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Working with pixels truly is an art, but given their modular nature, if you keep fussing with them, you can eventually create competent work even if you can't draw a straight line. Pixel animation is a big part of many games, especially indie projects, so we've supplied a tutorial to make a simple floating animated character, which should also teach you the basic principles of pixel animation. *By Gary J. Lucken*



JUST DO IT!

WANT TO GET INTO THE GAME INDUSTRY? NO PROBLEM!

THE BEST WAY TO START MAKING GAMES

is to start making games. There was a time when that wasn't precisely true, but that's starting to feel like the dark ages. Even five years ago, there was a catch-22 of needing experience to work in the game industry, but not being able to get that experience without somehow already being in the industry. While the classic example of working your way up through the quality assurance department is still a viable path, those with bigger ambitions should simply start making their own games right now.

Schools with game programs are an increasingly good place to learn to make games, and depending on where you go, you may be put into an intensive traditional team structure, be encouraged to go it alone, or forge teams for yourselves with skills you've learned. If you haven't the money for a proper game school though, self-education is getting easier than ever.

MAKER'S MARK

Thanks to the proliferation of cheap or free game-making tools, you don't have to be a John Carmack-style savant in order to make games on your own. There are loads of tools out there that make game creation easier, and if you've got an idea, you can make it happen for yourself, with a little determination. For example, free Flash tutorials abound, and there's a great community surrounding Game Maker [see last year's Career Guide for more on these: www.gamecareerguide.com]. If you want to break into the third dimension, Unity has come to the fore as an excellent, very cheap 3D game engine, and we've got a tutorial to help you get started with that (pg. 7).

Now, making one or two small games isn't going to instantly land you a job, but proving you can actually make an end-to-end product will definitely win you favor, as will being able to discuss with potential employers the difficulties of game development, and what

you did to overcome those issues. Simply having released a game, even if it was only to your friends and family, shows that you can see something through to the end. That's half the reason employers want to see that you have a college degree in the first place, to assure them you can complete something difficult and long-term, while taking direction from others.

As John Graham of Wolfire Games says in his advice column for indies (pg. 85), "Everyone



can think of fun ideas... your real problem will be implementing them." It's the follow-through that counts, even if your game isn't perfect, or amazingly creative. If you can speak intelligently about what you've done, and have something to show for it, you're ahead of the game.

"You often can't objectively determine how fun something is until you build it," he adds. "Game development is often a messy iterative process that requires you to sculpt as you go. Even the great Will Wright has used the phrase 'accidents that worked' to describe parts of his development process. Actual implementation is more important than just thinking about implementation."

THE SPARK OF GENIUS

If you're not looking to land a job at a big company, and would prefer to work outside a corporate structure, there are some pretty successful models to follow out there. While the

MINECRAFTS of the world are few and far between, the indie development lifestyle can be a good fit for the right sort of person, and many, if not most of the indie scene's bigger players have never worked for a large company. If you're prepared to live a Spartan lifestyle for a few years, indie game development can be very rewarding. We have found through interviews and surveys that while indies make significantly less money than those in traditional company structures, they are much happier with their situation in life. If you can subsist on top ramen for a year to pursue your dreams, you can do some very creative things (and isn't that what school is all about?).

But in the indie scene, you really have to stand out. If your ambition is to work on the next GEARS OF WAR, you should stick with the traditional path, but if your interests run a bit east of normal, and you have some different ideas to put out there, the indie scene may be the place for you. Either way, making your own games now is going to help you a lot in the future. Just don't expect to get rich off them!

FORGE THE FUTURE

The paths to game development are multitudinous now—iOS and XBLIG publishing platforms have almost zero barrier to entry, game education in the Western world is improving rapidly, and tools exist to support all skill levels. In the end though, what you really need is a passion for games. And that's why you're reading this, isn't it?

We hope we've given you enough information within these pages to get started making games, but the journey doesn't end here. Once you've gotten all you can out of this issue, you can read past career guide editions, subscribe to *Game Developer*, or continue reading online at www.gamecareerguide.com. We look forward to seeing what the next generation of game creators comes up with!

—Brandon Sheffield
twitter: @necrosofty



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WWW.GDMAG.COM

United Business Media
303 Second Street, Suite 900, South Tower
San Francisco, CA 94107
t: 415.947.6000 f: 415.947.6090

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FOR DIGITAL SUBSCRIPTION INFORMATION
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EDITORIAL

PUBLISHER

Simon Carless | scarless@gdmag.com

EDITOR-IN-CHIEF

Brandon Sheffield | bsheffield@gdmag.com

PRODUCTION EDITOR

Jade Kraus | jkraus@gdmag.com

ART DIRECTOR

Joseph Mitch | jmitch@gdmag.com

DESIGNER

Jessica Chan

CONTRIBUTING WRITERS

Tom Curtis
Bradley Johnson
Chevy Ray Johnson
Gary J. Lucken
R. Hunter Gough
Samuli Syvahuoko
John Graham
Jeffrey Fleming
Matthew Wasteland
Ryan Newman
ADVISORY BOARD
Hal Barwood Designer-at-Large
Mick West Independent
Brad Bulkley Microsoft
Clinton Keith Independent
Brenda Brathwaite Lolapps
Bijan Forutanpour Sony Online Entertainment
Mark DeLoura THQ
Carey Chico Independent
Mike Acton Insomniac

ADVERTISING SALES

GLOBAL SALES DIRECTOR

Aaron Murawski | amurawski@think-services.com
t: 415.947.6227

MEDIA ACCOUNT MANAGER

John Malik Watson | jmwatson@think-services.com
t: 415.947.6224

GLOBAL ACCOUNT MANAGER, RECRUITMENT

Gina Gross | ggross@think-services.com
t: 415.947.6241

GLOBAL ACCOUNT MANAGER, EDUCATION

Rafael Vallin | rvallin@think-services.com
t: 415.947.6223

ADVERTISING PRODUCTION

PRODUCTION MANAGER

Pete C. Scibilia | peter.scibilia@ubm.com
t: 516-562-5134

REPRINTS

WRIGHT'S MEDIA
Ryan Pratt | rpatt@wrightsreprints.com
t: 877.652.5295

AUDIENCE DEVELOPMENT

TYSON ASSOCIATES Elaine Tyson
e: Elaine@tysonassociates.com

LIST RENTAL Merit Direct LLC

t: 914.368.1000



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WHO TO KNOW & WHAT TO DO IN THE {GAME INDUSTRY}

BRANDON SHEFFIELD AND TOM CURTIS

{EVENTS}

Video game events and trade shows are an excellent resource for learning about the industry and making connections with professional developers. Here are a few events you should know.

GAME DEVELOPERS CONFERENCE

www.gdconf.com

/// Last year marked the 25th anniversary of the Game Developers Conference (GDC), which brings together developers from all walks of life. You've got indies, social game devs, and traditional developers rubbing shoulders with students and game development hopefuls.

GDC features lectures, summits, workshops, and more, all designed to

event continues to grow, and supports the show's Game Career Pavilion, where attendees can meet face-to-face with some of the industry's top studios, and hand out a few resumes.

GDC also hosts the annual Independent Games Festival, which showcases some of the finest games in the indie space. It has a special Student Showcase, which displays 10 specially chosen student projects and puts them on display in front of thousands of

GDC ONLINE

www.gdconline.com

/// GDC Online is similar to GDC, but (as you may have guessed!) has more of an online focus, and is located in Austin, Texas, a hub of game development in the southern U.S. But that's not all the show covers—there's everything from mobile and social titles to free-to-play and subscription-based MMOs, not to mention offline game development. There's a Career Seminar here, too! The next GDC Online will be

but turns its gaze toward European developers and regional market trends. The show takes place in conjunction with the consumer-focused trade show gamescom, and has cheaper student passes that allow access to all content, and will take place in Cologne, Germany from August 15–17, 2011.

GDC CHINA

www.gdcchina.com

/// GDC China, which will be held November 12–14, 2011 in Shanghai, hosts talks on business and management, game design, production, programming, and visual arts. The show also hosts its own IGF competition, much like the primary GDC, and is open to Oceania as well as all Asian countries.

GAMESCOM

www.gamescom.de/en/gamescom/home

/// Be sure to book some extra vacation time after GDC Europe, because Cologne, Germany will be hosting gamescom immediately after the developer-focused event on August 17–21, 2011. Gamescom is Europe's largest trade fair for games, and the show invites the public and industry professionals to check out upcoming titles and interact with the developers behind them.

DEVELOP CONFERENCE

www.develop-conference.com

/// The annual Develop

Conference, held in Brighton, UK, hosts talks on production, coding, audio, design, art, and business. The show also features the Evolve Conference, which focuses on the emergence of new platforms, technologies, and markets. The 2012 Develop Conference will take place in the summer.

TOJAM

www.tojam.ca

/// The Toronto Game Jam (TOJam) aims to foster collaboration and experimentation among developers by hosting a three-day programming marathon for hobbyists and professionals alike. Attendees bring their own computers, tools, and sleeping bags to collaborate with their peers and make the best game they can—from scratch—over the course of a weekend.

The event is not a competition, but rather an opportunity for amateur and professional developers to test their skills in a fun environment while surrounded by like-minded peers. Since the first TOJam in 2006, the event has produced well over a hundred complete games. The next TOJam will take place in May 2012.

INDIECADE

www.indiecade.com

/// The annual IndieCade Festival brings together independent games and



PHOTO COURTESY OF GAME DEVELOPERS CONFERENCE

GDC 2011.

make you better at your job, or to help you get one. Of particular interest for students is the Career Seminar, in which industry luminaries give lectures to aspirational game developers. This popular

attendees (and potential publishers).

[GDC is owned and operated by UBM TechWeb, which also owns Game Developer magazine, and will next take place in 2012 in San Francisco.]

held October 10–13, 2011 in Austin, Texas.

GDC EUROPE

www.gdceurope.com

/// GDC Europe follows the structure of the San Francisco-based GDC,



developers from around the world to celebrate the growing indie space. The event allows developers to showcase their titles and network with peers, and the event organizers host an awards ceremony to honor the industry's standout indie games and studios. The next IndieCade will take place October 6–9, 2011 in Los Angeles, CA.

PENNY ARCADE EXPO

www.paxsite.com

/// The biannual Penny Arcade Expo (PAX), held in Seattle and Boston, builds its reputation on celebrating video games and the culture that surrounds them. This is by far the most accessible of all the shows we've mentioned, and has a real consumer and fan-oriented focus. The show features a range of tournaments and other social events for attendees, as well as a number of panels from industry professionals. The show's expo floor offers a collection of upcoming titles, as well as a showcase of top indie games known as the PAX 10. The Seattle-based PAX Prime event will take place on August 26–28, 2011, and PAX East will take place in Boston in early 2012.

D.I.C.E.

www.dicesummit.org

/// The D.I.C.E. (Design, Innovate, Communicate, Entertain) Summit is more about the business end of the industry, bringing the higher level executives together as they discuss developing trends and opportunities within the game industry. The show is organized by the Academy of Interactive Arts & Sciences and hosts the annual Indie Game Challenge as well as the Interactive Achievement

Awards. The last D.I.C.E. Summit took place in February 2011 in Las Vegas—details for the 2012 event have yet to be announced.

E3

www.e3expo.com

/// The Electronic Entertainment Expo (E3), organized by the ESA, is one of the largest and most extravagant U.S. events in the industry. The show brings together publishers and hardware manufacturers as they reveal their upcoming projects, and build excitement for the ever-important fourth quarter. While the show is only open to professionals, E3 drew in more than 45,600 attendees in 2010.

TOKYO GAME SHOW

<http://expo.nikkeibp.co.jp/tgs/2011/en>

/// The Tokyo Game Show (TGS) is the largest video game trade show in Japan, where the region's biggest publishers exhibit their upcoming titles to journalists, fans, and the industry at large. The show features a number of workshops and conferences for developers, and serves as a venue for the Computer Entertainment Supplier's Association's (CESA) Japan Game Awards. TGS' Sense of Wonder Night allows developers to showcase their new or experimental projects and ideas.

The first two days of TGS are held exclusively for professionals, though the final two days are open to the general public. The event is co-organized by CESA and Nikkei Business Publications, Inc., and the 2011 show will be held September 15–18 at the Makuhari-Messe in Chiba City, Japan. 

{ ORGANIZATIONS }

These organizations support and regulate the game industry, and a number of them are open to students and consumers.

IGDA

www.igda.org

/// The International Game Developers Association (IGDA) aims to connect developers worldwide. This non-profit organization has chapters in North America, Asia, and Europe, and sponsors a number of events and parties at the industry's various developer conferences.

Members of the organization gain access to a wealth of community tools and discussions that allow developers to connect with each other and share information and ideas. Annual memberships are available to both students for \$30 and to professionals for \$48, with other options are available for qualified individuals. They even have a group health care plan!

ESA

www.theesa.com

/// The Entertainment Software Association (ESA) represents the interests of U.S. game publishers via anti-piracy programs, business and consumer

research, government outreach, and intellectual property protection efforts. The organization also owns and operates the popular E3 Expo, and funds several charities through its ESA Foundation.

VIDEO GAMES VOTER NETWORK

www.videogamevoters.org

/// The Video Game Voters Network, sponsored by the ESA, helps lead the charge against legislation that threatens the video game industry. The organization aims to keep voters educated about issues that could affect game regulation, and encourages outreach to local, state, and federal officials.

ESRB

www.esrb.org

/// The Electronic Software Ratings Board (ESRB), created by the ESA in 1994, rates the content of games released in North America, and ensures that the industry follows a common set of marketing guidelines. The organization receives support from publishers

and retailers alike.

GAME AUDIO NETWORK GUILD

www.audiogang.org

/// The Game Audio Network Guild provides a common network for game audio professionals to connect with peers, share ideas, and advance the implementation of audio in video games. Members of the organization gain benefits including access to the G.A.N.G. social network, as well as a number of other opportunities to network with like-minded audio professionals. Membership is available at a variety of levels for both students and professionals.

AIAS

www.interactive.org

/// The Academy of Interactive Arts and Sciences (AIAS) is a non-profit organization that celebrates the developers behind the industry's most influential games. The AIAS hosts the annual D.I.C.E. summit, as well as the event's Interactive Achievement Awards. 

{ ADDITIONAL RESOURCES }

There are several other events, organizations, and web sites that game industry professionals should be familiar with, including:

ORGANIZATIONS

- » Game Developers Association of Australia
- » IGDA Student Action SIG
- » NPd
- » The Entertainment Consumers Association

EVENTS

- » MiG
- » Microsoft Gamefest

- » Montreal International Game Summit
- » SIGGRAPH
- » Taipei Game Show
- » GameTech
- » SXSW
- » Casual Connect
- » GameON Finance
- » AI for Interactive Digital Entertainment Conference

WEB RESOURCES

- » Gamecareerguide.com
- » Gamasutra.com
- » Gamedev.net
- » Gamedevmap.com
- » Gamepolitics.com
- » Gamestudies.org
- » Gameaudioforum.com
- » Indiegames.com
- » Mobygames.com
- » Tigsources.com



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Unity and conquer!

a 3D game making tutorial in UNITY

BRADLEY JOHNSON

/// Some will argue that 2010 was the year of the “indie,” or independent game developer. Some may even argue that we’ve entered the decade of the indie. Part of the reason so many small studios have popped up recently is the availability of great tools to make games, alongside ease of deployment via the internet and mobile platforms. One of the major players in the game engine space is Unity.

ABOUT UNITY

» Unity is a game engine that lets you build for one platform and easily deploy to many others. You now have the web, PC, Mac, iOS, Android, and even major consoles at your fingertips thanks to Unity. Established companies, solo developers, students, and hobbyists use Unity to create not only 2D and 3D games, but also educational software, training programs, medical visualizations, and just recently, even military simulations. Making games is never an easy process, but using a game engine like Unity takes away a lot of the tedious and complicated tasks so developers can focus on creating great content.

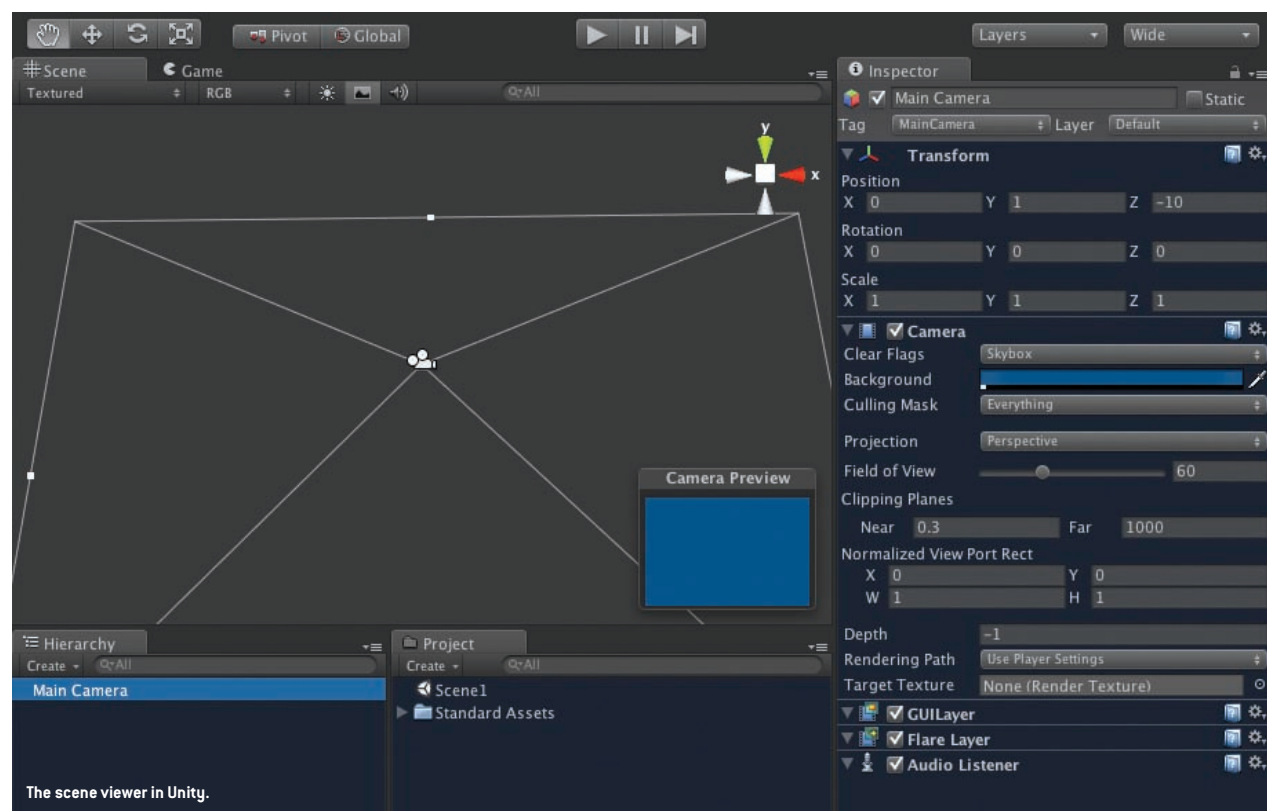
There’s a free version of Unity that lets you deploy to the web, so it’s a good idea to try it out before you spend money for the various licenses. There are both PC and Mac versions available for download at www.Unity3d.com.

EVERYBODY LOVES EXPLOSIONS!

» I’ve put together a tutorial for creating a very basic 3D game using Unity that we’ll call Mr. Explody Barrel. The tutorial uses some light scripting, but it should be simple enough for anyone to get a basic understanding of how things work. Here’s a quick rundown of the Unity editor and some terms you’ll need to know.

A Unity project consists of at least one scene that can have any number of objects in it. A scene is like a level in a game, and it is where all of your game elements go—terrain, a camera, the player, exploding barrels, etc. For example, you can have a project with five different scenes, and each scene can be a different scenario with unique missions and art. Scene 1 could be a desert level, and when the player finishes the level, you could have it load up a jungle level for Scene 2. For this tutorial, we will just have one scene with a few basic objects in it.

Looking at the picture of the Unity editor we see several different frames with various tabs. You can add, delete, resize, and drag and drop tabs to get the desired layout. >>>



Here are some items you need to know about. Note that an extensive manual for Unity can be found by navigating to Help->Unity Manual within the software itself.

SCENE TAB /// This is where you'll be creating and repositioning objects in the scene. After placing an object in the scene you can click on it to highlight it. Once highlighted press W, E, or R on your keyboard to go into the Move, Rotate, or Scale modes. Zoom in and out using the mouse wheel. Rotate the view by holding option (on a Mac) + the left mouse button and dragging the mouse around. Pan the view by holding option + the mouse wheel and dragging the mouse. When an object is selected in the Scene view you can press the F key to center the view on it.

GAME TAB /// This is where you'll play the game when running it from the editor.

HIERARCHY TAB /// A list of all the objects in the current scene.

PROJECT TAB /// A list of all the files in your project's asset folder. You can add outside files to your project by dragging them into the project tab. From within this tab, you can also create many different assets, such as scripts, materials, shaders, and prefabs.

INSPECTOR TAB /// When clicking on an object, material, texture, mesh, or other element, this tab is filled with all the components and attributes associated with the selected item.

PREFABS /// A prefab is a pre-made object (by you or someone else) that can be placed into a scene or instantiated at runtime. In this tutorial, we'll make a barrel prefab that has a mesh, collision, particle effects, and a sound associated with it.

COMPONENTS /// These are added to objects to give them various properties, such as scripts, particle effects, meshes, collision, physical properties, and the like.

MESH /// The visual component of the object

COLLIDER /// An invisible part of the object that will collide with other objects and terrain.

RIGIDBODY /// This gives physical properties to the object so that it can move and bounce around the world like a real object.

MATERIAL /// This holds info such as what type of shader and texture to use. Meshes and Particles need materials to be displayed properly.

CAMERAS /// It's the eye of the game. Whatever the camera is pointing at during runtime is what will be shown when you're playing the game. You can have several cameras in a scene that you switch between (think of security cameras) or just one that follows the player around.

SKYBOX /// The backdrop for a game (distant mountains, clouds, and that sort of thing).

TO THE TUTORIAL!

➤ If you haven't already installed Unity, then go to www.unity3d.com to download the software. Once Unity is open, create a new project by going to File->New Project. Set the project directory and name the project whatever you want. Make sure the boxes for these asset packages are checked before hitting the Create Project button: Character Controller, Particles, Skyboxes, and Terrain Assets. Several folders will be added to the Project tab because those boxes were checked when you created the project. These folders will have a bunch of files that are ready for you to use in your project. Unity provides quite a few free asset packages for use in your projects. It's safe to use these in a commercial product, but to give your game a unique look, you would want to build all your own assets or buy more pre-made packages from the Unity Asset Store. To access the asset store from within Unity go to Window->Asset Store.

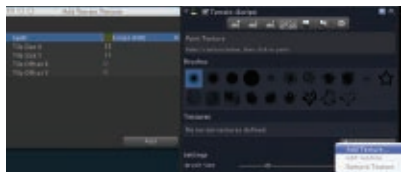
At this point, a default scene should appear in front of you. There will be a camera object in the Hierarchy tab, but the scene will appear blank. You shouldn't need to touch the camera for this tutorial, but you can click on it to see its attributes in the Inspector.

Make sure you've downloaded the "TutorialFiles.UnityPackage" (see Resources). Right click in the Project tab, select Import Package->Custom Package and choose to import TutorialFiles.UnityPackage. After you import the files they will appear in the Project tab. This package contains our player prefab, a barrel mesh, texture, and a sound file that we'll use later.

To make our scene appear a little more interesting, add a skybox by going to Edit->Render Settings. The Inspector tab will now populate with the render settings. Click the dot on the right side of where it says "Skybox Material" and click on any of the materials in the window that pops up. Choose one of the skybox materials that you think looks nice. I chose the "Eerie Skybox" material. Adding a skybox will give your scene a pleasant visual backdrop instead of having just a black or grey background.

Next, you'll want to create some ground for the player to run around on by going to Terrain->Create Terrain. This will create a large grey square in the scene. Add a texture to it by selecting the terrain in the Hierarchy, clicking the paintbrush icon in the Inspector, and then clicking on the Edit Textures button.

In the pop-up window, click the dot next to the Splat field, choose a texture and then click the Add button. The terrain piece in the Scene tab should now appear to have a tiled texture on it. The corner of the terrain is on the origin of the scene. This isn't good, because our players could easily run off the edge. To fix this, select the terrain in the Hierarchy tab, and then type -1000 in both the X and Z position fields in the Inspector.



The terrain will probably seem too dark at this point, so let's increase the ambient light by navigating to Edit->Render Settings. Click on the grey box in the Ambient Light field and choose a color that's brighter [white's good for this tutorial]. This will brighten or darken the scene depending on what color you choose. You can also add lights to the scene by navigating to the GameObject->Create Other menu, but we won't talk about those in this tutorial.

Now let's add a player. If you imported the TutorialFiles.UnityPackage file earlier you will

have a folder called Tutorial in the Project tab. Expand the subfolder called Prefabs, and drag the Player object into the scene. In the Hierarchy, select the newly placed Player object and set its position in the Inspector to X=0, Y=1, Z=0. This will set our player a little above the terrain so we won't fall out of the world. This Player prefab uses the third-person controller supplied by Unity and adds a sphere collider to it. The sphere collider will be used as a trigger to explode a barrel when our character makes contact with it. The third-person controller has a mesh, a couple animations, and some script components that will let us move the character around in a 3D world. One of the script components also tells the camera how to follow the player. Creating a player in a 3D game can take a lot of work, so using this prefab will save us a good deal of time.

Don't forget to save your work! Select File->Save Scene to do this. Making games is difficult enough without losing work due to something crashing.

Now press the Play button (top middle of the editor window) to see if everything's working. If it's going well, you should now be able to move the player around in the game by using the W, A, S, and D keys. Press the Play button again to quit playback.

Let's create an exploding barrel. Select GameObject->Create Empty from the menu. This will create a GameObject in your scene that you can rename by right clicking on in the Hierarchy. Rename it to "Barrel." We need to add several components to the object. With the Barrel selected use the Component menu to add a Mesh Filter and Mesh Renderer. These components will now show up in the Inspector when the Barrel is selected.

To add a mesh to our object make sure the Barrel object is selected, and then drag the Barrel_Mesh file from the Tutorial folder in the Project tab to the Mesh field in the Barrel's Mesh Filter in the Inspector tab. Alternatively, you can click the dot in the mesh field and select the mesh from the popup window. Now expand the materials field in the Mesh Renderer and add the Barrel_Material next to where it says "Element 0." Then use the Component menu to add a Rigidbody and a Box Collider. The Box Collider should automatically match the size of the mesh, which you can see by looking for its green outline in the Scene tab.

Explosion sounds and particle effects are the best part of exploding barrels, so let's add them. From the Components menu add an Audio Source, Ellipsoid Particle Emitter, Particle Animator, and a Particle Renderer. With the Barrel selected add the Kaboom audio file (found in the Tutorial folder) to the Audio Source and uncheck Play On Awake. For the Ellipsoid Particle Emitter uncheck Emit, set the Min and Max sizes to 1,

LISTING 1

```
private var mainGameObj : GameObject;

//Called once when the object is loaded
function Start()
{
    mainGameObj = GameObject.
    Find("MainGameObj");
}

//Automatically called when colliding with a
trigger
function OnTriggerEnter(other : Collider)
{
    Explode();
}

//Play the kaboom sound, FX, and hide the object
function Explode()
{
    audio.Play();
    particleEmitter.Emit();
    renderer.enabled = false;
    rigidbody.detectCollisions = false;
    mainGameObj.SendMessage("BarrelExploded");
}
```

LISTING 2

```
var barrelPrefab : GameObject;
private var score : int = 0;

function Start()
{
    //Spawn 3 barrels
    for (i = 0; i < 3; i++)
        SpawnNewBarrel();
}

function OnGUI()
{
    //Create a button to reset the score
    if (GUI.Button(Rect(0, 0, 60, 30), "Reset"))
    {
        score = 0;
    }

    //Draw the score
    GUI.Label(Rect(200, 0, 60, 30), "Score: " +
    score);

    //Draw the controls
    GUI.Label(Rect(0, 50, 120, 60), "Controls:
    W,A,S,D Hold shift to run");
}

function BarrelExploded()
{
    //Increase the score by 1
    score += 1;

    //Call the SpawnNewBarrel function
    SpawnNewBarrel();
}

//This function spawns a new barrel
function SpawnNewBarrel()
{
    var newPosition = Vector3(Random.Range(-10,
    10), 2, Random.Range(-10, 10));
    Instantiate (barrelPrefab, newPosition,
    Quaternion.identity);
}
```

set all the Rnd Velocity fields to 10, and make sure One Shot is checked. Rnd Velocity will change the speed of the particles, and the One Shot attribute will make all the particles fly out at once instead of in a continuous stream. For the Particle Animator make sure Autodestruct is checked, which will automatically destroy the barrel once all its particles disappear. For the Particle Renderer all you need to do for now is add a material. Sparkles1 is a good one. You can see what the particles look like by checking the Emit box in the Particle Emitter, but make sure to leave it unchecked when you're done.

To make the barrel explode we need to add a script to it. Right click in the Project tab and select Create->JavaScript. Rename the script to BarrelScript. Add the script to our barrel by dragging the BarrelScript from the Project tab onto the Barrel object in the Hierarchy tab.

We want to spawn several instances of the barrel throughout the game so we need to make a prefab of it. Right click in the Project tab and select Create->Prefab. Rename this new prefab "Barrel," and then drag our Barrel object from the Hierarchy onto this new Barrel prefab. Notice how the Barrel object in the Hierarchy tab turned blue. This indicates it's a prefab object. Now we can use this prefab in our script to spawn multiple barrels. Go ahead and delete the Barrel from our scene since we will be spawning them from script.

Find and open the BarrelScript, and type the script in exactly as in Listing 1. The script holds a reference to something called a MainGameObject. This is an object we'll be creating in the next step. The OnTriggerEnter function gets called by the engine whenever the barrel collides with a trigger object (like the one our Player has). This will call the Explode function that plays the sound, emits particles, hides the object, and calls the BarrelExploded function in the MainGameObject's script.

Before we can do anything else, we need to create the MainGameObject that was referenced in the barrel script. Go back to Unity and use the GameObject menu to create an empty object. Rename the new object MainGameObject. Right click in the Project tab and create a new Javascript. Rename the file to MainScript and drag it onto the MainGameObject to add it as a component. Double-click the script file to open it and type in the script as you see it in Listing 2.

At the top of the script is a barrelPrefab variable which we will use to spawn barrels in the SpawnNewBarrel function. We'll need to assign this variable later using the Inspector. The Start function uses what's called a "for loop." This specific for loop is set up to call SpawnNewBarrel three times right when the level is loaded. The OnGUI function is used to draw all the GUI elements, and in this case we're drawing a Reset button and two text labels—



resources

Unity Answers:
<http://answers.unity3d.com/index.html>
 TutorialFiles
 UnityPackage:
<http://gdmag.com/resources/code.htm>

one displays the score and the other shows the controls. Go back to Unity and select the MainGameObject in the Hierarchy tab. There should be a field called barrel Prefab in the script component in the Inspector. Drag the Barrel Prefab from the Project tab onto this field. This links our script to the barrel prefab so we can now spawn barrels.

The game should be ready to go. Hit the play button and run your character through the barrels. The score should go up each time a barrel explodes, and you should hear the Kaboom sound and see particle effects fly out. Hitting the reset button should set the score back to zero. Congratulations on making a game! Feel free to change different values of the Barrel prefab's components. You can change the color of the particles, their size, give them gravity and a bunch of other cool stuff. Lastly, if you want to

share the game with your friends, make a web build by going to File->Build Settings and press the Build button.

Once you start working on a new project you'll probably run into problems you don't have the answers for. There's a great site called Unity Answers where you can search for answers and ask your own questions. ☺

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BRADLEY JOHNSON is a programmer & designer who started out making console games but realized his true calling in the form of Be-Rad Entertainment, a tiny studio he founded to make sweet games. Be-Rad's first two releases are mobile games called LAME CASTLE and SERIOUS SAM: KAMIKAZE ATTACK!

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Photo credit: Sungho Lee, Texture & Light Game Design Course

an introduction
to artificial
intelligence
pathfinding

getting there from

here

/// I'm currently located in my 10th floor apartment and I want to get to the coffee shop down the street, so how do I get there? It's time to do some pathfinding.

EVERYDAY PATHFINDING

» Well, here is my usual route: exit my apartment, turn the corner down the hall, enter the elevator, exit the lobby, and then walk down the street until I reach the shop. I don't walk around the building, because that would take longer; and I don't jump out the window because, although that would be quicker, it would likely be detrimental to the condition of my spine. So I start along my path, but alas, the elevator is broken.

Suddenly, my optimal path to caffeinated goodness has been intercepted! But I've considered this possibility (or at least some wise builders have), and I continue on to the stairwell at the end of the hall. Since I'm on the 10th floor, this is slower than the elevator, but eventually I make it to the bottom and exit out the back of the building. From here, I recalculate: I need to get back on track to the coffee shop, so I walk around the building to the front-facing street, and voilà, I have reunited with my optimal path and can reach my destination.

Welcome to pathfinding, something humans do every day when we get up on our feet and walk from A to B. The question of how to do this in games is something that game developers are faced with all the time, and have been solving and re-solving for decades.

For example, let's say you're making a dungeon crawler or an MMORPG, and the player clicks on a location on the screen, indicating they want their avatar to walk there. Unless your game world is painfully empty, then there are going to be obstacles that they will have to navigate around, under, or deal with in order to reach that location. Or perhaps you're making

an RTS game, and you select a group of tanks you've just built and order them to rendezvous somewhere. They're going to not only have to do the same thing, but also avoid running into (and overlapping with) each other as they do so.

When dealing with games, you're dealing with abstract game objects, which don't intuitively know how to navigate around each other and terrain obstacles. In fact, they don't even inherently know that any of these other objects exist. It's your duty as a programmer to use the information available in your game world to communicate to your objects what paths you want them to take and how to determine those paths.

The more complex your worlds are, and the more conditions your pathfinding requires, the more complex this solution becomes. But to jump right into some of the more advanced methods employed by programmers today would be overkill. Being able to break down a larger procedure into a set of specific, logical instructions is an invaluable skill for a game developer. By starting with a simple problem, solving it, and then introducing complexities one by one, we can approach the problem of how to get from A to B one baby step at a time.

BREAK DOWN THE PROBLEM

» If we take a look at Figure 1, we have everything we need to solve this problem at its most basic level: a player, coffee, and a playing field. I want to get to the coffee, but to do so, I have to navigate across the playing field, which I have broken down into a set of grid cells. I have done this to simplify the problem as much as possible, so we'll say that our game player (myself), can only move between adjacent cells (right, left, down, or up).

Our pathfinding is limited to the information we have, so what is that? We have our start position (0,0) and our goal position (4,2). Now all we have to do when we move our player is compare his position with the one he wants to move to, and determine his movement based on that. If you were to code that, it might look something like this:

```
// Move horizontally.
if COFFEE IS TO MY RIGHT
    MOVE RIGHT
else if COFFEE IS TO MY LEFT
    MOVE LEFT
```

```
// Move vertically.
if COFFEE IS BELOW ME
    MOVE DOWN
else if COFFEE IS ABOVE ME
    MOVE UP
```

So here we have two chunks of code. The first moves him horizontally, and the second moves

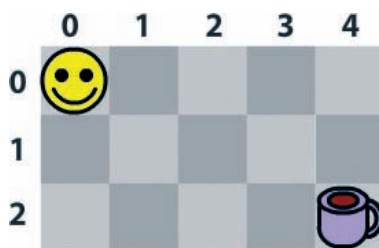


Figure 1

him vertically. If we keep alternating between the two as they're running, starting with the first, the results will be as in Figure 2.

Coffee achieved! Even if you don't understand that code, the concept should be quite clear. If the coffee is right, move right; otherwise move left; the same goes for up and down. Even using very simple logic like that, Mr. Happy here finds his coffee using what appears to be the shortest path available, in six steps.

It's really helpful for game developers to think critically about the pathfinding problem they need to solve, and to solve that problem in the most fitting way possible. Since there was nothing blocking Happy's way to the coffee, this particular solution was easy. So what happens to this solution if we suddenly toss an obstacle in the way?

In Figure 3, you can see that the method works for one step, but then it halts. Our logic says, "He needs to move right, but he can't," and "He's in the right y-position, so don't move vertically." This means he doesn't move

anywhere once he hits that wall. He is forever caffeine-deprived, poor fellow.

Since we've introduced a complexity that breaks our pathfinding, we now need to introduce a solution to handle that complexity. We need to tell our character to do something different in the case where he encounters a wall. So what I've done now is adjust the pseudo-code from before to take the wall into account:

```
// Move horizontally.
if COFFEE IS TO MY RIGHT
    if WALL IS TO MY RIGHT
        MOVE UP
    else
        MOVE RIGHT
else if COFFEE IS TO MY LEFT
    MOVE LEFT
```

What we've done here is add another condition to the horizontal portion of our code which will handle the case in which we hit a wall. If we then apply this, our happy protagonist will make it to the coffee as seen in Figure 4.

While this worked for that particular case, it's easy to see how we could once again break this method: if we add a whole bunch of walls on top of this one, our player will just move up along them until he can get past. Considering that it would be much faster to go under them, instead of all the way around, this solution isn't really our best.

You'll notice that the pseudo-code is a branching tree, and the branches of this tree



Figure 2: Coffee achieved!



Figure 3: We've all had mornings like this.



Figure 4: Wall: 0 Coffee: 1



Figure 5: A more complex scenario.



Figure 6: BFS "expands" out from the starting point.



Figure 7: BFS only searches available tiles.

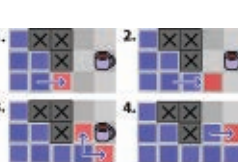


Figure 8: The search keeps expanding until it finds the target position.



Figure 9: Values representing distance from the yellow tile.

are always the actions in red. The blue parts are where we use logical conditions to split the tree into more branches to handle different cases (more complexities). The more complexities we have, the more conditions and branches our logic tree will have, and the better our player's movement will be.

But sometimes there are so many possible conditions that it is nearly impossible for a game developer to foresee and handle them all. Or they can, but the result will be such a large and complex tree that it uses up too much computation and slows down the game. What many clever programmers have done to handle this is come up with special algorithms that are designed to "search" an area, rather than evaluate behavior on a step by step basis, until they find the target location. I don't have enough time and space to explain all these algorithms, but I will cover one in particular, because once you understand how it operates, it is much easier to make sense of the context in which pathfinding code often occurs.

THE BREADTH-FIRST SEARCH

» The breadth-first search (BFS) algorithm is very intuitive in concept, and because of this, novice game developers sometimes stumble upon it themselves without even realizing what it is. Here is what BFS looks like in pseudo-code, where a "node" represents a grid cell.

```
CREATE AN EMPTY QUEUE
ADD START NODE TO QUEUE AND MARK IT
while QUEUE IS NOT EMPTY
    PULL NODE FROM QUEUE
    if NODE IS THE GOAL
        EMPTY THE QUEUE, WE ARE DONE!
    else for each NEIGHBOR OF NODE
        if NEIGHBOR IS EMPTY AND NOT MARKED
            ADD NEIGHBOR TO QUEUE AND MARK IT
```

If you're having trouble following that, here's the gist of what is happening: We have a "queue" of nodes that starts with just our marked starting node in it. Then, we run a piece of code that loops, pulling a node from the queue every time until it is empty. In this loop's code, we take the node that was pulled and look at each of its "neighbors," or adjacent nodes. For each of those nodes, as long as it hasn't already been marked, we mark it and add it to the queue. This loop will continue as long as there are neighboring nodes to be explored, and will stop when we have found the goal node.

Let's walk through that step by step and see what happens. We'll start with a pathfinding problem too complex for our earlier code and solve it using BFS, as seen in Figure 5. When we run the code, it will start with the first node, which is where our player is located. That node will be marked, and then its neighboring nodes

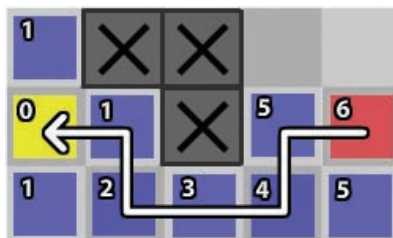


Figure 10: We "track back" to the starting tile.

will be examined. In our example, marked nodes show up as blue, and nodes in the queue will show up red (see Figure 6).

Since we have three nodes in the queue now, as you can see in Figure 6, the loop will keep running. On the next pass, it will then do the exact same thing for each of those red nodes, marking them and then adding *their* neighbors to the queue.

See what is happening here? In Figure 7, the bottom node added its only available neighbor because the upper two nodes in the queue did not have any empty neighbors to add. Depending on the order in which we check neighbors, the node at (1,1) may have moved first, but this doesn't matter, we still end up with one node in the queue at (1,2).

Figure 8 shows what happens if we keep stepping through this algorithm until the goal

cost, or in other words, each node's distance (or "movements") from the start node. So the lowest value is always going to be 0, the start node, because obviously no node is closer to the start than itself.

Using that knowledge, all we have to do is simply "count down" from the goal node until we reach the goal. As you can see in Figure 10, I start with the finish node. From there, I just examine each adjacent node and move to the neighbor with the lowest cost until the starting node is reached. And now we have a path! The fact that the path is backward is trivial, our last step is simply to reverse the path so our player is able to walk along it to reach the goal.

DIFFERENT KINDS OF GRAPHS

» Knowing how to calculate the shortest path like that is cool, but you may be asking, "What if my game is not on a grid?" If so, then you're starting to think like a real AI programmer now, because this is the next stage of problems you start to face when designing the pathfinding in your games.

To address the first question, what would happen if, instead of using a grid like I did in the example above, you were to apply the BFS algorithm to either of the graphics in Figure 11 instead? Would it work?

The answer is yes, it certainly would. You

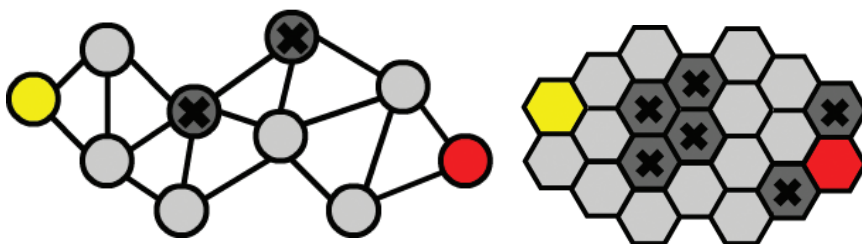


Figure 11: The BFS approach works with many different kinds of graphs.

is reached. As you can see, as long as a path exists from start to finish, the BFS algorithm will be able to get to the goal eventually. This search would find this goal in even the largest of mazes, if it existed (although it would be expensive to calculate).

But we're not finished yet. Although we know a clear path to the goal exists, we don't know exactly what it is. That's because the BFS algorithm doesn't actually create a path, it just does the search for us. Fortunately, using the information that the search has provided us with, we can actually create the path ourselves, and we do that by working our way back to the goal.

The trick to using BFS for pathfinding is, as you're performing the search, to do what I've done as seen in Figure 9—assign values to each of the nodes. This value is the node's

might have already noticed that the actual code for the search does not distinguish how many neighbors a node has or where they have to be, only that you need to be able to search them and assign them a movement cost. In the first graph in Figure 11, some nodes actually have more neighbors than others, and the distance between them varies, so you'd want to calculate a more precise distance when applying cost. The second graph is made up of hexagons, so each node can have a maximum of 6 neighbors, but the distance between them is constant, similar to the square graph.

The kind of game you are developing and the kinds of paths you want to create will determine which kind of a graph you use, naturally, so it's important to keep this in mind when thinking about pathfinding. Am I creating a strategy

game on a hexagon board, or a more open-world game with large navigable areas? For the latter, maybe you'd want to create a separate node-graph (like the one on the left in Figure 11), with each of the nodes placed at an important or strategic movement location.

TAKING PATHFINDING TO THE NEXT STEP

» While the BFS algorithm works fine, it is often far from the most elegant or least expensive solution to most pathfinding problems. But it is a well-known algorithm, and no matter what coding language or platform you are developing your game in, a quick Google search will likely result in tutorials or source code that apply it for you to learn from.

Now that you know how BFS works, why not explore more? There are many different approaches to pathfinding that game developers have explored for many different situations and styles of gameplay. When studying, do as you've done here and break down how the method works step by step, and apply it to the game you are creating (graph, movement cost, and so forth). I am unable to cover all of these various methods here, but I will briefly explain one of the more popular ones.

THE A* ALGORITHM

» My ulterior motive in introducing the BFS algorithm was that it is the ancestor of the extremely popular A* algorithm. The goal of A* is the same as BFS, but it's designed to be faster by reducing the total amount of nodes that are searched.

Remember as we are stepping through the breadth-first search, we assign a cost to each node, so we can use that to determine the shortest path when it is complete. A* is actually an evolved version of BFS that uses that cost while it is doing its search! But how? In BFS, a node's cost is calculated as such:

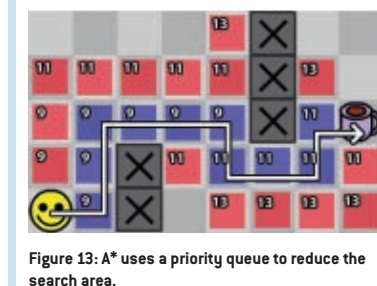
COST = DISTANCE_FROM_START

But A* calculates its each node's cost like this:

COST = DISTANCE_FROM_START + DISTANCE_TO_FINISH

The "distance to finish" is not the actual distance to the finish, but an estimate. This estimate does not take walls or anything into account, so you'll often see it referred to more accurately as a "heuristic." It's called that because different implementations of the A* algorithm use different heuristics, because changing it will actually result in different kinds of paths.

Certain heuristics are better optimized for certain kinds of graphs or situations. In the



following examples, I will be calculating the cost using square distance, meaning the horizontal distance is added to the vertical distance, because we are using a square graph and restricting our player to just horizontal and vertical movement. To understand how A* improves on the BFS approach, it's best to see them both applied to the same graph. In Figure 12, I've taken a larger graph and used BFS to search out a path to the finish. You can see the cost of each node used to calculate the path. But notice that the search extended up into the top-left area of the graph, where the path doesn't even go. If this graph were even bigger, the search would've gone way up there until it reached 10, because this search kept on expanding its breadth until it reached the goal at 10 moves.

So how does A* use this special cost value? Instead of using a queue, like our BFS algorithm does, it uses a priority queue. This means every time the algorithm loops, instead of just pulling out the next node, it pulls out specifically the queue with the lowest cost value!

Figure 13 shows A* applied to the same graph. You'll immediately notice that this search totally ignores the cells on the top-left! This is because as the search started moving right, you'll notice the cells all had a cost of 9, so they were being pulled from the priority queue first. And before those cells could even be considered, the search had found its way to the finish!

No matter how huge this graph extended in all directions, A* would still only search the same amount of nodes. Because it's designed to reduce the search area, this often makes A* much less expensive than BFS computationally. Because of this algorithm's popularity, there are

examples, tutorials, and source code available for it across the internet in just about every programming language.

WHERE TO GO FROM HERE

» It's important to realize that the above solutions are rarely adequate for most gaming situations, which often have more obstacles, moving objects, and more rules and conditions to take into consideration. Sometimes, you may not even want a unit to pathfind using the shortest path (for example, you want a tank to move along a road, not cut through a ditch, even if it's a shorter path).

Luckily algorithms like A* can be tailored and poked around to adapt to gameplay situations, so I encourage looking up tutorials and source code for these algorithms in your language of choice and playing around with them. Or, even better, build them yourself from the ground up.

Once you've mastered these, explore new methods and try coming up with your own. Sometimes in game development, a simple, quirky pathfinding method is much more charming and effective than the most accurate one. If you're looking for more pathfinding algorithms and approaches to read up on, I recommend searching for the following terms: Wall tracing, Best-first search, Dijkstra's algorithm, Navigation meshes, Flocking algorithms, and Potential function-based movement. 📖

CHEVY RAY JOHNSTON is a Vancouver-based indie game developer, educator, and creator of the FlashPunk API.

resources

AI for Game Developers

<http://oreilly.com/catalog/9780596005559>

>>> Introduction to AI techniques for game developers with a very large section dedicated to several different pathfinding methods.

Amit's Pathfinding Pages

<http://theory.stanford.edu/~famidp/GameProgramming>

>>> A huge collection of excellent tutorials on pathfinding, various graph implementations, and optimizing and improving on the A* algorithm.

AI Wisdom

<http://aiwisdom.com>

>>> Web site dedicated to game AI articles and tutorials with sections specifically for pathfinding and A* implementation.

Game AI

www.ai-blog.net/archives/000152.html

>>> Excellent tutorial explaining how to implement and optimize use of navigation meshes for pathfinding in games.

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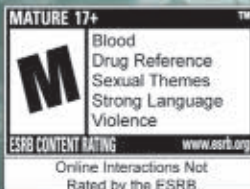
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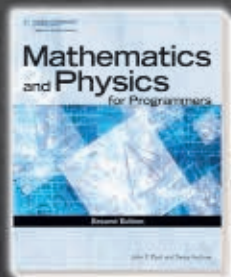
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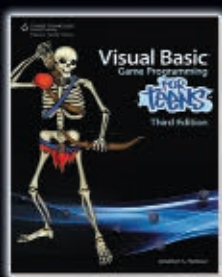
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the crowdfunding

crowdfund

looking for a crowdfunding option? here is our in-depth comparison.

BY R. HUNTER GOUGH

/// In March of 2009, Josh Freese (a session drummer who's played with every band you've ever heard of) combined preorder-funding, tiered pricing, and a huge dollop of punk rock ridiculousness to finance his second album, "Since 1972." For \$7, you could download the album. For \$50, you would get a signed CD, a T-shirt, and a personal thank-you phone call from Freese.

For \$1,000, Freese would wash your car, take you out drinking, and then you'd give each other haircuts in the parking lot of the Long Beach courthouse. For \$20,000, Freese, Tool's Maynard James Keenan, and Devo's Mark Mothersbaugh would take you mini-golfing, and then drop you off on the side of the freeway.

The publicity stunt was a huge success, getting write-ups everywhere from Wired to NPR, and "crowdfunding" took off. This was a huge boon to Kickstarter, a crowdfunding service that launched a month after the release of "Since 1972", and quickly established itself as the market leader.

Crowdfunding services—web sites that act as both a social network to connect projects with backers and as a marketplace or escrow house for project funding—have become a popular business model in the last two years, and several more have sprung up alongside Kickstarter, each with their own perks, quirks, and twists on the basic model.

Crowdfunding is a natural fit for an independent game developer who needs to connect with an audience and secure funding at the same time. Rather than having to "prove" your game to a publisher, you're "proving" it directly to your customers, and you don't have to go out on a limb funding it yourself with no idea of whether you'll sell enough copies to recoup your investment. >>>

WHICH FUNDING!?

» While Kickstarter is the most well-known crowdfunding service, it may not be the best fit for every video game project, so we're taking a look at five different crowdfunding services for video game projects to help you decide which will work best for your needs.

Kickstarter, the leader of the pack, has successfully funded over 6,500 projects since launching in April of 2009, 67 of which have been video games. IndieGoGo actually launched over a year before Kickstarter, but limited its funding to film projects until 2010.

RocketHub and ulule are two young up-and-comers that launched last year, and are taking the basic crowdfunding model in interesting new directions; RocketHub is building gamification and an incubator of sorts on top of the basic model, while ulule is coupling its crowdfunding service with a message board and keeping costs to a bare minimum to create a very friendly and inviting space. Finally, 8-Bit Funding is the underdog of the bunch, launched at the beginning of this year as a crowdfunding service exclusively for video games.

The biggest core difference that separates these crowdfunding services is the funding model. Kickstarter and ulule both use an "all or nothing" funding model, meaning that no money exchanges hands until a project's deadline is reached, and only if the project has also reached or exceeded its funding goal. IndieGoGo and 8-Bit Funding both use a "keep it

importance of "all or nothing" is that it protects both the creator and the backer. As the creator you know you're only obligated to follow through if you receive the funds you said you needed, so you're not left having to fulfill obligations when you raised only \$40 of the \$40,000 you were trying to raise.

"And for backers there's "safety in numbers," he says. "You're only supporting something that's fully funded, and you don't have to worry about 'Where is this money actually going to go?' the way you might if there wasn't that sort of threshold that has to be reached."

Cédric Bégoc, community manager for ulule, agrees. "What happens if you don't reach the goal? You don't have enough money for the making of your project. What happens if we give you the money anyway? You end up making a sloppy project, because you don't have the means to fulfill your ambition. You are disappointed. And you disappoint your supporters and your fans.

"But, yeah, the crowdfunding site [takes] its commission during the process. On the contrary, we believe the good way to use crowdfunding is a clear one: you need a budget, you succeed," he concludes. "At the minimum you get the budget, then you make the best of it, and no one is fooled."

Adherents of both funding models encourage creators to reapply if they don't reach their goals; an "all or nothing" project that doesn't reach funding can often succeed by reorganizing as a smaller project with a lower funding goal (as in the case of the "You Meet The Nicest People Making

Video Games" project on Kickstarter. See <http://thenicestpeople.tumblr.com>), and "keep it all" projects can re-apply for their same goal minus the money they made previously, often reaching their final goal after several "rounds" of funding.

WHAT'S RIGHT FOR ME?

» Deciding what funding model to use for your video game project is primarily a matter of how flexible your budget is. If you need a specific amount of money for a particular engine or assets, and you're willing to wait a month or two for the funding deadline, you're going to want an "all or nothing" model. On the other hand, if your project's expenses are already covered and you're committed to finishing the game regardless of how much funding you receive, then

you'll probably want a "keep it all" model where your fans can cheer you on (and help you pay rent) with their preorders.

Many of these services have added their own unique features to help them stand out from the crowd. RocketHub awards users badges for doing specific things on the site like launching a project, backing a project, backing a successful project, and so forth, which Meece says has been a big hit with its users. RocketHub also has the aforementioned dedicated "LaunchPad Opportunities." "Think of RocketHub as an incubator for creatives with crowdfunding being the first step," says Meece. "We are in the process of lining up LaunchPad Opportunity providers for the next year—and yes, some will include video-game-oriented opportunities."

IndieGoGo has partnered with a number of different companies to offer special services to its projects. Partners of particular interest to video game projects are Fractured Atlas, a nonprofit organization that makes contributions to projects tax-deductible, and MTV Networks, which keeps an eye on IndieGoGo for video, music, and video game projects to promote and acquire.

Kickstarter has recently added a new feature called "Curated Pages," where organizations like the IGDA and Kickstarter alum Kill Screen

	KICKSTARTER http://kickstarter.com	INDIEGOGO http://indiegogo.com	ROCKETHUB http://rockethub.com	ULULE http://ulule.com	8-BIT FUNDING http://8bitfunding.com
LAUNCHED	April 2009	January 2008**	January 2010	October 2010	January 2011
SUCCESSES	8,000+	400 (22,000 total)	1,500	160	1
VG SUCCESSES	83	1	12	4	1
FUNDING MODEL	All or Nothing	Keep It All	All & More (Keep it All)	All or Nothing	Keep It All
SERVICE FEE	5%	4% (9%*)	4% (8%*)	0%	5%
PAYMENT FEE	3-5%	3%	4%	3%	3%
TOTAL FEE	8-10%	7% (12%*)	8% (12%*)	3%	8%
PAYMENT METHOD	Amazon	PayPal/Credit Card	Credit Card	PayPal	PayPal
PERKS	Popularity and Curated Packages	Partners	Badges and Opportunities	Low Fee and Message Board	Video Games Only
INTERNATIONAL	No	Yes	Yes	Yes	Yes

* HIGHER FEE FOR UNSUCCESSFUL PROJECTS ** FILM PROJECTS ONLY UNTIL JANUARY 2010

A side-by-side comparison of the major crowdfunding services

all" model where funding is paid immediately to the project, regardless of whether the project reaches its funding goal by the deadline.

RocketHub has a model it calls "All & More," which is a "keep it all" model that further rewards creators that reach their funding goals with tickets to its incubator-like "Launchpad Opportunities" service. (Both IndieGoGo and RocketHub also release half of their service fee to projects that successfully meet their funding goals as an added incentive.) So, although only 400 IndieGoGo projects have successfully reached their funding goals, over 22,000 IndieGoGo projects have at least gotten some funding through the service. Likewise, RocketHub counts 94 projects that have reached their funding goals, but has distributed "over half a million dollars" across all its projects.

Brian Meece, CEO of RocketHub, points out that a "keep it all" method means that "a creative can aim high with the confidence of a supportive safety net." Creators can rest assured that every dollar their project has raised is money in the bank, and don't have to worry about not getting anything if they're just a few dollars short when the deadline strikes.

On the other hand, Kickstarter cofounder Yancey Strickler argues, "The

Magazine help prospective backers navigate Kickstarter's huge list of active projects by highlighting ones they're interested in.

Strickler says, "By and large it's about the endorsement of someone saying 'this is cool,' and whatever a backer chooses to take from that is up to them. This is a feature that's going to grow, and you get a better sense of it when you look at how [a school] like RISD [the Rhode Island School of Design] is using it to highlight projects by their students and alumni and collect it in a central place, so that if you're part of the RISD community, you know where your first stop is going to be. So I think the pages will develop like that, not only in games in particular but even in specific genres, and I think we'll see that in the next couple of months."

Strickler believes that Kickstarter's comprehensive nature is what makes it an especially good fit for video game projects. "Millions of people come to Kickstarter every month looking for cool things to back," he says, and even if they're usually interested primarily in film or music projects, they could be enticed by an exciting video game project.

8-Bit Funding's Geoff Gibson feels the opposite is true, and says that crowdfunding for video game projects should be segregated for "the same reason why we get most of our video game news from sites like IGN or Joystiq instead of the New York Times." Gibson feels that video game projects get overshadowed by the more mainstream appeal of film, music, and design projects on most crowdfunding sites, and the low number of video game project successes across all of these crowdfunding services seem to support his conclusion.

Bégoc says that "projects come by type" on ulule. "We have a lot of short movie projects because, at some point, we received two great movie projects.

They were both successful and attracted a lot of attention from the short movie community." Now that ulule has launched a few video game projects, he expects to see a similar surge in video game project popularity on the service.

BEST PRACTICES

» Strickler and Gibson both feel that connecting with your backers is the key to a successful crowdfunding project. "You want to have a video that not only shows the gameplay footage, but also preferably shows the creator as well; I think people like to know who it is that made something," says Strickler. "You also want to have rewards that are fairly priced and that will allow everyone to benefit from the success of the project, because with every project it's important that not just the creator benefits, but that everyone has a share in the success. I think that inspires a lot of people to get involved and also keeps them coming back."

Gibson adds, "Any developers out there thinking that they can make a project on any of the crowdfunding sites and watch the money roll in needs to reconsider creating a funding project altogether. It takes a lot of work, a lot of constant marketing and asking and poking and prodding to get people to take notice and open up their wallets a little bit. If they don't do that, their projects won't succeed."

resources

<http://kickstarter.com>
<http://indiegogo.com>
<http://rockethub.com>
<http://ulule.com>
<http://8bitfunding.com>

R. HUNTER GOUGH has created a wide variety of crazy things over the years, most of which can be found at studiohunny.com. He enjoys spending time with his wife and daughter, repairing pinball machines, Islay scotch, and Cadbury Creme Eggs.



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Kristine Picken

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Having read gaming websites, other tutorials and articles, the material in the course is practically identical to the methods within the industry. **Just another plus for my confidence in the school.**

When I first looked at 3DS Max, I felt like I was in another world. It looked complicated, and while I most definitely do not know all there is to know about animation, I feel competent.

I think that the challenges lie in creative development, but in a positive sense. It made me think, made me practice, which I love!”

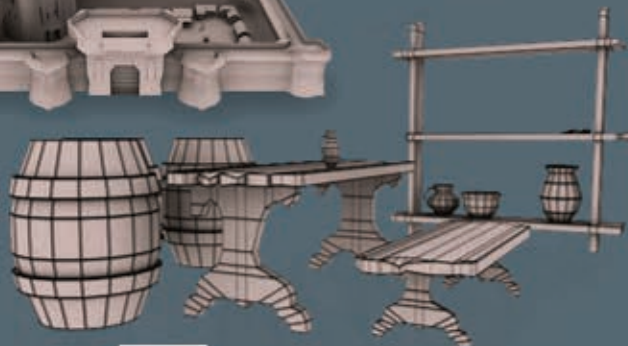
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TENTH ANNUAL SALARY SURVEY

GAME DEVELOPER'S SALARY SURVEY IS AN OBJECTIVE LOOK AT WHO'S EARNING WHAT IN the game industry. Developers of all experience levels and job descriptions give us information about their base salaries, benefits, and so forth. From there we can get the big picture of game developers' salaries. In this special Career Guide edition, we present to you our entry level-focused 10th anniversary salary survey.

As a newcomer to the game industry, what can you expect to earn? That all depends on where you are and what you do, but don't expect instant riches. Very few game developers are rolling in cash, but our survey at least proves you can make a decent living doing what you love.

In 2010, the average salary across all disciplines and experience levels rose \$5,244, over 2009. The number of respondents whose salaries increased in 2010 was up across the board, with the biggest increase coming from those in production, 73 percent of whom reported higher income than last year.

This year was one of proving for the social game space, and we believe that contributed somewhat to the overall raise in salary across all disciplines. Social games are also a good place

to cut your teeth, since many small companies are making big waves, as the space forms its own set of best practices, outside the confines of the traditional packaged game industry. Meanwhile, the indie segment has continued to rise in prominence as a source of opportunity and employment for those looking for a different path. Last year, we included indie developers and independent contractors in their own listing, a practice we continued this year, though with a slightly lower response.

A major takeaway from the comments section of our survey (available in the April issue of *Game Developer*) revealed that while, in general, salaried developers are making more money, independent developers are a lot happier with their lot in life. Worth considering when you decide in what way you'd like to enter the game industry.

—Brandon Sheffield and Ryan Newman

TENTH ANNUAL

programmers

AVERAGE SALARY
3 YEARS OR LESS

\$55,426

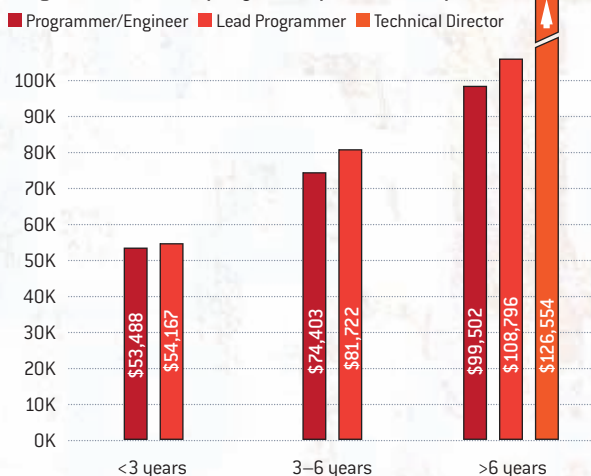
PROGRAMMERS ARE THE BACKBONE OF THE INDUSTRY, AND THEIR hard work is certainly rewarded. The profession continues to be one of the highest paid in the industry, though this year coders have been eclipsed by producers in salary levels.

The average salary for programmers of three years experience or fewer rose by over \$1,500 this year, a modest increase. Overall though, the salary averages dropped for programmers.

This fall in salary, combined with a rise in the number of respondents in the entry-level categories is likely an indicator that companies are hiring more fresh-faced computer science graduates. This is something to keep in mind as fledgling programmers enter the industry in 2011 and 2012.

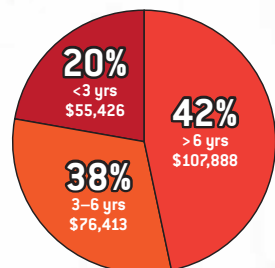
Programmers in Canada fared better in 2010, earning \$74,473 in 2010, up from \$67,937 [USD] in 2009. European programmers also saw a rise, earning \$48,230 [USD] on average.

Programmer salaries per years experience and position



ALL PROGRAMMERS AND ENGINEERS

YEARS EXPERIENCE IN THE INDUSTRY



Percent receiving additional income: **77%**

Average additional income: **\$17,689**

Type of additional compensation received

Annual bonus.....	51%
Pension/Employer contribution to Retirement plan.....	49%
Profit sharing.....	16%
Project/title bonus.....	27%
Royalties.....	12%
Stock options/equity.....	37%

Percent receiving benefits: **94%**

Type of benefits received

Gender	Percent Represented	Average Salary
Male	96%	\$86,140
Female	4%	\$74,559

Medical.....	99%
Dental.....	93%
401K/Retirement.....	84%

artists and animators

AVERAGE SALARY
3 YEARS OR LESS

\$45,714

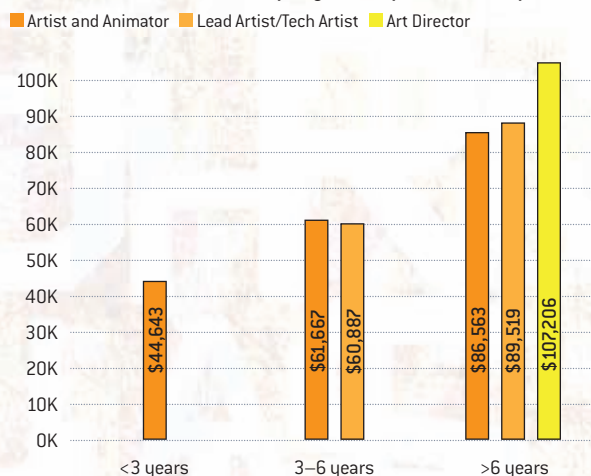
THE AVERAGE ENTRY-LEVEL SALARY FOR ARTISTS WAS UP ONLY

slightly from last year, and in fact the biggest decrease in 2010 was found amongst lead artists and tech artists with over six years of experience, with their average salary falling to \$89,519 in 2010 from \$97,206 in 2009.

Young artists are often hired, compartmentalized, and burned out very quickly in the game and film industries, so take care in choosing where you want to go. There may be indies that need you more than the big guys do.

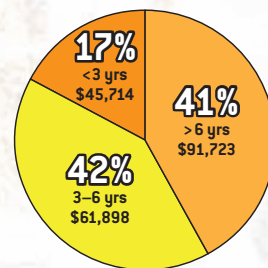
Canadian artists found their salaries increasing on average by \$3,877, up to \$63,277 [USD]. The increase was largely found amongst artists and animators, whose salaries increased from \$50,565 in 2009 to \$56,630 [USD] in 2010. European artists also found themselves earning more, with an increase of \$3,459 from 2009, bringing the average salary up to \$41,611 [USD].

Artist and Animator salaries per years experience and position



ALL ARTISTS AND ANIMATORS

YEARS EXPERIENCE IN THE INDUSTRY



Percent receiving additional income: **74%**

Average additional income: **\$12,711**

Type of additional compensation received

Annual bonus.....	47%
Pension/Employer contribution to Retirement plan.....	49%
Profit sharing.....	16%
Project/title bonus.....	39%
Royalties.....	16%
Stock options/equity.....	33%

Percent receiving benefits: **94%**

Type of benefits received

Gender	Percent Represented	Average Salary
Male	89%	\$72,924
Female	11%	\$59,224

Medical.....	99%
Dental.....	93%
401K/Retirement.....	80%

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TENTH ANNUAL

game designers

AVERAGE SALARY
3 YEARS OR LESS
\$46,214

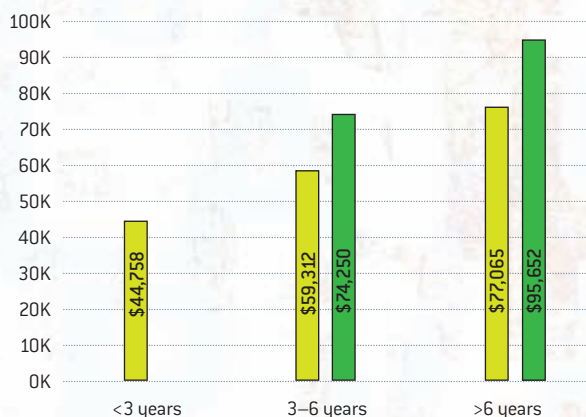
GAME DESIGNERS, CREATIVE DIRECTORS, AND WRITERS RECEIVED a slight boost from last year. This is an area that many aspiring developers want to move into, but it isn't so easy your first time out. Making some games on your own first can help, but designers are among the worst paid of the creative-side disciplines.

Overall, designers across all experience ranges saw little movement, and design has been one of the most stable positions as far as compensation throughout our survey. 66 percent of those surveyed reported at least a slight increase in pay from last year.

Designers working out of Canada experienced a decrease in pay, with the average salary falling from \$61,520 in 2009 to \$58,319 [USD] in 2010. European designers also had lower incomes but fared slightly better with an average salary of \$41,250 [USD], down \$1,173 from 2009.

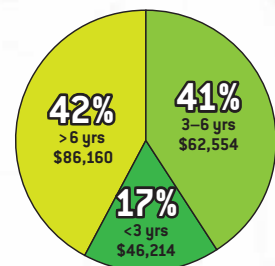
Game Designer salaries per years experience and position

■ Game Designer ■ Creative Director/Lead Designer



ALL GAME DESIGNERS

YEARS EXPERIENCE IN THE INDUSTRY



GENDER STATS FOR DESIGNERS

Gender	Percent Represented	Average Salary
Male	93%	\$72,924
Female	7%	\$59,224

Percent receiving additional income: **75%**

Average additional income: **\$14,259**

Type of additional compensation received

Annual bonus.....	42%
Pension/Employer contribution to Retirement plan.....	40%
Profit sharing.....	16%
Project/title bonus.....	34%
Royalties.....	17%
Stock options/equity.....	35%

Percent receiving benefits: **96%**

Type of benefits received

Medical.....	96%
Dental.....	92%
401K/Retirement.....	80%

producers

AVERAGE SALARY
3 YEARS OR LESS
\$51,324

AFTER AN OVERALL AVERAGE SALARY DIP IN 2009, PRODUCERS

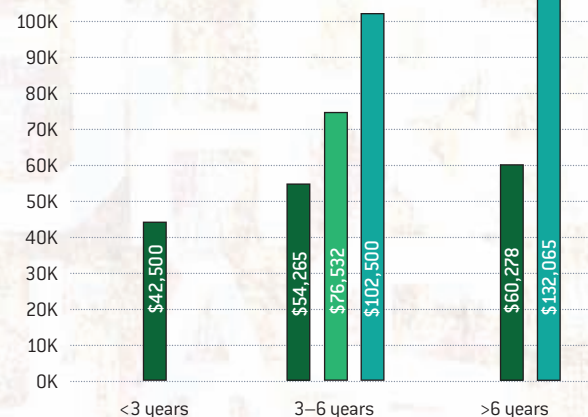
rebounded with an increase of \$13,462. Seventy-three percent of respondents reported an increase in their salary. This could be due to the fact that over half our respondents reported having over six years of experience, but also may indicate the shift toward social games, which can pay producers web 2.0 salaries. Producers with three years or less experience saw their average salary shoot up some \$9,000 in 2010, which is an impressive number for an inexperienced group.

Production also had the second-highest percentage of additional compensation, at 83 percent, second only to business' 85 percent.

Canadian producers reported a significant decrease in salary, with the average dropping from \$87,130 in 2009 to \$72,500 [USD] in 2010. Producers in Europe had a slight increase in 2010 with an average of \$52,884 [USD] and 56 percent reporting a salary increase.

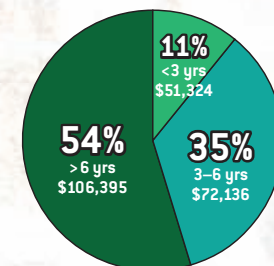
Producer salaries per years experience and position

■ Associate Producer ■ Producer/Project Lead ■ Executive Producer



ALL PRODUCERS

YEARS EXPERIENCE IN THE INDUSTRY



GENDER STATS FOR PRODUCERS

Gender	Percent Represented	Average Salary
Male	83%	\$90,744
Female	17%	\$77,870

Percent receiving additional income: **83%**

Average additional income: **\$16,223**

Type of additional compensation received

Annual bonus.....	61%
Pension/Employer contribution to Retirement plan.....	41%
Profit sharing.....	13%
Project/title bonus.....	32%
Royalties.....	7%
Stock options/equity.....	42%

Percent receiving benefits: **96%**

Type of benefits received

Medical.....	97%
Dental.....	95%
401K/Retirement.....	85%

SALARY SURVEY

audio professionals

AVERAGE SALARY
3 YEARS OR LESS
\$39,375

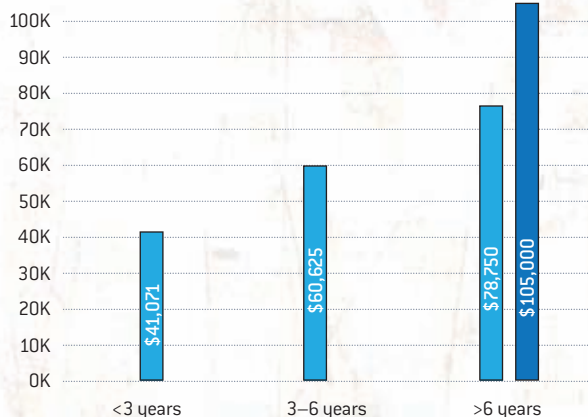
OF THE AUDIO PROFESSIONALS SURVEYED, 15 PERCENT REPORTED earning less than they did the previous year, the highest of any discipline. There was a slight uptick in respondents this year, in a category which typically has a low response rate due to the low number of full-time audio professionals in games, but numbers are still low, so it is difficult to gauge with absolute certainty.

Audio developers continue to be the least likely to receive additional benefits, such as health insurance. However, they were the most likely to receive royalties for their work, with the reported 25 percent significantly higher than other disciplines, with game design coming in second at 17 percent.

Canadian audio developers reported earning more in 2010, with the average salary increasing from \$61,250 to \$68,571 (USD). European audio developers reported an increase in average salary, up \$6,111 to \$46,944, with 50 percent earning more in 2010.

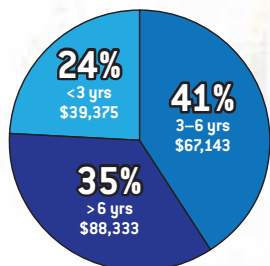
Audio Developer salaries per years experience and position

■ Sound/Audio Designer/Engineer ■ Sound/Audio Director



ALL AUDIO DEVELOPERS

YEARS EXPERIENCE IN THE INDUSTRY



Percent receiving additional income: **82%**

Average additional income: **\$7,570**

Type of additional compensation received	
Annual bonus	50%
Pension/Employer contribution to Retirement plan	46%
Profit sharing	21%
Project/title bonus	32%
Royalties	25%
Stock options/equity	18%

GENDER STATS FOR AUDIO DEVELOPERS

Gender	Percent Represented	Average Salary
Male	94%	\$70,469
Female	6%	\$30,000

Percent receiving benefits: **88%**

Type of benefits received	
Medical	100%
Dental	100%
401K/Retirement	80%

qa testers

AVERAGE SALARY
3 YEARS OR LESS
\$36,136

HOME TO MANY ENTRY-LEVEL POSITIONS, QUALITY ASSURANCE

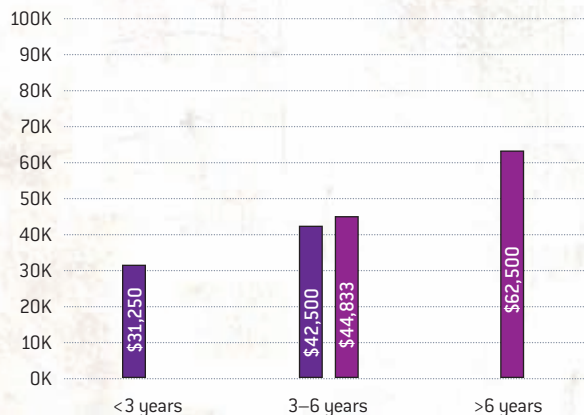
remains one of the lowest-paid disciplines. However, testers were rewarded in 2010 with a modest increase in salary and benefits. Many developers still get their start in QA.

A lot of QA professionals are on contract, so the entire range may not be represented here, and the fact that QA leads are the most likely to be salaried could potentially explain the increase. Like producers though, the bump could come from those working in the web industries, with companies such as Zynga having long-hours QA needs. Web developers in general tend to be paid a little better than their counterparts in traditional video games.

Canadian testers did not benefit as much as those in the United States with the average salary reporting as having dropped from \$39,375 to \$37,857 (USD) in 2010. European testers benefited from an increase of \$7,722, bringing the average salary to \$37,222 (USD).

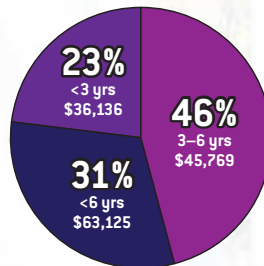
QA Tester salaries per years experience and position

■ Tester ■ QA Lead



ALL QA TESTERS

YEARS EXPERIENCE IN THE INDUSTRY



Percent receiving additional income: **73%**

Average additional income: **\$7,824**

Type of additional compensation Received	
Annual bonus	69%
Pension/Employer contribution to Retirement plan	56%
Profit sharing	16%
Project/title bonus	19%
Royalties	9%
Stock options/equity	31%

GENDER STATS FOR QA TESTERS

Gender	Percent Represented	Average Salary
Male	95%	\$48,200
Female	5%	\$62,500

Percent receiving benefits: **93%**

Type of benefits received	
Medical	95%
Dental	98%
401K/Retirement	90%

TENTH ANNUAL

business and legal people

AVERAGE SALARY
3 YEARS OR LESS

\$57,778

THOSE SURVEYED IN THE BUSINESS AND LEGAL DISCIPLINES INCLUDE chief executives and executive managers, community managers, marketing, legal, human resources, IT, content acquisition and licensing, and general administration staff.

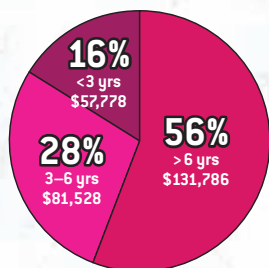
Those in business were most likely to receive any additional compensation (85 percent). Business not only had the highest average salary, but it also led in average salary across all experience levels. Of the disciplines surveyed, business also had the highest percentage of those with six or more years of experience, at 55.6 percent. As a student, finding a good business partner you can trust early on is crucial, so novice businesspersons are equally in demand.

The business, marketing, and legal arena is also where the second-most women can be found, dwarfed only by production's 17%.

Canadian business personnel fared well with an increased average salary of \$85,312 (USD). Business persons in Europe also saw an increase, up from \$59,231 to \$63,235 (USD) in 2010.

ALL BUSINESS AND LEGAL PEOPLE

YEARS EXPERIENCE IN THE INDUSTRY



Percent receiving additional income: **85%**

Average additional income: **\$28,972**

Type of additional compensation Received

Annual bonus	73%
Pension/Employer contribution to Retirement plan	35%
Profit sharing	23%
Project/title bonus	17%
Royalties	7%
Stock options/equity	37%

GENDER STATS FOR BUSINESSPEOPLE

Percent receiving benefits: **93%**

Gender	Percent Represented	Average Salary	Type of benefits received
Male	86%	\$110,849	Medical 100%
Female	14%	\$80,556	Dental 95%
			401K/Retirement 76%

LAYOFFS

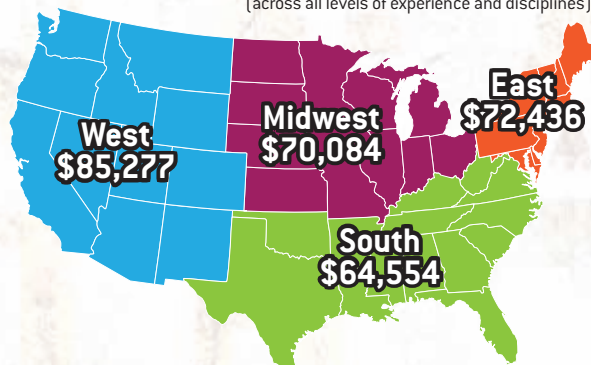
OF THE ALMOST 4,000 SURVEYED DEVELOPERS, 14 PERCENT HAD BEEN laid off at one point or another in 2010. That is a 5 percent decrease from 2009's 19 percent, but it is still higher than 2008's 12 percent.

Fifty-two percent of those laid off were able to find employment at a game studio or publisher, while 16 percent were unable to find new jobs in the industry. More developers (23 percent) also found themselves going into contracting and consulting in 2010, up from 17 percent in 2009. Thirteen percent went on to found or cofound a company, up from 10 percent in 2009.

Developers also went into indie development in greater numbers (19 percent), up from 16 percent in 2009. The increased amount of developers going into independent and contract work combined is up 9 percent over 2009, another strong indicator in the rise of development outside the traditional developer-and-publisher venue.

AVERAGE SALARY BY U.S. REGION

(across all levels of experience and disciplines)



TOP 5 STATES WITH HIGHEST AVERAGE SALARIES

(across all levels of experience, excluding states with low sample size)

	AVERAGE SALARY	PERCENT WHO OWN HOMES	AVG. SALARY OF HOMEOWNERS
1 California	\$86,772	35%	\$108,061
2 Washington	\$85,536	51%	\$103,343
3 New Jersey	\$73,409	54%	\$79,167
4 Virginia	\$92,000	58%	\$95,833
5 Oregon	\$71,288	51%	\$94,265
6 Maryland	\$74,583	39%	\$94,605
7 Florida	\$57,500	33%	\$81,500
8 Massachusetts	\$74,049	39%	\$90,081
9 Illinois	\$70,288	53%	\$85,000
10 Wisconsin	\$69,891	60%	\$80,714

AVERAGE SALARY BY U.S. REGION BY DISCIPLINE

	EAST	MIDWEST	SOUTH	WEST
Programmer	\$77,630	\$71,000	\$68,636	\$96,651
Art and Animation	\$62,756	\$52,500	\$62,692	\$77,942
Game Design	\$67,125	\$68,889	\$58,032	\$76,560
Production	\$80,900	\$62,500	\$69,444	\$94,929
Audio	\$62,500	\$85,000	\$50,000	\$73,636
QA	\$49,643	—	\$35,833	\$47,167
Business	\$109,265	\$106,667	\$91,944	\$111,645

AVERAGE SALARY FOR HOMEOWNERS VS. NON-HOMEOWNERS BY U.S. REGION

	EAST	MIDWEST	SOUTH	WEST
Homeowners	\$90,479	\$82,917	\$79,754	\$103,917
Non-Homeowners	\$61,113	\$54,625	\$50,733	\$71,365

AVERAGE SALARIES IN THE U.S., CANADA, AND EUROPE

(across all levels of experience, by discipline, given in USD)

	U.S.	CANADA*	EUROPE**
Programmer	\$85,733	\$74,474	\$48,231
Art and Animation	\$71,354	\$63,278	\$41,611
Game Design	\$70,223	\$58,320	\$41,250
Production	\$88,544	\$72,500	\$52,885
Audio	\$68,088	\$68,571	\$46,944
QA	\$49,009	\$37,857	\$37,222
Business	\$106,452	\$85,313	\$63,235

*Most Canadian respondents were from British Columbia, Quebec, and Ontario.

**Most European respondents were from the United Kingdom (26%), France (15%), Germany (10%), Spain (9%), The Netherlands (5%), and Italy (5%).

SALARY SURVEY

AVERAGE SALARY BY EDUCATION LEVEL AND DISCIPLINE

[across all levels of experience]

	PROGRAMMING	ART	DESIGN	PRODUCTION	AUDIO	QA	BUSINESS
High school/GED	\$93,929	—	\$67,500	—	—	\$52,500	\$119,167
Some College	\$94,457	\$79,000	\$71,667	\$89,224	—	\$49,286	\$111,750
Associates Degree	\$93,571	\$73,654	\$70,682	—	—	\$49,643	\$96,667
Bachelors Degree	\$80,908	\$70,299	\$68,772	\$82,310	\$64,250	\$42,717	\$101,379
Some Graduate	\$96,528	\$80,577	\$76,250	\$110,313	—	—	\$112,500
Masters Degree	\$92,703	\$58,056	\$74,352	\$90,000	—	—	\$131,563
Some Doctoral	\$78,750	—	—	—	—	—	—
Doctoral Degree	\$102,500	—	—	—	—	—	\$84,167

METHODOLOGY

NOW IN ITS TENTH YEAR, the *Game Developer Salary Survey* was conducted in February 2011 for the fiscal year January 1, 2010 through December 31, 2010 with the assistance of Audience Insights. Email invitations were sent to *Game Developer* subscribers, Game Developers Conference attendees, and Gamasutra.com members asking them to participate in the survey.

We gathered 3,781 responses from developers worldwide but not all who participated in the survey provided enough compensation information to be included in the final report. We also excluded salaries less than \$10,000 and the salaries of students and educators. The small number of reported salaries greater than \$202,500 were excluded to prevent their high numbers from unnaturally skewing the averages. We also excluded records that were missing key demographic and classification numbers.

The survey primarily includes U.S. compensation but consolidated figures from Canada and Europe were included. The usable sample reflected among salaried employees in the U.S. was 1,343, for Canada 276, and for Europe 404; and 473 for indies and independent contractors who provided compensation information worldwide.

The sample represented in our salary survey can be projected to the U.S. game developer community with a margin of error of plus or minus 2.7% at a 95% confidence level. The margin of error for salaried employees in Canada is plus or minus 5.9%, and is 4.9% for Europe.

THE INDIE REPORT

THIS IS THE SECOND YEAR OF

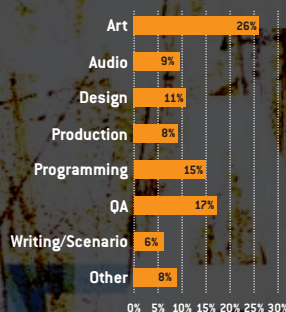
our indie section, which includes independent developers and contractors. Of those segments surveyed, it was independent contractors (not part of a team) who again found themselves at the top of the pile.

Last year's average compensation of \$45,137 was bested in 2010 by a significant margin, with independent contractors earning an average of \$55,493. Those who were members of a team also fared better in 2010, with an increase of over \$6,000 for an average of \$26,780. Individual developers were again at the bottom, earning less in 2010 with \$11,379.

Of those surveyed, the majority of respondents (52 percent) were designers, while the majority of independent contractors (26 percent) were involved in art. Of those individual developers or members of an indie team, 55 percent made under \$500 from the sale of their games in 2010.

Some indie developers make money from sources other than their game, as well. Eighteen

CONTRACTORS BY JOB FUNCTION



percent of individual or team members made additional income from alternative game-related revenue streams. Of those, 16 percent made less than \$100, while 23 percent made over \$20,000. This additional revenue came in the form of promotions, non-game DLC content, sponsorships, ads, awards, and grants. Of those salaried and independent contractors who responded, 33 percent received an annual bonus, 7 percent royalties, and 10 percent profit sharing, of which 25 percent made under \$1,000 while 3 percent made over \$100,000.

Interestingly, of almost 500 non-salaried respondents, 63 percent have never worked at a traditional, salary-based game developer. Many students now get their start as an indie developer.

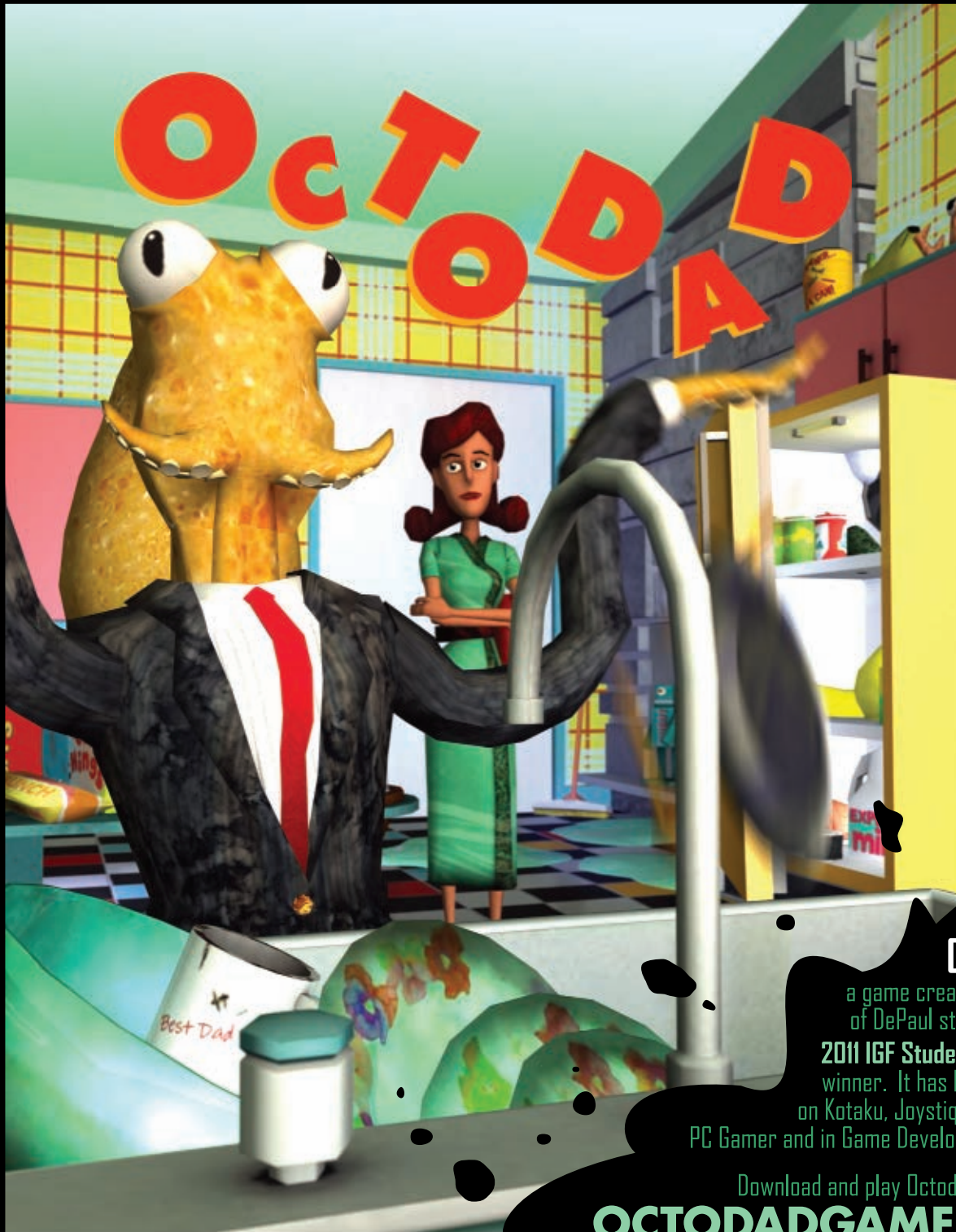
JOB FUNCTIONS

For contractors, we asked respondents to choose the capacity in which they primarily worked in 2010, but for indies, it's a little more complex. Given the "many hats" nature of small-scale development, asking an indie to choose just one discipline is unreasonable. As such, the indie chart should be read as "what percentage of indies do at least this job function," rather than "how many indies do this job exclusively."

INDIES BY JOB FUNCTION

Art	41%
Audio	18%
Design	52%
Production.....	37%
Programming.....	40%
QA	31%

GAMEDEV.DEPAUL.EDU



Octodad

a game created by a team of DePaul students, was a 2011 IGF Student Showcase winner. It has been featured on Kotaku, Joystiq, Destructoid, PC Gamer and in Game Developer Magazine.

Download and play Octodad for free at
OCTODADGAME.COM

At DePaul you'll work with faculty who have extensive game industry experience, not to mention our faculty experts in animation, AI, computer graphics, cinema, game studies, screenwriting and sound design. We offer graduate and undergraduate programs in **game art, programming, design, production** and **animation**.



DEPAUL UNIVERSITY
COLLEGE OF COMPUTING & DIGITAL MEDIA



EDUCATED PLAY!

FOR THE PAST TWO YEARS, *GAME DEVELOPER* MAGAZINE HAS BEEN FEATURING STUDENT GAMES IN A SPECIAL SECTION OF EACH ISSUE, INTERVIEWING THE MAKERS OF PARTICULARLY INTERESTING PROJECTS. HERE, WE COMPILE SEVERAL OF THOSE INTERVIEWS, FROM STUDENTS OF THE UNIVERSITY OF CENTRAL FLORIDA, THE VIENNA UNIVERSITY OF TECHNOLOGY, DIGIPEN, THE UNIVERSITY OF KASSEL, AND OTHERS.

SHADOWS OF ABIGAIL

www.shadowsofabigail.com

AS PART OF THE UNIVERSITY OF CENTRAL FLORIDA IN ORLANDO, THE FLORIDA INTERACTIVE ENTERTAINMENT ACADEMY PROVIDES AN INTENSIVE TRAINING PROGRAM THAT AIMS TO REFLECT THE REALITIES OF COMMERCIAL GAME DEVELOPMENT. SHADOWS OF ABIGAIL IS A TEAM EFFORT FROM STUDENTS AT THE FIEA AND WE SPOKE WITH LEAD DESIGNER STEVE JULSON AND PROJECT LEAD/GAME PLAY PROGRAMMER JOSÉ LUIS LÓPEZ ZURITA TO FIND OUT HOW THE 3D PLATFORMER CAME TOGETHER IN ONLY SIX MONTHS.

JEFFREY FLEMING: *What was your prototyping process like?*

STEVE JULSON: We first prototyped with the Unreal Development Kit to determine what types of platforming would fit best with our shooting mechanic. It was after this that we realized how beneficial LITTLE BIG PLANET's level editor was for our prototyping. Once we discovered the METAL GEAR SOLID mod for LBP, which provided the player with a physics-based projectile weapon that would influence other physics-based objects, we immediately went to work putting all of our paper designs to test.

At FIEA, the importance of prototyping was stressed in order to successfully understand what specific mechanics needed to be hashed out and to know what was fun, intuitive, and potentially emergent. As lead designer, it was beneficial to make a convincing prototype in LBP because the other designers could rally around it and feel that we had a serious trajectory for our concepts.

JF: *I like the idea of finding emergent play during prototyping. What were some bits of emergent fun that you hadn't planned out ahead of time and instead discovered during prototyping?*

SJ: We found one aspect of emergent game play while we were using the Metal Gear Solid mod for LBP. I had been thinking about how

the projectile allowed us to move certain physics objects around the game space. After moving the objects around horizontally, I then built a tower where I shot the objects down vertically. I then thought to myself, "How can I move these up?" So using this same tower area, I placed little launchers that I could activate to throw the objects into the air, where I shot at them, moving them onto an ledge while in air. It was a lot of fun, and we returned to this concept a lot in SHADOWS.

We also created item spawners in the game for players to get objects out of in case the one they were using fell over a ledge or was lost. While testing the game, one of our designers just kept hitting the item spawner and object upon object started pouring out. Once we put a cap on the item spawners, we realized we could actually have them in the environment and that players could use them to fill large gaps with stuffed animals so they could cross, basically making a bridge out of the objects, which is actually one of the first things the player does in the game.

JF: *How did game play evolve over the course of developing the game?*

JOSÉ LUIS LÓPEZ ZURITA: The game was pitched as a 2.5D platformer, but we really wanted to do something unique to it.

We analyzed many games in this genre trying to find how to create something with a little twist. 2D arcade shooters are so popular that it is difficult to innovate on them. The first prototype mixed an old school 2D platformer style with a 3D platformer/puzzling gameplay. Each enemy reacted differently when attacked, but all of them had a common design pattern and their reaction could trigger chains of reactions in other enemies.

As much as we liked the idea, soon we realized this project was beyond our scope. This problem was present during the whole development process, sometimes because the idea was too complex to be implemented and tested in the given time, and other times because we just weren't able to get a good prototype working in a reasonably short period of time. We knew that many game ideas that seem great don't play that great, so we needed a way to discover the good ones. We found in the LITTLE BIG PLANET editor a great tool to accomplish that goal. It kept our level designers busy while the programmers were able to work on the core of the game and it gave us a lot of flexibility to test different



ideas, although it also forced us focus exclusively on 2D gameplay.

JF: *Did you have a separate art team from level design, or did everyone have multiple responsibilities?*

SJ: Our art team carried our game for the first five weeks of development. We actually had such a strong art team that they were creating art assets before designers could put an official stamp on the design-required assets. This created a broken design pipeline where we were incorporating their assets into our design, rather than us telling them what we needed.

We designers were actually slowing down the artists who could pump out beautiful assets in a matter of hours. Once we finally realized that innovative game play does not always start at a round table but from iteration on mechanics, we were able to move forward on the assets we needed from the art team.

—Jeffrey Fleming



AND YET IT MOVES

AND YET IT MOVES BEGAN LIFE AS A STUDENT PROJECT AT THE VIENNA UNIVERSITY OF TECHNOLOGY. AFTER THE PROTOTYPE ENJOYED A WARM RECEPTION FROM PLAYERS WHO PICKED UP ON THE GAME'S CLEVER ROTATING WORLD MECHANIC AND ITS UNIQUE PAPER COLLAGE ART STYLE, THE TEAM DECIDED TO GO PRO. CALLING THEMSELVES BROKEN RULES INTERACTIVE MEDIA, THE TEAM SPENT THREE YEARS POLISHING THE GAME AND HAVE SINCE RELEASED COMMERCIAL VERSIONS FOR THE PC, MAC, AND LINUX, AS WELL AS A WIIWARE EDITION. WE SPOKE WITH PROJECT LEAD FELIX BOHATSCH TO FIND OUT MORE ABOUT THE JOURNEY FROM STUDENT TO PROFESSIONAL.

JEFFREY FLEMING: *What tools were you using to build AND YET IT MOVES as a student project?*

FELIX BOHATSCH: From the beginning we made AND YET IT MOVES with Torque Game Builder. At first it was really nice, because TGB is great for prototyping. But making a full game is a whole different story and the more the project grew, the more problems we had with TGB. But we stuck with it to the end. Even AND YET IT MOVES WiiWare was done using TGB, but in a heavily modified version.

JF: *What led you to the decision to make a commercial version of the game?*

FB: During the University course we finished a prototype with two levels and submitted that to the IGF 2007. We were part of the Student Showcase 2007 and could show our prototype to all the people at GDC. Being there was really great and gave us a big boost in press coverage and motivation. AND YET IT MOVES was also a finalist at IndieCade 2007 and 2008. Both festivals showed us that many people really liked our game mechanics and enjoyed playing the prototype. This helped us decide to take our chances and build a full, commercial version.

Also, indie gaming was getting bigger every minute, Steam was already hot, and all game-consoles had their own online market, so the promise of successful indie game development was there. We felt it would be a waste of opportunity to leave AND YET IT MOVES in the prototype phase.

Once we made this decision, the money question came up.

Luckily we are based in Vienna, Austria and we have good creative-industry-subsidies. Gaming was a hot topic there as well, so after a lot of paperwork we managed to get a comfortable sum. This meant we could focus all our non-study time on developing AND YET IT MOVES.

JF: *What was the most difficult aspect of going pro?*

FB: The most difficult aspect is running your own business. We are all developers who love to make games, but we have no one on the team who loves to organize a team, do business, or PR. This means we have to split these roles up, which takes a lot of time away from actually designing and developing a game. This can be quite frustrating!

The upside of having our own game company is, that we can make the games we like to make. We are a small business—we're five people at the moment—so we have more freedom with what we want to try out or experiment. But what's sometimes really stressful is chasing money. Even if we can work on whatever we want, we have to keep an eye on the financial side. Suddenly business decisions influence our game design and all of a sudden we're not as free anymore as we originally thought. Finding a balance between making money and doing what we love to do is really hard.

Also, I found that running a business also means that it's really hard to stop thinking about your business. Finding a good work-life balance and being able to enjoy your free time is another hard challenge!

JF: *How did the creation of the WiiWare version go? Was it easy to port?*

FB: It turned out great, but it did take longer than we expected and it's been mostly a technical challenge. We had never worked on a console so we were not used to such a strict environment, where you have to watch everything you put into the game. More importantly, we had never really optimized on the PC and Mac version—which resulted in quite high system requirements—but it wasn't such a big problem on these platforms. Going to Wii, with its underpowered hardware, meant we had to do a lot of rewrites and performance improvements. We had to dig really deep into TGB for Wii and improve it in many ways to get AND YET IT MOVES running smoothly on the console. We learned a lot about programming though and now feel that we are able to deliver our games on any hardware that is out there.

JF: *Was your approach to art direction any easier to implement in the game than a polygon-based look?*

FB: From an artistic standpoint, definitely. That design mostly arose out of necessity. We are a team of four computer science students, so our team lacked a specialized visual game artist. We looked for a style we liked that we would be able to produce. The roughness and analog feel of a world set in a paper collage provided just what we wanted, without the necessity of artists building it.

But from an implementation standpoint, I think it was more

work than a traditional polygon-based look. Our levels took a lot of time, as all pieces had to be manually placed. We started by ripping apart a lot of paper and scanning it in. With a base set of pieces of paper in different forms and sizes we built the levels, which proved to be quite a tedious task. Making the levels look good took a lot of effort, next time we might go for a different look. But then again, all the work paid off, as the art style made AND YET IT MOVES stand out and lots of people dig it.

JF: *Do you have any hard won advice for other student development teams who are considering going pro?*

FB: The most important thing when you start developing an idea for a game, is to focus on the key gameplay mechanic. If you already have a setting or a genre for your game, think of what can be added to it to make it a fun and unique experience. Don't try to make the next HALO or a huge MMO. Focus on what is realistic to finish and don't try to compete with the big players. You can't stand-up against a team of 300 people, so instead do what's difficult or even impossible for them—be innovative and experiment. It's actually quite scary how much work a good game is. We worked for three years—part and full time—on AND YET IT MOVES and most people still complain that it's too short. Even indie games need a lot of polish nowadays and this will take a lot of time, so subtract from your design and only keep what is absolutely necessary.

—Jeffrey Fleming



FRACT

www.richardflanagan.com

FRACT IS AN ATMOSPHERIC PUZZLE GAME INFUSED WITH SYNAPTIC GLITCH VISUALS AND A CRACKLING ELECTRONIC PULSE. WE SPOKE WITH RICHARD FLANAGAN TO FIND OUT HOW HE CREATED THIS 2011 INDEPENDENT GAMES FESTIVAL STUDENT SHOWCASE WINNER.

JEFFREY FLEMING: *FRACT has a really fantastic look with abstract, generative-looking art. Did you use any procedural or random techniques to create its environments?*

RICHARD FLANAGAN: The creative process during the development of FRACT was almost entirely experimental, and the techniques I used evolved along with my understanding of game development workflow and asset management.

JF: *How would you compare the Unity engine to other development environments that you might have used?*

RF: My experience with other development systems is relatively limited, with some time spent in Blender Game Engine, Unreal Editor, Adventure Game Studio, and Game Maker, to name a few. While I've seen inspiring examples of great games developed with these systems, they weren't

synthesizer, sometimes combining them with iconic percussion samples from early electronic music to sync up with events in the game world. In order to add some subtle emotional inflection to many of the sounds, I used a simple white noise generator to lay the basis for tonal shifts and crescendos. Sound design for FRACT happened in parallel to modeling and animation, and even precedes some puzzles. I am fascinated with the principles of synesthesia and I try, where I can, to build contextual relationships between the sounds, sights, and interactions found in the world of FRACT.

Sound design is not only a very integral element in the FRACT beta, but also a major source of inspiration. I have a very strong emotional connection to my initial discovery and exploration of electronic music and sound design, and I wanted to explore some of these themes within a game space. The FRACT beta hints at how I would like to build creative tools for the player to create sound and music in non-intimidating ways. I hope to explore this further.

JF: *You don't often hear analog synthesis in games. What synthesizer are you using to generate FRACT's tones?*

RF: Analog synths really are quite magical devices. While the only synth currently still in my possession is an indestructible Yamaha CS-15, it has proved quite handy on FRACT. The Yamaha is only duophonic, but still yields a remarkable range of sound from expansive soundscapes to percussive squelches and bleeps. A handful of recordings and samples from a Roland Juno-60 and a friend's Korg Monopoly also got mixed into a bit of the sound design, along with samples from Kawai R-100 and Alesis HR-16 drum machines.

I must humbly admit, though, some of the sound was also produced with analog modeling software, including the Arturia Arp 2600 VST and the remarkably versatile built-in synths found in Ableton Live. Given an unlimited timeline I'd build everything with these dusty, temperamental machines.

JF: *It was interesting to read on your blog about how important the study of typography was to your development as a designer. What might be a key lesson from typography that game designers should be considering?*

RF: I think the best design is achieved when it is able to communicate a message or experience to the user without making them overtly aware of how it is being achieved. Good typography is especially capable of this, combining both aesthetic and purpose in a subtle but powerful way.

Similarly, I think the gaming moments that we remember most fondly occur when we forget the game design and just get lost in the experience. It is in these moments where gameplay, mechanisms, presentation, and feedback come together to show just how powerful games can be as a medium of communicating ideas.

While the methods in which game design and typography achieve their respective communication pathways are different, I think they are rooted in a similar purpose. I've only managed to scratch the surface of typography in my work and studies, but constantly refer to it as a blueprint for good communication design. And as an aspiring game designer, I hope to be able to apply these principles in the games that I create.

—Jeffrey Fleming



My original hope was to use the terrain editor built directly into the Unity engine, but I could not manage to produce the angular and polygonal look I was going for. In order to achieve the harsh angular geography seen in the FRACT beta, I used the terrain generator found in Cinema 4D, which when coupled with a random seed and a series of definable parameters, gave me something closer to my initial vision. These results, however, still required a fair amount of hand sculpting in order to behave correctly within the world.

While some generative systems certainly helped me prototype and produce assets quickly, building a relatively cohesive world still required a fair amount of time.

the right tools for me at the time.

Unity surprised me, though, as I never found myself completely stonewalled by a development hurdle. While many of my workarounds were inelegant at best, I still ended up with results close to my original intent. I think it's a testament to Unity's usability, great documentation, and very collaborative user community that I managed to create the FRACT beta in roughly three months of full-time work.

JF: *Sound is a big part of FRACT. Can you tell me a bit about how you created the game's aural landscape?*

RF: For the sounds in FRACT, I would record tones, pulses, or sonic textures from a trusty old analog



SOLACE

<http://solacegame.com>

A BULLET HELL SHOOTER IS AN UNLIKELY FORUM FOR EXPLORING KÜBLER-ROSS' FIVE STAGES OF GRIEF, BUT IN THEIR GAME SOLACE, THE ONE MAN DOWN TEAM AT DIGIPEN HAS FOUND NEW EXPRESSIVE POSSIBILITIES IN THE GENRE. WE SPOKE WITH SOLACE PRODUCER JORDAN HEMENWAY TO FIND OUT HOW THE 2010 PAX 10 AND 2011 IGF STUDENT SHOWCASE WINNER CAME TOGETHER.

JEFFREY FLEMING: *The bullet patterns in SOLACE are really lovely. Were you able to use any libraries, or were they coded from scratch?*

JORDAN HEMENWAY: At the beginning of the project, we sought help from a DigiPen alumnus who had worked with bullet hell-styled games in the past. With help and suggestions, Dan Rosas wrote a library of behaviors that could be chained together using an action-list method. Most of the patterns resulted from a visual idea that Dan would think up, like the raindrops falling. He would then tweak the calculations and timing until we had something visually interesting while still playable in-game.

JF: *In SOLACE, music is generated from the action on the screen. What methods did you use to ensure that the result was musical rather than cacophonous?*

JH: One of the most challenging things for us in developing SOLACE was finding ways to keep the music sounding pleasant while using a bit of randomness and repetition.

We started off by keeping all sounds triggered by the player and enemies on beat, and we used basic music principles like picking a specific scale and selecting certain notes from it. For many instruments, like the piano in Denial or the synth instrument in Bargaining, picking random notes from a bank worked well at any time with background layers.

However, other instruments, like the guitar in Anger, didn't sound correct since guitars don't usually lend themselves well to random notes. Instead, for those cases we used a straightforward

progression that was broken up into several tiny pieces for each bullet. It took a lot of iteration to figure out what made sense to the ear. For example, we ended up going through at least seven versions of the Anger level to get the music into its current state.

JF: *SOLACE was your sophomore project at DigiPen. Does the One Man Down team stick together for the next year's project or do you all join new teams?*

JH: Yes, it is true that SOLACE was a sophomore project, but that is a bit misleading. The game was a project started by three sophomore programmers, but we were able to snag our artist, Jami Lukins, to do all the art for the game despite her being a senior at the time. She is now happily graduated and employed.

As far as the programmers are concerned, I joined a team with other friends. We are currently developing an open-world exploration game. Robert Francis and Dan made a team together and have been working on a music-based platformer along with their team of artists and other programmers. Shortly into the spring semester, Dan took an internship at the Seattle-based game studio Fuelcell. So sadly, the team is split in four directions working on their own separate projects, but who knows what the future might bring?

JF: *Where did the idea to incorporate the five stages of grief into SOLACE come from? It's an odd but interesting framework for a shooter-style game.*

JH: During the early stages of the production of SOLACE, Robert Francis, our technical director, lost his twin brother. The team name "One Man Down"

came from the fact Robert was missing from the Engine Proof milestone presentation due to this tragedy. Robert's loss had affected the whole team, and he says he wouldn't have been able to continue that school year if it hadn't been for the support from his teammates, and the game giving him something to focus on.

We entered the second semester and Dan came up with the dynamic music mechanic we now have in the game, and when we were deciding on the artistic direction, overall theme, and scope of the game, the five stages of grief just seemed to be the perfect match. If you wait until the end of the credits, there's a dedication to Robert's twin brother, Nathan.

survive long enough to see the beautiful bullet patterns.

We attempted to keep things simple, eliminating the HUD and displaying all important information on the player. We were also much more forgiving to our players, allowing them to take multiple hits before losing the level. In keeping with our simple design, we decided not to add bombs or other power-ups during gameplay. Doing so would have required some form of HUD, taking away from the elegant design.

JF: *What was the biggest challenge in developing SOLACE?*

JH: Overall, the hardest part about making SOLACE was trying to express an abstract emotional



JF: *Bullet hell shooters are typically extremely challenging and for the hardcore only. What did you do in SOLACE's design to make it more accessible for players but still retain the visual intensity of bullet hell?*

JH: While we were planning SOLACE, we talked about difficulty and how the general style of a bullet hell shooter can lend itself to difficult gameplay. After looking at our options we decided that we would try lightening the overall difficulty so that more casual players could

component during each stage through the gameplay.

Some stages lent themselves to fairly straightforward interpretation, like Anger and Depression, making it easier to represent visually and audibly. Stages like Denial and Bargaining, however, left us thinking how a musical instrument, bullet patterns, or even color could represent such a concept or feeling. In the end it was definitely our most interesting challenge, and one we have learned a lot from.

—Jeffrey Fleming


www.tinyandbig.com

TINY AND BIG

IGF STUDENT FINALIST TINY AND BIG COMBINES 3D PLATFORMING WITH PHYSICS-BASED SANDBOX DESTRUCTION, ALLOWING PLAYERS TO SLICE AND RE-SHAPE THE LANDSCAPE USING TOOLS SUCH AS A GRAPPLING HOOK AND A HIGH-POWERED LASER. THE KASSEL, GERMANY-BASED TEAM RELEASED A PROTOTYPE FOR THE GAME IN 2010, AND IS NOW WORKING ON A NEW, FULL-FEATURED VERSION, TITLED TINY AND BIG: GRANDPA'S LEFTOVERS.

TOM CURTIS: *Tell me about the team's approach to design for TINY AND BIG. What process did you use? Prototyping? Sketches?*

FLORIAN GROLIG AND SEBASTIAN STAMM (game designer and artist): Designing the game mechanics was an iterative process; it usually started with an idea roughly sketched on paper to illustrate it to the team. Based on that sketch, we created a prototype to check whether the basic idea actually worked. Keeping the concept consistent turned out to be the major challenge. Many features we were excited about or that were requested by people who played the demo didn't make it into the game because they would have weakened the core mechanic.

To catch the mood and structure of our levels, we created concept artwork of the scenery and the key elements of each level. We simultaneously started to create sketches of the challenges and puzzles. During the whole process of making the game, we allowed ourselves a lot of room for testing and time to rearrange the environment and puzzles to eventually get to a point where every level had its own theme and feeling.

TC: *Why did you choose to develop your own engine rather than use an existing one like Torque or Unity?*

JOHANNES SPOHR (engine lead): The three programmers among us have been enthusiastic about game development since back when we started our CS degrees, or even earlier. The Scape Engine was born out of a few projects in computer graphics classes, which we attended mainly because of

their relevance to 3D games. With time, more and more code was added as more ambitious projects were pursued. A few successful courses and some unfinished games later, we had a nice game programming toolset which allowed us to rapidly develop 3D games. The driving force behind our DIY effort was very basic, yet irresistible: It was fun!

TC: *Did the slicing mechanic present any particular design challenges? It seems to allow a lot of room for players to accidentally destroy their path through the environment.*

SS: You bet it does! One of the biggest challenges we've encountered was the almost unlimited freedom given to the player. As nearly everything in the game can be cut and modified, every piece of the environment is a potential way to stray from the level's predefined path. On one hand, we wanted to maintain a certain linearity in the game to prevent the player from getting lost or overwhelmed by possibilities. On the other hand, we didn't want to destroy the whole experience by taking away too many options, so we were pretty careful in creating boundaries. We limited the range of the laser and other tools to keep the player's focus on the area he is standing in and to prevent him from accidentally cutting apart pieces in the far, far distance.

TC: *The game certainly seems to revel in its comic-book aesthetics. What were your sources of inspiration for the art style?*

SS: Ever since I began playing video games, I liked games like DAY OF THE TENTACLE, SAM AND MAX, WOODRUFF, HOT WHEELS (C64),

and EARTHWORM JIM. They all had a certain style that made them feel special and self-contained. What made them different from a lot of games was their own visual language. When developing the visual style and characters for our game, I always tried to bear in mind what made me excited about those games.

Our general approach was to get as close as possible to the

game. So we decided to look for talented designers at Kassel's School of Arts and Design.

Florian Grolig, Sebastian Stamm, and Philip Gutjahr were hooked after our first meeting. They brought amazing skills to our team, skills which we couldn't have dreamed of covering before. During the year that followed, we ventured off into the art school's dark dungeons to work



original, analog-drawn artwork. We didn't want to produce a mash-up of different styles and end up with trade-offs and a common visual appearance. This led to the pop-up words for sound effects, the flat and painted shading, the speech bubbles, and the crosshatched shadows on every object.

TC: *How did you all come to work together on this project?*

CHRISTIAN NIEMAND (engine programmer): In early 2004, Johannes and I met at the University of Kassel. In 2008, Sebastian Schulz joined our team, and together we took a shot at creating a game. Besides coding, we had to build content like models, textures, sounds, and music ourselves, or grab it from the internet. This resulted in a couple of prototypes with programmer art that were miles away from a seamlessly designed

on the TINY AND BIG prototype. The feedback we received after its release largely factored into our motivation to make a full game with the same concept. Our only problem was that we had no money at all to do it. So we concocted two plans: One was to develop TINY AND BIG in our spare time while still having a day job. The other was to apply for a grant for our enterprise. Writing a business plan took us eight weeks, but in the end, it was worth it; the grant was approved. We now had money to secure our existence for 12 months. While we're still working in yet another dark dungeon, this one is our own office at the university. Our goal is to release TINY AND BIG: GRANDPA'S LEFTOVERS this year through our own company: Black Pants Game Studio. 🎮

—Tom Curtis

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a beginner's guide to pixel
animation



pushing pixels

GARY J. LUCKEN

/// In this tutorial, I will walk you through the creation of a cute animated character, which should give you the basic skills to create pixel art for games.

Kaoani comes from the Japanese kao (face) and ani (animation). It's a word used to describe those cute little animated characters that adorn many a chat window or blog. These little animated mascots are perfect practice for pixel art creation as they are small in file size, colorful, and fun to look at. At my Army of Trolls web site, I have expanded the idea a little to include an adoption agency for these cute little critters. Those who adopt are rewarded with a return link from my web site. I have created hundreds of pixel art animations, and with this tutorial, I will pass on some of my knowledge, which should help you learn all the skills you'll need to create your own little kaoani. The theory behind creating these creatures is similar to making graphics for 2D video games, so with some practice, you could be making your own game graphics in no time.

We'll be using Adobe Photoshop, so make sure you have the program before you begin. This tutorial has 32 steps, and I've outlined how each should look with an accompanying image. Every build of Photoshop has a different look, so don't worry if yours doesn't match the screens you see in this article exactly. >>>

the secret art of pixels

/// If you are attempting this tutorial without having created any pixel art before, then this is for you. The first and most important rule of pixel art is “Anti-Aliasing is the spawn of Satan.” Photoshop needs to be set up correctly before you even attempt to put pixels together. Turn off all anti-aliasing, make sure you are working on a 72dpi (screen resolution) document, and select the smallest 1-pixel pencil.

With pixel art, you are working within a limited palette of 256 colors. Don't worry though, 256 is more than enough, and a lot of small pixel work will come in at under 32 colors. Make blocks of color on your document for easy selection.

Pixel art is often very small, so you will mostly be working in a very zoomed in document. It's helpful to see your image at 100% though, so you'll probably be zooming out a lot to see the full picture.



1 GETTING STARTED



First we need to create our little pixel art character. Open Photoshop and create a new document that is 32x32 pixels. Using the pencil tool with anti-aliasing turned off, draw a shape like the one in the image accompanying. It's roughly 23 pixels on each side.

2 ARMS AND LEGS



Now let's add some little arms and legs to our character. On each side, draw 3 pixels going diagonally downward, then do the same for the bottom edge where you think the legs should go. Using the Eraser tool, with anti-aliasing turned off, delete a few pixels where the arms and legs join the body.

3 EARS TO HEAR



Our troll is going to be a cute little fox creature, so he'll need some ears. From the top left edge of the body, draw 2 pixels upwards, move 1 to the right, then draw 2 more up. Do this 4 times, then come back down in a similar fashion until the ears join the body.

4 EYES SO HE CAN SEE



Now we have the basic outline of our troll. Add two 3x3 blocks of pixels next to each other where you feel his eyes should go. If you mess up, just delete some pixels using the eraser and start again.

5 BIG MOUTH



We now have arms, legs, ears, and two eyes. We still need a nose and a nice big mouth that we will animate later. For the nose, I have drawn a 5x3 rectangle, and underneath, a great big mouth that almost fills the entire width of the body.

6 PEARLY WHITES



With the outline of our character, he's really starting to take shape. Before we color him, to make seeing easier I've taken the fill tool and filled in all the blank pixels within the outline of our character with a white color, and added some teeth.

7 COLOR, COLOR, COLOR



He's looking a little ill, so let's give him some color. Feel free to choose your own colors. I have chosen an orange from the color palette, and used this to fill the main body section, with white for the eyes and pink for the nose. Notice I have left the ears and belly patch white.

8 IN THE SHADE



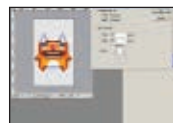
Having blocked out the basic color, it's time to shade him. Notice how I shy away from using grey to shade the white sections. This kind of artwork is so small that too many greys can sometimes spoil the image, making the pixels look muddy. Although, I will say that there is some very cool black and white pixel art out there.

9 COLORED OUTLINES



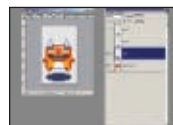
We don't need to leave the outlines of our character black, and in fact a lot of sprite work of this type benefits from colored outlines. I have selected darker versions of our shading colors, and used this to color the outlines of our character. I've given him two big eyebrows for good measure.

10 LARGER CANVAS



Now we are ready to start animating him, but we'll need more room on our document to do this. Go to Image->Canvas Size, and put 52 in the height box, and click the top middle anchor point. This has increased the canvas from the top downward. Move our character down to the center of the canvas.

11 SHADOWS



To make our animation more effective, we are going to draw a shadow underneath our troll. Using the circular marquee tool with anti-aliasing turned off, select an oval section under our character and fill it in with a dark color. Create 3 shadows, each smaller than the other, each on separate layers.

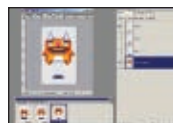
12 ANIMATION FRAMES



It's time to open Photoshop's simple animation palette. Go to Window->Animation, and the Animation Palette will appear. Click the arrow at the edge of the Animation Palette and create 2 more frames by selecting "New Frame." We should then have a

total frame count of 3. Also, you'll need to convert to Frame Animation, because by default, it'll open in Timeline format, which is not useful.

13 MAKE HIM FLOAT



Click on the first frame and make sure the largest shadow layer is showing. Then click on the second frame, nudge the character up a few pixels, and turn on the second shadow layers. Finally, move him up even further and turn on the smaller shadow layer. This will make it look like our troll is floating up and down.

14 COPYING FRAMES



To smooth out the animation we need to add another frame after the third, which will be the same as frame 2. Select the second frame, and copy it by clicking "New Frame" underneath. Then click and drag this to the third frame in the sequence.

15 TOO FAST!



Now we have a basic animation. You can preview it by clicking the play button on the Animation Palette.

However, it's running way too fast, so we'll need to slow it down. To do this, select all frames, then click the arrow next to where it says 0 sec and change this to 0.2 seconds. You can also press "spacebar" to make the animation play. This is also unfortunately the hotkey for the hand tool, which can be infuriating because you'll try to move the document around only to play the animation and mess everything up. There's no way to change this unless you change the hotkey for the hand tool.

16 WE NEED MORE FRAMES!



With the basic animation now complete, we need to add a few more frames before we tweak our character and add some finer animation details. Select all frames, and from the Animation palette menu, choose "Copy" then "Paste" these new frames after frame 4 of our current animation. We now have 8 frames in total.

17 SAVING AS A GIF



Before we start to tweak, we need to save our animation as a gif. To do this, open the Optimize palette by selecting Window->Optimize, and choosing gif 128 with no dither from the palette menu. Then go to File->Save for Web and save the animation as a gif. There you have it! You can now open the gif file and use this to work from.

18 OPEN WIDE! ♡

Let's give our character a little more. Let's start by making his mouth open and close. Notice that the newly saved gif has created new frames for each part of the animation, instead of layers like the previous file. Go to frame 3 and use the square marquee tool to select just below the top row of teeth. ♡



19 OPEN WIDER!



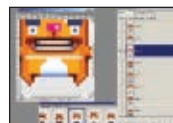
With the whole character selected, below the top row of teeth, use the arrow keys with the move tool selected to move them downward by 1 pixel. Do the same on frames 4 and 5, but move downward by 2 pixels in frames 4 and 3. In frame 5, make the mouth appear to open.

20 TONGUES!



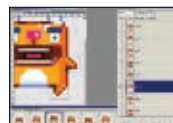
We've got an open mouth now, but there are big pixel gaps in frames 3, 4, and 5. We will need to fill these in with our chosen colors using the pencil tool. Notice how I have given our little fella a little tongue. Feel free to add your own details.

21 KEEP IT CLOSED



To finish off the open mouth animation, let's make him close his mouth a little in frame 6. Grab a selection starting from the bottom of the mouth to just above the bottom row of teeth, and move it up until it is close to the top row of teeth. Fill in the missing pixels, and we're done.

22 HANDS AND FEET



Let's make his hands and feet move a little as well. To do this, I have just selected the hand with the marquee tool in frame 3 and moved them up a little. Same for the feet. Feel free to draw the pixels freehand rather than using the marquee.

23 FEET AND HANDS



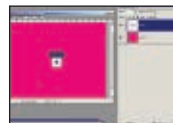
I have continued this hand movement for a few frames, making them move up and down. You may have to experiment a little with what looks good, so make sure you are always previewing your animation as you make it.

24 ALL IN THE EYES

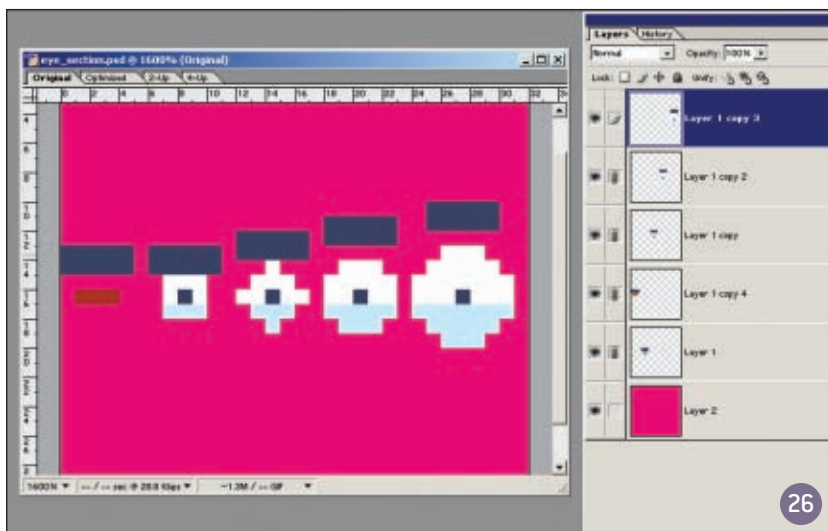


As a final detail, we will have his eyes bulge as he floats up and down. Let's try another technique for this. With the marquee tool, zoom into the eye section and select the eye brow and the eye. Zoomed in like this, with anti aliasing turned off, it's easy to copy individual pixels.

25 NEW PAIRS OF EYES



With the eye selected, copy and paste it into a new document (if you like shortcuts, you can use ctrl+n for new and ctrl+v for paste). Next, increase the canvas size by choosing Images->Canvas Size from the Image menu. I have filled the bottom layer with a pink color to make it easier to see the eye pixels.



26 FIVE EYES ▲

In our new document, I have made 5 new eyes, ranging from closed to wide open. I have created each one on a separate layer. I made each eye by simply adding to the surrounding white area and moving up the eyebrow. Create your eyes however you want them to look.

27 ADDING THE EYES



With all our eyes now created, drag the first one into frame 2, and move it into position. Then duplicate it for the opposite eye, and flatten frame 2 by linking the eyes with the frame and selecting "Merge Linked" from the Layers menu. Do the same for all the other eyes in the next few frames.

28 HOT STUFF



All this floating is hard work, so to finish off our animation, let's add some beads of sweat coming off our cute little troll. On frame 2, draw four 1 pixel square beads of sweat. You can put them wherever you like, just keep them close to the head, as we need space for the sweat to move.

29 KEEP ON SWEATING >>

Mark the place of our sweat in frame 2 with guides by simply dragging from the ruler at the top left of your document. Then move to frame 3, and draw some bigger sweat drops in the position you think they would have moved to as

our little guy floats up and down.

30 STILL SWEATING



I have created beads of sweat falling downward from frame 2 to frame 6, and made sure I place them in a position in each new frame that looks like the sweat is flying off our character and falling to the ground. We are almost done!

31 ALMOST DONE!



Before we save our final animation, play it through a few times to check that it plays how you want it, then select all layers and right click on the little bouncing ball icon at the bottom of each frame. From the menu that appears, select "Restore to Background."



32 SAVING THE FINAL ANIMATION



We're finished creating our little guy! It's time to save the final file. Make sure the Optimize palette is open, and select Gif 128 with no dither from the menu. Then go to File>Save for Web, and save your file.

pixels pushed!

/// Now you've got a little animated character! As you practice, this stuff will become second-nature. Pixel art is a unique art form with some similarities to the impressionist movement. It often hints at detail, rather than actually drawing every last minute part of every character. By far the best way to learn these techniques is to study from the masters. There's a whole host of references out there on the internet and in books.

There are some great tutorials over at Gas 13's site (<http://gas13.ru/tutorials>) that deal with all aspects of pixel art. A great place to start is the "So you want to be a pixel artist" tutorial. My own site (www.armyof trolls.co.uk) has tons of pixels for you to grab and study, but also check out Junkboy, www.eboy.com/eboy, and www.adamtierney.com for some excellent pixel art. There are also forums full of helpful experts and eager beginners. Two of the best are Pixeljoint at www.pixeljoint.com and Pixelation, at www.wayofthepixel.net. Register at either of these, post your artwork in the forums, and you'll get loads of helpful feedback from some very good artists.

There are also a few helpful pixel art books that you can order online. A must-have is Eboy's Hello. It's expensive but well worth it, with over 500 color illustrations for you to study. It's basically an isometric pixel art master class. 📖

Jonathan Kim contributed to this article.

GARY J LUCKEN runs www.armyof trolls.co.uk, a web site that collects his pixel art illustrations, video games, and character designs under one colorful roof. Gary is a self-taught illustrator who is heavily influenced by 2D video games, cartoons, toys, and Japanese food packaging, and has produced pixel art for a range of companies from BBC to Honda.

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Portfolio

DEPAUL

postmortem

IN THE SUMMER OF 2010, A GROUP OF DEPAUL FACULTY BEGAN A PROJECT KNOWN AS DGE2 (THE DEPAUL GAME EXPERIENCE). THE PURPOSE: TO CREATE FOR STUDENTS THE EXPERIENCE OF WORKING AT A GAME STUDIO. THE GOAL: TO DEVELOP A GAME THAT COULD BECOME AN IGF STUDENT SHOWCASE WINNER. APPROXIMATELY FIFTY STUDENTS APPLIED AND INTERVIEWED FOR THE TEAM. THE FACULTY ADVISERS, GAME DESIGNER PATRICK CURRY, ANIMATOR SCOTT ROBERTS, AND SOUND MAN ROBERT STEEL SELECTED TWENTY STUDENTS THEY CONSIDERED THE MOST QUALIFIED TO TAKE PART IN DGE2.

In June, those of us who were selected gathered in the meeting rooms and the game labs of DePaul's College of Computing and Digital Media. We began a month of pitching, refining, and prototyping new game ideas. The previous year's team, the DGE1, had taken a spot in the previous year's IGF Student Showcase with its game DEVIL'S TUNING FORK. We were under pressure to find an idea that could match DEVIL'S TUNING FORK's success, while also being completely and utterly unlike it. Finding the right game was essentially a quest for our identity as a team. We ran the gamut of platformers with twists and physics puzzles, and many of them were great ideas, but lacked that certain spark. Then came one silly suggestion about an octopus.

OCTODAD is a slapstick comedy adventure game about a father who is trying to keep his family from realizing that he is an octopus. It was practically a joke at first, but we grew to love the idea. By the time the first prototype was finished, we could see that certain spark in OCTODAD, and we knew that it would be the game that would not only define us, but would get us to the IGF Student Showcase. Production on OCTODAD began in July; it was submitted to the IGF at the end of October.

It was a whirlwind of development, filled with glorious triumphs and tragic missteps. The lessons we learned on the path to making OCTODAD were invaluable, and we'll keep them close to heart as we head into our future endeavors.



1> Uncanny Team Chemistry

The team composition and dynamic is what made OCTODAD work. We all began this project as strangers, unsure of what we'd be working on or how we would work together. However, as we began to present our ideas, the atmosphere became more and more lighthearted and bizarre. We came to realize that we were all kindred spirits, united by our collective insanity.

We fed off of each other's strangest, silliest notions, reaching a creative height that none of us could have achieved alone. We kept the bond strong throughout the project by going out to lunch every day, playing our favorite music in the background, holding after-hours HALO matches, and sharing joke after joke after joke. We came to find that near the end of the project, our team had a shared language that outsiders could barely understand, and we briefly wondered whether we'd ever be able to talk normally again. Still, our unchained atmosphere of odd friendship fed directly into OCTODAD as we were making it, until it became as strange and funny as we were.

2> Generating Concepts

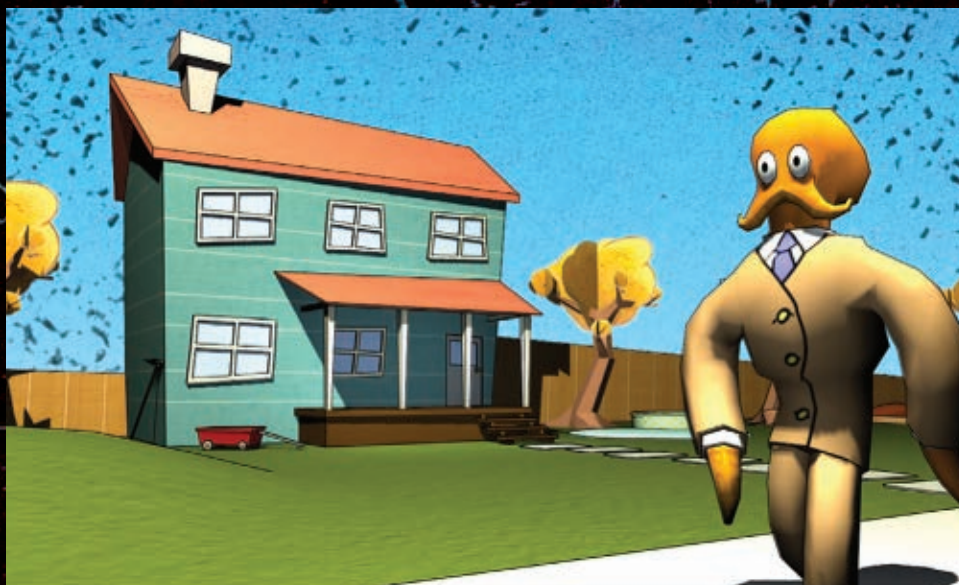
Despite our wacky personalities, our approach for coming up with new game ideas was grounded in a systematic exercise set up by our advisers. We would come up with a series of one-page game ideas, present them, come up with more one-pagers, present those, then team up with somebody to make a more detailed eight-page idea, and finally pick three of those concepts to prototype. We found that first ideas tend not to be the most creative or interesting ones, but that each rejected idea may spark something more. OCTODAD itself came out of the third round of pitches. We took that approach and ran with it throughout development. Everything from the way OCTODAD walks, to the kitchen challenges, to OCTODAD's manly tentacle-moustache was the product of an exhaustive list of possibilities, and seldom did we go with our first idea. Our dedication to exploring every avenue served us well.

3> Playtesting Like Mad

From our earliest prototypes to our final levels, we were always playtesting. We advertised weekly tests through Facebook and word-of-mouth. We had an open door policy, and allowed anybody to sit down and play the game at any time. We were voracious in finding fresh players and new demographics; if there were high-school kids, visiting Japanese students, professional game developers, or notable animators in the building, we would seek them out and invite them to play. OCTODAD is about riding the line between frustrating and fun, and we found out very early on that our definition of "easy" did not match up with most players. We constantly needed to balance the control scheme, seek out the most fun challenges, and find out whether our jokes were funny. With our rapid-fire testing, we were able to gather and respond to this information on a weekly basis. That's not to say we always did what a particular tester wanted, but regardless, they helped us shape OCTODAD into a game that others would actually enjoy.

4> Setting our Sights and Sounds

Ensuring that the sound and visual design of our game fit the silliness of the mechanics and narrative improved our game immensely. We had a dedicated sound designer from the beginning, so we were able to avoid the common pitfall of shoving all the sounds in at the end of development. Our sound designer, Seth Parker, went wild making ambient music, collision sounds, hilarious placeholder voices, and octopus noises (often times with his own body). Furthermore, our team's early attention to sound gave us the time to seek out and work with professional voice actors,





and to obtain permission to appropriate Dalmation Rex and the Eigentones' "Octopus I Love You" as our theme song. The sounds, voices, and songs did more than make OCTODAD extra funny and charming; they also brought a sense of reality to the team whenever we listened to them, bolstering our confidence about the whole project.

From the beginning, we consciously thought of visual design as a way of reinforcing the hilarious experience that we wanted to create. We made a decision early to follow mid-century visual aesthetic and design. During pre-production, we pulled a lot of inspiration from *Cartoon Modern*, a book all about 1950s cartoons, and the *Incredibles* art book. For the environments to reach the same level of inspired design we looked to famous modern architects and industrial designers from that era: Mies van der Rohe, Ray and Charles Eames, Dieter Rams, and others. While we developed our own feel, this style was at the core of our design decisions along the way. We chose this because the team felt it would match the lighthearted comical feel of the game. The clean lines and bold colors serve to create an idealized world for OCTODAD to explore and destroy. Going with this visual style also inspired the art team, because they were required to explore graphic design, typography, animation, color theories, furniture design, illustration, and architecture.

5> Octo-ber Crunch Time

No matter how well OCTODAD began, what really mattered was how well we finished it. We had a great number of troubles in the middle of development, especially when school came back into the equation in September. Schedules were shattered, priorities were mixed, everything was grinding to a halt, and the November 1st deadline only loomed closer. We made a stand, and declared the final month of development "Octo-Ber." The whole team would meet on Saturdays and work from 8 am till 6 pm. With about four such meetings possible, we analyzed all of the things we had left to finish, and broke them into weekly chunks. Amazingly, we got more done each Saturday than we had done in weeks previous. The ominous pressure combined with our love of the project forced us to focus, cut, and refine the game in bursts of activity. We continued working up until the day of the deadline, but we got it all done. When we say that this was a positive aspect of development, we don't mean to glorify crunch. We weren't actually working many more hours than we had been previously. However, we were able to recognize that school had impacted our ability to communicate and work effectively during the week. Making a short-term sacrifice of a weekend day in order to gather at the same time and place allowed us to make more efficient use of our precious time, which had a positive impact on our ability to finish the game.

WHAT WENT WRONG

1> The Vertical Slice

Our first attempt at a vertical slice of OCTODAD was an unmitigated disaster. We were feeling great after some successful pitches and prototypes, and our vision for what OCTODAD could be was outrageously out of scope. We decided that OCTODAD's entire house would be the first "level," and set out to make it in a scant few weeks. When the time came to show it to our advisers, they were livid. It was forty minutes long, it was terribly buggy, the art was completely unfinished, there was no work done in the UI, player direction, or camera control, and worst of all, it wasn't the slightest bit funny or fun. In no way did it represent what we wanted our game to be. We had left behind everything that made our prototypes good in an effort to make the game larger and longer, and in doing so, failed to accomplish anything.

After our defeat, we took a good, hard look at the state of things and realized that it would take the entirety of our development to finish OCTODAD's house alone. And so we did that. Our lesson thoroughly learned, we focused on making a "real" vertical slice out of OCTODAD's kitchen, and it was the total opposite of our previous effort.

2> Physics

Building a character entirely out of physics objects and having him slam into other physics objects is the crux of our game. And it was a headache to deal with. With so many different kinds of bodies and meshes flailing around, there was an endless stream of physics bugs to sort out: objects not colliding, objects colliding too much, objects jettisoning from the room, and in one strange accident, a room jettisoning from itself. Each bug corrected and each feature added sent ripples across all development, invalidating designs that had worked earlier, or required new designs to be put in place. Any game that tangles with physics is bound to have these troubles, but in our case, we had no game without it, so there was nothing we could do but slog through it all.

3> Failure to Communicate

Whenever our team got together to talk in person, we were excellent communicators, and our meetings were fruitful. Once we were in different places working at different times, our ability to communicate broke down. We collectively had a bad habit of not recording our conversations on or offline, so it was easy to forget what we had talked about without being around to remind each other. Our system for storing information online was also a confusing mess. Each discipline had its own task list pages hidden among many nearly identical superfluous pages in a wiki. Nobody would read other group's pages, as they were difficult to find or possibly an inaccurate duplicate. Because of these communication issues, we lost a lot of time to team members waiting for other members to complete tasks they were dependent on, not realizing that either the task was never communicated, or that the task had been completed already. This problem was the most ruinous in September, when school resumed and the team spent more days apart than together. Our final crunch snapped us out of it, for the most part, and demonstrated to us just how bad our communication had gotten.

4> Late, Late Bug Tracking

Part of what made our Octo-ber crunch successful was the inclusion of bug tracking software. We suddenly had a dependable way to see who needed what done, and a steady meter for how much work remained on the project. We were foolish to wait so late in the project to set up such a clearly beneficial system. Doubly so because we realized the need for bug tracking at the beginning, but pushed it aside because it took more effort to use compared to talking in-person. The need for one consolidated source of updated information was crucial, and personal communication is less reliable than we thought. We won't be doing that again.

5> MINECRAFT

No, seriously, it was a problem for the OCTODAD team. We're fun loving people, and an accessible game with infinite replay value is the death of productivity. For two weeks after the MINECRAFT Beta was released, it steadily took over more and more of the team's time; sneaking in a minute of MINECRAFTING could swiftly become an hour lost. Incidentally, this was also around the time of our vertical slice. It saw a lot less play after the slice. While MINECRAFT itself was only a short-term problem, it was a symptom of something more. In general, we had issues with getting distracted. During our online meetings, people would have pointless side conversations, or they'd post links to silly videos. In the middle of work days, we'd often play games or stand around watching even more silly videos. The downside of having such a fun, friendly atmosphere is that it's difficult to take things seriously.

A GAME WITH LEGS

OCTODAD was officially submitted to the IGF on November 1st, about four hours prior to the submission deadline. We simultaneously made the game available to the public and asked a few members of the press to check it out. We felt the pride of accomplishment in seeing our development all the way through, and a nervous anticipation as our bizarre brainchild was released into the world. We also held quite a party in celebration.

Prior to the announcement of the IGF finalists, we received a lot of positive attention. In the two weeks after releasing the game, OCTODAD was mentioned on Kotaku, Joystiq, IndieGames.com, RockPaperShotgun, and many other news outlets. The trailer that we prepared for the launch of the game, which has been viewed 220,000 times as of this writing, made it easy for the media, as well as players, to share our game with others. The game has been downloaded 160,000 times from our web site, with mirrors and torrent files popping up all over the world. We were also able to get feedback from players by keeping an eye on Twitter. Releasing the game for free has allowed us to gain a reputation as a group of talented developers with insane ideas before we even finished school.

Ultimately, we achieved our goal and won a spot in the IGF Student Showcase. We've gone to GDC. Soon enough, we'll have to close the chapter on this first incursion into the cephalopod fatherhood simulator genre. The friends we made, the lessons we learned, the trials we overcame, and the experiences we had will stick with us even as school ends and the team goes their separate ways. In the future we'll look back, shake our heads, and laugh as we remember that strange and silly time when we became the fathers of OCTODAD. 🐙

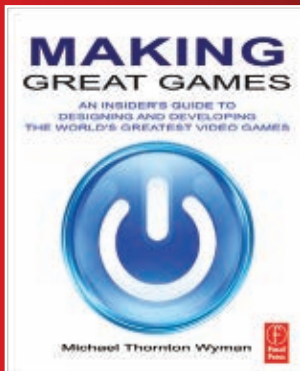


BRIAN O'DONNELL was the lead programmer on OCTODAD. He is enrolled in DePaul University's game development masters program. **JAKE ANDERSON** was the lead designer on OCTODAD. He recently graduated from DePaul University's game development program. **NICK ESPARZA** was the lead artist on OCTODAD. He is a recent graduate from DePaul University's animation program. **JOHN MURPHY** was the executive producer on OCTODAD. He is a recent graduate from DePaul University's game development masters program. **KEVIN ZUHN** was the writer and project lead on OCTODAD. He is a recent graduate from DePaul University's game development program. Kevin, John and some of the other energetic, playful and rebellious OCTODAD developers have started an independent studio, Young Horses, where they will develop a commercial followup to OCTODAD as well as other unusually innovative games.

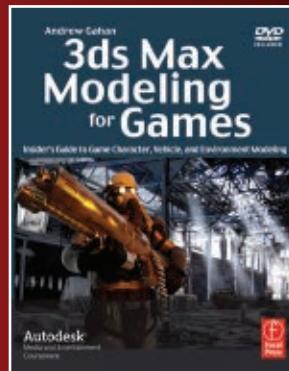
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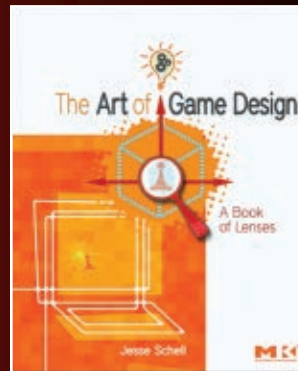
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S A M U L I S Y V Ä H U O K O

/// Pitching plays a critical role in the lives of all non-independent game developers. When you go in front of a publisher and present your new game to them, the minutes that follow will be among the most critical minutes you will ever spend during that project. If you fail in your pitch, it will be extremely hard to get in front of the same publisher again with the same project. If you succeed, well, then you have a chance to take further steps to secure a publishing deal for your game.

I have been involved with the industry since 1995 and have made (and received) hundreds of pitches, from tiny mobile games to AAA next-gen productions, such as MAX PAYNE. Some have been successful, and some have not. As a general rule, you need a good game and a good pitch to be successful. If you lack in either area, you will face hard times; if you lack in both, it will be a complete failure.

There are as many ways to pitch as there are developers, but there are also methods and common practices that are universal and can help you perfect your pitch. This article is simply a collection of some hints and tips—and dos and don'ts—that will hopefully be useful for game developers that are new to the industry, and students looking to pitch their games, not only to publishers, but to whomever may listen.

A short guide for start-up
game development studios

the art of pitching games to publishers



Game Developers Conference 2011.

PHOTO BY TRISH TUNNEY

THE DEMO

» The first ingredient you need is a good game demo. The most effective way to create one, in most cases, is to demonstrate the core gameplay mechanic in a compelling way. Everything else—art, tech, story, supporting gameplay mechanics, and so forth—is secondary. So, when you set out to create a gameplay demo, focus on the core mechanic first. After that, if you have time, put effort into the audio visual presentation. A compelling core gameplay mechanic coupled with a little bit of gorgeous graphics and some atmospheric audio can often be enough. Be aware of your audience, though. The less the person you're speaking to knows about games, the more important "finished-looking" graphics might be.

When designing your demo, it's a good idea to keep it short and to the point. You should be prepared to get your game's core idea across in just a few minutes. If possible, it's also good to prepare for a more in-depth presentation for those publishers who want to learn more right away, but this is also secondary. Never show a demo that has lots of incoherent bits and pieces that are not fully thought-out; that's torture to the publishers, and will make them think you are an amateur. A great three-minute demo is 100 times better than a watered-down 10-minute demo.

At industry trade shows like GDC, E3, or Game Connection you can bump into publishers anywhere, and when running from one late meeting to the next, the publishers may only have a minute to spend with you. That minute can be a gateway to further discussions, so make sure you are prepared to seize the moment. An elevator pitch of your game and perhaps a short video of your game on your iPhone can be very effective.

THE PITCH

» In most cases though, developers have 15–30 minutes to present their game. It is important to plan and script what happens during that time so that there is enough room to get introduced, present the game, gauge the publisher's initial reactions, and agree on the next steps. All start-up developers should also know that no matter how much the publisher praises your game during your first meeting, it doesn't necessarily mean much. Only the next steps will show the actual direction you'll be going.

When you start your pitch meeting, it is important to properly and clearly introduce yourself to the publisher and exchange business cards. Even if your name is as difficult as mine, pronounce it loudly and clearly, and make sure you say what your role is in the company. It's also polite to look at the cards given to you, and

you can also try to pronounce the names of the publisher's representatives (this is especially important with Japanese publishers, who are a lot more formal).

At this point, the publisher will be sitting down, taking out their note pads, and getting prepared to focus on your presentation. If you have prepared a poster or other printouts of your game, this is when they will most likely take the first proper look at it and start forming their first impressions. As with the demo, the poster should focus on the core element of your game—and it is crucial that the poster looks professional. If you can't manage that, don't put up a poster.

If you are presenting your game with multiple people, make sure each person has a clear role in the meeting and that everyone knows what they are supposed to say and do. A good way to split the roles is to have a creative person who will talk about the game, another person to handle the game's controls, and a third person to represent the business side of things. Publishers like to get game pitches directly from the person(s) who are creating the game (e.g. a creative director or a lead designer). The CEO (or other business person) should let his "stars" shine without stepping in too much. Not trusting the leads to deliver their message on their own can give an impression of weak team leaders or a micro-managing CEO. Once the game has been

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presented, the business guy can start moving the discussion forward.

When starting the actual demo, you can kindly request that questions are saved for after the presentation. Some publishers can be quite impossible in a meeting, especially with less experienced developers. They will keep asking questions all through the demo just to poke holes in the game, and to see how the developer handles themselves in a tough situation. If you ask them to delay the questions to the end of the demo, you are displaying self-confidence and structure, which many publishers will think of as a positive, so they may go along with it. If you can manage this, your presentation will be more coherent and there will be less risk of you breaking the momentum and forgetting to mention important facts about your game.

Out of all the lessons that I have learned, one sticks out more than others: Prepare a script of what you want to say about your game and memorize it. Test the presentation in front of a live audience (who are not familiar with your game), and make adjustments if some points are not getting across clearly enough. Sync the talk with what is happening on the screen. Once you are happy with the presentation, rehearse it until you get sick of it, and then rehearse some more. And make sure the other people doing the presentation with you can fill in your lines if needed, and that there are clear cues between people doing the talking.

When presenting your game, speak clearly and not too fast. Pause often to give your audience a chance to absorb each piece fully. Monitor your audience and adjust your pacing accordingly. When they are writing down notes, don't start showing anything critical until they lift their gaze back to the screen. But more than anything, be self-confident and excited. Even if your demo is not the best it could have been, a confident and exciting presentation can go a long way toward filling the gap. After all, it's ultimately the people behind the game that the publisher will be investing their money in. If they get a confident feeling from you during the pitch, they will assume that your whole company is as professional and self-confident as your pitch, even if that's not entirely true.

As for some smaller hints and tips, make sure your demo space (e.g. a meeting room) and the demo setup is in perfect working order before each meeting. The volume might be too low/high, the controller might not work, or the game crashes when it's not supposed to. The devil is in the details.

You only have one chance to pitch your game. If the publisher notices a lot of problems during your pitch, they will not be convinced. Even if your game is interesting and has potential, a poor pitch will seriously hinder your

chances. It is extremely hard to get a publisher to properly look at your game again if your pitch wasn't convincing. Even if they agree to take a second look, you will have a very steep mountain to climb to get over their previous impression of you. This is not doable unless your new demo and pitch are dramatically better than before.

BIG QUESTIONS

» When you have finished presenting your game, give the publisher a moment to digest everything they have learned. Don't start asking for their opinions or feedback immediately; if they get excited about your game, they will start asking questions. If they don't seem impressed, then you should ask what they liked or—more importantly—didn't like about your game. That can help you refine your pitch for the next publisher.

Before putting yourself in front of publishers, it is a very good idea to prepare for questions that the publisher might ask. Try to think of the hardest questions you would ask a developer if you were in their shoes. Here are some example questions:

❑ What is your target audience and why?

❑ What are your competing titles?

❑ Why is your game better than or different from the competition?

❑ What other gameplay features are you designing for your game and why?

❑ What's your plan for a demo, DLC, and sequels?

❑ What kinds of Achievements and Trophies have you thought about?

❑ Your studio hasn't shipped a title of this scope yet, what makes you think you can ship this title?

❑ How is your team assembled?

❑ What titles have your team members shipped?

❑ What are your studio's biggest strengths and weaknesses? What if a key employee leaves?

❑ When will your GDD, TDD, and detailed production plans be ready?

❑ What engine/tech are you using and why? Do you have a contingency plan?

❑ How are your production pipelines set up?

❑ How will you handle project management, and which methodologies and tools are you using?

❑ How will you handle gameplay and QA testing? Who will do the localization?

❑ What is your studio's financial condition?

❑ If you're a student, is your whole team committed to working on the project after graduation?

In case the publisher gets excited, the first things they will want to know about are how much time and money you will need to finish the game, and which platform versions those numbers include. If your game design is still heavily under development, you won't be able to give an accurate answer. Be honest and say that you are still working on the game design and production plans, and that you will come back to them with more accurate information within a certain date (and stick to that date no matter what).

In the case where you're pitching your game for the third or fourth time and still receiving a poor reception, then there's probably something very wrong with your game, your pitch, or both. In this situation you should consider postponing the pitching process to a later date. If you give the same poor pitch to more publishers, you will essentially have closed the doors on most—if not all—of them. Also, if you are unsure how interesting your game is, it's a good idea to pitch it to those publishers who are least likely to sign it anyway. Their reactions and feedback can still be very valuable, and can help you avoid a catastrophic failure.

At least in my experience, no publisher has ever signed a game based on one pitch meeting, no matter how exciting the game was; however, I once signed a game on the spot at E3 2003, and drew up a binding contract by hand on a piece of paper. After a positive pitch meeting, the ball is in the hands of the publisher. If they follow up, they are interested. If they don't follow up, it's very likely that they are not. It's extremely rare that a publisher loses your contact information or forgets about an exciting game, but it can happen (especially if it's a low-budget game). So, if you have not heard anything back within two weeks of your meeting, follow up with a short and polite

email or a call. It is also a good idea to use LinkedIn to connect with the publisher's representatives after the meeting.

Saying no to someone is always hard, so even if a publisher is not interested, they are not likely to say it out loud. Also, even if the publisher was impressed by your game/pitch, their own internal situation is constantly changing, and they may shift focus away from where your game is aimed. They may also be considering another similar title from a competing developer, or they may run into money troubles, at which time they will not sign any new projects no matter how exciting they are. In this situation, they will still try to keep discussions going with developers in hopes that their internal situation changes (and to keep good games from falling into the hands of their competitors). For a developer, it can be very hard to see what's really going on at the publisher's end, so it's important to have discussions going with as many publishers as possible.

LEGAL EAGLES

» Although this article is not about deal terms or contract negotiations, I shall touch upon a few common themes nonetheless. When discussing commercial deal terms with a publisher, there are three main points that will be discussed: development funding, royalties, and intellectual property (IP) ownership.

A start-up developer that has not shipped any titles will find it very difficult to negotiate any of the terms. If the publisher believes in the game's potential, and if they think the complexity of the game is on par with the developer's experience level, they can go for a fully publisher-funded deal. In this case, they will most likely require that they obtain full ownership of the IP. This may feel unfair, but remember that the publisher is taking all the commercial risk.

The publisher will also insist on a low royalty rate, but even a start-up developer should make an effort to fight for a better rate, as this is the only way to ensure some kind of back-end profit if the game is a success. Some publishers do realize that if the developer is stripped of all IP ownership and not left with a sensible commercial upside, it will not bode well for going the extra mile to make an excellent game. The developer just needs to remind the publisher about this fact and be adamant about it. And even if the publisher is unwilling to change the terms, it doesn't hurt to ask.

What kinds of royalty rates can a start-up developer expect to get? It obviously depends on the game, the target platform(s)/market(s), how much risk the publisher is assuming, and so forth. In any case, for traditional boxed retail games the royalty rate is generally lower than for digitally distributed games. In the case of retail games, there are a lot more costs and middlemen

involved than with digital games. It's difficult to give specific numbers, but a 10–20% royalty rate (from the publisher's net revenue) for retail games is probably not unrealistic. For a digital game (e.g. XBLA and PSN), the figure can go as high as 20–30%.

If the developer can fund a major portion of the development cost by themselves, it can change the deal terms significantly. Generally speaking, the one who funds most of the development cost gets the IP. However, a "shared IP" (or co-IP) model also exists. This can mean many things, and while it varies between publishers, they generally shy away from it because it's a complex arrangement that can backfire in a number of ways.

When self-funding any portion of the game's development cost, a developer should be able to demand a better royalty rate, as they are also carrying part of the financial risk. If you can't get a better rate, the publisher should fund the whole development. Tactically speaking, a developer should first ask for an offer on deal terms for a fully publisher-funded scenario. Once the publisher has rendered their terms, the developer can ask how the terms would change if they were to self-fund X percent of the development cost.

There's also a thing called "development advance recoup" that developers should be wary

of. There are also many other deal terms that go into a publishing agreement. Another important term is how the publisher defines "net revenue." Publishers will generally want to deduct all marketing, distribution, localization, quality assurance, physical box costs, and more, from the game's revenue before doing a royalty split with the developer. On digital titles there will be fewer costs to deduct. Generally speaking, most publishers are not willing to discuss this term, although smaller publishers may be open to it.

Milestones are also a fundamental aspect of a publishing agreement. It is absolutely critical to fully understand the definition of each milestone (and this varies between publishers) and to set a realistic milestone schedule. Having an unrealistic milestone schedule is a recipe for big problems. Many good games get canned if they miss their milestone dates. Also, the development funding is almost always tied to the milestone schedule. This can lead into serious cash-flow problems if you miss a deadline, which in turn means late salaries, and that's not a good way to hold on to employees. The publishers also know this, and if they see that a game project is constantly late, they would rather cut their losses than to witness the developer's slow death. On the other hand, if they really want to save the project, they may

////////// The publisher will also insist on a low royalty rate, but even a start-up developer should make an effort to fight for a better rate, as this is the only way to ensure some kind of back-end royalty profit if the game is a success.

of. Whenever a publisher funds the development of a game, this is treated as an advance against future royalties. What this means is that once the game goes on sale and starts to generate revenue, the publisher will recoup the money they put into the development of the game from the developer's royalty portion. The formula for this is usually so unforgiving that the developer will never see any actual royalty profits from their game. This is the sad reality for most start-up (and even experienced) developers. However, there are situations where publishers have changed the recoup terms so that the developer would have a better chance to get royalty profits. This can happen if the publisher is especially keen on building a long-term relationship with the developer, or if there are other publishers fighting for the same game. One way for a better recoup method is for the publisher to let the development advance be recouped at a much higher royalty rate (e.g. 50%). Once all the development advances have been recouped, the actual royalty rate will kick in and the developer will start getting their share from each copy sold.

send someone to your office to take charge of the project. This can have its good and bad points.

THE SWEET SPOT

» To start-up developers, all this may sound a bit overwhelming. However, it's all worth it—and it gets easier and better over time. One should think of it as climbing a staircase, one step at a time. Even if your first game and publishing deal is less than optimal, it's still a doorway to the next level for your studio, and even better games and deals. But you should always try for the best deal you can get.

In the end, it's all about creating great games and getting them in front of players; nothing beats the feeling of finally shipping a title that you have worked long and hard on. If the players enjoy your game and think it's worth the money they spent on it, good things are bound to happen; and who knows, publishers might start contacting you for a change. 🎮

SAMULI SYVÄHUOKO is the founder of Recoil games, and former CEO of Remedy Entertainment.

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ENTERING INDIE COMPETITIONS CAN HELP YOU MAKE A NAME FOR YOURSELF

Indie game competitions can be a critical resource for student developers. Events such as the IGF or showcases like the PAX 10 can help rookie developers make a name for themselves and raise awareness about their games. These events also help incentivize efficient development and timely release windows by forcing teams to meet deadlines and produce finished games. Below you will find a handful of indie game competitions open to students in 2011 and 2012.

IGF STUDENT SHOWCASE COMPETITION

WEB SITE: www.igf.com

SUBMISSION DATES: Annual, 2012 dates to be announced

ENTRY REQUIREMENTS: Open to all student developers worldwide, entrants must be at least 13 years old.

ENTRY FEE: None

ORGANIZERS, SPONSORS: UBM TechWeb

/// As part of GDC's Independent Games Festival, the IGF Student Showcase encourages students to submit their games or mods to be judged by a panel of roughly 60 leading independent and professional developers. The winning titles will join the other games featured at the IGF Pavilion on the GDC show floor, and each team will receive \$500 to help fund a trip to the show. At the Independent Games Festival Choice Awards, one of these finalists will win \$2,500, the prize for Best Student Game. IGF Student Showcase finalists from 2011 include OCTODAD, TINY AND BIG, and FRACAT.

INDIE GAME CHALLENGE

WEB SITE: www.indiegamechallenge.com

SUBMISSION DATES: Annual, 2012 dates to be announced

ENTRY REQUIREMENTS: Open to individuals or teams worldwide [except to those located in U.S.-embargoed countries]

ENTRY FEE: \$100 (fee is waived for residents of certain states in the U.S.)

ORGANIZERS, SPONSORS: The Academy of Interactive Arts and Sciences, Gamestop, Inc., The Guildhall at Southern Methodist University

/// This game development competition, hosted alongside the Interactive Achievement Awards at D.I.C.E., allows student developers to compete for up to \$100,000 in prizes. Finalists in the competition receive \$500 to help pay for travel to the awards ceremony, where the challenge's grand prize winner will be announced. These finalists also receive the opportunity to talk to a number of game companies about potential publishing deals.

DREAM-BUILD-PLAY CHALLENGE

WEB SITE: www.dreambuildplay.com

SUBMISSION DATES: Submission currently closed, 2012 dates to be announced

ENTRY REQUIREMENTS: Open to individuals who are at least 18 years old and who are legal residents in their country of entry

ENTRY FEE: None

ORGANIZERS, SPONSORS: Microsoft

/// The Microsoft-hosted Dream.Build.Play Challenge tasks entrants with creating a high-quality title using the XNA Game Studio 4.0. Winners of the competition will split a prize pool of \$75,000, and will secure a publishing contract and exposure for their game on the Xbox Live Marketplace.

INDIECADE

WEB SITE: www.indiecade.com

SUBMISSION DATES: 2012 dates to be announced

ENTRY REQUIREMENTS: Submitted games must not have funding from a major publisher.

ENTRY FEE: Processing fees range from \$35 to \$70 and are based on time of entry

ORGANIZERS, SPONSORS: Gnarwhal Studios, Slashware Interactive

/// IndieCade offers developers a chance to gain exposure for their games by granting winners a spot in the IndieCade Festival showcase in Culver City, CA. The games shown at IndieCade are selected by a panel of over 160 jurors, and the show welcomes indie titles of all types, from virtual toys to Alternate Reality Games (ARGs). Entrants may submit works in progress, but all games should include at least one finished, playable level.

SENSE OF WONDER NIGHT

WEB SITE: <http://expo.nikkeibp.co.jp/tgs/2011/en/exhibition/sown/index.html>

SUBMISSION DATES: 2012 Dates to be announced

ENTRY REQUIREMENTS: The game must invoke a sense of wonder!

ENTRY FEE: None

ORGANIZERS, SPONSORS: Computer Entertainment Supplier's Association (CESA), Nikkei Business Publications, Inc., IGDA Japan

/// The Tokyo Game Show's Sense of Wonder Night provides developers with an opportunity to present new and experimental game ideas to an audience of professionals. Winning applicants get 10 minutes to present their idea or prototype to an audience at the show, and can exhibit their project at the SOWN Pavilion on the TGS show floor. In 2010, the event introduced a category for smartphone titles.

PAX 10

WEB SITE: <http://prime.paxsite.com/pax10.php>

SUBMISSION DATES: 2012 dates to be announced

ENTRY REQUIREMENTS: Open to all independent developers without a traditional publisher-developer relationship in place

ENTRY FEE: \$50

ORGANIZERS, SPONSORS: Penny Arcade

/// The PAX 10 showcase at both the Seattle and Boston shows allows indie developers to demo their titles on the PAX show floor. These developers receive exposure for their work and get the chance to interact with the show's attendees.

JAVA4K

WEB SITE: www.java4k.com

SUBMISSION DATES: Submission currently closed, 2012 dates to be announced

ENTRY REQUIREMENTS: Open to all applicants

ENTRY FEE: None

ORGANIZERS, SPONSORS: Java gaming

/// The Java4K competition does not offer prizes or contracting deals for a winning title, but encourages developers to practice efficient programming and game design. Developers must create a game using Java, with one simple caveat: their game cannot exceed 4KB. Community voters and a panel of four judges help review the entries and assign each with a score ranging from 0–100 percent.

INDEPENDENT PROPELLER AWARDS

WEB SITE: www.indiepubgames.com/contest.php?contestId=2

SUBMISSION DATES: 2012 dates to be announced

ENTRY REQUIREMENTS: Open to all applicants more than 13 years old

ENTRY FEE: None

ORGANIZERS, SPONSORS: indiePub, Zoo Games, South By Southwest (SXSW)

/// The Independent Propeller Awards, presented by the indiePub community, offers indie developers the chance to win a \$50,000 grand prize, with \$25,000 going to the winners of four subcategories including best art, audio, design, and technical excellence. The awards are held annually at South by Southwest Interactive's ScreenBurn, the conference's video game-based track. 

Game School Directory

THERE WAS A TIME WHEN GOING TO SCHOOL FOR GAME-RELATED DEGREES CAUSED PEOPLE TO RAISE THEIR EYEBROWS. NOW, MANY SCHOOLS HAVE respect not only from the game industry, but from the academic community as well. This is partly due to large traditional universities adding excellent game programs and research labs, but also because game development-specific schools have taken an upturn in quality, pumping out students who are ready for the spotlight.

There are tons of options out there in terms of viable game schools, and in this list we've collected a sampling of those from our larger listing at www.GameCareerGuide.com. Our web site has more schools to browse, and more information about the schools listed here, so be sure to visit when you get a chance. No list could possibly tell you all you need to know, so do some independent research, find out what schools are near you (or far from you, if that's what you prefer!) and get out there and make the best games you can!

NAME	LOCATION	PROGRAMS INCLUDE
3D TRAINING ACADEMY	Bellevue, WA	3D Game Art & Design, 3D Animated Short Film, and Motion Capture
ACADEMY OF ART UNIVERSITY	San Francisco, CA	3D Modeling, Background Painting, Character Animation, Game Design, Storyboard, VFX/Compositing, Visual Development, 2D/3D Modeling, Visual Effects, Computer Graphics, Game Environments, Maya, 3D Animation, Character/Tech, Web Design
A.I.E THE ACADEMY OF INTERACTIVE ENTERTAINMENT	Seattle, WA	Advanced Diploma in Professional Game Design: Art Major, Software Development. Screen and Media, Digital Post Production FX
ALGOMA UNIVERSITY	Ontario, Canada	Computer Games Technology
ALGONQUIN COLLEGE	Ottawa, Canada	Game Development
AMERICAN SENTINEL UNIVERSITY	Aurora, CO	Computer Science, Game Programming, Software Engineering
ANGELO STATE UNIVERSITY	San Angelo, TX	Computer Science
ANNE ARUNDEL COMMUNITY COLLEGE	Arnold, Maryland	Interactive Technologies, Game Interface Design, Game Art and Design
ANIMATION MENTOR	Emeryville, CA	Advanced Studies in Character Animation
ART INSTITUTE OF CALIFORNIA - LOS ANGELES	Santa Monica, CA	Game Art & Design

abbreviations

R	State residents
AA	Associate of Arts
AAS	Associate of Applied Science
BA	Bachelor of Arts
BCS	Bachelor of Computer Science
BFA	Bachelor of Fine Arts
BGA	Bachelor of Game Art
BSc	Bachelor of Science
MA	Master of Arts
MFA	Master of Fine Arts
MSc	Master of Science
PhD	Doctor of Philosophy

DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
—	—	—	—	12:1	206.395.2094 or 877.540.3DTA [3382]	www.3DTrainingAcademy.com
MA/MFA, Associates, Online Programs, BFA	\$740 a unit	Yes	Yes	—	800.544.2787 or 415.274.2200	www.academyart.edu
Certificate/Diploma	\$300 a unit	Yes	Yes	25:1	206.428.6350	www.TheAIE.US
MA	\$28,000 per full program	Yes	Yes	1:1	1.888.ALGOMAU	http://mastersingaming.com/algoma
—	—	—	—	—	613.727.4723 [5182]	www2.algonquincollege.com/mediaanddesign/program/game-development
BSc	\$960 per course	Yes	Yes	15:1	866.922.5690	www.americansentinel.edu
Certificate/Diploma and BSc	In state: \$162 per unit Out of State: \$462 per unit	Yes	Yes	25:1	325.942.2101	www.angelo.edu
Associates	\$173 per unit	Yes	Yes	—	410.777.7029	www.aacc.edu
Certificate/Diploma	\$18,928 per program	—	—	9:1	1.877.326.4628 or 510.450.7200	www.animationmentor.com
BSc	\$21,856	Yes	Yes	19:1	888.646.4610 or 310.752.4700	www.artinstitutes.edu/losangeles

Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
ART INSTITUTE OF CALIFORNIA - ORANGE COUNTY	Santa Ana, CA	Game Art & Design, Media Arts & Animation, Visual & Game Programming
ART INSTITUTE OF CALIFORNIA - SAN DIEGO	San Diego, CA	Game Art & Design
ART INSTITUTE OF CALIFORNIA - SAN FRANCISCO	San Francisco, CA	Game & Art Design, Visual & Game Programming
ART INSTITUTE OF DALLAS	Dallas, TX	Media Arts & Animation
ART INSTITUTE SYSTEM OF SCHOOLS	Pittsburgh, PA	3D Modeling for Animation & Games, Animation Art & Design, Computer Animation, Game Art & Design, Game Programming, Media Arts & Animation, VFX for Film & Television, Visual & Game Programming, Visual Effects & Motion Graphics
AUDIO INSTITUTE OF AMERICA	San Francisco, CA	Audio
AUSTIN COMMUNITY COLLEGE	Austin, TX	Visual Communication, Web and Interactive Design, 2D Animation, 3D Animation, 3D Modeling, Graphic Design, Graphic Arts, Interactive Media Technology, Motion Graphics
BAYLOR UNIVERSITY	Waco, TX	Game Development, Computer Science
BECKER COLLEGE	Worcester, MA	Game Design, Game Development and Programming, Game Design
BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY	Burnaby, Canada	Computer Systems Technology
CALIFORNIA INSTITUTE OF THE ARTS	Valencia, CA	Character Animation, Experimental Animation
CASE WESTERN RESERVE UNIVERSITY	Cleveland, Ohio	See web site
CENTRE FOR ARTS AND TECHNOLOGY - FREDERICTON CAMPUS	Fredericton, Canada	3D Game Artist, 3D Animation. Audio Engineering, Graphic and Digital Media Design
CENTRE FOR ARTS AND TECHNOLOGY - HALIFAX CAMPUS	Halifax, Canada	3D Animation, 3D Game Animation, Audio Engineering, Digital Filmmaking, Graphic and Digital Media Design, Event and Talent Management
CENTRE FOR ARTS AND TECHNOLOGY - KELOWNA CAMPUS	Kelowna, Canada	3D Game Animation, 3D Animation, Audio Engineering, Graphic and Digital Media Design

DEGREES INCLUDE		TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
BSc		\$483 per Unit	Yes	Yes	20:1	714.830.0200 or 888.549.3055	www.artinstitutes.edu/orangecounty
BSc, Associates		\$19,862 per year	Yes	Yes	20:1	858.598.1399 or 800.591.2422	www.artinstitutes.edu/sandiego
BA/BGA, BFA		\$26,432 per year	Yes	Yes	16:1	415.865.0198 or 888.493.3261	www.aicasf.aii.edu
BFA		\$403 a unit	Yes	Yes	18:1	214.692.8080 or 800.275.4243	www.aid.edu
Certificate/Diploma, Associates, BSc, BA/BGA		—	Yes	Yes	—	1.888.233.6898	www.artinstitutes.edu/game/
Certificate		—	—	—	—	415.752.0701	www.audioinstitute.com
Certificate/Diploma		\$900 per semester	Yes	Yes	12:1	512.233.4802	www.viscom.austincc.edu
BSc		Varies	Yes	Yes	16:1	254.710.3876	www.gaming.baylor.edu
BA/BGA, BFA		\$12,000 per semester	Yes	Yes	12:1	508.373.9731 or 508.373.9733	www.becker.edu/gamedev
Bachelors of Technology		\$12,060 Canadian Dollars (CAD) per Full Program	Yes	Yes	12:1	604.432.8644 or 604.453.4021	cstbtech@bcit.ca
MA/MFA, BFA		\$29,300 per year	Yes	Yes	7:1	661.255.1050	www.calarts.edu
—		—	—	—	—	216.368.2000	http://engineering.case.edu/eecs/ node/246
Certificate		—	Yes	Yes	15:1	506.460.1280	inquire@digitalartschool.com
Certificate		—	Yes	Yes	—	902.429.1847 or 1.866.429.1847	inquire@digitalartschool.com
Certificate		—	Yes	Yes	12:1	250.860.ARTS [2787]	inquire@digitalartschool.com

Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
CENTRE FOR DIGITAL MEDIA - MASTERS OF DIGITAL MEDIA PROGRAM	Vancouver, Canada	Masters of Digital Media Program
CENTRE NAD - NATIONAL ANIMATION AND DESIGN CENTRE	Montreal, Canada	3D Animation and Digital Design
CHAMPLAIN COLLEGE	Burlington, VT	Electronic Game Programming, Electronic Game & Interactive Development, Specialization in Game Design or Art & Animation
COGSWELL POLYTECHNICAL COLLEGE	Sunnyvale, CA	Digital Art & Animation, Digital Audio Technology, Digital Arts Engineering, Software Engineering, Computer Engineering
COLLEGE FOR CREATIVE STUDIES	Detroit, MI	Entertainment Arts, Illustration, Advertising Design
COLUMBIA COLLEGE CHICAGO	Chicago, IL	Digital Media Technology, Audio for Visual Media, Game Design, Interactive Arts & Media
CONSERVATORY OF RECORDING ARTS AND SCIENCES	Gilbert, AZ	Audio Recording, Sound Mixing, Digital Recording, Music Business



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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
—	\$10,000 Canadian Dollar (CAD) per Semester	Yes	Yes	4:1	778.370.1010 or 778.370.1001	gasmeen_awadh@gnwc.ca
BSc, BA	—	Yes	Yes	30:1	1.514.288.3447	info@nadcentre.com
BSc, BA/BGA	\$26,655 per year	Yes	Yes	15:1	802.860.2727 or 800.570.5858	www.champlain.edu
BSc, BA/BGA	\$9,462 per semester	Yes	Yes	12:1	800.264.7955	www.cogswell.edu
BFA	—	Yes	Yes	11:1	313.664.7425 or 800.952.ARTS	www.insideccs.com
BA/BGA, BFA	\$17,104 per year	Yes	Yes	20:1	312.663.1600 or 312.344.7131	www.iam.colum.edu www.game.colum.edu
—	\$18,440 per semester	Yes	Yes	12:1	480.858.9400	www.audiorecordingschool.com



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Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
C.W. POST CAMPUS OF LONG ISLAND UNIVERSITY	Brookeville, NY	Digital Game Design and Development
DARTT (DIGITAL ARTS TECHNOLOGY TRAINING INSTITUTE)	Nova Scotia, Canada	3D Animation, 3D Advanced Character Animation, Graphic Design, 3D Game Artist
DEPAUL UNIVERSITY	Chicago, IL	Game Development, Animation, Computer Graphics Programming, Interactive Media, Digital Cinema, Computer Science
DE SALES UNIVERSITY	Center Valley, PA	Computer science, Game Programming, Software Engineering
DEVRY - DALLAS	Irving, TX	See web site
DEVRY UNIVERSITY	Downers Grove, IL	Game & Simulation Programming
DIGIPEN INSTITUTE OF TECHNOLOGY	Redmond, WA	Real-Time Interactive Simulation, Computer Engineering, Computer Science, Production Animation, Game Design



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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
MA/MFA	\$982 per unit	Yes	Yes	13:1	516.299.2382 or 516.299.2900	www.liu.edu/cwpost/game
Certificate	—	Yes	Yes	1:1	1.866.567.3010	www.darttinstitute.com
MSc, BSc, MA/MFA, BA/BGA, PhD	\$27,055 per year	Yes	Yes	16:1	312.362.8381	http://GameDev.DePaul.edu
BSc	\$26,000 per year	Yes	Yes	17:1	610.282.1100	www.desales.edu
—	Varies	—	—	—	972.929.6777	http://www.devry.edu/locations/campuses/loc_irvingcampus.jsp
BSc	—	Yes	Yes	—	866.338.7934	www.devry.edu
BSc, MSc, BFA, BA/BGA	\$476 a unit	Yes	Yes	13:1	425.558.0299 or 866-478-5236	www.digipen.edu



Screen shot from 2011 Senior Capstone Project, *The Warden of Ro'al*

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Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
DIGITAL MEDIA ARTS COLLEGE	Boca Raton, FL	Computer Animation, Visual Effects Animation
EDINBORO UNIVERSITY OF PENNSYLVANIA	Edinboro, PA	Game and Virtual World Development, Computer Animation
EMILY CARR UNIVERSITY OF ART & DESIGN	Vancouver, Canada	Fine Arts, Applied Arts
EXPRESSION COLLEGE FOR DIGITAL ARTS	Emeryville, CA	Animation and Visual Effects, Game Art and Design, Motion Graphic Design, Sound Arts, Interactive Audio, Digital Filmmaking, Interaction Design
FINGERLAKES COMMUNITY COLLEGE	Canandaigua, NY	Game Programming and Design
FULL SAIL UNIVERSITY	Winter Park, FL	Game Development, Computer Animation, Game Art, Game Design
FUTUREPOLY	Bellevue, WA	3D Modeling for Games, Texturing for Games, Digital Painting, Concept Art, Character Modeling with ZBrush, Character Animation for Games
GEMINI SCHOOL OF VISUAL ARTS & COMMUNICATION	Cedar Park, TX	Diploma in Visual Arts & Communication
GEORGE MASON UNIVERSITY	Fairfax, VA	Computer Game Design
GUILDHALL AT SMU	Plano, TX	Art Creation, Level Design, Software Development, Production
HAGERSTOWN COMMUNITY COLLEGE	Hagerstown, MD	Simulation and Digital Entertainment
HERZING COLLEGE	Montreal, Canada	3D Animation
HOUSTON COMMUNITY COLLEGE	Houston, TX	See web site
INDIANA UNIVERSITY	Bloomington, IN	Game Design, Game Programming, Game Art, Game Audio, Game Business and Legal, Game Studies, Game Design, Game Telemetry
ITP AT NEW YORK UNIVERSITY	New York, NY	Interaction Design
LOS ANGELES FILM SCHOOL - GAME PRODUCTION	Hollywood, CA	Game Production

DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
BFA, MFA	–	Yes	Yes	–	866.255.DMAC(3622)	www.dmac.edu/computer-animation-gcg
BSc, BA/BGA	\$5,804 per year	Yes	Yes	19:1	814.732.2760 or 814.732.1171	www.edinboro.edu
BA/BGA, MA/MFA	\$3,500 per Year	Yes	Yes	18:1	604.844.3897 or 604.844.3800	admissions@ecuad.ca
BA	–	Yes	Yes	–	1.877.833.8800 or 1.510.654.2934	www.expression.edu
Associate's	–	Yes	Yes	–	585.785.1278	www.flcc.edu/academics/gameprogramming/index.cfm
BSc, MSc	–	Yes	Yes	–	407.679.0100 or 800.226.7625	www.fullsail.edu
Certificate/Diploma	\$3,200 per semester	–	–	18:1	206.331.1573	www.futurepoly.com
Certificate/Diploma	\$17,000 per year	–	–	24:2	512.249.1237	www.geminischool.com
BFA	\$3,756 per semester	Yes	Yes	5:1	703.993.9591	http://game.gmu.edu
Masters	\$65,100 for full program	Yes	Yes	12:1	214.768.9950	http://guildhall.smu.edu
Certificate/Diploma, Associate's and AAS	\$1,568 per semester	Yes	Yes	18:1	301.790.2800 x361	www.hagerstowncc.edu
Associate's, Attestation d'études collégial and Attestation of Collegial Studie	–	Yes	Yes	20:1	514.935.7494	www.herzing.edu/academics/game-development
–	–	–	–	–	713.718.5728	http://swc2.hccs.edu/digiGame
Certificate/Diploma, BSc, BA/BGA, MSc, PhD	\$4,062 per semester	Yes	Yes	15:1	812.855.3828	http://games.indiana.edu
–	\$22,000 per semester	Yes	Yes	5:1	212.998.1882 or 212.998.1880	http://itp.nyu.edu
Associates	\$37,900 for full program	Yes	Yes	–	323.860.0789 or 877.952.3456	www.lafilm.edu

Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
LIVING ARTS COLLEGE	Raleigh, NC	Interactive Media, Animation & Game Design, Digital Filmmaking, Digital Audio Production & Design, Digital Photography
MADISON MEDIA INSTITUTE COLLEGE OF MEDIA ARTS	Madison, WI	Game Art & Animation, Recording & Music Technology, video and Motion Graphics
MINNEAPOLIS MEDIA INSTITUTE	Edina, MN	Game Art & Animation
MOUNT IDA COLLEGE	Newton, MA	BS in Game Art and Animation
PARSONS THE NEW SCHOOL OF DESIGN: SCHOOL OF ART, MEDIA AND TECHNOLOGY	New York, NY	Design & Technology
NEW ENGLAND INSTITUTE OF TECHNOLOGY	Warwick, RI	Game Development and Simulation Programming Technology, Software Engineering Technology, Video and Audio Production Technology, Digital recording Arts, Graphics Multimedia and Web Design

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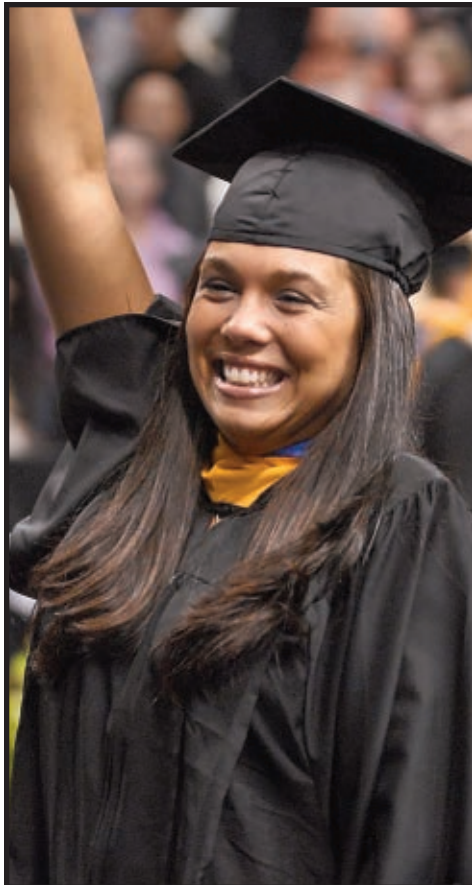
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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
Certificate/Diploma, BA/BGA	\$428 per unit	Yes	Yes	10:1	800.288.7442 or 919.488.5900	www.living-arts-college.edu
Associates	\$500 per unit	Yes	Yes	16:1	1.800.236.4997 or 1.608.663.2000	www.madisonmedia.edu
Associates	\$8,700 per semester	Yes	Yes	16:1	1.866.418.3233	www.minneapolismediainstitute.com
BSc	—	Yes	Yes	—	617.928.4609	www.mountida.edu
MA/MFA and BFA	\$ 31,000 per year	Yes	Yes	15:1	800.252.0852 or 212.229.8908	http://cdt.parsons.edu
Associates	\$17,925 per year	Yes	Yes	15:1	401.739.5000 or 800.736.7744	www.neit.edu



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Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
NORTHEASTERN UNIVERSITY - CREATIVE INDUSTRIES (GAME DESIGN & INTERACTIVE MEDIA)	Boston, MA	Game Design and Digital Art, Graphic Design, and Computer Science, Interactive Media and Graphic Design, Digital Art, Musical Technologies, and Computer Science, Creative Industries
PACIFIC AUDIO VISUAL INSTITUTE	Vancouver, Canada	Game Design & 3D Animation
PLANET DIGITAL EDUCATION	Orlando, FL	See web site
PLATT (MEDIA ARTS) COLLEGE	San Diego, CA	Graphic Design, Media Arts, 3D Animation, Graphic Design, Video Production, Web Design, Multimedia/Animation
PIEDMONT COMMUNITY COLLEGE	Roxboro/Yanceyville, NC	Digital Effects and Animation Technology
POWERUP GAMES	Jacksonville, FL	Game Testing Certification
RASMUSSEN COLLEGE	Multiple locations in US	Game & Simulation Programming, Information Systems Management, Multimedia Technologies, Microsoft and Cisco, Digital Design and Animation



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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
BFA, BS	—	Yes	Yes	12:1	617.373.2000 or 617.373.7645	www.ci.neu.edu
Certificate	—	Yes	—	—	1.800.601.PAVI	www.pacificav.com
—	—	—	—	—	407.896.7326	www.planetdigital.com
Associates, Certificate, BSc	\$16,300 per year	Yes	Yes	12:1	866.752.8826 or 619.265.0107	www.platt.edu
Associates	—	Yes	Yes	12:1	336.694.5707 or 336.599.1181	www.piedmontcc.edu
Certificate, Diploma	\$129 per course	—	—	10:1	310.594.3464	www.powerupgames.com
BSc, Associates, Certificate	—	Yes	Yes	—	888.549.6755	www.rasmussen.edu/degrees/ technology-design/game-design

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NAME	LOCATION	PROGRAMS INCLUDE
RENSSELAER POLYTECHNIC INSTITUTE	Troy, NY	Game and Simulation Arts & Sciences
RINGLING COLLEGE OF ART AND DESIGN	Sarasota, Florida	Motion Design, Business of Art and Design, Game Art and Design, Interior Design, Painting
ROCHESTER INSTITUTE OF TECHNOLOGY	Rochester, NY	Game Design & Development, Information Technology, Computer Science, Film and Animation, Computer Graphic Design, New Media Interactive Development, New Media Design and Imaging, Software Engineering, 3D digital graphics
SAN FRANCISCO SCHOOL OF DIGITAL FILMMAKING	San Francisco, CA	See web site
SAVANNAH COLLEGE OF ART AND DESIGN	Savannah, GA	Animation, Interactive Game Design & Motion Graphics, Sound Design, Visual Effects
SCHOOL OF VISUAL ARTS	New York, NY	Broadcast Design, Compositing, Visual Effects, 3D Animation
SOUTHERN NEW HAMPSHIRE UNIVERSITY	Manchester, NH	Game Design and Development
SOUTHERN POLYTECHNIC STATE UNIVERSITY	Marietta, GA	Computer Game Design and Development, Computer Science, Information Technology, Software Engineering
TALLAHASSEE COMMUNITY COLLEGE	Tallahassee, FL	Computer Game Design
TEXAS STATE TECHNICAL COLLEGE	Waco, Texas	Game Programming and Design, Game and Simulation
THE BANFF NEW MEDIA INSTITUTE	Banff, Alberta	Computer Technician Work, Video Production, Creative Electronics
THE PIXELYARD SCHOOL OF ART	San Diego, CA	Game Art
TRIBECA FLASHPOINT MEDIA ARTS ACADEMY	Chicago, IL	Game & Interactive Media, Animation & Visual Effects, Recording Arts
TRIOS COLLEGE	Toronto, Canada	Video Game Design and Development
UNIVERSITY OF ADVANCING TECHNOLOGY	Tempe, AZ	Game Design, Game Programming, Software Engineering, Game Art and Animation, Game Production
UNIVERSITY OF CALIFORNIA SAN DIEGO - EXTENSION DIGITAL ARTS CENTER	San Diego, CA	Casual Gaming, Graphic Design

DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
BSc	—	Yes	Yes	—	—	www.gsas.rpi.edu
BFA, BA/BGA	\$13,810 per semester	Yes	Yes	13:1	941.351.5100 or 800.255.7695	www.ringling.edu
MSc, BSc, MA/MFa	\$31,584 per year	Yes	Yes	13:1	585.475.6631	www.rit.edu
—	—	—	—	—	877.292.4200	http://sfdigifilm.com
MA/MFA, BFA, Certificate	\$22,950 per year	Yes	Yes	16:1	800.869.7223 or 912.525.5100	www.scad.edu
BFA, MFA	\$14,775 per semester	Yes	Yes	9:1	800.436.4204 or 212.592.2100	www.sva.edu
BA/BGA, BSc, BA/BS	\$26,904 per year	Yes	Yes	15:1	800.642.4968 or 603.645.9611	www.snhu.edu
BSc, MSc, Certificate	\$4,279 per semester	Yes	Yes	20:1	678.915.4982 or 678.915.3571	http://games.spsu.edu
Associates	\$85.85 per course	Yes	Yes	30:1	850.201.8352	www.tcc.fl.edu/about_tcc/academic_affairs/division_of_technology_and_professional_programs/ar
Associates	—	Yes	Yes	15:1	1.800.792.8782 ext. 2360 or 254.867.2360	www.waco.tstc.edu/dmd/dmd_aas/index.php
Certificate/Diploma	Varies	—	—	—	1.403.762.66552	www.banffcentre.ca
Certificate	—	—	Yes	4:1	858.427.1616 or 866.741.8349	www.thepixelyard.com
Associates	\$25,000 per year	—	Yes	15:1	312.332.0707 or 312.332.0707	www.tribecafashpoint.com
Certificate	—	Yes	Yes	20:1	1.888.282.3893	info@trios.com
BA/BGA, Associates, MSc, MA/MFA	\$8,400 per year	Yes	Yes	14:1	602.383.8228 or 877.UAT.GEEK	www.uat.edu
Certificate	\$11,500 per program	Yes	Yes	20:1	858.534.6705 or 858.534.6731	http://dac.ucsd.edu

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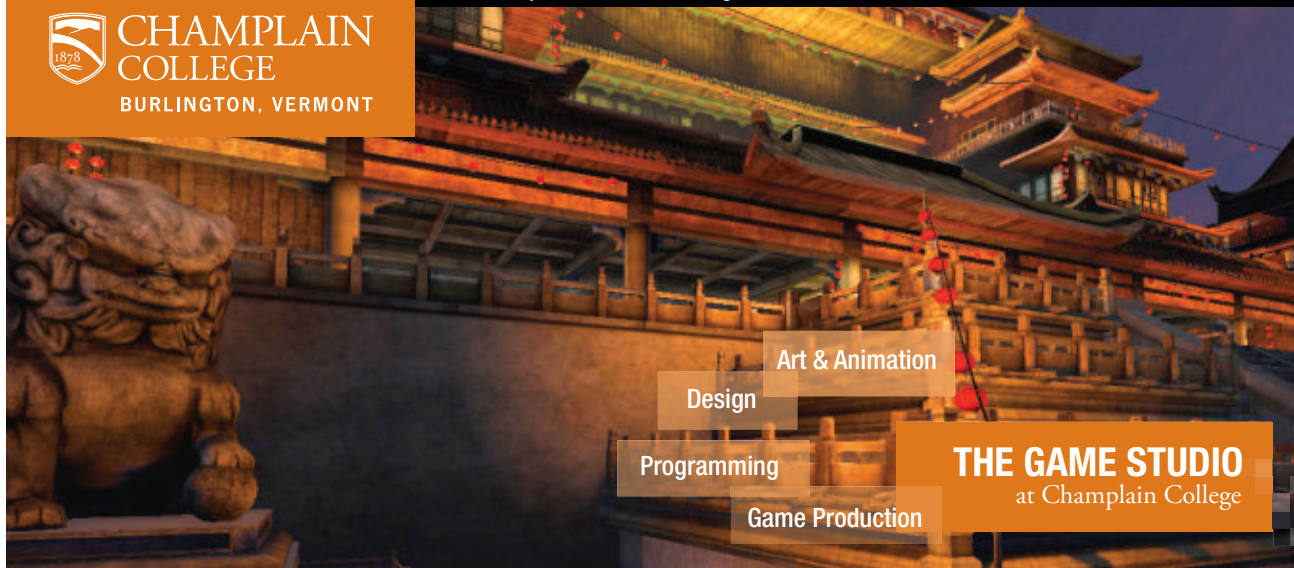
Game School Directory

NAME	LOCATION	PROGRAMS INCLUDE
UNIVERSITY OF CALIFORNIA SANTA CRUZ - CENTER FOR GAMES & PLAYABLE MEDIA	Santa Cruz, CA	Computer Game Design, Digital Arts & New Media, Computer Game Design Ph.D
UNIVERSITY OF CENTRAL FLORIDA (FIEA)	Orlando, FL	Programming Track, Art Track, Production Track
UNIVERSITY OF PENNSYLVANIA	Philadelphia, PA	Computer Graphics & Game Technology, Digital Media and Design, Human Modeling and Simulation
UNIVERSITY OF SOUTHERN CALIFORNIA - INTERACTIVE MEDIA DIVISION	Los Angeles, CA	Interactive Entertainment, Interactive Media
UNIVERSITY OF UTAH: ENTERTAINMENT ARTS AND ENGINEERING MASTER GAMES STUDIO	Salt Lake City, UT	Entertainment Arts and Engineering
UNIVERSITY OF WASHINGTON - BOTHELL	Bothell, WA	See web site
UNIVERSITY OF WASHINGTON - PROFESSIONAL AND CONTINUING EDUCATION	Seattle, WA	Game Development, 3d Animation for Games and Digital Media, Virtual Worlds
UNIVERSITY OF WATERLOO	Waterloo, Canada	Computer Science and Computer Engineering



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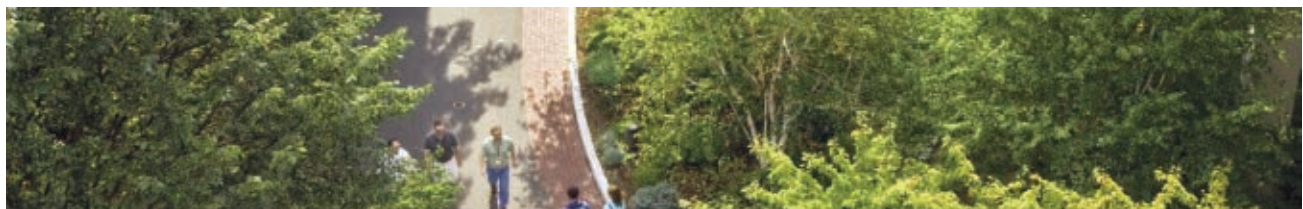
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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
BSc, MA/MFA, Ph.D	\$11,415 per year	Yes	Yes	17:1	831.459.5840	http://games.soe.ucsc.edu
MSc	\$33,000 for full program	Yes	Yes	8:1	407.823.2121	www.fiea.ucf.edu
MSc, BSc, PhD	\$15,000 per semester	Yes	Yes	10:1	215.898.8560	www.cis.upenn.edu/grad/cggt
BA/BGA, MA/MFA, PhD	\$30,000 per year	Yes	Yes	5:1	213.821.4472	http://cinema.usc.edu
BA/BGA	—	Yes	Yes	15:1	801.581.5127	http://mgs.eae.utah.edu
—	—	—	—	—	425.352.5000	www.bothell.washington.edu
Certificate	\$800 per course	Yes	—	25:1	206.685.8936 or 888.469.6499	www.pce.uw.edu
BSc, PhD	\$14,982 per Year	Yes	Yes	19:1	519.888.4567	cs-chair@cs.waterloo.ca



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NAME	LOCATION	PROGRAMS INCLUDE
UNIVERSITY OF WESTERN ONTARIO	London, Canada	Computer Science with Minor in Game Development
VANCOUVER COLLEGE OF ART & DESIGN	Vancouver, Canada	3D Modeling Animation Art & Design
VANCOUVER FILM SCHOOL	Vancouver, Canada	Game Design, 3D Animation, Classical Animation, Digital Character Animation, Sound Design, Game Design
VANCOUVER INSTITUTE OF MEDIA ARTS (VANARTS)	Vancouver, Canada	Game Art & Design, 2D/3D Character Animation, Visual Effects
WAKE TECHNICAL COMMUNITY COLLEGE	Raleigh, NC	Simulation & Game Development
WESTWOOD COLLEGE	17 locations in the US	Game Art, Game Software Development
WORCESTER POLYTECHNIC INSTITUTE	Worcester, MA	Interactive Game Media



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DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
PhD, MSc and BSc	\$6,178 Canadian Dollars [CAD] per year	Yes	Yes	7:1	1.519.661.4059 or 1.519.661.3539	katchab@csd.uwo.ca
—	—	Yes	Yes	—	—	
Certificate	—	Yes	Yes	16:1	604.685.5808 or 800.661.4104	inquiries@vfs.com
Certificate	\$29,750 Canadian Dollars [CAD] per year	Yes	Yes	10:1	604.682.2787 or 800.396.2787	info@vanarts.com
Certificate	\$56.50 per unit	Yes	Yes	—	919.866.5390	http://cet.waketech.edu/sgd/sgd.htm
BSc	—	Yes	Yes	—	866.246.8831	http://www.westwood.edu
BSc, MSc	\$36,890 per year	Yes	Yes	14:1	508.831.4977 or 508.831.5000	http://imgd.wpi.edu

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DAVID BOWRING, GAME DESIGN GRADUATE
GAMEPLAY DESIGNER, SAINTS ROW 2

Game School Directory

International Schools

NAME	LOCATION	PROGRAMS INCLUDE
3DMX DIGITAL DESIGN UNIVERSITY	Zapopan, Mexico	Video game Development
ACADEMY OF INTERACTIVE ENTERTAINMENT	Watson, Australia	3D Animation for Games and Film, Screen, Computer Game Development
ASIAN INSTITUTE OF GAMING AND ANIMATION	Bangalore, Indonesia	Game Art, Game Programming
BACKSTAGE PASS, SCHOOL OF GAMING	Andhra Pradesh, India	See web site
BRUNEL UNIVERSITY - SCHOOL OF ARTS	Uxbridge, England	MA Digital Games: Theory & Design
CENTRO DE ENTRENAMIENTO ALCANCE DIGITAL	Guanajuato, Mexico	Digital Cinematography, 3D Animation, 3D Animation, Video Game Production, Digital Music Composing, VFX, Digital Design
CREAJEUX	Nimes, France	Concept 3D, Programming
DADIU	Copenhagen, Denmark	See web site
DIGIPEN INSTITUTE OF TECHNOLOGY SINGAPORE	Singapore	Real-Time Simulation, Game Design, Production Animation, Game Design
DIGIPEN INSTITUTE OF TECHNOLOGY EUROPE-BILBAO	Bilbao, Spain	Real-Time Interactive Simulation, Digital Arts and Animation
ENJMIN (NATIONAL SCHOOL OF VIDEO GAME AND INTERACTIVE MEDIA)	Angoulême, France	See web site
FACULTY OF INFORMATICS - COMPLUTENSE UNIVERSITY OF MADRID	Madrid, Spain	See web site
FH-SBG MULTIMEDIAARTS	Salzburg, Austria	Game Development
GLASGOW CALEDONIAN UNIVERSITY	Glasgow, Scotland	Computer Games (Software Development, or Design)
HOCHSCHULE DARMSTADT UNIVERSITY OF APPLIED SCIENCES	Darmstadt, Germany	Digital Media, Media Direction, Media
HOWEST - UNIVERSITY COLLEGE WEST-FLANDERS	Kortrijk, Belgium	Digital Arts & Entertainment

DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
Certificate	37,190 Mexican Pesos (MXN) per Semester	—	—	—	+52 (33) 3122.7458 or +52 (33) 1057.9688	informes@3d.com.mx
Certificate	—	—	—	—	+61.2.6162.5131	Sydney@aie.edu.au, Melbourne@aie.edu.au, Canberra@aie.edu.au
Certificate	\$6,000 US Dollars (USD) per Course	—	Yes	8:1	+91.80.40480900	info@aiga.in
—	Varies	Yes	—	6:1	+91.8008002794	www.backstagepass.in
MA/MFA, BA	—	—	—	—	011.44.0.1895.267214	admissions@bunel.ac.uk
Certificate	—	Yes	Yes	—	(477) 7718738/7718745 or (477) 218 7077	www.alcancedigital.com
—	—	—	—	—	04.66.35.56.20	www.creajeux.fr
—	—	—	—	—	—	http://english.dadiu.dk
BSc, BA/BGA	\$51,000 per Full Program	—	Yes	10:1	+65 .6577.1900	singapore@digipen.edu
BSc, BFA	13,500 Euros (EUR) per Year	—	—	—	.94.4706400 or .94.4706500	admissions.es@digipen.es
—	—	—	—	—	—	—
MSc	\$8,200 per year	—	—	—	+34.91.394.7626	mastervj@fdi.ucm.es
Certificate	—	—	—	—	+43.662.4665 .500	www.fh-salzburg.ac.at/en
BSc	—	—	—	—	+44.0.141.331 .3277	secenquiries@gcu.ac.uk
BA/BGA, MA/MFA, PhD	—	Yes	—	—	+49.6151.16 .9460	www.h-da.de
BSc	—	Yes	—	—	+32.56.24.12.11	info@digitalartsandentertainment.be

Game School Directory

International Schools

NAME	LOCATION	PROGRAMS INCLUDE
ISART DIGITAL	Paris, France	Game Design, Game Art, Gameplay Programming, Web and Mobile Game, CG Animation, 3D VFX
MD.H MEDIADESIGN-HOCHSCHULE	Berlin, Germany	Game Design
NHTV BREDA UNIVERSITY OF APPLIED SCIENCE	Breda, Netherlands	International Game Architecture and Design
NORTHERN REGIONAL COLLEGE - BALLYMONEY CAMPUS	Ballymoney, Ireland	Level 3 BTEC Extended Diploma in Creative Media Production
NORWEGIAN SCHOOL OF INFORMATION TECHNOLOGY	Oslo, Norway	Creative Game design, Game Programming
PLAYGROUNDSQUAD	Falun, Sweden	Programming, 3D Graphics, Game Design



DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/ FACULTY RATIO	PHONE	URL
MA/MFA	6,200 Euros (EUR) per Year	Yes	—	—	+33.148.075.848	informations@isartdigital.com
BSc, MA/MFA	\$6,900 per semester	Yes	Yes	15:1	+49.30.399.266 .19 or +49.30.399 .266.0	http://mediadesign.de
BA/BGA	—	Yes	—	15:1	+31..76.533.2770 or +31.76.533 .2499	secretariaat.mem@nhtv.nl
—	—	—	—	1:1	028.2766.0401 or 028.7035.4717	info@nrc.ac.uk
BSc	\$5,000 per semester	Yes	Yes	15:1	+47.22.059.999	oslo@nith.no
Certificate	—	Yes	Yes	35:3	+46.23.29855	www.playgroundsquad.com



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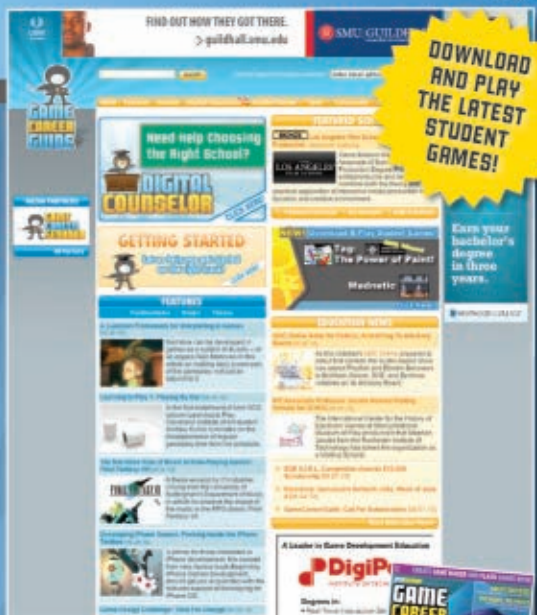




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QUEENSLAND UNIVERSITY OF TECHNOLOGY - BRISBANE CITY	Brisbane, Australia	Bachelor of Games and Interactive Entertainment
SAE INSTITUTE SOUTH AFRICA	Cape Town, South Africa	Digital Film Animation, Multimedia and Web Development, Audio Engineering
THE GAME ASSEMBLY	Malmö, Sweden	Game Programmer
UNIVERSIDAD IBEROAMERICANA LEON	Guanajuato, Mexico	Digital Design
UNIVERSIDADE ANHEMBI MORUMBI	São Paulo, Brazil	Game Design
UNIVERSITY OF GÄVLE	Gävle, Sweden	Creative Computer Graphics
UNIVERSITY OF GLAMORGAN	Pontypridd, Wales	Computer Animation
UNIVERSITY OF HULL - DEPARTMENT OF COMPUTER SCIENCE	Hull, England	Games Programming
UNIVERSITY OF OTAGO	Dunedin, New Zealand	Computer Game Design, Computer Graphics, Artificial Intelligence, Software Engineering
UNIVERSITY OF PORTSMOUTH - SCHOOL OF CREATIVE TECHNOLOGIES	Portsmouth, England	Computer Games Technology
UNIVERSITY OF SKÖVDE	Skövde, Sweden	Design and Graphic, Design and Programming, Game Motor Programming
UNIVERSITY OF TEESSIDE	Middlesbrough, England	Computer Games Design, Interactive Computer Entertainment, Visualisation, Computer Animation, Computer Games Art, Virtual Reality
UNIVERSITY OF WESTERN AUSTRALIA - SCHOOL OF COMPUTER SCIENCE & SOFTWARE ENGINEERING	Perth, Western Australia	Entertainment Technologies
UNIVERSITY OF WEST SCOTLAND	Paisley, Scotland	Computer Games Technology, Computing Science, Multimedia, Software Engineering and Computer Animation and Digital Art
UNIVERSITY OF WOLVERHAMPTON	Wolverhampton, England	Computer Science in Games Development
ZURICH UNIVERSITY OF THE ARTS	Zurich, Switzerland	Game Design, Interaction Design

DEGREES INCLUDE	TUITION	ACCREDITED	FINANCIAL AID	STUDENT/FACULTY RATIO	PHONE	URL
MA/MFA, Certificate/Diploma and BA/BGA	—	—	—	—	+61.7.3138.2782	www.scitech.qut.edu.au/study/careers/int_entertainment.jsp
Certificate	—	—	—	—	+27.21.469.3600	www.sae.edu
Certificate	—	Yes	Yes	16:1	—	info@thegameassembly.com
Certificate	—	—	—	—	+477.7100600 or +477.7100652	alfonso.orozco@leon.uia.mx
BSc, BA/BGA	8,327 Brazilian Reais (BRL) per Semester	Yes	Yes	35:1	+55.11.50955605 or +55.11.50955636	gamedesign@anhembibr
BSc	—	Yes	Yes	—	+46.26.648.635	tjo@hig.se
BA/BGA and BA	—	—	—	—	+44.1443.654450	ian.d.wilson@btinternet.com
MSc and BSc	—	Yes	—	20:1	+44.1482.465951	admissions@dcshull.ac.uk
BSc	—	—	—	—	+64.3.4795740	simon@cs.otago.ac.nz
MSc, BSc	—	—	—	20:1	+44 2392 845459	mark.eyles@port.ac.uk
MA/MFA, BSc, BA/BGA, HND	—	—	—	—	+46.500.44.8000	vxl@his.se
MA/MFA, BSc, BA/BGA, HND	—	—	—	—	+44.1642.342630	s.stobart@tees.ac.uk
BSc	—	Yes	Yes	—	+61.8.6488.2281	Nick.Spadaccini@uwa.edu.au
BSc, PhD, BA/BGA	—	Yes	—	—	+44.141.848.3541	info@uws.ac.uk
BSc	—	Yes	Yes	—	01902.321402	www.wlv.ac.uk/scit
BA/BGA	\$820 per semester	Yes	Yes	15:1	+41.43.446.32.54	verena.romanens@zhdk.ch

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AM I {INDIE} ?

JOHN GRAHAM

HOW DO YOU KNOW WHETHER YOU SHOULD BECOME AN INDEPENDENT GAME DEVELOPER?

One of the most frequently asked questions we've received at our humble independent studio, Wolfire Games, is whether a given person should develop games independently. I've wrestled with the topic briefly in my individual email responses, but I've never had a chance to sit down and really distill my thoughts in one place. Any way you slice it, this is a difficult question that each individual must answer for themselves. But for those who want some insight, after a couple of years of living the indie lifestyle, I have compiled my main thoughts for those considering embarking on the risky but romantic path of independent game development.

THINKING OF FUN GAME IDEAS

/// If you're going to make your own game, you need to have an initial fun idea, of course, but you shouldn't stress too much about perfecting your idea in advance by writing out pages and pages of design documents. Everyone can think of fun ideas, but when you go indie, your real problem will be implementing them. As Thomas Edison said, "Genius is 1% inspiration and 99% perspiration." This is especially true for games, because you often can't objectively determine how fun something is until you build it. Game development is often a messy iterative process that requires you to sculpt as you go. Even the great Will Wright has used the phrase "accidents that worked" to describe parts of his development process. Actual implementation is more important than just thinking about implementation.

TESTING THE WATER

/// The best way to see if you have what it takes to make your own game is to make your own game. If you can, start early. Make games while you are still going to school. If you're already working in the real world, start making games in your free time while you have a steady job putting food on your table. Working for a big company like EA or Activision can be a good way to hone your game dev skills while still receiving a reliable salary (just make sure you're still allowed to make outside projects, some companies might own all your output). After all, some of the biggest indie rock stars (such as Jon Blow, Ron Carmel, and Kyle Gabler) did time at big companies before crafting their amazing breakout successes.

You want to flex your game development muscles early and often to improve your skills, and gauge your potential before betting your entire livelihood on your abilities. To go indie, you have to anticipate the predicament of having no brand, no community, no budget, and a large risk of no sales. The good news is that all these factors can be mitigated by fast prototyping: Build something fun as fast as you can and release it into the wild. This will quickly show you whether you are headed in the right direction. If the public reacts positively to your work, you should consider iterating on your idea. Several indie games like CORTEX COMMAND, NATURAL SELECTION 2, and especially MINECRAFT have been able to raise awareness, goodwill, and decent money early in development by following this model. If it turns out gamers aren't interested in your released prototype, you'll be able to scrap your idea and try something new before wasting a lot of time and money.

PLANNING YOUR DEVELOPMENT CYCLE

/// Game development adheres to Hofstadter's Law: "It always takes longer than you expect, even when you take Hofstadter's Law into account." As such, you need to have a plan that gives you more than enough time to finish your game. Are you prepared to eat ramen for an extended period, live with your parents, or get a part-time job flipping burgers to see your game through to the end? If so, you probably have just enough runway to complete your game. On the other side of the equation, narrow the scope of your game whenever possible. Every motivated

developer feels compelled to add more and more to his game, but you must fight the urge to bite off more than you can chew. Beware the dreaded feature creep.

BEING YOUR OWN BOSS

/// It's great to have creative control over your project. But when no one is looking over your shoulder and scheduling milestones for you, you'd better be able to manage your own time. Having hard-working teammates can foster an ecosystem of high motivation, but so can the stress of a continually shrinking bank account. A more unconventional tactic we've been trying at Wolfire has been to openly share our development process with the public from day one. This has enabled the world to look over our shoulder as we craft OVERGROWTH, essentially making the community our boss. There are lots of ways to approach the motivation issue for an indie team, but the big thing to keep in mind is that making your own game should be fun. If this is not the case, YOU ARE DOING IT WRONG!

WEARING MANY HATS

/// Indie developers have to sweep through a full gamut of roles on a daily basis: programmer, artist, game designer, story writer, Foley technician, composer, marketer, community manager, and so forth. If you can't narrow your scope further and don't have all the necessary hats in your wardrobe already, you'll need a plan. You either have to be ready to learn new skills, or assemble a team that can fill in the gaps for you. Some people hold on to the notion that they can just be game designers and come up with ideas that others will magically want to implement. Unless you can afford

to pay a team to work on your idea, or you have already proven yourself to be a game design rock star, best of luck to you.

Some hats are more important than others (e.g. programming and making art), but it's best to have a good foundation in several areas, so that if all else fails, you can get your project sailing on your own. Then, as it becomes clear that you are headed somewhere fun, that's when others will magically appear to join you on your development journey.

DON'T BE A F***ING WUSS!

/// At Fantastic Fest, I had the good fortune to hear Jon Blow (creator of BRAID) explain how people's assessment of risk is not always in perspective. If you're even considering becoming an independent game developer, you're probably not in one of the many parts of the world where you have to worry about getting shot or bitten by a snake every time you walk outside. How frightening can it really be to risk not making very much money for a year or two? As Ron Carmel once wisely told us, when you're 80 years old and on your deathbed, you won't think to yourself, "Man, I wish I had never tried to make that game."

KNOW THYSELF

/// Each one of these points is designed to get you thinking honestly about how you would fare as an independent developer. If you've contemplated them all and deep down as you can see yourself having the motivation, skills, discipline, and resources to make a game on your own, then congratulations, going indie might be the right choice for you. 🎮

gd

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Considering a Video Game or Art School? Here's what to Know.

It starts with your creativity. Comes to life in the form of a character. And moves, breathes, and exists through the tools and technology you can experience at an Art Institutes school.

Before making a decision, it's crucial to research which school is right for you. The best way to do this: Find out what makes each school's programs unique. The Academy of Interactive Entertainment (AIE) offers a one-of-a-kind approach to education and hands-on training, including:

- Both vocational and degree programs that offer scalable approaches to real-world learning and hands-on skills
- Lower tuition costs, less out of pocket expense and the chance to work in realistically simulated studio environments
- Over 1,800 direct contact hours with an instructor who has proven on-the-job industry experience in our vocational tracks.
- World-class training in virtual worlds and MMO programming and development in our degree track.
- A Seattle campus that's located in the heart of the city at the Seattle Center House right below the Space needle, with ample public transportation and nearby student housing
- Strong local industry ties and a robust curriculum committee, with courses that stay fresh and topical to what studios want, increasing chances of job placement

THE AIE STORY

Founded in 1996 in Australia, AIE is a multi-award winning educator which has been recognized as a leader in its field. For years now, AIE graduates have been directly working throughout the world at top-ranked companies including Bioware, 2K Marin, Electronic Arts, Rockstar, Splash Damage, THQ and Sega, among others.

OUR APPROACH

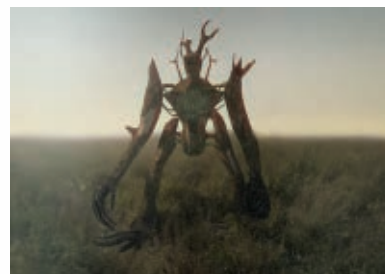
AIE courses are designed and delivered to give you the hands-on skills and practical knowledge required by industry. The courses are delivered in a simulated studio environment where art and programming students form teams and take on specialist roles in a range of game development projects.

AIE attracts some of the most creative and innovative students across the country, many of whom become valuable contacts for peers in the industry later on. Entry to our courses is based on talent and passion, which we assess through a portfolio review and interview with our teachers. We're looking for students with that special spark of potential to become the next generation of game artists, game programmers, animators, designers and visual effects producers.

AIE courses have responded with agility to the rapid evolution of the sector through the rapid update, review and integration of new curriculum through its wide network of close industry links.

SEATTLE CAMPUS

Seattle is home to over 150 game development studios including Gas Powered Games, The Amazing Society, PopCap Games, Zombie, Microsoft Game Studios and Valve. At AIE Seattle, students are taught using the same cutting-edge software tools as used in industry and dedicated high-end workstations. Awesome local industry opportunities, great public transportation (the monorail goes to our front door), and plenty of affordable housing make AIE Seattle a great place to get your career started.



"Game development for many graduates is just a pipe dream. The AIE provided me with the skills and knowledge to realise that dream. With such close ties to industry, the AIE not only provided students with the best training, but also a foot in the door to network directly with game companies to help land that elusive job."

Thomas Johnstone, Rockstar Games

"I can definitely say that AIE was the main factor that got my foot in the door and allowed me to build a career in games. More so than any university degree the AIE taught me the skills needed to make it in the industry that I love."

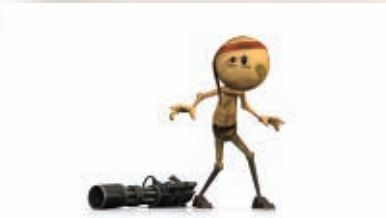
Andrew Hung, EA

→ THE ACADEMY OF INTERACTIVE ENTERTAINMENT

Center House Suite 405
305 Harrison St.
Seattle, WA 98109
Ph: 206.428.6350
Fax: 206.428.6354

www.theaie.us
Sydney/Melbourne/Canberra/USA





"Animation Mentor is truly a campus without borders," said Bobby Beck, CEO and cofounder of the school. "Our alumni go on to do some amazing work at great studios all over the world. We hope to inspire aspiring animators to take that plunge with us so we can help make their dreams come true too!"

→ ANIMATION MENTOR

1400 65th Street, Suite 250
Emeryville, CA 94608
510.450.7222 (domestic)
1.877.326.4628 (international)
Admissions@AnimationMentor.com
Facebook.com/AnimationMentor

AnimationMentor.com



ANIMATION MENTOR
The Online Animation School

It All Started with a Question...

It is amazing what can happen when you start with a simple question. In the case of Animation Mentor, its three founders asked — "If we were to learn animation over again, how would we want to learn?"

The answer is a state-of-the-art online animation school whose programs are taught by top animators working in the industry. Our educational experience delivers a first day of school unlike any other. After all, students are learning face-to-face from the professionals who are animating their favorite characters on the big screen...not to mention on TV and in the video games they love.

Just Like in the Real World

Our mentors conduct classes online and hold one-on-one eCritiques® with students where they can draw directly on the work and offer support, guidance and feedback. From these comments, students refine their shots for the next review — just like the professionals do in the studios.

This real-world approach teaches students to focus on each of the important aspects of animation within the framework of a production environment. By learning to receive and integrate feedback, Animation Mentor students graduate ready to contribute on their first day on the job as real professional animators.

One of Many

Although students may study from the comfort of their homes, they are never alone. They immediately join Animation Mentor's thriving and global community of staff, students, alumni, mentors, instructors and industry professionals. Regardless of where they may live, our students enjoy the support, mentoring and unmatched quality of education to enable them to succeed in the world of animation.

"Animation Mentor is truly a campus without borders," said Bobby Beck, CEO and cofounder of the school. "Our alumni go on to do some amazing work at great studios all over the world. We hope to inspire aspiring animators to take that plunge with us so we can help make their dreams come true too!"

Our Programs

Character Animation Program

This 18-month program is comprised of six 12-week quarters. Our Character Animation Program develops students' character animation workflows and skills in a real-world studio environment — and helps them assemble their demo reels. Upon graduation, students receive a Certificate in Advanced Studies in Character Animation as approved by the Bureau for Private Postsecondary Education, and are prepared for immediate employment.

Animals & Creatures: Master Class

Our advanced program is made up of two 12-week classes. The curriculum is designed for animators who want to focus on fantasy creatures, quadrupeds and flying creatures in a realistic animation style. Upon completion, students receive a Certificate in Advanced Studies in Animals & Creatures Animation as approved by the Bureau for Private Postsecondary Education.

We Hope to See You on Campus Soon!

To learn more about our programs, mentors, community, events — or to schedule an online campus tour — please visit us at AnimationMentor.com. And remember to follow us on Facebook to access exclusive content. We hope to see you on campus soon!



CENTRE FOR Distance Education

"This is the way I like my education." – KEVIN GRAHAM, GRADUATE

CD-ED's Digital Arts Technology Training Institute offers a 1-year, fully recognized 3D Game Artist diploma program available throughout the United States, Canada, the UK, and beyond. With a main campus in Sydney, Nova Scotia and a new branch campus in Tampa, Florida, plus the virtual campus that allows access all over the world, it's never been easier for you to get an education.

The skills learned in this program might help you find a position at a company creating games for the PC or for independent gaming platforms such as the PS3, DSi, Wii, PSP, and more.

In development of the 3D Game Artist program, we took our cue from the game industry itself, building a program that would ensure successful graduates a shot at entry-level employment. The curriculum is based on the requirements listed in actual employment ads for these jobs from companies such as Bioware, Blizzard Entertainment, and the Walt Disney Company.

With its tight focus, you'll be ready to apply for a job such as 3D Background Artist, 3D Artist, or Environment Artist. As a graduate you'll have all the 3D techniques and technical aspects required in a real live job, such as creating low-poly and high-poly models based on provided concept artwork and model sheets while adhering to the polygon & texture budgets established for the production.

At the end of the program, you will be able to prepare your models to accept your custom game-specific textures with UV maps. You'll know the technical aspects of using normal mapping & texture baking to bring your high-poly detail into a low-poly game setting and how to import your 3D assets into a game engine.

CD-ED's learning methodology places a heavy focus on portfolio development, and as every hopeful game artist knows, the portfolio will make or break you. You will have both a CD-ready and a web portfolio upon graduation.

The innovative, industry-driven, fully online and interactive programs give you the opportunity to immerse yourselves in the digital environment to the degree necessary to truly excel in the gaming industry.

Online education means having wider choices. CD-ED has the courses employers want, when and where the student wants to take them. With minimal disruption to your daily life, you can become a 3D Game Artist regardless of where you live or work.

Graduates from CD-ED are in high demand. CD-ED graduates are compositing and modeling at IMAX and contributing to XBOX 360 games.

CD-ED is committed to helping you find employment in the field of your choice. In fact, we'll start before you even begin as a student! If you call us today, your personal admissions representative will research the job market for this career in your city, and help you decide if this program is the right path for your future.

After graduation, we'll help you find an interview with your prospective employer in the job market and coach you through the job hunt until you find the career you've been dreaming of.

Apply now to ensure that you are accepted on your schedule.



→ CENTRE FOR DISTANCE EDUCATION

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Sydney, Nova Scotia, Canada
B1P 1J3

BRANCH CAMPUS: USA DIVISION
Centre for Distance Education
14502 North Dale Mabry Highway
Suite 200
Tampa, Florida 33618

Toll-Free Phone: 1.866.446.5898
1.866.567.3010
Toll-Free Fax: 1.866.559.0131
Email: info@cd-ed.com

www.cd-ed.com/GDC

"I got recruited as a 3D Artist with Hydrant Studios Inc. in the Niagara region. We work on XBOX 360 titles developing assets and characters. As a 3D artist at Hydrant, I am responsible for concept development (character and environment assets), 3d modeling, texturing, sculpting and preparing the assets to be rigged and animated. My tasks are always different from project to project. One day I can be working on a vehicle or a building and the next day I can be making a three-legged creature from a fantasy swamp."

Alejandro Mendoza
Graduate



Industry's Perspective of DigiPen:

"[DigiPen students] come here when they're juniors, they intern with us, then they go back to school and look for opportunities to use what they've learned here. Then they come back for a second 'tour of duty' as an intern, and say, 'Oh, yeah, by the way, while I was back at school I was doing this...' [DigiPen students] are able to hit the ground running. We can actually hire them as associate-level engineers and they're already as experienced as our mid-level engineers are, in a lot of ways. So it's a huge win for us."

Eric Gross, Core Technology Team Manager,
Monolith Productions



→ DIGIPEN INSTITUTE OF TECHNOLOGY

9931 Willows Road NE
Redmond, WA 98052
866.478.5236
info@digipen.edu



www.digipen.edu



DigiPen Institute of Technology



DigiPen: Developing the Next Generation of Innovators

Since 1989, DigiPen has been leading the charge in game education and is the world's first college to offer a bachelor's degree dedicated to game development. Through its rigorous academic curricula and team-based projects, DigiPen aims to spark innovation and propel the game and interactive entertainment industry forward. DigiPen's practical and real-world approach to academics in its bachelor's and master's degree programs prepare and equip its graduates for successful careers in the industry.

Why DigiPen?

Award-Winning: Every year, the Princeton Review ranks DigiPen's undergraduate program for game design among the top three game design programs offered in North America. In addition, DigiPen students win numerous awards in worldwide competitions, including over 30 awards from the world-renowned Independent Game Festival at the annual Game Developers Conference. No other university in the world has won as many student awards in this field. DigiPen's faculty, engineers and technology have also achieved awards of distinction from technology industry leaders. From Boeing's 10,800 suppliers worldwide, DigiPen was awarded as Boeing's "2008 Supplier of the Year Technology Category" and the "Performance Excellence Award" for software that DigiPen developed for the world's leading aerospace manufacturer.

Applied Education: A DigiPen education goes beyond mere theory. Aside from learning the fundamentals of gaming, programming, design, animation, or computer engineering, DigiPen students

put their knowledge into practice by developing projects such as video games, 3D animated shorts, or handheld mobile devices. Students break up into groups and create everything for these projects from scratch – be it a game engine, artificial intelligence, or even music that sets the mood for a game's storyline. Companies have been so impressed by DigiPen students and their projects that at times, entire teams have been hired upon graduation because of their projects. In fact, the smash hits *PORTAL* and *PORTAL 2* were both developed by DigiPen graduates and inspired by their student game projects, *NARBACULAR DROP* and *TAG*. To read other DigiPen success stories, please go to: www.digipen.edu/successstories.

Specialized Degree Programs:

Every course that students take at DigiPen relates to their majors and to the industry in which they want to work. DigiPen's degree programs are hyper-focused, academically rigorous, comprehensive, and interactive. With this type of concentration, students are able to spend their four years gaining knowledge and expertise in their preferred field of study.

Location, Location, Location: DigiPen is located in the heart of Redmond, Washington. Over 150 game companies are DigiPen's neighbors, colleagues, and friends. Due to its location and connections to and with the industry, many students are able to get internships during their junior and/or senior years, which may lead to a job offer and one year of professional experience before they graduate. DigiPen's close proximity to the industry also enables it to have excellent guest speakers on campus.



FULL SAIL UNIVERSITY®

World-Class Game Programs at Full Sail University

Delivering an educational experience that mirrors the workflow and technology found at today's major gaming studios, Full Sail University offers multiple degree programs targeted toward specific roles in the game creation process. Located in Winter Park, Florida, the school's programs are developed for the diverse career opportunities found in the video game industry, whether a student is interested in programming and development, art and design, or production and project management.

Game Art Bachelor's Degree Program Delivered both on campus and through the school's innovative online platform, the Game Art Bachelor of Science Degree Program presents a heavy emphasis on character development, shading and lighting, texturing, and modeling – giving students a solid foundation in the art production methods and workflow seen in the industry. Game Art students also collaborate with programmers and designers from other Full Sail programs to create art for a playable game project.

Game Development Bachelor's Degree Program Individuals who are interested in the technology behind today's most innovative games can thrive in Full Sail's on-campus Game Development Bachelor of Science Degree Program. A comprehensive programming degree, it teaches students the latest processes for creating single and multi-player games for networks, consoles, handheld devices, and computers. The courses mimic studio environments, where students learn essential skills in artificial intelligence, C++ programming, 3D graphics, and story development, while creating their own playable games.

Game Design Bachelor's Degree Program Behind every gaming experience is a story – and a team of professionals that brought it to life. Offered exclusively as an online program, the Game Design Bachelor's Degree Program is designed for students who want to create compelling games, with coursework that focuses on game play, story development, and the production needs of the industry.

Game Design Master's Degree Program Courses in the Game Design Master of Science Degree Program stress the creative production and business management skills used at professional game studios. Students learn to broaden their abilities as project coordinators, with practical applications that recreate the processes used by successful managers – including developing an understanding of team leadership, project development, and collaborative design.

Accomplished Alumni, Industry Accolades The range of skills covered in these degree programs has enabled Full Sail graduates to develop successful careers with major game studios across the globe, where they've worked on a variety of bestselling and critically acclaimed console, handheld, and PC games. Graduates have helped create the graphics, audio, and gameplay for titles that include the CALL OF DUTY series, RED FACTION: ARMAGEDDON, RESISTANCE series, RATCHET & CLANK series, MADDEN NFL 11, TWISTED METAL, STAR WARS: THE FORCE UNLEASHED II, and RED DEAD REDEMPTION.

Learn More For more details, call 1.800.226.7625, or visit www.fullsail.edu.



"I've honestly never felt like I've worked a day in my life. Sometimes there's struggles and stress, but I'm still making something fun."

Full Sail Game Development graduate,
Jameson Durrall



"Until you finish a game you don't know what it's like – it's like an affirmation of your skills and what you can do."

Full Sail Game Development graduate,
Nicholas Zippman

→ **FULL SAIL UNIVERSITY**

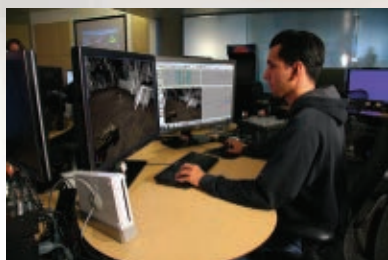
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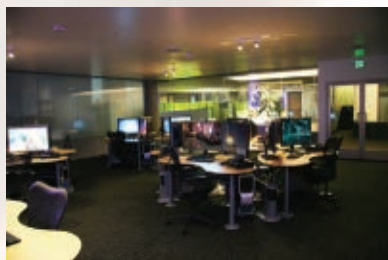
"One of the best-equipped private learning centers in the country."

The Hollywood Reporter



"Entertainment interchanges from movies to games all of the time. This makes The Los Angeles Film School an ideal place to learn because it presents a great opportunity for those involved in graphics and movies."

Nolan Bunshall, Founder of Atari, Member of LAFS Game Production Advisory Committee



"This program is a great addition to the educational landscape in Southern California, as Los Angeles is the hub of the gaming industry. Not only is there a strong industry demand for well-equipped people, but as technology changes and new techniques need to be acquired, professionals are constantly looking to refresh their own skills."

Andi Smithers, Research and Development, Senior Engineer, Sony Online Entertainment

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Email: info@lafilm.edu

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THE LOS ANGELES[®] FILM SCHOOL

ANIMATION + AUDIO + FILM + GAMES

Learn Video Game Production in the Heart of Hollywood!

When you are ready to do more than simply play your favorite games, the Game Production Degree Program at the Los Angeles Film School could be your next move.

Featuring a curriculum designed by game industry veterans, the 18-month ASGP program is focused on giving students a comprehensive education and hands-on experience with the process of creating video games, from concept to screen.

The Los Angeles Film School extends its proven track record of producing successful entertainment media professionals into the video game space by offering its ASGP students classes ranging from programming, audio and art (both 2D and 3D) to analog game theory, gameplay design, level design, business, and project management.

The LAFS campus, near the corner of Sunset and Vine in Hollywood, features industry-standard equipment in high-tech classrooms and sits just minutes away from such major industry players as the interactive divisions of Paramount, Warner Bros. and Disney, as well as Activision-Blizzard, THQ, Riot Games and the Los Angeles offices of Konami, Square Enix and Electronic Arts.

Real Game Development Experience

The centerpiece of the ASGP program is the intensive 90-day Final Project experience. After a "greenlight" competition designed to emulate the professional video game pitching process, each student is placed on a small development team and charged with creating a game from scratch. Student teams are encouraged to forge their own identity as a game development company and are given a dedicated workspace on campus to design, create and deliver a commercial-quality game at the end of the three-month period. Unlike many other game schools, LAFS students own their own work, and are encouraged and mentored toward self-publishing and actually monetizing their creations, in addition to using them as a highlight of their professional portfolios.

A World-Class Faculty

ASGP instructors have combined decades of real-world experience in video game development and publishing. They range from studio directors, level designers, concept artists and engineers who have worked with platforms ranging from home consoles, PCs, hand-helds, "smart toys," and smartphones. They include published authors of leading textbooks and have business experience with a variety of publishing models, from traditional console games sold at retail to "free-to-play" online games.

Because a foundation in general education is as important as knowing the most current techniques and equipment, you will also learn basic industry skills that include time management, self-motivation, resume writing, communication skills and how to prepare for that first step into the industry. And with your success in mind, the LAFS Career Development Department is there to provide guidance as you interview for a range of entry-level jobs in the video game industry. Our career development services continue to be available to you throughout your career.

For more details, call 877-9LA-FILM, or visit www.lafilm.edu.

CENTRE FOR DIGITAL MEDIA

MASTERS OF DIGITAL MEDIA PROGRAM | GREAT NORTHERN WAY CAMPUS

Our Academic Partners:



emily carr
university of art + design



Masters of Digital Media (MDM) program at Vancouver's Great Northern Way Campus

Preparing the new leaders of the digital media industry The Masters of Digital Media (MDM) program is Canada's first professional graduate degree program of its kind in digital media and entertainment technology.

Offered at Vancouver's Centre for Digital Media, this intensive 20-month program is uniquely designed for students from wide-ranging backgrounds to gain leadership experience, hands-on training, and top industry contacts through real world project work.

With a curriculum developed through academic and industry collaboration, the MDM program is rooted in the industry that helped create it.

Learning by Doing Team-based project learning is core to the MDM program curriculum. Following intensive course work in the first semester, students work in small multidisciplinary teams with faculty and industry professionals on three separate semester projects. Each student also completes a four-month, full-time internship.

Students connect with leading companies and the industry's brightest to tackle real world projects, and secure internships. Our industry partners include top companies such as Electronic Arts, Ubisoft, Zynga, and Microsoft. Project teams develop ideas, prototypes and innovative products, and students learn to work successfully with colleagues from other disciplines, and communicate clearly, and effectively, with clients.

In addition to games and interactive entertainment, past projects have involved applications in e-learning, social media marketing, data visualization, and interactive advertising – some of which have spawned start-ups.

MDM Students: Multidisciplinary and International MDM students come from around the globe, and from diverse undergraduate and professional backgrounds – including the arts, design, computing science, natural and social sciences, business, and engineering. As in the industry, this diversity is essential to the success of MDM project teams, which require the joint input of technical, business, and artistic talent and experience. And all MDM students have a demonstrated passion for digital media.

Through the MDM program, students transform their marketable skills, innovative ideas, and experience into leadership opportunities. Graduates have the know-how to work at a high level in the digital media industry, and many have gone on to be producers, lead designers, managers, and senior artists, as well as start their own companies.

A Unique Academic Partnership The MDM program is offered at Great Northern Way Campus (GNWC) – an integrative campus environment that combines the strengths of four top academic institutions: The University of British Columbia, Simon Fraser University, Emily Carr University of Art + Design, and the British Columbia Institute of Technology. MDM graduates receive a high-powered degree accredited by all four academic partners.

And the program is growing! To support higher enrollment, construction of a new 49,000 sq. ft. Centre for Digital Media at Great Northern Way Campus will get underway this June for an anticipated September 2012 opening.

Vancouver: Digital Media Hub MDM students enjoy the benefits of living and working in Vancouver – a dynamic city and international digital media hub. Vancouver has one of the top video game clusters in the world, with presence from major publishers such as EA (Electronic Arts), Nintendo, THQ, Vivendi/Activision, Disney and Microsoft. The city also boasts an established film and TV sector.

For more information about the MDM program visit mdm.gnwc.ca



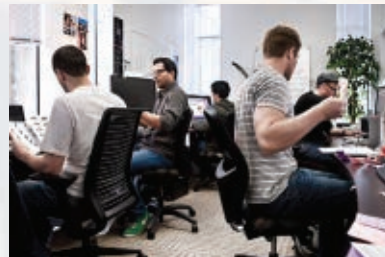
"The MDM program builds upon solid academic fundamentals and mixes that with industry expertise and experience, preparing students for leadership positions in our industry upon graduation."

Don Matrick, President, Interactive Entertainment Business, Microsoft



"The MDM represents a once in a lifetime opportunity: to be part of something new and exciting that has no equal anywhere else in the world."

Ashley Blacquiere, MDM Graduate, Class of 2009; Mission Designer, Radical Entertainment



→ MASTERS OF DIGITAL MEDIA PROGRAM

MAILING ADDRESS:

Masters of Digital Media Program
Centre for Digital Media
Great Northern Way Campus
577 Great Northern Way
Vancouver, BC V5T 1E1
Canada

SPEAK WITH AN ADVISOR:

Yasmeen Awadh
Senior Student Recruitment Coordinator
Tel. 778.370.1010

VISIT US ONLINE AT: mdm.gnwc.ca
TO APPLY ONLINE GO TO: applynow.gnwc.ca



"The time I spent at SCAD provided the training and experience I needed to build a solid foundation for a successful career within the gaming industry. I utilize the wide variety of knowledge and skills my professors provided me on a daily basis to excel in a career that I am very passionate about."

**Jimmy Barnett, Environment Artist,
Gearbox Software**

"I recently gave a presentation at SCAD's 2011 GDX. Afterward I was able to speak to the students and tour the SCAD facilities. I have to say that I was not only blown away by the talent the students showed but also by the amount of resources that were made available in the facilities. Anyone thinking of getting an education in a creative field should definitely check out SCAD. What they offer is pretty incredible."

**Lina Halper, Senior Programmer,
Epic Games**

→ SAVANNAH COLLEGE OF ART AND DESIGN

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Savannah, GA 31402-2072
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Email: admission@scad.edu

scad.edu/interactivedesign

SCAD® The University for Creative Careers®

At the Savannah College of Art and Design, the interactive design and game development department hosts two exciting directions of concentration for designers interested in pursuing areas of game art and design or interactive media forms such as web design, user experience design and digital installation art. SCAD designers work on screen-based forms of artistic production as well as in the physical space with computing technologies.

SCAD offers a well-rounded education in game development comprised of a variety of skills required by the rapidly evolving game industry. These skills include a working understanding of game-play systems and mechanics; 2-D game development for mobile devices and rich media sites; 3-D game authoring with a strong emphasis on technically proficient and visually engaging real-time environments; and game design theory. Students may enroll in the Bachelor of Arts, Bachelor of Fine Arts, Master of Arts or Master of Fine Arts degree program in interactive design and game development. SCAD offers these programs at distinctive locations in Savannah and Atlanta, Georgia; in Hong Kong; in Lacoste, France; and online through SCAD eLearning.

No matter the location, the interactive design and game development program at SCAD fuses artistic and technical training to prepare students for professional, creative careers in the growing interactive and game development industries. SCAD's faculty of artists, designers and programmers includes award winners and experts in their fields. They bring to the classroom a combined total of more than 50 years of experience in both game development and interactive design.

SCAD's game development concentration offers a professionally structured environment where students utilize state-of-the-art hardware and software in a creative and collaborative setting. At SCAD, students use a motion-capture lab, green screens, Cintiq tablets, Autodesk Maya, Autodesk Mudbox, Z Brush, Photoshop, Illustrator, Premiere, After Effects, Flash, C++, Unreal Developers Kit, Unity, ActionScript and Dreamweaver as well as multiple visual programming and scripting languages.

SCAD students develop the aesthetic, artistic, design and technical abilities necessary to become leading artists, level designers, game designers, innovators and interactive Web and experience designers, as well as installation and digital artists. Game development alumni have been placed at the top game studios, social media development teams and educational game companies in the world. Representatives from leading game design and digital media companies – including Bungie, Zynga, Lucas Arts, Activision, Blizzard and Electronic Arts—frequently visit SCAD to recruit students and new alumni.

SCAD sponsors the annual Game Developers eXchange, which brings together game developers, educators and students with experts who share their behind-the-scenes knowledge. Faculty and students also participate in the Game Developers Conference and SIGGRAPH.

SCAD has been named by The Princeton Review as one of the 10 best schools in the United States and Canada to study video game design. According to the Los Angeles Times, the SCAD interactive design and game development program ranks among the top 10 in the United States mentioned by industry recruiters. At SCAD, students learn to become innovative designers, strategic thinkers, global communicators and the game design industry's premier professionals.



CREATE TOMORROW

A SERIOUS LEVEL OF OPPORTUNITY.

Create your tomorrow with the Game Art & Design programs at The Art Institutes.

Go from game player to game developer. Imagine having a choice of just one video game. In one dimension. With one landscape, one set of characters, dull graphics, and clunky mechanics. Well, if it wasn't for people with a love of gaming, a head full of ideas, and a way with technology, that might be the all-too-real world of gaming.

Of course, the reality is that every day seems to bring new consoles, new mobile gaming devices, and new technologies. And if you want to join the creative minds who keep pushing the industry forward, your first move is a focused education at an Art Institutes school. We understand how creative people think. And we know how to help you develop your talents so you can make the leap from game player to gaming professional.

We're your connection to this dynamic and creative industry.

Bring us your creativity. We'll help you explore the possibilities. In our Game Art & Design programs, you'll find yourself in a creative community, collaborating with other students who share your passion. And instructors who work in the same fields they teach. Which means they know where the industry is and where it's heading – and the demands of the career you're preparing for.

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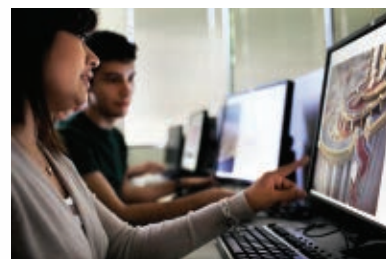
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Program offerings, technology, and credential levels vary by school.



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ART SCHOOL



*"Involving experienced, successful and respected professional game developers with writing *The Guildhall* at SMU's curriculum was a very smart move and will likely give an advantage to all students in the program as they strive to become game makers themselves."*

Randy Pitchford
President, Gearbox Software



"The Guildhall at SMU has set a new standard for entry-level design candidates. Without exception, the graduates we've hired are able to ramp up and contribute to projects very quickly. They're versatile, technically proficient, and possess a solid grasp of the relationship between space and gameplay. Not only does their training prepare them for jobs in the game industry, it clearly attracts students with the talent and motivation to be successful."

Jason Scott
Studio Design Director, Volition

→ THE GUILDHALL AT SMU

5232 Tennyson Parkway, Building 2
Plano, TX 75024
Phone: 972.473.3539
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SMU | GUILDHALL
GAME DEVELOPMENT EDUCATION

art creation + level design + production + software development

SMU Responds to Video Game Industry Need and Adds Production Track

The Guildhall at Southern Methodist University continues to distinguish itself as the top graduate level video game development program in the U.S. with its recently launched Production Track, making it the only program of its kind to offer the four key industry specializations: Art, Design, Production and Programming. Expanding curriculum to include the Production Track is a natural outgrowth of SMU's commitment to evolve in sync with the industry, and is based on both extensive research and direct input from industry leaders.

Currently, there exists a growing demand for producer-oriented individuals who can manage the pipeline – art, animation, cinematic, programming, design, scripting, and sound – that is required to produce a quality video game on time and within budget. The process of producing games has become increasingly complex and the inherent lack of hands-on game development leadership experience is posing a significant and costly learning curve. Industry leaders have consistently approached us about this fairly new reality suggesting that SMU address this knowledge gap.

SMU's philosophy is to serve as a "living laboratory" so that the student experience mirrors what is happening in major game studios across the globe. The guiding principles of curriculum comprise a balance between theory and application; team-motivated learning; cross-disciplinary collaboration and individual portfolio development. While SMU also offers a Professional Certificate in game development, the Production Track will be available only within the Master's degree in Interactive Technology.

Production students will learn the fundamentals, experience production with teammates in their own cohort, and apply theory and experience to helping produce games of later cohorts. This learn it, live it, lead itsm approach, anchored by experiential learning, focuses on four essential skill sets for game producers identified by subject matter experts in academia as well as the industry: leadership, production, technology and experience.

Upon graduation, students will be able to demonstrate mastery of game project management and the financial, product design, marketing, and publishing processes in order to communicate and coordinate effectively with upper management. In addition, they will exhibit proficiency in workflow and asset management, organizational skills and documentation in order to lead a creative team through the typical 2-5 year game development cycle.

The Production track will be taught by full-time faculty members and industry veterans including Ed Clune, Corey Rosemond and Elizabeth Stringer, complemented by professors from SMU's Cox School of Business MBA program, nationally ranked "top 20" by such leading business publications as *U.S. News & World Report* and *Bloomberg Businessweek*.

The Guildhall at SMU is renowned internationally for its industry-driven, university empowered digital game development program. Many of the school's founders are industry icons, and classes are taught by industry veterans. Since 2005, the program has graduated nearly 400 students and alumni are working at more than 140 video game studios around the globe.

To learn more about the program, please visit <http://guildhall.smu.edu/> or contact Rene Archambault, Director of Admissions: reneja@smu.edu / (972) 473-3539. Connect with current students and alums on Facebook: [facebook.com/smuguildhall](https://www.facebook.com/smuguildhall).



In the past decade, the video game industry has become a mainstream media industry that employs thousands of people worldwide.

Revenue generated from the video game industry in 2010 was estimated at USD\$40.2 billion. Price Waterhouse Coopers predicts that it will be a \$68 billion dollar business in the North American market by 2012.

Canada is a large player in the global video game market. In 2010, Canada had the third largest video game industry worldwide in terms of employment numbers.

In 2008, triOS College recognized the incredible demand for Video Game Programmers and began offering the Video Game Design & Development + Internship Diploma program. This program was designed with industry experts and gaming employers to provide qualified and job-ready graduates for the gaming sector.

The 18-month program is subdivided into six 12-week (3 month) blocks and followed by a 4-month internship. Over the duration of the program, students will learn everything from core theory and fundamentals on gaming as a starting point, right through to XNA Development, Design Structure, Unity & Mobile Development and DirectX Development. Upon completion of these blocks, student can build games for multiple platforms, including XBOX, iPhone/iPad, Windows Phone 7 and Flash.

At triOS College, we practice what we preach. As a result, nearly all of our courses focus on developing video games in a team environment, and students will participate in at least 8 different major projects throughout the duration of the program. In addition to the hands-on training, students will be provided with an exciting internship upon program completion, with a video game development studio.

Upon graduation, our Career Services team will work with our graduates to help place them into large, medium and independent gaming studios for employment. Graduates generally begin in entry level positions including QA Tester and can rapidly advance within 2-3 years. According to Gamasutra.com and PayScale.com, salary ranges for Game Programmers with 3 years of experience range from \$51,000-\$54,000.



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"triOS College is planning on graduating the type of programmers that the games industry needs; I want to hire them now!"

**Keith Makse, CEO
Cerebral Vortex Games**

"I wish I could take this program!"

**Tim Maly
Independent Video Game Producer**

"Every course offered by triOS College has been designed by a compilation of industry veterans. This ensures that every graduate has a full knowledge of what is currently utilized in the industry."

**Hamed Abbasi
Vast Studios Inc.**

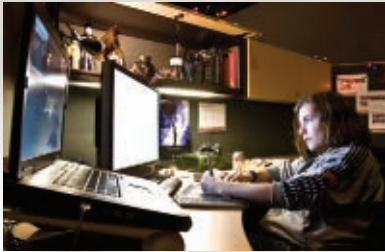
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**Matt Read, Lead Designer/Sr. Designer,
Electronic Arts, MADDEN NFL 8, 9, 10, 11,
MADDEN NFL ARCADE**

FIEA was recently ranked the #2 graduate game-development program by the Princeton Review.



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Florida Interactive Entertainment Academy



Part of the University of Central Florida, the Florida Interactive Entertainment Academy (FIEA) offers a graduate gaming education in a world-class facility in downtown Orlando. It teaches artists, programmers, and producers the techniques, tools and skills that you don't get in a traditional degree program.

You'll be exposed to an industry-based curriculum that mimics the production environments of successful gaming studios. You'll work on student teams with real-world projects to learn the skills and software of video-game design and development.

In 16 months, you'll earn a Master's of Interactive Entertainment.

Five Reasons to Choose FIEA

Faculty Our faculty are industry veterans with real-life answers. Collectively, FIEA faculty have shipped more than 40 of today's biggest games and films and have worked in studios like EA, Disney, Microsoft and Take Two. And our 8-to-1 student-to-faculty ratio ensures you'll get the attention you need.

Master's Degree Unlike some schools, FIEA offers a fully accredited Master's of Interactive Entertainment. So you not only get a cutting-edge education but also a degree that's recognized and a valuable marketplace commodity. And you get it in only 16 months.

Industry Success Bioware. Google. Zynga. Ubisoft. Telltale Games. Neversoft. Cartoon Network. Irrational Games. Bethesda. Electronic Arts. 38 Studios. FIEA grads are everywhere making games and building their careers.

Recent games FIEA grads have worked on include CALL OF DUTY BLACK OPS, MADDEN NFL FOOTBALL 11, CALL OF DUTY 4, DEAD SPACE 2, MMA, TIGER WOODS 11, ROCK BAND 2 and MARVEL ULTIMATE ALLIANCE.

Three Tracks Our producer, programmer and artist tracks teach you all you need to know to become industry ready. As you specialize, you'll go deep into your chosen discipline to learn all the techniques and tools used to make AAA games and films. But because we never offer two classes at the same time, you can also "minor" in one of the other specialties to learn valuable additional skills.

You'll apply these skills in our team-based curriculum. From the day you enter, you'll be put on a game team with other artists, programmers and producers and be required to display the communication and commitment necessary to bring a game to fruition.

The Space FIEA is located in UCF's Center For Emerging Media where FIEA students collaborate with student musicians, filmmakers, architects and animators on games and other interactive projects. The 114,000 sq. ft. building features a soundstage and motion capture facility that host student and industry shoots.

Learn more at www.fiea.ucf.edu



CG@Penn

Computer Graphics at the
University of Pennsylvania

Computer Games and Visual Effects

Interactive entertainment and computer-animated visual effects are now part of our main stream culture. Creating such computer-generated imagery, however, is no trivial task. It requires a delicate blending of art with science by teams of highly skilled professionals, including artists, animators, writers, designers, engineers and software developers working long hours with cutting-edge technology and tools. Currently there are very few academic programs at four-year research universities adequately preparing students for such positions. Penn's Master's program in Computer Graphics and Game Technology was created specifically to address this need.

Program Overview

The University of Pennsylvania's Computer Graphics and Game Technology (CGGT) Masters Program was established in 2004. The goal of the CGGT program is to expose recent graduates, as well as students returning from industry, to state-of-the-art graphics and animation technologies, as well as interactive media design principles, product development methodologies and engineering entrepreneurship. The CGGT program prepares students for positions requiring multi-disciplinary skills such as designers, technical animators and directors and game programmers. Students in the CGGT program use the equipment and resources available through the Center for Human Modeling and Simulation (<http://cg.cis.upenn.edu/>). Opportunities for specialization are provided in such core areas as art and animation, creative design, animation and simulation technology, human/computer interfaces and production management. Students seeking admission to the program are assumed to have a Bachelors Degree in either Computer Science or Engineering; students seeking admission with non-computer science and/or engineering undergraduate backgrounds will require a minimum of two years to complete the program, with the first year spent in the Masters of Computer and Information Technology Program (<http://www.cis.upenn.edu/grad/mcit>).

Penn Advantage

Since 1975, the University of Pennsylvania's Center for Human Modeling and Simulation (HMS) has been a leader in the fields of 3D computer graphics, human simulation and the behavioral animation of embodied intelligent agents. The lab has achieved international recognition for its research and is well known for the "Jack" software, a procedural character animation system used in both private sector and government applications. CG @ Penn alumni have been influential in computer graphics applications around the world, and include industry leaders such as Nick Foster of PDI/DreamWorks ("Shrek") and Cary Philips at Industrial Light and Magic (ILM), who are winners of Academy Awards for Technical Achievement. The HMS Center provides a collegial and open atmosphere in which faculty, staff, and students interact and collaborate. Ph.D. students are often teamed with CGGT students and students from the affiliated undergraduate Digital Media Design (DMD) program to conduct cutting-edge research and produce animated demonstrations highlighting their results. The continued industry need for well-rounded designers, programmers and technical directors who understand both the art and science of producing visual media and interactive content has led to great success in graduates from both the CGGT and DMD programs finding employment at companies such as Pixar, Dreamworks, Disney, Electronic Arts, Microsoft, Sony, Activision, Blue Sky Entertainment.



EXAMPLE STUDENT PROJECTS:



→ CONTACT US

Dr. Stephen H. Lane

Director, Computer Graphics and
Game Technology Masters Program

Department of Computer and Information Science School of Engineering and Applied Science

University of Pennsylvania
3330 Walnut Street
Levine Hall
Philadelphia, PA 19104-6389
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UNIVERSITY



"Coming in from VFS, I was ready to hit the ground running. VFS prepared me very well for the volume and type of work that I do, and to produce the kind of gameplay that I can be proud of."

David Bowring, Game Design Graduate
Gameplay Designer, SAINTS ROW 2

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Vancouver Film School

Game Design at Vancouver Film School is an intense one-year program that covers everything you need to join the game industry as a designer or producer, from theory to hands-on practice to the production of a professional-quality portfolio. There's a reason why the L.A. Times called VFS one of the top 10 schools favored by video game industry recruiters.

VFS Game Design students learn more than just one side of game design – they experience the full scope of this varied and rewarding career through an in-depth curriculum that includes:

- >> Interactive Narrative
- >> Analog Games
- >> Interface Design
- >> Scripting
- >> Level Design
- >> Pre-Production
- >> Project Management
- >> Flash
- >> Mobile & Handheld Design
- >> Game Audio
- >> The Business of Games

Led By Industry

In VFS Game Design, you're mentored by a faculty of respected industry pros – your first crucial connections to the professional world. At the helm is veteran Dave Warfield, who, as a Senior Producer for EA, helped produce and design the NHL franchise for 10 years. His many other credits include titles like EA's NBA LIVE and Konami's TEENAGE MUTANT NINJA TURTLES. An Advisory Board of industry leaders, including luminaries from Activision, Microsoft, Nokia, and LucasArts, keeps the curriculum on the cutting edge.

A Studio Environment

In a process that closely mirrors a real-world studio environment and production pipeline, you work in

teams to take games from concept to completion. Toward the end of your year at VFS, you get the chance to present your final playable games to an audience of industry representatives and recruiters: a unique chance to prove yourself and make valuable professional contacts.

Living & Creating in Vancouver

In VFS Game Design, you have the advantage of learning in Vancouver, B.C., Canada. Along with its strong film, TV, and animation industries, Vancouver is a world center of game development, meaning that VFS is always industry-current, hosts many guest speakers, and provides you with vital mentorship and feedback opportunities throughout your year. It's the perfect place to get your career started.

The Results

Our graduates have gone on to earn key design and production roles at top studios around the world. A small selection of their recent and upcoming titles includes: PROTOTYPE 2, MASS EFFECT 3, DEUS EX: HUMAN REVOLUTION, WARHAMMER 40,000: DAWN OF WAR II, DRAGON AGE II, PUNCH-OUT!!, FIFA 10, SKATE 3, TRON: EVOLUTION, DEAD SPACE 2, STAR WARS: THE OLD REPUBLIC, DEAD RISING 2, and MODNATION RACERS.

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company info

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- + Countries: 75
- + No. of Games: 18

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- + 4STORY
- + OGAME
- + IKARIAM
- + BITEFIGHT
- + NOSTALE
- + ELSWORD
- + WIZARD101 EUROPE
- + STAR TREK - INFINITE SPACE
[FALL 2011]



Who we are

Gameforge is the leading provider of multiplayer online games in the western hemisphere. With over 200 Million registered players, our aim is to expand our leading role in the next few years and set new standards for games that offer long-lasting and free gaming fun. This is only possible with an all-round excellent service: support, community management, payment transactions, technical availability of the games and services must all be of the highest quality. Our challenge remains to continue mastering the technical infrastructure, produce outstanding games and offer our players an unparalleled service so that the name Gameforge becomes synonymous with the term 'online game'.

Teamplay

Gameforge's success is closely connected to an extremely dedicated team: young, avid gaming enthusiasts and experienced professionals from the gaming and internet industry ensure that gaming fun as well as our technical components meet the highest standards possible. Talent and experience work hand in hand at Gameforge - from the young Junior Developer to the experienced VP of System Administration, the technical Product Manager, the enthusiastic Community Manager, the Head of Customer Care with international expertise, the brilliant Game Designer, the Accounting Specialists and last but certainly not least, the creative Marketing Professional.

What makes us unique

We offer a friendly working atmosphere in a young and dynamic company. Our focus lies on creativity, inspiration and above all, job satisfaction and enjoyment. Taking relaxing holidays with the whole company, throwing legendary parties and numerous other activities and events are part of it as is friendly interaction amongst colleagues. It opens up a creative freedom that can be filled with responsible work and interesting challenges. We're an independent company that makes its own individual decisions. After all, the best way to develop ideas is in committed teams with flat hierarchies and not with titles on name plates. This makes togetherness all the more important, because playing table football and pinball are as much a part of the day as the casual conversation with the chief executive in the hallway.

In 2010 we were awarded with the 'TOP JOB Arbeitgeber des Jahres' ('TOP JOB Employer of the Year') prize. In addition, the Great Place to Work Institute Germany named us as one of the best employers 2010.

What we're looking for

We're looking for the gaming industry's highest flyers for whom the sky is the limit. People that want to use their dedication and passion to create exceptional computer games. Co-workers that want to use their inspiration and imagination to help an innovative company become even better. Dynamic talents, who can ensure the smooth operation of our games. Communicative people that can organise our cooperation with external studios and make sure that we publish games of the highest quality together.

IN A NUTSHELL: We're seeking colleagues that want to become part of our company's success story.

Level Up!

The Guide to Great Video Game Design

By Scott Rogers

Want to learn how to create cutting-edge video games? Need some advice to improve your current game? Then get ready to Level Up!

Scott Rogers, the video game designer behind hits such as PAC-MAN WORLD, GOD OF WAR, the MAXIMO SERIES, and SPONGEBOB SQUAREPANTS, shares his years of knowledge and experience with you on how to make video games great.

LEARN HOW TO:

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WHAT ARE YOU WAITING FOR? GRAB THIS BOOK AND PREPARE TO LEVEL UP!

"[Level Up!] . . . serves as one of the best primers for game design that I have ever come across. This book is definitely recommended if you want to further your understanding of video game design. A+ work, Mr. Rogers, and thank you on the behalf of all the readers."

— Larry Charles, Jr., Level Designer

"Scott Rogers has written a book that is easy to understand and builds chapter by chapter on all the elements (camera, mechanics, bosses, combat, controls, level design) necessary for a great game concept. . . . I recommend this book for any team."

— Ben Acevedo, Founder and CVO, Cosmicube, Inc.

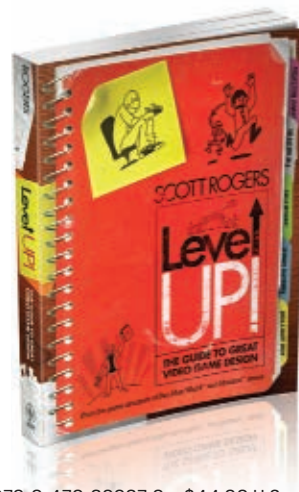
"The book is fabulous, easy to read, informative, and hilarious."

— Saint

"K.I.S.S. (Keep it simple, stupid.) Scott Rogers follows this rule very well. Level Up! is an entertaining and informative book that neither bores nor confuses the reader. It paints a clear picture of the fascinating yet daunting world of video game design."

— Dean Stephenson, Robot in the Corner Podcast

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THE BIG INTERVIEW

VIDEO GAME CHARACTERS APPLY FOR VIDEO GAME JOBS

Gordon Freeman (HALF-LIFE)

/// So, what skills do you bring to the table for the position of gameplay programmer?

Gordon Freeman: ...

/// You look a little confused. I'm sorry, I might have jumped ahead a bit. To clarify, the gameplay programmer is a bit of a generalist, someone who has a good head for design, as well as the technical chops to work deep within the engine. You know, someone who gets what the designers do and can translate that into highly optimized low-level code.

Gordon Freeman: ...

/// One of the things—are you okay?—one of the most important things we look for is good communication skills, because the gameplay programmer needs to work closely with the designers and the other stakeholders in the process. If you want, maybe we can start from there? Why don't you tell me a story about a time where you had to use your communication skills to solve a particularly tough problem?

Gordon Freeman: ...

/// Do you—do you need some water or something?

Mario

/// And your name is—let me see here—ah, “Mario,” correct?

Mario: It's-a me! Mario!

/// Mario, as a monetization designer at our growing social game studio, you'll be challenged to place hooks into our games that give players opportunities to enhance their experience—

Mario: Woohoo!

/// Yes! Yes! It's wonderful to hear you're so excited about this position! You know, a lot of people are a little turned off when they hear the job title “monetization designer,”

and I don't exactly blame them.

But there's a real interesting set of problems in there, and I think you've identified that it's actually kind of a fun job! Which is to say, I really like your attitude! When can you start? Maybe tomorrow? We're really happy to have you on board, Mario!

Mario: Here we gooo!

Kratos (GOD OF WAR)

/// You're doing great so far! Now, as you're probably aware, all of our game testers are expected to be really great team players. So, to speak on that aspect a little bit, I'd like you to describe a time you had a conflict with another person that you know, and what you did to resolve it.

Kratos: I... uh, well, I...

/// Yes? What is it?

Kratos: Uh, I think I'm gonna flunk this.

/// Why is that? Do you think you haven't experienced any major conflicts in your life? Come on, Mr. Kratos! Everyone has at least a little bit!

Kratos: No, I know—

/// Don't be afraid to share. Go on! Just tell the story of how you resolved a problem you had with someone!

Kratos: Hey! I just remembered I parked in metered parking. Can I duck out for a sec and move my car? I promise I'll be right back!

Francis York Morgan (DEADLY PREMONITION)

/// So, Francis—

York: Please, call me York. Everyone calls me York.

/// Okay, um, York. I wanted to start with your portfolio here. I looked over it, and there's nothing really in here that has anything to do with the level designer position you're applying for. Is there something you want to explain about that?

York: [Zach, do you remember that movie, *The Ice Pirates*? Came out in 1984, directed by Stewart Raffill. Now, I know that a lot of people thought it wasn't a very good movie, but I always liked it—the campy humor and bad special effects seem to work just right. I suppose I just can't help it, can I, Zach?]

/// Hey, are you talking to me? I wanted to ask about this portfolio—

York: [I've wanted to watch it again for years but I just can't find a good copy. The old video rental store near me just isn't what it used to be. How about you? Do you have a video rental store near you, Zach? If you do, let me know if you find *The Ice Pirates* there.]

/// Excuse me. Hello? My name isn't Zach.

York: I wasn't speaking to you. [This guy is a little pushy, isn't he, Zach?]

Kasumi (DEAD OR ALIVE)

/// Tell me about a graphics feature that you're particularly proud of creating in your career as a graphics programmer.

Kasumi: The lightmap compression I developed for *Dead or Alive Xtreme Beach Volleyball* is a particular highlight—no pun intended. We had these lightmap textures stored as spherical harmonic coefficients, of course. So our compression strategy relied on a two-pronged approach: signal compression, with both inter-chart and subchart optimization, and DXT compression, which uses two DXTs for each spherical harmonic coefficient channel. The key idea here was to optimize the sampling rate to allocate less texels to low-frequency areas...

/// Wait a second. I didn't even know *Dead or Alive Xtreme Beach Volleyball* had lightmaps in it at all. I mean, I tried to pay attention to the, uh, features...



Kasumi: Not that you'd see the precomputed lighting in any case; most of what's in there is a faked global illumination model I developed along with my half-sister and co-worker Ayane. Not long after that I got bored, though, and decided to write a new shader pipeline so we could do real-time subsurface scattering on materials like marble and skin. I thought it was pretty cool but the boss said he liked it better when the characters looked like they were made out of plastic. So yeah, that was interesting. Can you tell why I'm looking for a new job?

John Marston (RED DEAD REDEMPTION)

/// So you're applying for the producer position.

Marston: That's right, ma'am.

/// Have you done anything akin to production before? I don't see anything on your resume that would indicate experience with schedules, resource allocation, or—

Marston: The basics of herdin' are fairly simple, ma'am. Get in with the group and drive 'em where you want 'em to go. Cattle or game developers—I expect it ain't too different. 🐾

MATTHEW WASTELAND writes about games and game development at his blog, *Magical Wasteland* (www.magicalwasteland.com). Email him at mwasteland@gdmag.com.

UNREAL TECHNOLOGY NEWS

BY Mark Rein
Epic Games, Inc.

UDK GAME HAWKEN GETS TRIPLE-A PRAISES

Hawken, Adhesive Games' upcoming multiplayer mech combat game built with Epic Games' Unreal Development Kit (UDK), is gathering an impressive amount of early buzz. In development for about a year, the indie sensation has made fans all across the board, with *The Escapist* calling the preview trailer "quite simply amazing," *PC Gamer* praising it as "insanely beautiful," and *IGN* stating that the game has "visuals to challenge the very best games on the market."

But when the Adhesive Games team set out to create *Hawken*, they had almost no experience using Unreal Engine 3. For Khang Le, art director at Adhesive Games, the focus was on finding a robust solution that could deliver the graphically intense vision he had for the game on a tight schedule and with triple-A quality.

Le and his team decided to use UDK for the game because, when it came to Unreal Engine 3, he says, "We were familiar with its reputation as possibly the most licensed game engine in the industry. Being able to begin production using a cutting-edge game engine with no start-up cost offers an important opportunity to indie developers like us."

Adhesive Games considered other options before choosing UDK, but Le explains that it quickly emerged as the frontrunner.

"Once we decided to create a graphics-intense multiplayer game, the Unreal Engine looked like the clear choice. With Unreal you get a console-ready engine that has been proven

with bestselling released games." Additionally, UDK provided prototyping capabilities. "Within a month of starting *Hawken*," says Le, "we were able to test out a prototype."

As for the actual functionality of the Unreal Engine 3 toolset, Le found many useful applications.

"We noticed many of the features available with UDK would only be there because the engine was used many, many times in game production. This includes ease-of-use stuff like archetypes and searchable property lists, nut and bolts stuff like the packaging system, as well as major features. There is a lot of depth to the engine. Prefabs are great; our kitbash method used to create our levels requires a very robust prefab system and UDK delivered."

When it comes to working with UDK instead of the full source code version of Unreal Engine 3, Le and his team were impressed with UDK's flexibility in spite of early concern.

"We had some initial worries that using only what was available in UDK might limit us artistically, but overall the artists have been very happy with the ease and power of UDK. It enables our small team to create triple-A quality visuals."

Hawken's visuals have been praised universally and compared to big-budget studios. And while the team was somewhat skeptical about using only UDK and UnrealScript, that changed through the course of development.

"Working at an impressive pace, the Adhesive team leaned on the extensive documentation through Epic's Unreal Developer Network (UDN) and reached out to other developers

who had used UDK for their projects.

"We've searched the UDN docs as well as online tutorials. Using a publicly available engine means it's not only possible, but likely that there will be information online about whatever we're trying to accomplish. Also, the UDK community has been very supportive. We often browse through the forum and read what's possible or not before we make design decisions."

The robust community and frequent updates behind UDK were also very useful for Le and his team. "The monthly UDK update is very valuable for us. Many times we have found that a feature we needed that wasn't there when we started *Hawken* is now integrated in the latest UDK build."

The Adhesive team is currently finalizing plans for *Hawken's* distribution and plans to release the game next year.



Canadian-born Mark Rein is vice president and co-founder of Epic Games based in Cary, NC. Epic's Unreal Engine 3 has won *Game Developer magazine's* Best Engine Front Line Award four times along with entry into the Hall of Fame. UE3 has won three consecutive Develop Industry Excellence Awards.

Epic is the creator of the mega-hit "Unreal" series of games and the blockbuster "Gears of War" franchise. Follow @MarkRein on Twitter.

UPCOMING EPIC ATTENDED EVENTS

Comic-Con
San Diego, CA
July 21-24, 2011

Epic Developer Day & Unreal University
London, UK
July 13-14, 2011

Develop
Brighton, UK
July 19-21, 2011

GDC Europe
Cologne, Germany
August 15-17, 2011

Please email: mrein@epicgames.com for appointments.



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