

BEHIND THE BITS

A CLOSE-UP VIEW OF UAT STUDENT INNOVATIONS



ZERO DAYS

The New Cyber War Ammo



ZOMBIE X-TRAINER

LAST LEAF
A DIGITAL VIDEO

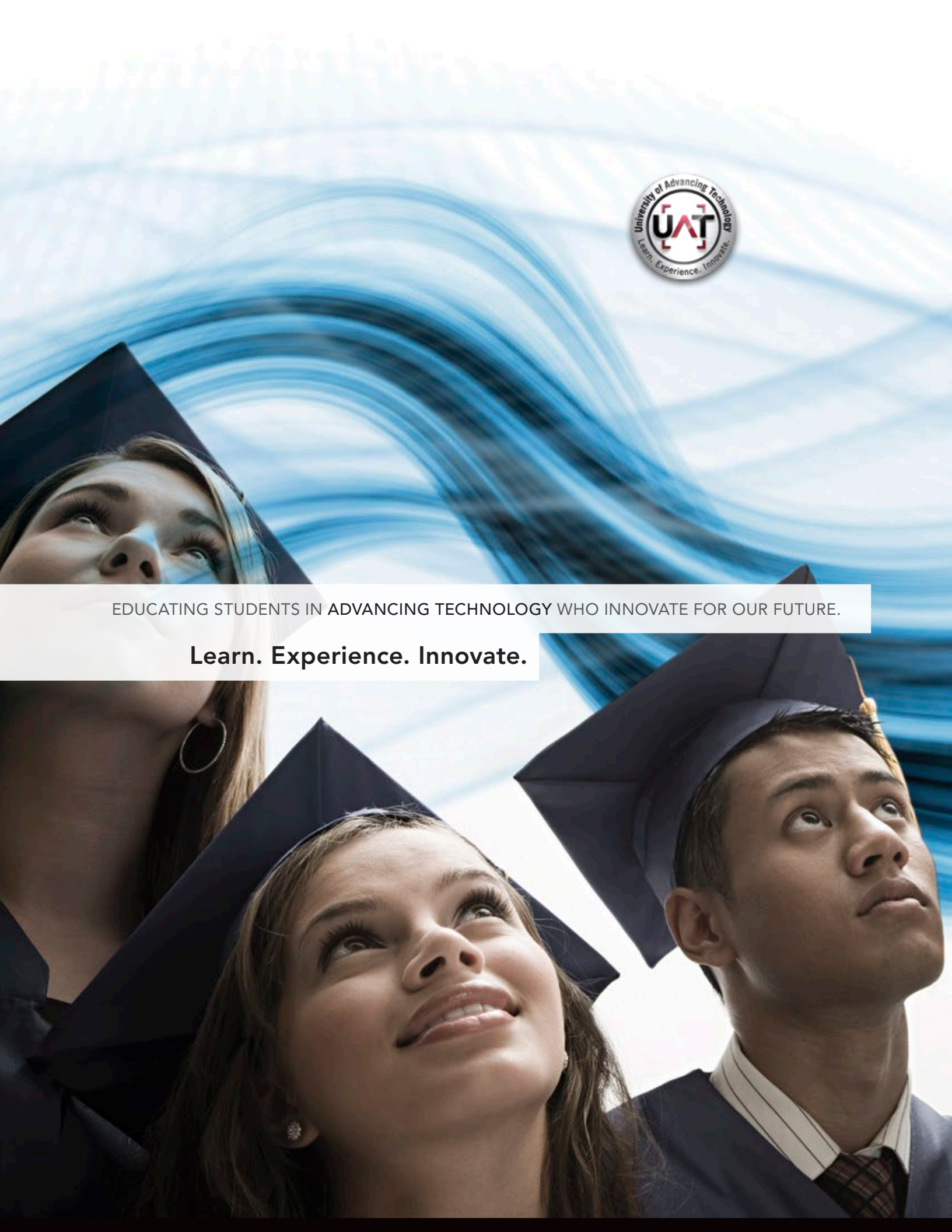


7 NEW STUDENT INNOVATION PROJECTS

BEYOND MOVIE MAGIC

ISSUE SEVEN





EDUCATING STUDENTS IN ADVANCING TECHNOLOGY WHO INNOVATE FOR OUR FUTURE.

Learn. Experience. Innovate.

FROM THE PRESIDENT



Welcome to *Behind the Bits*, UAT's student showcase of innovative, cutting edge works in advancing technology.

I invite you to read on for a unique, behind-the-scenes perspective that dives right into the creation and development processes of each work, revealing the potential each student has to make a leading contribution in the constantly evolving world of advancing technology.

From day one, students are challenged to learn, experience and innovate with advancing technology. Each student crafts an idea for a technology that aligns with UAT's core mission to advance society through the ethical development of tomorrow's most innovative technologies and become premier thinkers for a lifetime of innovation.

Over the course of their studies, with ongoing feedback from professors, professionals and peers, all students develop their concept into a Student Innovation Project with the innovative and agile thinking skills they hone that are necessary for their future success.

Our technology infused campus is designed to foster innovation in an environment that is as comfortable as it is stimulating. Students feel a true connection with peers, the industry and their professors. They have unlimited access to all labs and studios on campus, stocked with the most current software, constantly upgraded, world-class hardware and the guidance of brilliant, passionate minds dedicated to supporting students with their own innovation.

When you walk around campus, you will see groups of students working together on various technological innovations and tracking down the next breakthrough. These interactions not only challenge students to learn from each other, but also build friendships and partnerships that will last a lifetime.

As one of the first computer universities in the country, UAT has earned a reputation for excellence in advancing technology education. Every year, the graduating students from this top technology University impress the world around them as they go on to become forward-thinking innovators and capable problem solvers.

The works chronicled on these pages are truly impressive, and I am deeply proud of these students and their accomplishments. Their innovation shows great potential to be game changing, for all of us.

Sincerely,

Jason Pistillo
UAT President

* CONTENTS

***06**



JT
Martin
is a FabCom

***10**



DREADNOUGHT

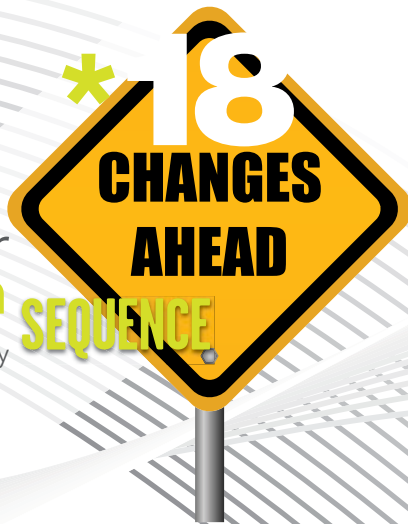
David
Strait



***14**

NEURAL
PROSTHETIC

***18**



CHANGES
AHEAD
SEQUENCE

tyler
curran
go daddy

***05**



GWYNETH
CHRISTOFFELS'
THE LAST
LEAF

JAYLYN
DAWSON
BY DESIGN



***44**

GIFT'S
GESTURE
INTERFACE



***22**

PROJECT
CAST



***30**

BRIAN
BONFIGLIO



UAT:
ALUM'S BASE
FOR SUCCESS

***36**

CROSSREALM



***26**



***48**

SIPS

UAT &
OCULUS



***32**

***40**



ZOMBIE
X-TRAINER

GWYNETH CHRISTOFFEL'S

LAST LEAF A DIGITAL VIDEO

OVERVIEW

One should think twice before giving in to greed. That's the moral communicated in the actions of a tiny, green caterpillar in Gwyneth Christoffel's film *The Last Leaf*. Gwyneth's objective was to create a joyful short film to showcase a fun, but gluttonous caterpillar character and some powerful messages. The Digital Video major from Halifax, Nova Scotia, Canada created a hit story told visually about this cute little crawler that runs into big trouble trying to get to the last delicious leaf on a tall tree. The film actually gets you thinking about other things too. The ideas of conspicuous consumption and conservation are relayed in a concise yet entertaining way.

The Last Leaf has been accepted to multiple film festivals, including the Four Rivers Film Festival in Croatia and the Chicago International Children's Festival.

What's even more innovative about her film is that she did it independently of her classes. In fact, she tries to complete one film each year over and above her other assigned class projects.

HISTORY

"What would be a fun thing to animate?" Gwyneth asked herself as she was thinking of her next film project. So she began thinking about the basic movements of a caterpillar, the story, and how to tie in a moral, a goal she has for every film. Drawing (pun intended) from the perspectives of

UAT's design classes, she decided, "Why not try a traditional hand drawn character and develop it frame by frame?" It wasn't until she was taking these classes that she discovered her artistic talent. The traditional drawing concepts in her Beginning Drawing 101 class was what initially inspired her. Her Graphic Foundational Principles class focused largely on Photoshop which also helped her discover her talent for digital painting.

"Congratulations, your film *The Last Leaf* has been accepted to the Four Rivers Film Festival in Karlovac, Croatia." Gwyneth has received lots of recognition for her newest film project, including letters similar to this inviting her to more than 20 film festivals. But this one was international. How could she afford to go? Thanks to support from UAT, including Digital Video professor Paul DeNigris who urged her to attend, the sophomore was able to travel to the festival, where she had the experience of a lifetime.

DETAILS

Gwyneth not only developed the concept and story but also created the imagery, and wrote and performed the music.

When her cousin gave her a ukulele for Christmas, she had the idea to include a ukulele track and UAT provided the materials for her to make a sound booth. It took three months for Gwyneth to take her idea from concept to completion. This caterpillar is fast becoming a "butterfly" on the student film festival circuit.

"I began *The Last Leaf* by creating a storyboard by hand to organize my thoughts. Then I used my digital painting tablet to sketch each frame in Photoshop," explains Gwyneth. "Once I finished this, I improved my sketches with concise brush strokes, color and texture. I exported each newly colored frame from Photoshop and imported them into Final Cut Pro X. In this program I assembled the drawings and added music, sound effects and titles. I recorded the music and voices for the film myself using a microphone from the UAT library and my trusty ukulele."

CHALLENGES

"Because this type of animation is so time consuming and requires precision, it was easy for my motivation to fade when creating *The Last Leaf*," says Gwyneth. "I would complete one drawing and then realize there were a hundred more to go. In these situations I would inspire myself by picking up the ukulele and experimenting with a possible soundtrack or by watching other animations I admired. It's important not to get hung up on the amount of work, but the outcome instead. I couldn't wait to share this animation and my passion with others which kept me going!"

FILM FESTIVALS

- | | |
|---|--|
| JANUARY 2015
Flagler Film Festival
Palm Coast, Florida | SEPTEMBER 2014
Awareness Film Festival
Santa Monica, California |
| Glovebox Short Film & Animation Festival
Boston, Massachusetts | Atlantic Film Festival
Halifax, Nova Scotia |
| NOVEMBER 2014
Chicago International Children's Film Festival
Chicago, IL | WorldKids International Film Festival
Mumbai, India |
| OCTOBER 2014
Aberdeen International Film Festival
Aberdeen, Scotland | AUGUST 2014
Chain NYC Film Festival
Long Island City, New York |
| Atlantic City Cinefest, Atlantic City
New Jersey | Shredder Film Festival
Hartland, Vermont |
| Mill Valley Film Festival
San Rafael, California | Film Fest Twain Harte
Twain Harte, California |
| Other Venice Film Festival
Venice, California | Atlantic Film Festival – Outdoor Film Experience,
Halifax, Nova Scotia |
| BAYMN Film Fest
San Francisco, California | JUNE 2014
Four River Film Festival
Karlovac, Croatia |
| Bayou City Inspirational Film Festival
Houston, Texas | Free State Film Festival
Lawrence, Kansas |
| | Oak Cliff Film Festival
Dallas, Texas |
| | APRIL 2014
Viewfinders: Atlantic Film Festival for Youth
Halifax, Nova Scotia |

>> View Gwyneth Christoffel films at:
www.youtube.com/user/Yourstrulygblog/videos

SUCCESSES

"One of the first sections I completed for the film was the caterpillar's face chomping down on a leaf. I had been studying my own face in the mirror and looking up examples in order to get the perfect movement. I watched this two seconds of animation and was so proud of myself. I was amazed that I was able to breathe life into a character that began as nothing. I couldn't wait to complete the film after this moment!"

FUTURE

Gwyneth's main plan for *The Last Leaf* was to share it in the Film Festival Circuit. She is constantly using it as a model for her newer animations because it was her first hand drawn animation. "I've learned so much from the process and can now work on improving my frame by frame animation techniques."

Gwyneth Christoffel
Class of '15

Hometown:
Halifax, Nova Scotia
Major:
Digital Video

Currently attending
the University of
Advancing Technology
on a full-tuition
scholarship.



ALUMNI PROFILE: JT MARTIN

FUELED BY UAT TO LEAD AD INDUSTRY

LEAD

OVERVIEW

JT Martin is one of the leading art directors in the southwest. But he'll tell you it took more than talent, and intellect. It takes the right education to nurture his development and optimize his growth to bring out JT's greatest potential to not just succeed... but lead.

The Litchfield Park, Ariz. native is a UAT alumnus who graduated magna cum laude with a Bachelor of Science in Software Engineering. He also holds a Bachelor's in Fine Arts degree in Advertising Design from Northern Arizona University.

A strong conceptual thinker with in-depth project management/ supervisory experience, he currently is lead designer and senior creative director at FabCom, an integrated strategic marketing and advertising agency, where he's impressed his team and clients for more than nine years.

HISTORY

There were early signs JT Martin was going to be a force in the ad industry. He was one of those "out-there," artistic, Tinker Toy and Erector Set kind of kids—perfect training for a career in advertising.

JT comes from a long and diverse history in advertising, both on the client and agency side of creative development. Prior to arriving at FabCom, he served in creative management for several of the nation's leading ad agencies: Patchen-Brownfeld (previous co-owner); Rosenfeld, Sirowitz, Humphrey and Strauss; and AdForce One.

He decided on UAT because he had heard about the technology university's faculty credentials, course selections and awesome facilities.

The well-known firms he has helped to develop their brands, and created content for, are Arizona Heart Institute,

America West Airlines, Arizona Biltmore, Great Western Bank, Heard Museum, McDonald's, Motorola SPS, Phoenix Convention and Visitors Bureau, Zila Pharmaceuticals, Syntex Ophthalmics, Westcor Malls and Western Pacific Airlines, as well as a host of others.

JT goes back to UAT every now and then, in a much different role these days – as creative director during the onsite photo shoots for Geek 411. And when he does, he feels right at home. In fact, he has developed relationships with many faculty and staff through the years, and it always feels great to reconnect. Professor Derric Clark, Professor Vesna Dragojlov, UAT Provost Dave Bolman, and UAT President Jason Pistillo are just a few examples.

"The thing I remember about JT is his drive to learn things with an intensity that stands out," says Professor Derric Clark. "He was driven in courses to learn and apply the materials and could see how the information fits into his view of the technology world. Beyond class, the Porsche 944 conversations we had were epic."

DETAILS

JT manages and directs creative staff, evaluates projects, provides hands-on direction and execution of concept development, develops client positioning and strategies, and creates sustainable campaigns to meet client needs:

>> Helps supervise and unify a vision

He's in charge of the overall visual appearance and how it communicates visually and psychologically appeals to clients' target audiences. He helps create concepts with copywriters and strategists to develop a look and feel for the 'big idea' designs for broadcast, print, online and other media. He makes decisions about visual elements used, and what artistic style is best.

>> Works with the entire FabCom team

JT works with photographers, illustrators, interactive designers, developers, copywriters and account executives to arrange the production of the campaign for all different mediums. As a team, they create strategies to strengthen the client's position in the marketplace, create experiences to perfect the

relationship with their customers, influence their future and redefine their brand.

>> Inspires others

He adds that another part of his role is inspiring other creative members of the team. "It's important to provide inspiration to others and be inspired by others on your team. That really helps fuel innovation."

GEEK 411 TAKES A DEEP DIVE TO EXPLORE JT'S WORLD FURTHER.

Geek 411: So what does a typical day look like?

"I've been doing this gig for many years, and with many different companies, and in different industries and no given day is exactly alike," says JT. "That's why I still do it and love it. It always varies, depending on the project or phase of the project we're in."

"With that said, almost all of us share a few common elements - research, meetings, clients, creatives, approvals – and deadlines, deadlines and deadlines. These elements seem to be the lifeblood of an AD position, and make up the bulk of my work day. Not to mention great music!"

Yeah, streamed music in the Design Studio definitely helps the creative juices flow. That and the energy that surges throughout the office.

Geek 411: What must graduates entering this field today know about art direction and today's technology?

"Art Directors today must know how to both design and execute innovative digital experiences," he explains. "They must know which design principles will work for best-in-class brand with interactive, mobile and web experiences. And they must successfully translate concepts into leading-edge interactive experiences. An in-depth knowledge of development tools, motion development and ActionScript is needed."

ALUMNI PROFILE: JT MARTIN



Geek 411: *What are some of the important skills an aspiring AD should possess?*

- >> Knowing basic principles of design and communication, which will translate into the ability to craft and sell your idea.
- >> An ability to see the bigger picture while focusing on the details that will make the difference.
- >> Ability to design a portfolio that is both strong

conceptually and creatively... less is more here.

JT works with a wide range of technology including software programs Adobe Suite (Illustrator, Photoshop and InDesign, C++ and C, HTML (the basic foundation for website design), JavaScript, Unix and Linux.

He offers this advice to students entering the art, design and multimedia realms:

"Having a passion for design and the arts is paramount. If you don't love what you are doing, you will burn out quickly. You must have a thick skin and learn to accept professional criticism. Stay up-to-date with the latest trends and techniques to stay fresh and relevant. Keep learning."

He adds that a good education opens doors and leads to new job experiences. UAT created new opportunities

for him that he wouldn't have had otherwise. It's no wonder he is considered a leading force in the ad industry.

"JT is a classic case of a super talented top professional in his industry who was starting to get eclipsed by new technology and new methodology," says Brian Fabiano, president/CEO of FabCom. "When that happened, he went and earned his degree from UAT and then was able to take the very best of his learned craft, together with his talents, and apply them to the next 20 years in his career. The combination of talent, experience, and new technology prowess with the latest advancing technology has made JT one of the best, if not the best, in Arizona."

SUCCESSSES

As a seasoned professional, JT has been successful in contributing at a high level in a field driven by younger creatives. He emphasizes that it's important to be able to work with people who range in age and discipline.



Winning the Effie Awards, which honor the most effective marketing communications cases in the United States and Canada are particular points of pride and among his most prized career highlights. He's also earned Addy's, HISMAI, a Prisma, and a Telly.

CHALLENGES

Progressing and improving skills in both the creative and technology arenas means staying continually connected to updates in these industries, which can present both challenges and opportunities. JT suggests effective ways to stay connected:

- >> UAT is there for you well beyond graduation. Auditing classes post-graduation at UAT is free... for life.
- >> Building your network to establish connections with people in your industry as well as those in complimentary fields that connect to yours.
- >> Surrounding yourself with peers and like-minded people with same attitudes and ambitions to grow and succeed.

WHERE IS HE NOW?

Aside from working at FabCom and being a respected industry leader, JT is the proud father of two grown sons who share their father's love of anything with wheels (racing cars, cycling, riding motorcycles, kart racing), concerts, drawing and painting. He also loves collecting mini guitars, vintage pocket watches and vintage race helmets.

JT Martin
Class of '04

Hometown: **Litchfield Park, AZ**
Major: **Software Engineering**

JT currently serves as Senior Art Director at FabCom.



>> Award winning Ad Campaign, for UAT, created by JT Martin.



DREADNOUGHT

UAT ALUM'S 3D WORK

Excitement
builds for
Dreadnought.



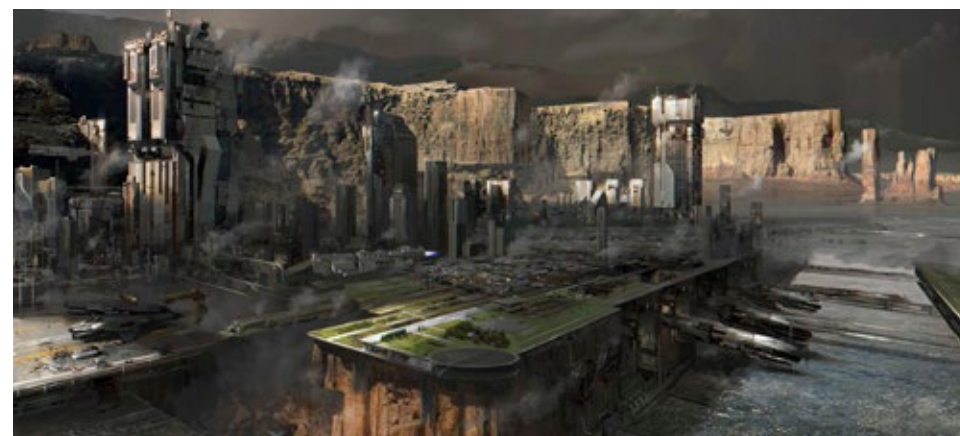
DREADNOUGHT

UAT ALUMNUS' 3D WORK

OVERVIEW

Dreadnought is an aerial armada action game garnering much excitement and anticipation even before its worldwide release sometime in 2015. If that isn't cool enough, *Dreadnought's* team of creators includes one of UAT's own – 2012 graduate Joshua Morrison who majored in Game Art and Animation. He's a 3D artist at Yager in Berlin, Germany.

The game is set in a futuristic era of war and hardship, where players take on the role of a mercenary spaceship captain who owes allegiance to no nation, fighting for glory amidst



a galaxy of chaos. Battleships in the game are massive spacecraft that come in varied shapes and classes. Commanders will assume complete control, dedicating power to specific sub-systems, customizing weapons, engines, armor, abilities, crew and their ships' aesthetics.

HISTORY

In the early 20th century, the Royal Navy's dreadnought was the leading style of battleship and a symbol of national power. The game *Dreadnought* already is highly acclaimed for its game design innovation that's generating a lot of buzz and making news, not to mention making the E3 Hot 50 List from Game Informer, and already being featured at PAX South in San Antonio, Texas; and PAX East in Boston, Mass.

About Josh

Josh came to UAT as an older student, married and serving in the Air National Guard. He was

very serious about his education in Game Art & Animation and dedicated himself to creating the best quality portfolio possible during the pursuit of his BA degree. Joshua focused on just a few pieces to highly polish them, pieces that were specific to his GAA specialty of military characters and weapons modeling.

While still attending UAT, he joined several game development teams including alumni owned game companies. Thanks to UAT's innovative curriculum in game development and real-world experience at Retora Games, Radial Impact and other companies during school and after graduation, Josh built his portfolio. He was instrumental on a team with alumni entrepreneurs that produced a product for a US military subcontractor, utilizing his talents as a character artists and animator. Shortly after graduating, with approximately five well-polished 3D models in his portfolio, Josh received an offer to join a team at Yager in Germany to create *Dreadnought*.

During his first year at Yager, Josh attended one of the industries major trade shows, E3 in the US, as a representative of his game and spoke at the conference on behalf of his company.

DETAILS

Dreadnought is a free-to-play, futuristic aerial "dogfighting" action game powered by Unreal Engine 4 for the PC. The game will feature 5v5 multiplayer as well as a single player campaign. The game has a distinct sci-fi look and intense, tactical feel. Published by Grey Box and developed by Yager, *Dreadnought* features both online co-operative multiplayer and an episodic single-player campaign. According to Yager, *Dreadnought* makes the player feel like a large and powerful force to be reckoned with.

Josh designed the game's long, narrow Artillery Cruiser.

Ships include:

- > The Artillery Cruiser, the most vulnerable ship in the fleet, categorized in the sniper class. It has the MOST damage output.
- > The Dreadnought, a huge tank that is the slowest class. Yet its size is designed to withstand the biggest beating.

> The Destroyer, the ship with the plasma beam, designed to be first in and last out (high damage and versatile class).

> The Tactical Cruiser serves as the tide turner of a battle and is categorized in the support class. Each one repairs ally ships on the fly and can lock in a win for your team.

> The Corvette is the scout. With the ability to cloak, the ship will be able to sneak behind enemy lines to take out support ships

Josh responds to a question from a Facebook Fan:

Question: Will we be able to customize the look of our ships? Such as adding decals or custom hull paints?
Answer: Yes, currently all of this is planned! You will be able to add cosmetic attachments that don't affect gameplay but let you create your own custom *Dreadnought*. You will also be able to pick from different paint jobs such as stripes or camo and then choose colors for these paint jobs. We will have decals too and are working on a figurehead system that will allow you to top it all off with a custom figure head for the front of the ship.

Source: Yager Facebook page

Joystiq captures so well *Dreadnought's* features and game play in a review on their website, (excerpts below):

"Describing *Dreadnought* as a 'shooter' isn't quite accurate. Though it features the control scheme that's been standard since the days of Quake and pits teams of players against one another in a rush to see who can rack up the most kills, these opposing forces are not populated by your typical hyper-macho space marines. Instead, you pilot spaceships. Huge spaceships."

"Each of *Dreadnought's* ships - which range from the gigantic titular craft seen in the above teaser, to smaller, more agile support ships and long-range artillery cannons - feature four unique abilities. That aforementioned *Dreadnought*, for instance, can fire broadsides straight out of Blackbeard's worst nightmares, though instead of hardened lead balls, the gigantic craft launches gouts of green plasma. Unfortunately, the broadside requires your ship to be relatively close to enemies, but the *Dreadnought* can also engage foes from afar by launching a tactical nuke, which doesn't just destroy a single ship, but obliterates everything nearby in a sphere of apocalyptic hellfire."

"Those who prefer a more passive role can opt for the smaller healer craft, which, while bristling with weapons, does its best work by repairing allies via healing beam. Want to play the sniper role? Steer an artillery craft to the edge of the map and take potshots at foes with your massively damaging blasts, but beware because that power comes at the cost of armor. Faster ships will quickly notice your artillery platform, chase you down and blast you out of the sky with rapid salvos of close-range weaponry."

FUTURE

Receiving great reviews even in the previews prior to its full completion and release scheduled for some time in 2015, *Dreadnought* is continuing to impress at game conventions throughout the world. The game will be available for PC, iOS and Android through the Apple Store and Google Play.

"Maneuverability is likewise complemented by a convenient wheel which allows would-be starship captains to choose where their finite (though constantly regenerating) supply of energy might best be allotted. If you're taking fire, you'll want to shift your power toward shields, but if fleeing from battle, you're going to need all your reserves pointed squarely at your engines."

"It's not quite Kirk yelling at Scotty to work his pseudo-scientific magic, but it gets the job done and dropping all power into your weapons dismantles enemy ships at a very satisfying clip."

CHALLENGES

"There were so many challenges when it came to this project and a big part of it I would say would be my learning curve in the whole process," says Alex. He says they made him a better filmmaker overall.

"I learned that it takes a considerable amount of organization and patience to be a producer," says teammate Natasha Stringam. "Scheduling itself was a wild ride for me, but I learned a lot from the experience."

SUCCESSES

Josh knocked it out of the park with his 3D design of the game's sleek Artillery Cruiser, one of the game's five ships playing a crucial role in gameplay and adding to the thrill of the game.

Joshua's successes are often shared with students along with the successes of other alumni with inspirational stories including those who have acquired triple-A jobs shortly after graduating.

Professor Lynn Understiller had Josh as a student in class and continues to be a big supporter and one of his biggest fans.

"During December of last year, I received some correspondence from Joshua through the professional networking site for the industry, LinkedIn. He stated, 'You don't know it but you have been a huge inspiration to students. I share your work and your initiative, and they are so inspired! Thank you for that! :) Happy Holidays -Josh!' What Josh may not fully understand is that he is also a huge inspiration to students, and to me!"

"On June 11, 2014, the UAT website posted the following image of some of Josh's work on *Dreadnought*. UAT and the game faculty members continue to work diligently to promote alumni and students within their careers. Having them feed back into the UAT culture by sharing their experiences helps to carve a path of success for future generations of UAT game students. Thank you, Joshua!"



WHERE IS HE NOW

JOSH currently is a 3D artist at Yager, an independent developer of computer and video games based in Berlin, Germany and specializes in the creation of AAA, multi-platform action experiences for a global audience.

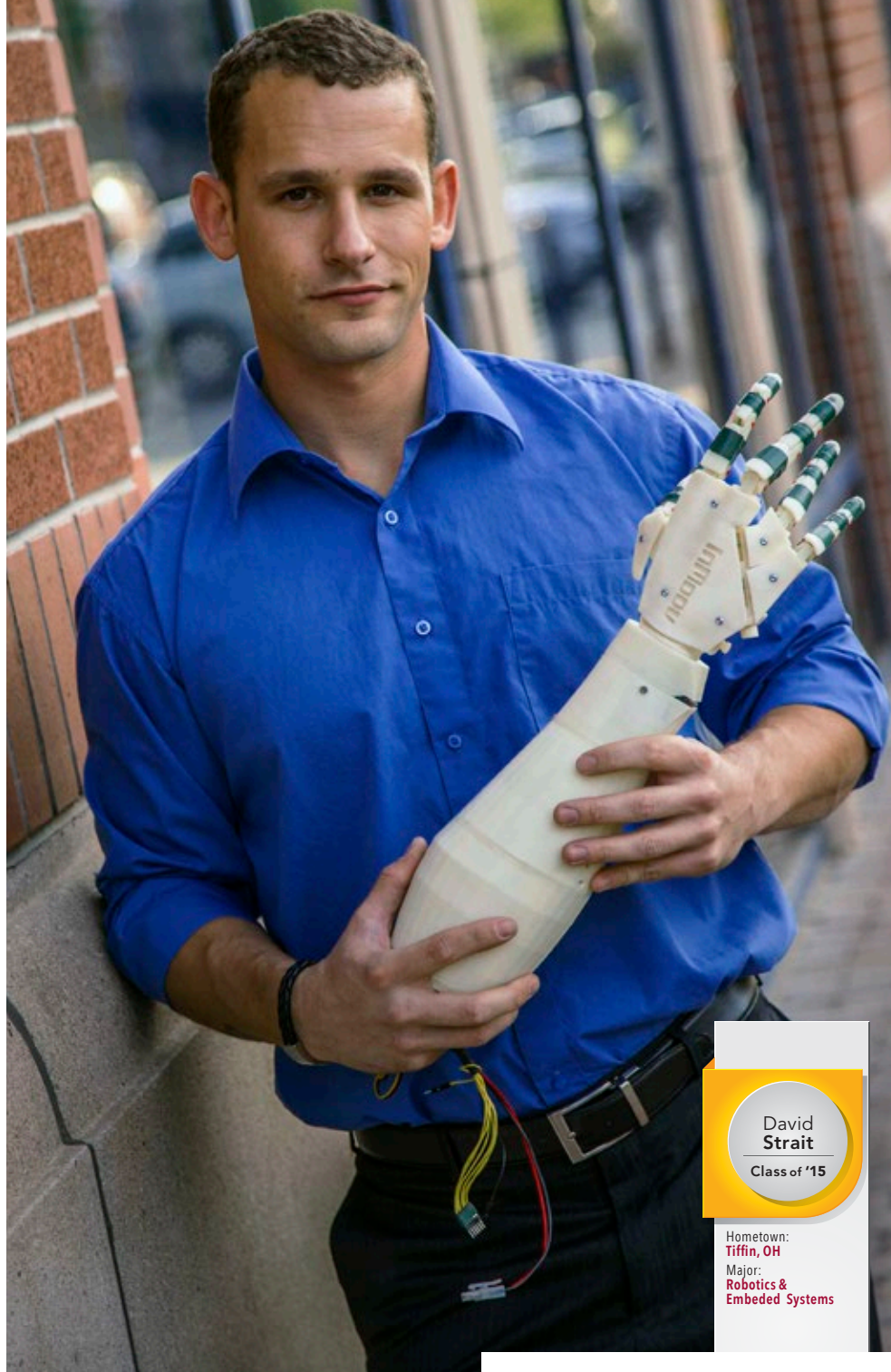
"*Dreadnought* is Battlefield in Space - A Unique Space Combat Game Worth Playing. We loved our playtime with *Dreadnought*. Assuming the team is capable of handling the great responsibility that is Free to Play, we'd instantly register for play upon the game's launch. Combat is fun and rewarding in that it's quick, match-based, and doesn't require a prohibitive amount of learning just to move the ship (standard WASD controls + vertical movement, then a few abilities)." -- Steve Burke, Gamers Nexus

"Yager promises a number of additional gameplay modes, including episodic single-player content, will be added prior to debut, but those two matches I spent blasting the game's devs into airborne detritus made one thing very clear: The free-to-play shooter space sorely needs more creative efforts like *Dreadnought*." -- Earnest Cavalli, Joystiq

"I was sold on the concept of *Dreadnought* when I first heard that it was like playing a Battlestar Galactica game. That was a high bar to set though, yet *Dreadnought* cleared it with ease. The ships are huge and feel appropriately slow and powerful. The class system offers variety and team tactics. And the game simply looks great, with ships taking realistic damage and exploding into glorious chunks of debris." -- Kyle Hanson, Attack of the Fanboy

"Distinguished by a range of classes, subclasses, and varied progression paths, each warship is a force to be reckoned with, bristling with dynamic armaments and fully customizable to make your opponents crumble beneath the might of your bow." -- Robert Purchase, Eurogamer.net

STUDENT INNOVATION PROJECT: DAVID STRAIT

NEURAL PROSTHETIC
(ROBOTICS AND EMBEDDED SYSTEMS)

David Strait
Class of '15

Hometown:
Tiffin, OH
Major:
Robotics &
Embedded Systems

OVERVIEW

Tiffin, Ohio native David Strait is putting his ideas into life-changing actions with his Student Innovation Project—Neural Prosthetic. With a strong interest in robotics prosthetics, he is improving prosthetic function and accessibility with an open-source 3D printed project combined with the Emotiv EEG headset. David's Python-language interface leverages the power of combining two advancing technologies to make a true difference in the lives of United States Military Veterans and many other people.

His purpose for doing this is to also help pave the way for future innovations that will bring together these technologies and start a trend.

"A little competition has always made a better product," says David.

Utilizing UAT's Maker's Fab Lab, he joined with UAT professors including Professor Mark Fedasiuk to design a Python programming interface to solve a real-world problem of timely, affordable access to quality prosthetics for wounded vets. The software serves as an interface and a unique training suite. Brainwaves are trained to control a task—in this case a hand. Each grasp is different, so each one has to be linked to a singled out frequency in your brain. One targeted brainwave makes for one motion, such as closing all fingers to make a fist.

What David likes the most about UAT and the robotics program are the resources – and Synchronic Learning model. "UAT has a very unique mindset and scope. My first semester wasn't just my prereqs – it was a little of everything. From my very first semester working on robotics, I dove right in to the meat and potatoes of what my degree is about and it's always been hands-on from the first semester. I've had my hands on robotics since day one which has helped me keep my focus. I've excelled greatly in this field, much more than I ever thought."

HISTORY

David went to very small hometown schools. He tore things apart as a child and wanted to see what was inside and how and why it worked. Interworking components interested him. His parents owned a saw mill, and he got to play with machinery. But for the most part, he wasn't around a lot of technology growing up.

So he learned on his own. When he entered into high school, he worked at a welding factory and saw they had a robotic welder. When he joined the Marines, he was part of the riflery infantry as a gunner. He witnessed robots picking up and diffusing bombs.

And he saw what other men and women were doing as they were recovering from their injuries and getting accustomed to prosthetics. He realized how lucky he was to be alive.

As he prepared to be discharged, David had no direction. But his experiences got him thinking. And seeing the movie "iRobot" with Will Smith, spurred his thinking even more. If they can make super cars, why can't they make better prosthetics? David decided to put his thoughts into action and combine the human, robotic and prosthetic elements together to help others.

"I can help other people, so why not?" he said.

David researched hundreds of colleges from his barracks and ultimately decided on UAT because of its comprehensive robotics focus. He registered just two months before his discharge. When that day came, he drove straight from the Marine Corps to UAT.

The idea for Neural Prosthetic happened when he sat down in a meeting with UAT professors, "They said they had a project they were asked to try to do. I told them I would join them on the project, and as a result I decided to take on the project as my Senior Innovation Project," said David.

From conception to working prototype, David's Student Innovation Project only had a four-week turnaround because there was an opportunity for UAT to display a functioning model at Tempe's Geek's Night Out event.

"We had a fully working demo for the event, including the Emotive headset. We showed people the program with visuals and everything. It was all done with Bluetooth so it was wireless."

DETAILS

David used UAT's Maker's Fab Lab to build the prosthetic. This was accomplished by using resources available such as the 3D printer, CNC routers, tools and fabricating materials. UAT now even has a vacuum former that creates moldings of objects to help fabricate many products.

The programming language being used to interface the two devices is Python. The "Emotiv" headset that reads the EEG brainwaves of the user comes with its own software that takes in the raw data and outputs it into a software program. It comes with the headset called the Emotive EPOC, which uses sensors to tune into electrical signals produced by the brain to detect user thoughts, feelings and expressions.

With help from his professors, David used their Cognitiv™ Suite software that allows the user to interpret his/her conscious thoughts and intents. This gives the user the ability to manipulate a virtual object in their program just by thinking. They created a program in Python that lets the user train brainwaves to do specific hand motions and grasps. It gave the user a visual of a hand on the screen that they practiced manipulating just like their virtual cube in their software. They sent this data wirelessly to the prosthetic, which was controlled by an Arduino microcontroller. The Arduino was pre-programmed to do all of the specified hand motions and grasps.

The two technologies that are combined are the prosthesis and the wireless Emotiv headset by Emotiv. The Python interface is simply the program they created to connect the two technologies so they can work together. The Python interface serves two purposes:

- > To allow the user to train on a virtual hand on the screen to perfect the hand grasps and motions.
- > To make the link from the Emotiv headset to the Arduino microcontroller.

Development steps included:

- > Find a prosthetic hand that we could use and fit to the application, then modify it to work for the intended purposes. We 3D-printed the open-source prosthetic, and made modifications to it to make it a wireless Arduino.
- > Create the Python language software interface that allowed us to train on the prosthetic hand instead of the Emotiv suite 'virtual cube.' The program then had to send out these commands wirelessly to the Arduino microcontroller.
- > Write the Arduino C language to control the actuation of the prosthesis by wirelessly receiving the information contained in the Python software.

From there, it was a couple weeks of excruciating amounts of programming, debugging and hardware testing. Throughout his project's creation, David was able to create everything he needed inside UAT's Maker's Fab Lab, the first campus-based lab of its kind in Arizona.

"We promote an open environment where all students have access to every lab, regardless of major," says UAT President, Jason Pistillo. "There was never a need to send schematics to a factory to build his project. David had all the resources to make it at UAT."

STUDENT INNOVATION PROJECT: DAVID STRAIT

SUCCESSSES

The first successful milestone of this project was taking a concept and creating a working prototype in under four weeks, all while taking a full-time semester of senior level classes.

Getting the Python interface to work off of the Emotiv Suite allowed users to train on a virtual prosthetic hand. Debugging the code was one of the bigger milestones. David and his professors had all pulled a near-all-nighter at UAT fixing one of the last programming bugs and finally got it to work.

The most important lesson David has learned throughout this process is that nothing great in life comes easily. "You must be prepared to put in the man hours and be willing to sacrifice a lot of sleep and gym time to be successful otherwise the project ends up on the shelf like other ones you didn't have the motivation to finish." This was David's first challenge.

The second challenge is having the motivation to do the project. "Once you lose motivation, then it won't get done, but if you keep the motivation and work hard at it, everyone else keeps with it," says David.

"Number one rule I've come to learn and accept is that in the robotics and prosthetics world, nothing will come out the way it is meant to the first time," explained David. "It will take some time to mold the project into what you

picture it as in the beginning. The key is to not give in too easily. Keep working on it, set days and times that you can work on it so you keep a consistent flow of work going. Don't overwork yourself to the point of quitting, but allow yourself to keep hands on the project. Once it gets put off to the side, and you take a short break from it, the project tends to get put on the backburner. Set the criteria that define the goals of when the project is complete. Define what it means to make the project complete so once you get there, you know it is complete, otherwise you never get the satisfaction of a completed project. Doing projects like this one allowed me to step way beyond my bounds, and I had to be very creative with my skill sets. This is a good one for anyone who wants to be successful in life; you cannot reap reward without taking the risk."

THE FUTURE

The project is a working model as of now. By the time he graduates later this year, David hopes to have fully functioning robotic prosthetic devices – partially 3D printed.

"We could live forever with what we have now, but why do that when there is something so much greater, affordable, more advanced, and more durable out there?" David surmises. "I hope to do models of the same project in the future that are more durable, cheaper and more efficient. Now, as far as getting this product into the hands of veteran amputees, there's no guarantee that will happen very soon."

The next milestone will hopefully be to get an all-in-one computer OS that is small enough to be carried discretely while running the Python interface, the Arduino, and any other components involved such as the headset. He wants to include a couple of slip sensors for the finger tips to allow the user to receive tactile feedback while trying to pick up an object so they don't drop it. This will include pressure sensors also.

Ultimately, he wants to make them cost efficient so that more vets can afford them. Costs will range from around \$1,000 dollars or under, compared to \$20,000 (often not fully paid by insurance).

WHERE IS HE NOW?

Everything is falling into place for David, especially because at one time he did not see himself here at UAT. He was in the middle of a couple of explosions and injured his back with herniated disks and torn ligaments, but thanks to physical therapy, he is here today.

David plans to either get a degree in biomechanical engineering or a masters in robotics so he can continue his work. He ultimately wants to work for DARPA and continue his work to make better prosthetics available to more injured soldiers. He, one day, hopes to have his own business that conducts research and development on new technologies to create some competition, which will expedite the process of getting products such as these out to the public faster.



CHALLENGES

THE PROJECT IS A WORKING MODEL AS OF NOW. BY THE TIME HE GRADUATES LATER THIS YEAR, DAVID HOPES TO HAVE FULLY FUNCTIONING ROBOTIC PROSTHETIC DEVICE.



A LITTLE COMPETITION HAS ALWAYS MADE A BETTER PRODUCT," SAYS DAVID.

THE FUTURE

"WE COULD LIVE FOREVER WITH WHAT WE HAVE NOW, BUT WHY DO THAT WHEN THERE IS SOMETHING SO MUCH GREATER, AFFORDABLE, MORE ADVANCED, AND MORE DURABLE OUT THERE?" DAVID SURMISES.

THE NEXT MILESTONE

SUCCESSSES

TYLER CURRAN / SEQUENCE

CHANGE UP YOUR GAME EXPERIENCE

OVERVIEW

Sometimes when you're playing a game, the order of events doesn't matter and changing it can actually make it more fun. That's why Game Design major Tyler Curran designed his Student Innovation Project, Sequence, to mix things up. Sequence is a game mechanic that provides the ability to craft and present segments of a plot in such a way that they can come together in any order, and still tell a coherent but unique story with the same content. What's even cooler is that down the road this mechanic could apply to storybooks as well.

Sequence involves being able to take the same self-contained story segments and, without modifying those individual segments, completely alter the overall story by placing them in a different sequence as if that was the sequence intended to be told all along.

HISTORY/BACKGROUND

"The idea for Sequence initially grew out of wanting to see if I could develop a system that allowed the player to somehow influence the game's backstory, in addition to the story they were currently taking part in," says Tyler. "That morphed into a vague concept about gathering intelligence to assemble some sort of timeline as to what happened previously in the game's environment. The concept eventually came into the game's current time and setting, and thus Sequence was born. The catalyst for the project was wanting to challenge myself. Information taking on new meaning based on experiencing it in a different order sounds like a very strange notion...so I wanted to see if I could do it."

Tyler
Curran
Class of '15

Hometown:
Pleasanton, CA
Major:
Game Design



TYLER CURRAN / SEQUENCE

CHANGE UP YOUR GAME EXPERIENCE

"This project was helpful in regards to the real world because I learned about managing a game's scope and properly scheduling projects," he says. "It gave me a big confidence boost."

DETAILS

The methods found in Sequence can be used to extend the replay value of a title. Tyler developed a system that emulates a visual novel within the Unity game engine, created a code that keeps track of player navigation and choices, and implemented the scripts he wrote for the screen transitions. The various elements of a story all fill multiple fiction tropes in order to create the links. For example, what was once an uplifting end to a story can take on a more sinister tone when placed at the start of the timeline.

The player will navigate the game using a first person perspective and be told the story through a variety of methods including audio recordings, in-game documents and holographic animations. The conclusion of the design prototype will recap the player's version of the story and then reveal to the player the true nature of the game. The player's will then be asked if they wish to repeat the game using a different sequence.

The player will be compelled to start over and play through the game again in order to experience a different story. Writing a story such as this will naturally improve the depth of

the tale being told by virtue of each segment needing to serve any number of purposes.

Tyler utilized prior art which includes sprites from the games Advance Wars: Days of Ruin and Super Robot Wars J, backgrounds from the website alphacoders.com, music from the games Star Fox 64 3D and Mass Effect, sound effects from the website Soundjig.com and code from the Easy Masking Transition script package.

A narrative example of how the game starts goes like this:

"Welcome to Sequence, an experiment in interactive storytelling. You are in control of Captain Jaycobs, the leader of a ragtag crew of thieves and couriers who will do any job in the galaxy... for a price. Your latest one sees you escorting a scientist to an abandoned space station so she "can search around." Her story raises some flags, but what the [bleep], the money is good and your ship is in desperate need of repairs.

CHALLENGES

> Time allocation: Tyler switched projects and was initially working on something completely different. When he changed course, it drastically reduced the amount of time he had to devote to Sequence. He also kept changing the way the multi-sequenced narrative would be delivered, which further decreased the amount of time that went into the final version.



"I grossly overestimated the amount of work I can get in a specific amount of time. When I planned to be able to do something within a day's worth of work, it would end up taking me a week."

Tyler learned the importance of a plan. Because there are several different permutations of how a story can be interpreted, it's difficult to plan out and anticipate what their interpretations will be. It's important to plan out the story from a variety of angles. Consider and anticipate a wider range of interpretations.

SUCCESSSES

The core concept was successful. Tyler was able to take the idea of non-linear storytelling being used to create a linear narrative and present that in a way that was playable. The player is able to come away with a variety of stories based on the

order in which the content is experienced... all without the content itself changing.

Tyler confronted the biggest issue which was deciding exactly how he would show the story off to the player. He went through completely different iterations before he arrived at the final product: His biggest success was the fact that he was able to construct a story that can come together in any order and form a coherent narrative. He's happy to say that he arrived at a solution and learned that there is value in simplicity.

Tyler's experience contributed to successfully developing a game concept and to his overall college experience.

"I particularly enjoyed UAT's environment and the collaboration you get with people that included running ideas back and forth," he said.

The most important lesson he learned is to not to designate a certain gameplay style for himself based on what he thinks he can do.

"It is okay to try something that I think will be a little beyond my skill level because I can learn to do stuff."

FUTURE

Sequence is complete. What Tyler learned about narrative, storytelling and games, he'd like to incorporate everything into a real product.

WHERE IS HE NOW?

Building his portfolio with this game and others provides Tyler some options to consider after he graduates.



GIFT PROJECT

MANAGING FIREWALLS GIFT'S GESTURE INTERFACE.



OVERVIEW

Game interfaces are designed to be simple and intuitive. So what if interfaces similar to that of video games could be used to solve real world problems with firewalls? That's what a team of UAT students and faculty explored that ultimately became the innovative approach taken in the Student Innovation Project GIFT (gestural interface firewall technology). The project aims to offer all of the back-end functionality a firewall administrator needs without using a clunky data table interface.

GIFT was the Student Innovation Project of Game Design major Jacob Nichols, Network Security major Michael Hoffman, Network Security major Freddy Chavez, Game Design major Joshua Thomasson, Game Programming/Game Design major Cody Fischer; Game Design major Derek Sinex, Artificial Life Programming major Louis Sandoval, Game Design major Flynn O'Hare and Network Security major Angela Leifson.

Contributions were made by Network Security major Robert Smithers, Network Security major Loran Lewis, Network Security major Nicolas Jauregui, Game Design major Justin Mooney and Game Design major Luke Venchus.

2014 graduate Jacob Nichols served as a game designer and communications liaison between the Network Security and Game Design teams.

When you think of gestural interaction, images of *Minority Report* and *Iron Man* often come to mind. But GIFT proves gestural interaction is not just the stuff of sci-fi movie blockbusters and this advanced technology can really be incorporated.

Taking one technology and applying it to another with the intent of solving a problem; now that is out-of-the-box thinking that can lead to real-world solutions.

HISTORY

Managing firewalls has, traditionally, been no easy task. Their needs got to be a more user friendly interface. Solving this problem became the focus of GIFT.

UAT students and faculty worked together to develop an idea to create it.

Professor Russ Rogers, Program Champion for Network Security at UAT, sought to develop something more intuitive than a massive data table. After collaborating with Professor Derric Clark (Game Design/Game Programming Program Champion), the idea to create a visual gesture interface with the Kinect was born. Students from across the disciplines of Network Security and Game Design/Programming were recruited to make the project a reality and a Special Topics class was formed for the project.

That's the beauty of personalized learning at UAT, cross discipline collaboration at UAT is encouraged and a pivotal part of its Synchronic Learning education model because it fully prepares students to work in teams after graduation.

"Professor Rogers wanted to merge two very different genres – Network Security and Game Design," explains Jacob. "Normally they don't meet, so it was kind of a cool idea that he came up with...asking himself how can he help us collaborate and develop our teamwork better. He developed a special topics class just for us with 14 people."

The GIFT team looked at some of the current stock of security-related appliances and software using a CLI interface for its users and administrators, which can be complex, confusing and cumbersome. After doing their research, they realized that most people prefer an intuitive, interactive interface, resulting in a more gratifying and simpler work experience. Together, they determined that using interfaces similar to that of video games would work well.

DETAILS

GIFT utilizes the Kinect SDK set up to monitor and administer firewalls through a gesture based interface, as opposed to the standard spreadsheet format. Taking that style of interface and transferring it to a firewall will make firewall administration quicker and easier. The program can be used on any computer with a Kinect attached and running. The application will turn the task of managing a firewall from searching through data tables to navigating simple menus with gestures.

GIFT PROJECT

MANAGING FIREWALLS



Prior art used in this project are SSH.NET Library and Kinect for Windows Wrap Panel functionality.

The design prototype maps out the menus of the application and how they relate to each other. The prototype is built on any image software or drawn on a board. Designs that were drawn link together different screens and list their functionalities, so the team was able to easily piece the different screens together later in the functional prototype.

GIFT's objectives include:

- > Create working prototype.
- > Hardware setup – Set up machines for client, firewall and server.
- > Add wrap panel functionality – Create basic wrap panel interface.
- > Set up firewall – Add basic rules to firewall.
- > List/Search Functionality – Allow user to list or search the rules.
- > Delete functionality – Allow user to delete a rule based on number.
- > Add functionality – Allow user to add a rule.
- > For prototype stage, only has to add a rule. Can be a hard coded rule.

Create custom GUI:

- > Create buttons.
- > Create GIFT logo.
- > Create custom menu backgrounds.
- > Integrate GUI items with functionality.
- > Add GIFT logo to application.
- > Import custom buttons.
- > Import custom menu backgrounds.

CHALLENGES

- > At one point, several scripts were scrapped because a new language needed to be used.
- > Communication across the disciplines proved to be difficult at times. Working together as a multi-disciplinary team tested and strengthened their abilities.

SUCCESSES

All of the objectives pertaining to the prototype have been completed. The prototype works as needed, allowing users to list rules, search through them, delete them, and add a hard coded rule. The motion controls work as expected, and allow for a smooth experience. Menus swap fluidly, with no lag.

"Being part of the GIFT team was a great learning experience for me that further

developed my skills and exposed me to how multiple technology disciplines work together," says Jacob, who hails from Clarkston, Wash. Now a graduate, he's glad he discovered UAT through PC Gamer magazine where he saw a full-page article featuring the game technology. The ad invited people to check them out, so he visited Tempe to take a tour. That was all it took; he was hooked.

THE FUTURE

An Alpha prototype of the project currently is in development. It is designed to be open source, and is available on GitHub so it can be shared and edited. There is a goal to target this technology to businesses.

WHERE ARE THEY NOW?

Jacob Nichols – Alumnus (Game Design) Class of '14
Jacob is continuing to build his portfolio and explore job opportunities.

Joshua Thomasson – Alumnus (Game Design) Class of '14

Freddy Chavez – Senior (Network Security) Class of '15
– Freddy currently is exploring job opportunities.

Michael Hoffman – Alumnus (Network Security, Network Engineering) Class of '14
Michael is an InfoSec Operations Tech at LifeLock.

Louis Sandoval – Alumnus (Artificial Life Programming, Advancing Computer Science) Class of '14
Louis is a web developer at eCreations, LLC.

Cody Fischer – Senior (Game Programming, Game Design) Class of '15
Cody has secured a job as lead programmer at Waden Kane Game Studios, LLC, in Reno, Nevada.

Flynn O'Hare – Senior (Game Design) Class of '16

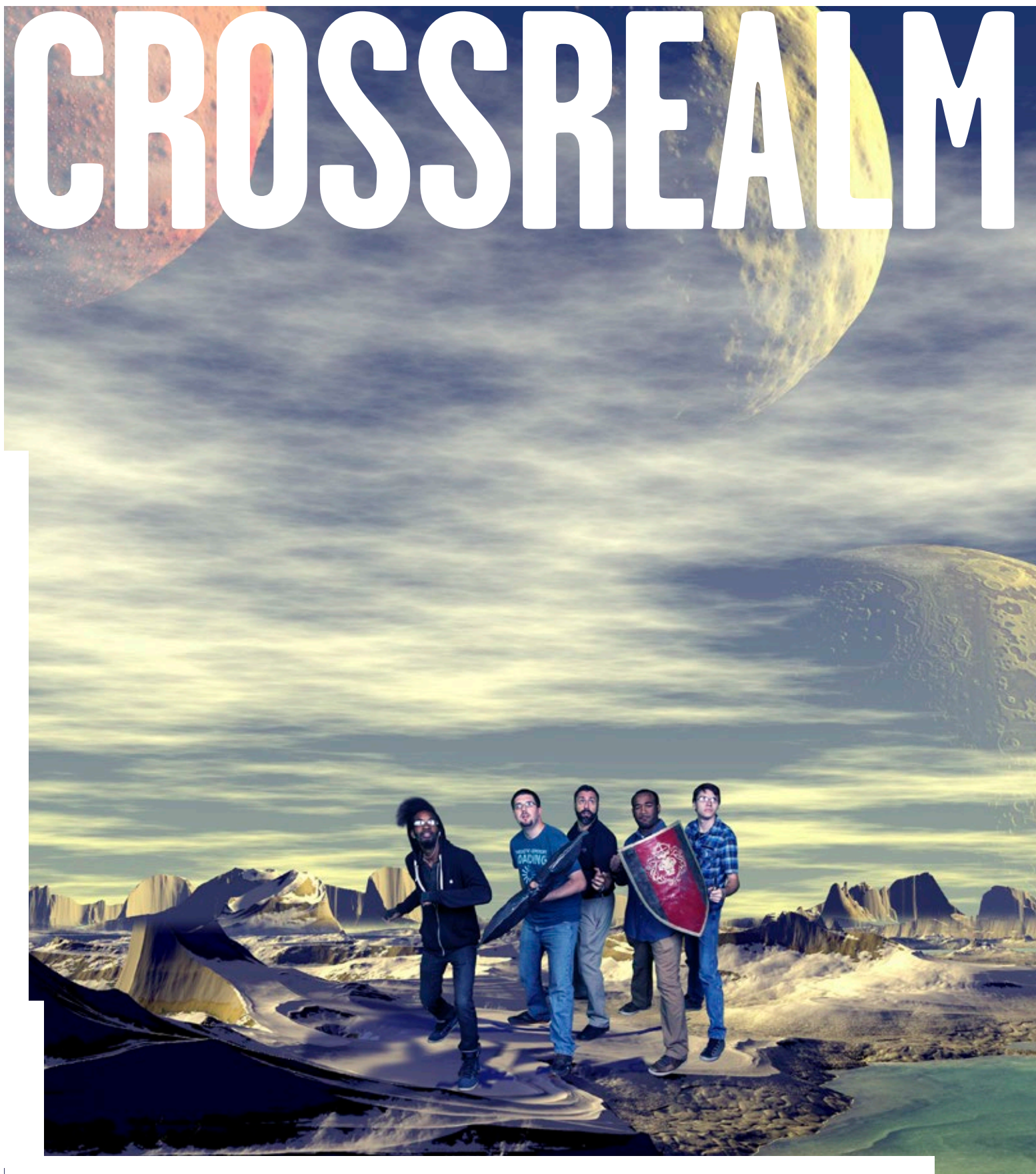
GIFT's Gesture Interface is Real

Derek Sinex – Senior (Game Design) Class of '15
While Derek completes his education, he also is gaining experience as a Game/Level Design Intern at Dorkatorium Games.

Angela Leifson – Junior (Network Security, Technology Forensics) Class of '15, Minot, North Dakota

STUDENT INNOVATION PROJECT

CROSSREALM



OVERVIEW

UAT students are innovating digital video technology rivaling the likes of what's been used in movie blockbusters *Avatar* and *The Hobbit* – but without the proprietary software, huge R&D budgets and giant teams of professionals.

Dylan White is the team lead of CrossRealm as well as Co-Producer & Co-Script Writer with Professor Paul DeNigris, UAT Digital Video program champion.

UAT's Digital Video Program is collaborating with Game Art, Game Design and Game Programming majors. It took off-the-shelf hardware and software, a little custom Unreal script and a small team of undergrads with big talent to create a multi-disciplinary team. They developed a real-time rendering solution for generating environments for green screen movies using the Unreal game engine and other off-the-shelf technologies. Together with Professor Paul DeNigris they solved a real-world problem—development of an inexpensive, mobile, easy-to-use system that allows the process of filming on a green screen to be more efficient.

CrossRealm is the Student Innovation Project of Dylan (Digital Video), Reginald Riley (Digital Video), Austin Prendergast (Digital Video), Natasha Stringham (Digital Video), Eric Reed (Game Art and Animation), Gabriel Vielle (Game Art and Animation), Jonathan Ellis (Game Art and Animation), Stephen Panagiotis (Game Programming/Advancing Computer Science) and Pedro Pappy Perez (Game Design).

Mashing both the gaming and digital video worlds, CrossRealm renders 3D environments, then composites them with live green screen footage in order to view the scene properly as it is being filmed. This malleable background can be seen by a director during production of a film, enhancing filmmaking quality and significantly increasing film completion rates.

HISTORY

In the film industry, larger studios can afford to create expensive software and equipment to replicate camera movements in a 3D environment. The children's TV show *"Lazy Town"* used a much larger and more expensive set up similar to the system CrossRealm designed. *"The Hobbit: the Desolation of Smaug"* also uses a similar concept. Movies like *Avatar* and *Real Steel* also have systems that attempt to make filming on a green screen or with 3D assets easier and more efficient.

It's a challenge for smaller studios to afford this technology.

Add that to the fact that film crews often film on green screens, but the process can be tedious. Reshooting scenes occurs frequently because footage doesn't match with rendered environments for a number of reasons.

The cinematographer, director, and even actors sometimes can lose track of where they are in a particular environment that will eventually replace the green screen. It's hard to orient yourself within a scene without any landmarks or points of reference. Cinematographers can face challenges filming a shot at just the right angle, and even if they do, sometimes the environment is rendered inaccurately to the needs of the footage. Directors can't always place actors exactly where they need to be, and actors sometimes miss their marks when they can't see the world around them. Angles or camera movements might not match, actors may be in incorrect positions, or simply, the background just isn't what was expected.

CrossRealm presented real solutions to these real problems.

"CrossRealm came about because I wanted to make a film using game engine technology ever since I saw the demos of Unreal and CryEngine a few years back," says Professor DeNigris.

"I was also fascinated with the on-set monitoring systems James Cameron's team had developed to be able to see digital environments in real-time while filming *Avatar*. I often discuss these sorts of "innovation" ideas with my students as possible future projects, and Dylan really latched onto this particular idea. He took the reigns and recruited a cross-discipline team of students from Digital Video, Game Programming, Game Design and Game Art & Animation.



DETAILS

Dylan reached out to the Game Art & Animation, Game Programming, & Game Design majors and got them to join the team. The DV students volunteered to join the project on their own after he and Professor DeNigris pitched the project.

The aim of this project was to solve issues that filming on a green screen cause.

"Together this team had to figure out how to get a number of disparate, unrelated, off-the-shelf systems to work together as if they were all one cohesive unit," Professor DeNigris explains. "They had to get the motion capture sensors to capture the movement of the camera rig, accurately send that

STUDENT INNOVATION PROJECT: CROSSREALM

data to Unreal, composite the output of the camera with the output of Unreal, and finally send the composited output back to a viewfinder on the camera rig – no small task considering every part of the puzzle was made by a different manufacturer.”

CrossRealm’s objectives include:

- > Designing and building immersive 3D environments
- > Programming sensors to act as a controller for a virtual camera in the UDK engine
- > Casting actors to perform in the environments they have created
- > Producing a finished film using the system that has been developed

“We originally wrote a full story & script to show off the project but due to time constraints we’ve cut it down to what is essentially a trailer,” explains Dylan. In addition to innovating the technology and its use, the team made the costumes and props for the trailer.

UDK is used to render, in real time, the 3D environment that is needed for any particular scene of a film. Motion capture sensors will be mounted to a camera in order to control a camera in UDK. The motion sensors will allow the camera in the engine to precisely match the movements of the real world camera. Both the rendered environment and the feed from the live camera will be composited together and displayed on a monitor for the crew to see.

The system is set up using two motion sensors mounted to a camera that will control the movements of a virtual camera in the Unreal Engine. Both cameras will be recording their respective environments, the real world camera recording actors on a green screen and the virtual one, a 3D environment, which will then be fed into compositing software. This software will combine the green screen footage with the game engine feed, and then this new image will be displayed on a monitor that the cinematographer can see.

Steps include:

- > Art assets to be modeled, textured and rigged as needed
- > Sensors programmed, mounted and tested successfully
- > Multiple environments designed
- > Testing of all systems
- > Actors cast
- > Film produced

Technology Used:

- > BlackMagic Design Cinema Camera
- > YEI 3-Space Sensor Wireless
- > TriCaster TC40
- > Unreal Development Kit
- > Zacuto Z-Finder
- > Mini-Jib
- > Manfrotto fluid pan-tilt heads
- > SDI-HDMI converter
- > HDMI-Component converters
- > Component-HDMI converters

“We outfitted the camera with special sensors to track its movement and manipulate an in-game camera in real-time,” says Stephen. “This allows for precise control over actors and objects in a virtual scene on set without having to wait for post to start.

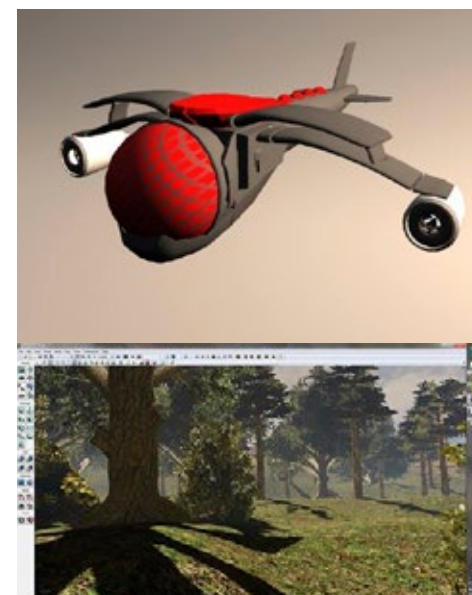
“The BlackMagic Cinema camera has been rigged with motion capture sensors. A real-time composite of the camera’s image is on top of an environment rendered in the Unreal game engine. The motion capture sensors on the rig move the camera in Unreal, in synch with the real-world camera.

For CrossRealm, I worked closely with the costume designer to create the costumes worn by the actors in the film,” says Natasha Stringham. “During filming I operated the Tricaster system.”

CHALLENGES

- > Managing green spill (primarily through lighting)
- > Key quality (through green spill management and adjusting TC40 LiveKey)
- > Reducing mocap lag
- > Adding capture of additional axes of motion (such as dolly moves)

These issues were addressed during CrossRealm’s development, and overall the technology was developed and the filming completed without many problems. The ones that did present themselves were overcome with ease. The majority of the problems faced were not the fault of the process but originated from other sources. With this project being one of the first times game designers, programmers, and artists have collaborated with film makers, the barrier of overcoming jargon from each field was something that slowed down the process at first. Eventually, communication improved and presented little to no problem moving forward. Other major issues included hardware failure or lack of capability from the hardware used. The sensors chosen for this project proved to be limiting in the types of movements allowed. Moving forward or attempting another project similar to this, it would be suggested that a different type of sensor be chosen.



SUCSESSES

- > Some of the hardware failures were repetitive but the cause was unknown. A solution was developed to use different hardware and the problem did not arise again.
- > The filming process in particular faced very few challenges and the process proved to be more effective and efficient for both the film crew and the cast of the film.
- > The footage was easily put together into a coherent sequence with limited visual effect requirements.

“In a way, the process itself became a metaphor for how the team had to function – lots of different parts coming together to make something new,” says Professor DeNigris. “I’m especially proud of how this team of students from different disciplines came together to tackle and ultimately conquer the challenge I had set for them. We were in completely new territory and weren’t even sure we’d be successful. But these students knocked it out of the park!”

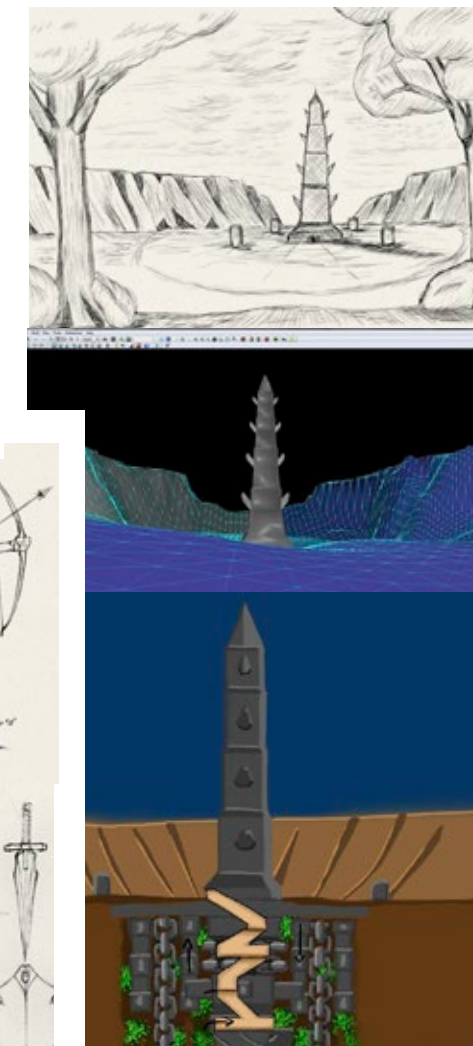


FUTURE

The project is currently in its post-production phase, and has been captured on film in a trailer available on YouTube.

“My hope is that the system developed by the project is used at the very least, by future UAT students,” says Dylan. “A couple of us on the team have discussed marketing the process we’ve developed, the thought we had was that it would be fairly easy to market towards independent filmmakers and small studios who are filming with green screen.

“This is revolutionary in how we will now shoot digital effects movies at UAT,” says Professor DeNigris. “We will finally be able to see in real time what these backgrounds look like.”



WHERE ARE THEY NOW?

The Team

Dylan White | Class of '15
O'Fallon, Illinois
(Digital Video)

Reginald Riley | Class of '15
Reginald is a freelance video editor in Hollywood, Florida
(Digital Video)

Austin Prendergast | Class of '14
O'Fallon, Illinois
(Digital Video)

Natasha Stringham | Class of '14
Natasha is a freelance video editor and motion graphics artist in Boise, Idaho
(Digital Video)

Eric Reed | Class of '15
Eric is exploring job opportunities.
(Game Art and Animation)

Gabriel Vielle | Class of '14
(Game Art and Animation)

Jonathan Ellis | Class of '15
Jonathan is exploring job opportunities.
Gary, Indiana
(Game Art and Animation)

Stephen Panagiotis | Class of '14
Stephen is a Tech Support Rep at Volt Workforce Solutions in Phoenix.
(Game Programming/Advancing Computer Science)

Pedro Pappy Perez | Class of '14
(Game Design)

“Being at the front of this collaboration was both exciting and a test of endurance. The team’s favorite saying became, ‘This is what happens when you’re on the cutting edge,’ in reference to the challenges we faced throughout the project.”

Dylan White '15

THE SPARKS OF INNOVATION

PROJECT CAST

“UAT is a lot more project based than other universities. You’re focused much more on your portfolio and proving that you do your work instead of just saying you know it.”

“Just the experience of exploring an idea and developing a concept is valuable to students in their careers, because the out-of-the-box way of thinking and how they approach a project can benefit them in their careers,” explains Dave Bolman, UAT Provost.

DETAILS

Student Innovation Projects at UAT are designed to spark new ideas, create multi-disciplinary teams and bring innovation to life. Sometimes, the very best of concepts in technology and business begin as ideas in college that morph into innovations beyond the scope of where they begin, well into a graduate’s career.

Take Project Cast for example. Gaming ease for those with limited mobility is the focus of the Student Innovation Project of Game Design majors Eric Price and Dylan Gaither.

The idea for Project Cast was something Eric had wanted to explore even before he arrived at UAT. While the project was not completed before graduation, his idea for Project Cast shows great promise -- to provide a more immersive gaming experience for players with decreased motor functionality, enabling them to enjoy motion controls with the same degree of finesse as anyone else.

Project Cast is the first project demonstrating the potential to allow full custom controls to be tailored to every individual. Players could create their own inputs using the recording power of the Kinect -- utilizing an existing piece of technology that could be used in a way never done before. If the player’s mobility changed and suddenly was unable to properly interact in a way that is already integrated with the Kinect, this could easily be changed to allow them to continue playing. This technology would be applicable to those playing games or simply interacting with the Xbox, such as navigating or searching.

“I first got the idea from watching Fable: The Journey’s E3 presentation,” explains Eric, who hails from Dillon, South Carolina.

“I thought the idea of casting spells with the Kinect was really cool, but I knew that a casual player would never be able to remember all the complex motions that were being showed on stage. Their idea spiraled from there, and even influenced the name.”

The technology behind their Student Innovation Project concept involves: allowing players to generate custom user inputs, using the power of the Kinect, then mapping those to different outputs, generating a unique level of immersion for each player assigning custom inputs to desired outputs by creating a recording process to integrate inputs into the system.

While Project Cast hasn’t left the conceptual stage, Eric believes the resources at UAT helped him explore his idea in greater depth and its focus on projects has been beneficial.



TEAM

Eric Price | Class of '15
Dillon, South Carolina
After graduation, Dillon wants to go on to earn a second degree from UAT in Game Art & Animation. (Game Design)

Dylan Gaither | Class of '15
Sylmar, California
(Game Design)

Robert Flad | Class of '15
Winona, Minnesota
Robert is exploring job opportunities. (Game Design)

Trevor Stevens | Class of '15
Tempe, Arizona
Trevor’s current plan is to get his foot in the door of the industry, and see where things go from there. Ultimately, he wants to run his own company. (Game Design, Game Programming)

UAT AND OCULUS

FORGING PATHWAYS IN THE NEW WORLD OF VR



1984



1993



2000



2006

OVERVIEW

Oculus and its technology are ushering in an entirely new era of gaming interaction and communication. It's safe to say the communication possibilities are what attracted Mark Zuckerberg, Facebook CEO, to acquire Oculus for \$2 billion last year.

Oculus introduces a virtual reality headset, the Rift, that many predict will revolutionize the virtual reality (VR) experience. It's an exciting time to be in game development because UAT is one of the few universities integrating this emerging new technology into its Game Development, Technology Leadership and Computer Science degree majors.

Geek 411 asked Game Studies Professor Derric Clark for his take on this emerging technology:

"Overall, the Oculus represents another creative outlet for game development and even serious game type applications. Imagine going to an architect and walking around in your designed house, on a multi directional treadmill with an Oculus on and 'experiencing' it before it is built. These types of experiences are becoming a reality and game development will be an area that embraces and fills the early adopter role, especially in the indie game

development community. A small, agile developer could make a splash with this technology in areas that the big developers might be risk averse to trying out. 2016 looks to be an interesting year for augmented and virtual reality."

"What excites me about technology such as the Oculus Rift is the potential to further blur the line between virtual and real worlds, and the hardware that takes us there," adds Professor Clark. "Technology can be a barrier to the virtual world, but as technology advances, this barrier is evaporating, allowing the user to explore the world without technological constraint. Giving students the access to this potentially media changing technology and seeing how far things can go is at the core of being a technologist and something I embrace here at UAT," he adds.

HISTORY

"The Oculus has made a big splash within the game industry and renewed a quest to incorporate immersive virtual reality experiences into games," explains Professor Clark. "The core of game development is to engage and immerse the player into the game and the best games allow a player to lose themselves or escape into virtual worlds as part of

the player experience. This is core to the popularity of games, this ability to escape."

"From this escapism mentality, the hardware that games used to deliver the experience are, by definition, a barrier to the experience, he adds. "The mouse, keyboard, controller, monitor, sound of the computer fans, dog running in front of the screen, etc. all break you out of the game. From interface design to user experience, the goal is to eliminate these elements and make entry into the world seamless."

DETAILS

"Head mounted display (HMD) technology adds a motion based layer of immersion," explains Professor Clark. "It is natural for a person to learn, move and look with their head and bodies when dealing with the real world. If you watch gameplay, even when not using motion tracking of any kind, you will see these motions naturally take place. Leaning, ducking, tilting a controller... It is part of how we interact with the real world and even when the system cannot track these motions, gamers will still do them. The helmet tracks these motions and this allows the player to accept the world as more realistic. This is where a lot of the motion tracking technology is



UAT AND OCULUS

FORGING PATHWAYS IN THE NEW WORLD OF VR

heading; Microsoft Kinect and Leap are other examples of this capturing of player movements. These systems range from gimmicky games to natural extension of body motion and will continue to improve with time.

The overlap between virtual reality, augmented reality, and mobile/tablet games exist because of the motion tracking. Engaging players in the game through movement creates a kinesthetic bond between the game and the player, engaging them within the game world. The old 'killer app' principle hits here, having hardware that needs that amazing experience in order to solidify it in the commercial market. The proliferation of mobile and tablet games that also use the tilt sensors of those devices creates a bridge to helmet based experiences.

In the last four months, more students at UAT have experienced the Oculus than did during the time it was stored in the library for checkout.

"UAT is embracing this type of technology, moving the Oculus, Kinect, Leap, Google Glass, and other technologies into a shared space, [the New Technology Lab], that gives students open access to experience and play with these technologies.

UAT's New Technology (NT) Lab provides an innovation sandbox where, together under one roof, a variety of leading-edge, prototype technologies converge for students to explore and shape new ideas, collaborate in a shared learning environment and innovate tomorrow's next great thing. What's even more exciting is that the lab is a living, breathing space that will change as technology evolves. The New Technology Lab includes work stations for Virtual Reality, Apple Development, Mobile Development, Game Development, Mind Control and Motion Control.

UAT's game development curriculum continues to embrace the possibilities.

"As the UAT game development curriculum deals with both AAA development as well as mobile and casual development, it is positioned to embrace augmented and virtual reality principles without a need for drastic shifts or changes," Professor Clark says. "The subtleties of the new technology allow for additional engaging game experiences and at the core that is what we are building, a group of students who can design, program and visually display engaging gaming experiences."

FUTURE

As the Oculus moves into commercial production, there will be a niche market for games and experiences that utilize this technology.



▼ Professor Derric Clark

Ultimately, VR's future rests in any number of unique, compelling experiences created by software. Your brain doesn't know the difference between a Rift experience and the real world. The list of potential uses is as vast as the brilliant minds that invent them.

Enter UAT students and the opportunities awaiting them to lead the future of advancing technology in this and other realms.

"Currently, UAT students are exploring projects that use the Oculus along with the brain scanning devices to create immersive environments with brainwave feedback incorporated," says Professor Clark. "The digital hangout spaces are always popular discussions and something that is considered. Other areas to be explored are gaming environments that are asymmetrical in nature, putting multiplayer gaming together with one person in the helmet and one outside interacting differently in the same world."

BRIAN BONFIGLIO

UAT: ALUM'S BASE FOR SUCCESS



Brian Bonfiglio
Class of '99

Hometown:
Battle Creek,
Michigan

Major:
Digital Animation
Production

Brian is Founder and
CIO of Base Commerce

OVERVIEW

A funny thing happened on the way to being a leader and innovator in his field. It was called opportunity—the opportunity that Brian Bonfiglio’s education at UAT aptly provided.

As a result, he is the founder and CIO of Base Commerce, a PCI Level 1 certified credit card payment platform offering unique products and services to help clients secure cardholder data and deal with threats in payment processing environments. In short, Base Commerce is an acquirer, which means they process credit card payments on behalf of the merchant.

HISTORY

A 1999 graduate in Digital Animation Production, Brian Bonfiglio gained real world experience in software and web development, not only in his classes but also as an intern in UAT’s IT department and then as a full-time employee there after he graduated. He later earned his Master’s degree in Computer Information Systems from University of Phoenix.

Hailing from Battle Creek, Michigan, Brian grew up with computers, and in high school took the only CAD class they had at the time. When it came time to seek out a technology college, UAT was a top choice, and he moved to Arizona.

In 2001, he joined First American payment processing, which transitioned to Check Gateway (electronic check payment processing) and ultimately to Base Commerce (separate company that’s the credit card equivalent). The Phoenix based company serves as the gateway between online merchants and financial institutions, providing auto debit

and check clearing capabilities to clients such as Massage Envy, IBM and more. For two years, Brian worked in IT and was promoted to IT manager. He designed, built, and maintained numerous software applications, as well as the network infrastructure and had the vision to take it in a new direction.

Impressive, to say the least. So it came to Brian’s surprise one day when he was called into the owner’s office. What had he done wrong? In fact, the owner wanted to speak with Brian to offer him, along with another employee, the opportunity to buy the company. Brian’s education and experience made him the clear choice.

When asked who his mentor was at UAT, he’s quick to say Jason Pistillo, UAT’s president. Back in the mid ‘90s, Jason was the IT manager and Brian’s boss when he worked there prior to being named president.

“I always saw him as a mentor and role model because of his IT knowledge and skills,” says Brian.

“What I learned at UAT has helped me make these companies better and stay on the cutting edge,” says Brian. “Among these things is my ability to learn how to learn, one of the most important skills you can have.”

“Brian is a fine example of just how far UAT’s education can take you,” says President Pistillo. “At UAT, we’re focused on the development of each student’s job and life skills. Learning how to learn is an important part of our culture and Synchronic Learning model, because learning is a continual process, well beyond graduation. Technological

change swirls around us, so learning to stay on top of it, and ahead of it, helps you continue to grow and be a true innovator of advancing technology.”

Brian believes so much in the value of his UAT education that he looks there first for qualified students and graduates for internships and jobs at Base Commerce. In fact, he has employed and partnered with at least five UAT graduates.

“We find UAT students to be the most talented from the skill pool out here in Arizona. It’s the experience and time I spent at UAT as both a student and an employee that has helped me thrive and grow to where I am today,” says Brian.

DETAILS

Base Commerce’s system has to make sure the money flows from Visa and MasterCard to Base Commerce and back to these merchants so they get paid on time every day. When you handle something like two million transactions a month from 10,000 merchants, and have to account for all that money to the penny, it makes for a busy day to say the least. And no two are alike.

In addition to his duties managing the day-to-day operations of Base Commerce, Brian meets with trade groups, associations, and community leaders on new business opportunities and issues related to federal bank regulations that are increasingly impacting banks and ultimately Base Commerce.

BRIAN BONFIGLIO

UAT: ALUM'S BASE FOR SUCCESS



The payment industry is highly technology oriented because when you're working with electronic payments, everything is driven by technology. "What we do is so interesting because we utilize so many technologies," Brian says. On Brian's team of 40, a majority, 60 percent, are software developers. "Most platforms are written in Java and .NET. They use Sequel Server and MySequel in our databases. Windows and Unix products are used for their operating systems. They write all of our customer software, processing, ability to accept and move payments, everything from accepting payments to storing them securely to transferring them to Visa and MasterCard. We write software for the terminals in C and C++," explains Brian. "There's a lot of opportunity to use different technology. Everything we have is proprietary."

As far as opportunities to get on board in this industry, there are many. It's a complex industry, but these are the types of puzzles technology people enjoy. Network Administrators and Network Security specialists comprise another 10 percent of his team. "We have a lot of

networking things we do. We manage our own servers and build our own firewalls using 3DSD, which is the same kind of open source environment as Linux," he added.

Because Base Commerce connects to banks, a lot of their security is devoted to encryption and this team integrates all that. For example, the PCI security standard implemented by MasterCard uses a lot of encryption – a lot of security updates, maintenance, security patches, etc. It's the way we structure our network to minimize exposure to security risks (hacking) and internal and external concerns.

"Our real job is to provide the financial security to the network," explains Brian. "If a merchant is fraudulent and they charge a bunch of fraudulent charges to a consumer, it would be our responsibility to pay that consumer payment." So top security is paramount.

His administrative team makes up 30 percent of his force. They include specialists in accounting, risk monitoring, underwriting, research, fact checking and more. Every merchant that applies for the Base Commerce service has to complete an application and these team members must conduct a thorough background check.

"We have to approve them for a merchant account and conduct our due diligence because we also have to protect ourselves from losses in the form of merchant fraud and consumer fraud," explains Brian. "

Then there are interns. Base Commerce is committed to bringing interns on board for real life experience, which is one reason Brian stays connected with UAT. He always considers applications from UAT students majoring in Network Security, Network Engineering and Advancing Computer Science.

CHALLENGES

Being a key force in the electronic payment industry and being closely tied to the banking industry means staying current on changing federal regulations as well as strengthening connections with trade groups, associations, business leaders and politicians.

These changes present challenges as well as opportunities for Base Commerce. It's all about understanding how to navigate changes in technology, something UAT taught Brian to do so he is prepared to embrace the future and all the changes that it will bring.

"This is definitely a complicated business," says Brian. "You always need to be creative and innovative." One example is Visa and MasterCard. They require that by summer 2015 all credit card terminals in use become EMV compliant. Currently, that involves incorporating Apple Pay. EMV (Europay, MasterCard, and Visa), is a universal standard for inter-operation of integrated circuit cards (IC cards or "chip cards"), IC card capable point of sale (POS) terminals and automated teller machines (ATMs),

for authentication of all credit and debit card transactions.

"It's a challenge to be EMV compliant, and some merchants won't be able to do it," says Brian. "If we can get the technology built, we can set ourselves apart from competitors."

SUCCESSSES

Brian can now add award-winning tech entrepreneur to his long list of accomplishments. As founder and CIO of Base Commerce, he and his partners were recently presented the prestigious Inc. 5000 award from Inc. 5000 for building one of the fastest growing privately held companies in America. Started in 2011, they grew the company to \$1 million the first year, and to an impressive \$12 million within two years. The company is #23 on the list nationally, and also #3 on the list of financial services in Arizona.



WHERE IS HE NOW?

Brian not only is a successful entrepreneur and industry leader but also a devoted family man. With wife Melissa, Brian has two daughters, Jaycee, age 6, and Saylor, age 4.

THE FUTURE

There's no denying it. The electronic payment industry is a boom industry with a lot of growth, new businesses, and venture capitalists, so it will continue to grow and evolve. Brian is excited to see where it goes. And he's is keeping his eye on bitcoin to see what opportunities emerge.

"Bitcoin will have a positive impact on our core business, making payments easier to use," Brian predicts.

Then there are the evolving federal regulations in electronic payments that actually will create new opportunities. With his UAT education, Brian has the foresight to see them coming.

STUDENT INNOVATION PROJECT: MARK YOUNG



OVERVIEW

Zombie X-Trainer is a game and a one-stop shop for both entertainment and healthy living through exercise. To play, you have to become a zombie or the survivor who outruns it. That's the premise for Zombie X-Trainer, the Student Innovation Project of Game Design major Mark Young.

Zombie X-Trainer seeks to change the general consensus of exercise games. Players who are looking for an escape from the same boring jogs on the treadmill can use Zombie X-Trainer to have fun while exercising.

"There haven't been many exercise games that included objective-based workouts with an atmosphere and the ability to compete or play with friends," says Mark, a 2014 graduate from Rochester, Penn. His game concept proposes a zombie encounter experience that can occur both as a survivor or a zombie with online and offline competitive and cooperative multiplayer modes.

HISTORY

Zombie X-Trainer is based on the concept of other exercise games out there, although it has the "exercise and replay value that other exercise games don't provide."

Over the last few years many games have incorporated various plot points or genres into exercise games to give them more draw and appeal than just being touted as an exercise game such as Wii Fit (Nintendo, 2014). Microsoft also developed a game that used the same concepts as Wii Fit known as Your Shape Fitness Evolved. This game used the Kinect camera to track the player's movements in relation to exercises that are displayed on the screen.

Other companies have used real-world existing exercise structures to create games such as Zumba Fitness for the Xbox 360. This game also uses the Kinect camera to track the player's movements but it is based off of the

concept of Zumba which is a type of exercise style that uses certain styles of music and turns dancing into a cardiovascular workout. Developers have also taken advantage of popular weight loss television shows such as "The Biggest Loser." Microsoft developed a game that utilized the Kinect camera named "The Biggest Loser: Ultimate Workout." Along these same lines, Nintendo teamed up with EA Sports to create motion controlled game for the Wii named "Active NFL Training Camp." This game uses the Wii remote and some other custom controls to track the player's movements to give them the experience of being in a training camp like real NFL players. Another sports-oriented game that was developed by SCEA was "Sports Champions." This game utilizes the Playstation Move controller along with the Playstation Eye to track the player's movements. This game is not as much of an exercise game as some of the other games in its genre; however, it still has exercise fundamentals built into its gameplay.

"I had researched several colleges in my pursuit of a game design degree and when I found UAT's website, I found it to be the most pleasing. UAT's website was very stylish and looked as though there was a lot of time and effort put into it. The design of the site was appealing and it looked as though UAT was a college that was meant for people in this field. All of the other schools that I researched had very bland and standard descriptions of the game design degree almost as though it was an afterthought. I found that UAT had a much larger website dedicated to this specific field and that was what caused me to pursue this school."

Mark enjoyed the ease of use of the online classes. The website was always functioning and over the course of four years, he never had any trouble turning in homework or taking tests. He also enjoyed a lot of his professors and the course curriculum.

DETAILS

Zombie X-Trainer is designed to work on the Xbox 360 and Xbox One using the Kinect camera. Players will interact with the game by performing actions that translate into the game as mechanics.

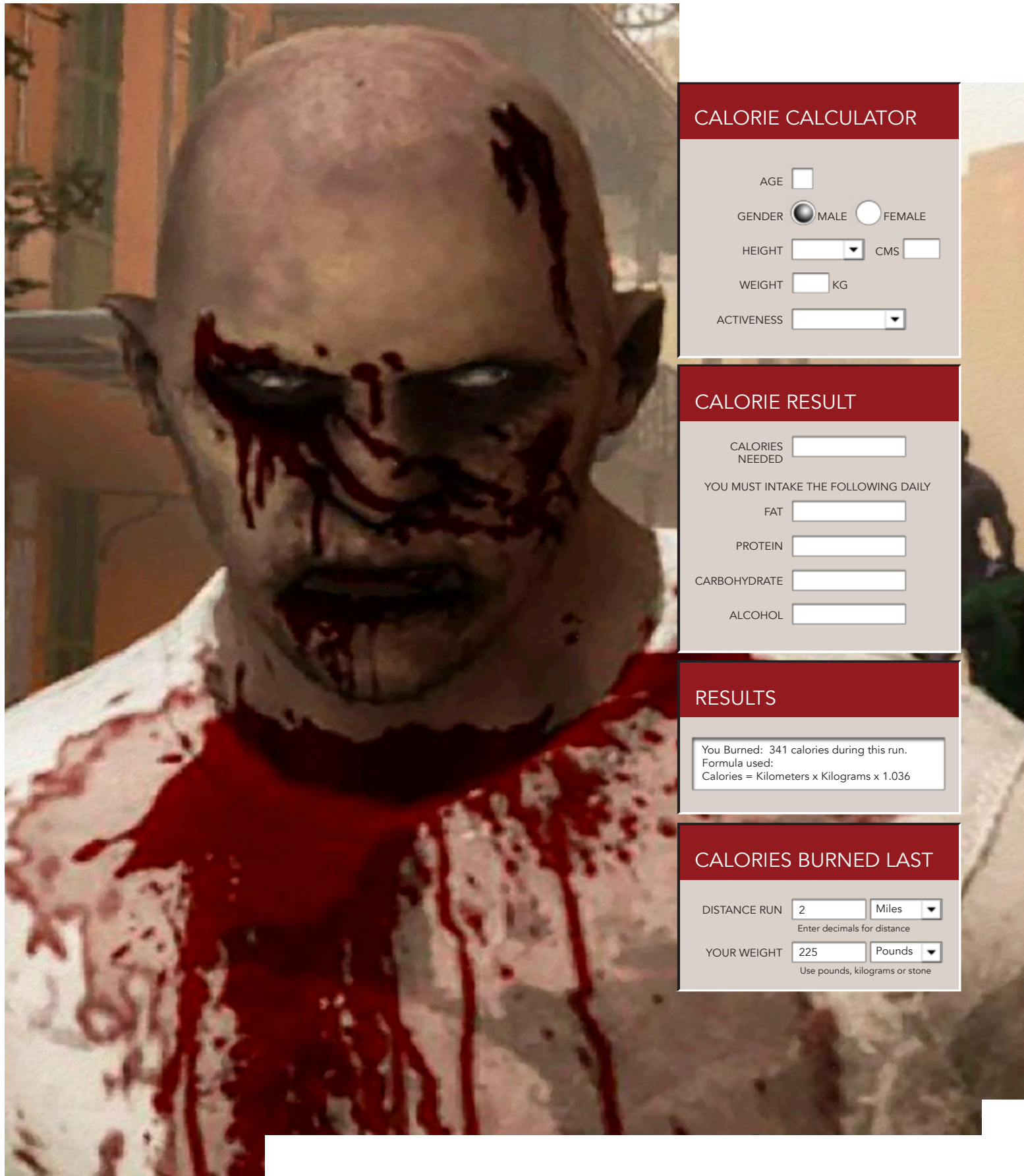
Two modes of play exist: Survivor play and Zombie play.

As a zombie, the goal is to chase down the computer-controlled survivor and decrease their health bar enough to bring them down, achieving the win condition. As a survivor, the player must run from the zombie until they reach the end of the level which will cause them to achieve the survivor win condition. At the beginning of the game, a player will enter their stats: height, weight, age and gender. During each session the player will be able to track their calories burned per level, by day, by week, and by total calories burned since they first started playing the game.

"Zombie X-Trainer is designed to draw people into a fun, exciting, new way to exercise while still having a great time. You can play by yourself or compete and play with friends via their Xbox Live accounts, and play with them in either CO-OP or competitive multi-player mode. The Kinect camera tracks the motions performed by the player and interprets them into the various actions the player uses in the game. Multiplayer game modes also exist where players can play on teams of either zombies or survivors, or they can play against each other on opposing sides," said Young.

A player's movements are tracked and related to the game, monitoring a player's calories burned while running and jogging. There is also an on-screen counter that shows a player the speed they are jogging as well as the amount of simulated distance they have traveled. Other player actions include ducking, punch attack, claw attack and turning.

STUDENT INNOVATION PROJECT: MARK YOUNG ZOMBIE X-TRAINER



CALORIE CALCULATOR

AGE

GENDER MALE FEMALE

HEIGHT CMS

WEIGHT KG

ACTIVENESS

CALORIE RESULT

CALORIES NEEDED

YOU MUST INTAKE THE FOLLOWING DAILY

FAT

PROTEIN

CARBOHYDRATE

ALCOHOL

RESULTS

You Burned: 341 calories during this run.
 Formula used:
 Calories = Kilometers x Kilograms x 1.036

CALORIES BURNED LAST

DISTANCE RUN Miles

Enter decimals for distance

YOUR WEIGHT Pounds

Use pounds, kilograms or stone

PLAYING THE GAME

While playing as either a Survivor or Zombie, the player begins with 100 Hit points (HP) and navigates through levels, environments and items.

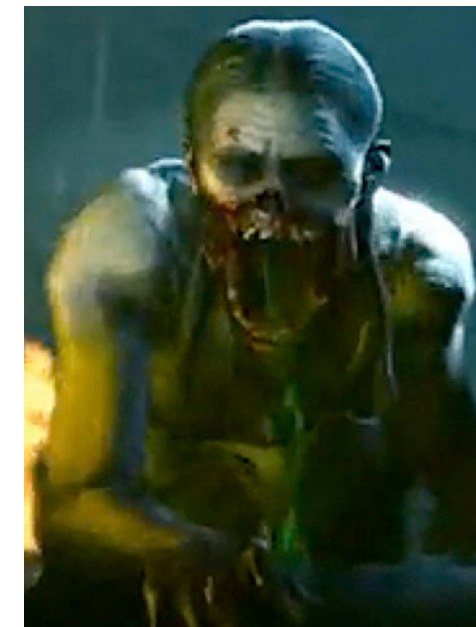
When the player reaches 0 Hit Points (HP) they are returned to the beginning of the level. This is a loss condition.

- Player actions in both modes unless otherwise indicated:
- > Running
 - > Turning
 - > Item Select (Human Survivor mode: The player shouts "Protein Shake" or "Energy Bar" to select which item will be selected)
 - > Duck (squat)
 - > Pick Up Item (Human Survivor mode only: Bend from the waist and touch your toes)
 - > Use Item (Human Survivor mode: Clasp hands together in front of their chest and then move them out horizontally to perform this action.)
 - > Punch Attack (Human Survivor mode: Swinging the player's arms in a punching motion; each punch attack causes 20 damage to a zombie's Hit Points)
 - > Claw Attack (Zombie Mode – swinging arms)
 - > Claw attacks cause 20 damage per strike

GRAPHICS & ART

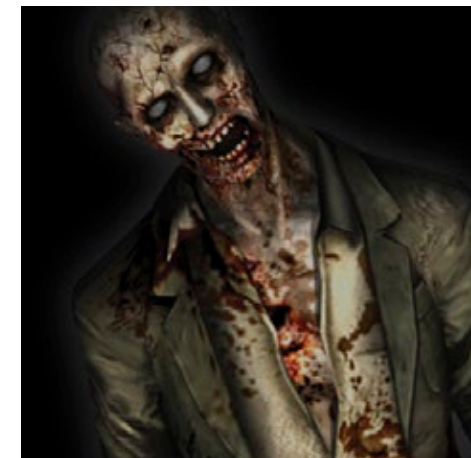
Fans of violent and action packed zombie games will be expecting a bloody and exciting experience while parents buying the game for their children will hope for a game that won't give their child nightmares. Mark is designing a solution to create a dynamic system that controls the graphics. Many games come with the ability to turn off various graphical settings to improve performance. The same idea is used with this concept, as the player will be able to select the amount of violence and gore represented on the screen.

Example of graphics set on a Zombie Enthusiast setting:



(Booth, 2009)

FARLEFT: Example of Zombies with parental controls: These controls allow parents to scale the amount of gore and violence that appears onscreen. "Blood levels" is a setting that can be set anywhere from "None" to "High." This setting adjusts the amount of blood that shows up on screen when damage takes place.



Toaka, 2012)

CHALLENGES

The biggest challenge for Mark was that he was not a programmer. "I don't have much training in that field so without outside assistance, I knew I wouldn't be able to take the concept much past a prototype. I think if I would have had the opportunity to find some programmers and possibly an artist, the project could have moved from concept to completion. I had worked with a great team on an earlier project, but they were all too busy at the time and were not available to assist with Zombie X-Trainer."

FUTURE

Mark would like to have the opportunity to fully develop this game at some point in the future. He was able to complete the design documentation and the innovation brief, a paper prototype of a sample level for proof of concept and a basic animation to showcase the various actions performed by the player in-game.

Going forward, the next steps in the development process for Zombie X-Trainer include further work on refining the game mechanics, adding additional mechanics to give the game more depth, level designs, multiplayer functionality testing and comprising a team of programmers and artists to assist with further implementation of the project. After a basic working prototype of the game has been completed, Zombie X-Trainer will become a marketable design that can be brought to a fully completed game.

WHERE HE IS NOW

Mark is building his career path leading to game design. He currently is working as a designer creating industrial products.

"My dream job would be at one of the large RPG game companies such as Bioware or Bethesda. I've always been a fan of long and open role playing games, and I would love the chance to be a part of creating one."

BEHIND THE BITS - ALUMNI PROFILE JAYLYN DAWSON

BY DESIGN HCI/MAKER GRAD DISHES UP CAREER SUCCESS



Jaylyn
Dawson
Class of '13

Hometown:
Phoenix, Arizona
Major:
**Human Computer
Interaction/Digital
Maker and Fabrication**

Jaylyn is a User
Experience Designer
for Dish Network in
Englewood, Colorado.

OVERVIEW

Relocating from her home in Phoenix, Ariz. to "Colorful Colorado," just south of Denver in Englewood, alum Jaylyn Dawson is enjoying the magnificent scenery and her new job as User Experience Designer for Dish Network. Jaylyn, who graduated in 2013 with degrees in Human Computer Interaction and Digital Maker and Fabrication, loves all things design, and Colorado is where it's at.

Design is all encompassing for Jaylyn. She emulates UAT's emphasis on continual learning by reading books and articles when she gets home and then applies all of the methods and techniques she has learned to her work. Jaylyn's love for design also is evident in her cooking, baking and crafting.

HISTORY

Jaylyn found UAT through a random Google search. She had already gone to a big state school, but it was too big and impersonal for her. Her parents were also helping her pay for her education, and they really wanted her to stay in AZ. So after looking into the school and then taking a tour, it seemed like a good fit. What really influenced Jaylyn's decision to go to UAT was its small size and the tons of technology available to her as a student. Once she got here, it was both the faculty and her experiences there that helped prepare her for the real world.

Jaylyn is particularly thankful for Professor Vesna Dragojlov and Professor Craig Belanger. "They had a lot of passion for their respective subjects, and that passion really translated well into learning and understanding concepts I had never approached before my time at UAT."

"Professor Dragojlov has always pushed me to do more and do better," says Jaylyn. "She has had a ton of influence on me as a teacher, mentor and as my program champion. She's also the one that made it possible for me to study abroad in France which was an amazing opportunity to experience the world outside of North America." Jaylyn's involvement both inside and outside the walls of UAT made for a more enriching educational experience personally and professionally! "The best thing about going to college here was all the opportunities that UAT helps to foster. I studied abroad in France, I was the art director for a TEDx event, I showcased one of my projects at the Phoenix Art Museum, went to the HCI International Conference, and I was part of the My Music Mosaic project which allowed me to get some hands-on, real-world experience." Jaylyn got involved in other ways as well, that also helped her feel connected to UAT and her profession. She volunteered at two Black Hat conferences, served as Vice President in Student Government, and was a Student Ambassador, which honed her presentation and communication skills. She also kept a regular blog about her experiences that received hundreds of views.

It was Jaylyn's study abroad experience at the Ecole Supérieure d'Art et de Design d'Orléans that she says was "mind altering."

"I took for granted the conveniences of the American big city lifestyle and France isn't like that at all or at least not where I was in Orléans. Also, the schooling and expectations there really helped me realize different ways of solving problems. Design was more about exploration there. It was less about solving a problem and more about finding alternatives or new ways of doing things. I think the biggest thing studying in France gave to me was confidence. If I can go to a foreign country where I barely speak the language and survive for five months, then I can face a lot of other challenges. I mean, I lost my passport and wallet

and that experience alone taught me the notion of 'what doesn't kill you makes you stronger.'"

"Jaylyn came to UAT with a solid educational foundation as a transfer student, but more importantly, with a level of maturity, clear educational goals and expectations from UAT that I rarely see in my students on a regular basis," says Professor Dragojlov. "She pursued her passion in design with diligence, enthusiasm and an ongoing thirst for knowledge. She is a very proactive, outspoken young individual, which sets her apart from many of my other students. With that positive attitude she has been very involved in the community outside of UAT, especially with IxDA Association here in the Valley.

"Her quest for knowledge took her to ESAD School of Design in Orleans, France, for the full semester. It has been a life-changing experience for her. Jaylyn has been one of my favorite students and I am confident that she will be very successful in her career in the near future."

Jaylyn remains connected to UAT. In fact, when she was back in Arizona recently, she and Professor Dragojlov met for lunch to visit and get caught up. "She is doing great," Professor Dragojlov attests.

DETAILS

Jaylyn's job responsibilities at Dish include taking environment design requirements and conceptualizing what those changes will look like for Dish users. She also conducts observations and interviews to uncover problems, spends a considerable amount of time educating colleagues about design decisions and how they relate to the user experience.



A Day in the Life



No two days are alike, which Jaylyn likes, but when catching up with Geek 411 she offered a snapshot of what a day looks like.



7:30 a.m.

Arrive at work before 7:30 am every day so that she has time to prep for any meetings or activities she might have that day.

8:45 a.m.



Has daily stand-up meeting with her team to go over what everyone did the day before and what they'll be working on that day. They tell their manager anything that they need her help on in order to move forward on any projects.

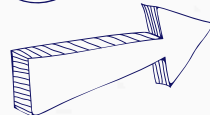
9:00 a.m.



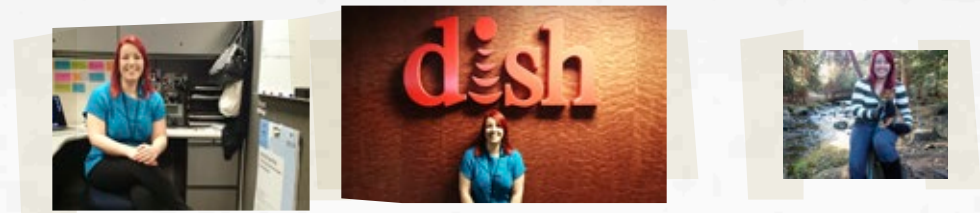
Jaylyn has her first meeting that goes until lunch.

"I'm on a fairly complex project at the moment, so this meeting is where my team can get input from other members in IT. They provide support and help us understand the project better. Right now we're working on a card sorting activity which basically means there's a bunch of sticky notes all over the walls that are sorted into groups."

12:00 noon



Lunch time! Depending on if she brought her lunch, Jaylyn might order food to be delivered or visit Dish Network's great cafeteria with healthy food options that change every week for variety.



1 p.m.

Informal meetings with her teammates. They talk about the project and how they'll tackle getting the information they need. Some days they have an optional meeting that's open to all employees to learn about how other departments work. Jaylyn enjoys going to those because she can learn more about how Dish works.

2 p.m.

Jaylyn has another meeting to discuss the card sorting; alternatively she might go do user testing or user observation.

"Like today, my team spent the time summarizing our findings from the last user testing we did."

4 p.m.



Jaylyn goes home and spends time with her boyfriend and puppy. Jaylyn utilizes a variety of technology, which includes Axure, a prototyping software. Occasionally, she will use Photoshop for editing images, InDesign if she needs to create some collateral and Illustrator for creating vector images. Additionally, she uses Excel for understanding and sorting data, Word for writing various reports and PowerPoint for presentations when necessary. She has a Mac Book Pro connected to a large monitor, and actually has a standing desk because she likes to switch between sitting and standing. And what creative desk isn't complete without a large assortment of sticky notes, pens, markers and few sketchbooks? Jaylyn also has access to an array of different devices for testing purposes including PCs, phones, tablets and TVs.

SUCCESSSES

Some success Jaylyn has had since she started at Dish Network include spending more than 100 hours observing users and creating some surveys for users. She collaborated with her teammates to make an Axure prototype for testing purposes, and she gave a presentation on what UX Design is to the IT building which received positive feedback.

"The thing I love most about being a UX designer is getting to know people, talking to them and having them walk me through what a day in their life is like," Jaylyn adds. "I also enjoy design discussions where my colleagues and I collaborate and try to find the best solution to a problem that makes the most sense for the users."

CHALLENGES

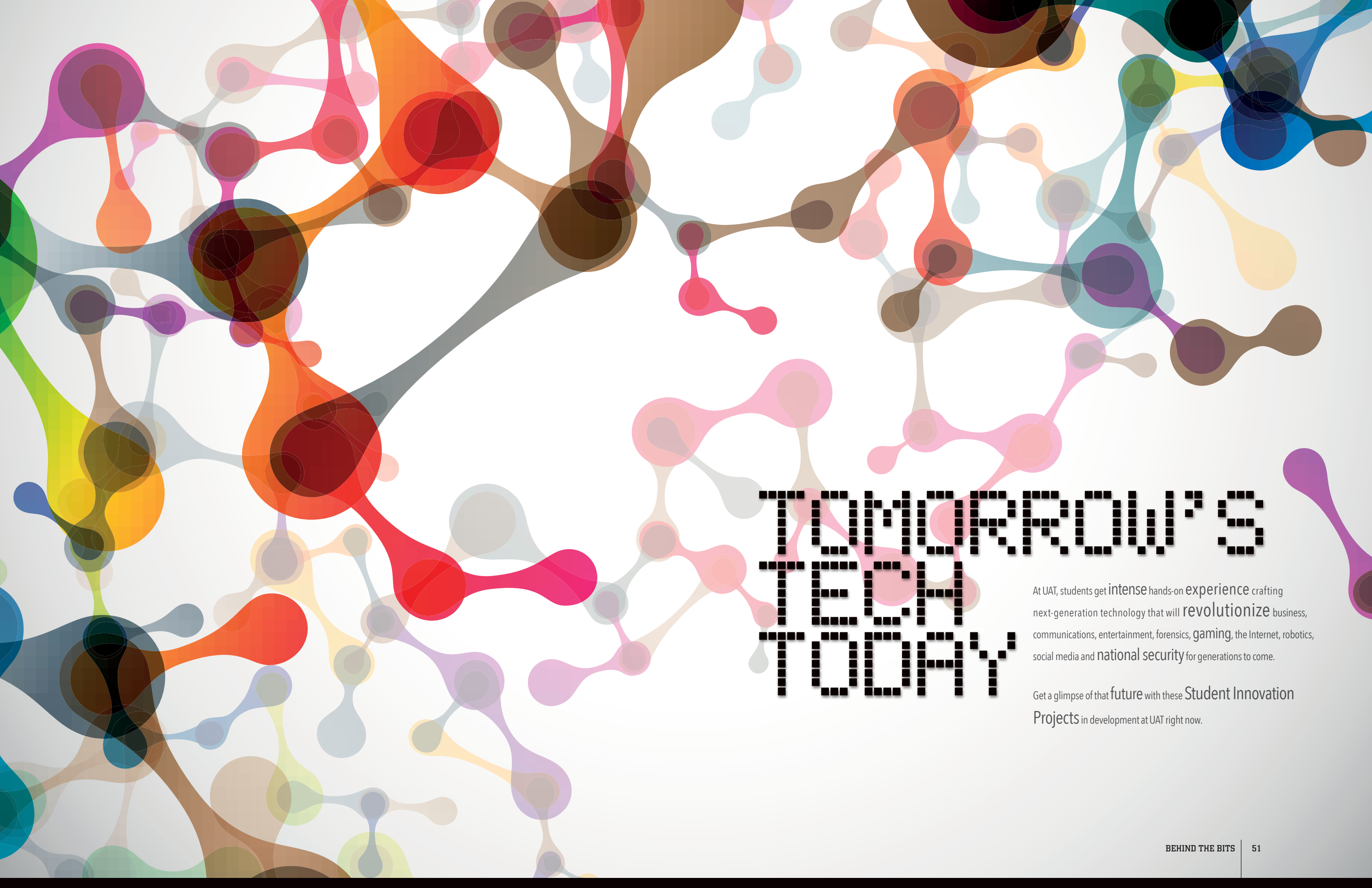
Because Jaylyn is new, she is in learning mode, putting the extra work and time needed to grow in her understanding of all the layers of her job and all aspects of the company. She is trying to find a process for design that fits with the Agile software development process and always focused on trying to show value for her time spent observing and testing users.

THE FUTURE

Jaylyn's experiences at UAT have definitely made her stronger and better prepared for her job. Fueled by what she has accomplished and what she aspires to accomplish down the road, Jaylyn's goal is to one day become a Chief Design Officer.

JAYLYN'S CAREER ADVICE

"My advice is to get out there and network. If you can't talk to people who are on your same level how are you going to be able to interview users or get client feedback or present your findings? Start now and it'll only get easier. Otherwise I recommend getting involved in whatever activities you can find. You never know what skill or experience you've had might resonate with an interviewer, and the more experience you've had the more interesting a candidate you are."



TOMORROW'S TECH TODAY

At UAT, students get **intense** hands-on **experience** crafting next-generation technology that will **revolutionize** business, communications, entertainment, forensics, **gaming**, the Internet, robotics, social media and **national security** for generations to come.

Get a glimpse of that **future** with these **Student Innovation Projects** in development at UAT right now.



PROJECT Immortal Edge

There are computer games, and there are board games. But when you combine physical and digital game play into one game, it morphs into an innovative new way to play. Anyone age 8 and older now can enjoy card and board games without the added task of keeping track of individual stats while playing. Immortal Edge is the Student Innovation Project of Daniel Muana (Game Design), Harlan Whitfield (Game Art and Animation) and Eli West (Advancing Computer Science/Game Art and Animation).

Students in the Advancing Computer Science undergraduate program will be prepared to take software engineering positions in a variety of organizations. Computer science degree graduates will demonstrate a mastery of multiple software engineering languages and become fluent in the most current software development methodologies.

Game Design students focus on the design principles, skills and techniques required to create mechanics, design documents and functioning prototypes for innovative game projects. Game Design students will also develop the leadership skills to see projects through from initial concept to publisher-ready final product.

The Project

Designed for the PC, Immortal Edge is a turn-based, action strategy, two-player game. The digital side is to track and manage data such as mathematic application and storing of scores. The physical side will be where the players interact, execute strategies and control their units.

The Next Phase of Student Innovation

While the project is complete, it is being polished to include a fully functioning combat system, a more polished UI, and replaced reference images with screen shots of their character models, including all eight character models, textured and animated. All the physical pieces will be finished and polished, as well. In the final version, players will be able to save and load their data.



PROJECT Speed Hack

Compete against fellow students in cyber games, create a competitive network environment and learn new skills to use in the future. These are the objectives of Speed Hack CTF, the Student Innovation Project of Ben Davis (Network Security/Network Engineering) and Andrew Davis (Network Security/Network Engineering). The project's innovation offers a new learning experience to students outside of the classroom.

UAT's Network Engineering degree provides a strong foundational knowledge of network and systems engineering concepts and forms the base on which the advanced topics are built. Key concepts such as routing, switching, server operating systems, email systems, IP Telephony, wireless and virtualization are explored in detail.

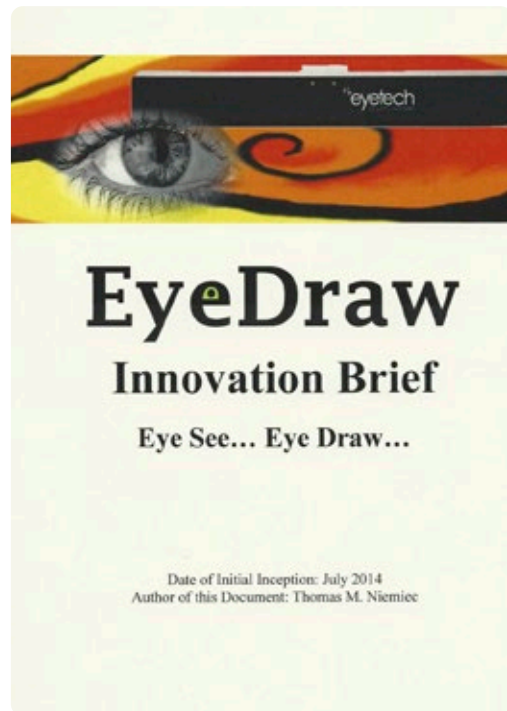
Graduates with the Network Security degree will be prepared for careers with government entities and multinational corporations. Designated as a Center for Academic Excellence in Information Systems Security Education by the US National Security Agency, UAT's cybersecurity degree is highly recognized by industry and government entities alike.

The Project

The game is composed of five systems, each with a different operating system that has specific vulnerabilities left open. The goal is to gain entry into all the vulnerable systems and retrieve the "flag" files. A player wins by hacking all five boxes. Points can be found throughout the game by finding objectives. The competitor with the most points wins.

The Next Phase of Student Innovation

The plan is to keep this project going, pass it on to fellow students and develop more game types, such as Networking vs Security, Red vs Blue, Capture the Flag and Forensic Recovery.



PROJECT Eye Draw

Eye See... Eye Draw!

Eye Draw is the Student Innovation Project of Thomas Niemiec (Digital Maker and Fabrication) that creates digital art by wearing headgear, reading brainwaves that project an image onto a computer screen.

The project's innovation combines the technology of the eye tracker by EyeTech and the software by Tux Paint by Linux so a person's eyes can draw images on a screen. This opens a world of art concepts to someone with limited use of their hands, thereby creating a potential source of income.

Students in the Digital Maker and Fabrication degree invent and prototype new products. Not only will they graduate, they will file for a U.S. patent and stand proudly on the crest of the biggest technology revolution since the Industrial Revolution of the 1920's. Students enrolled will patent their future.

The Project

Eye Draw is drawing innovation that creates digital and physical art guided by your eyes.

- > Creates detailed design onto screen with option to print in 2D or 3D
- > Combines Eye tracking application with art software
- > Ergonomically designed allowing for natural, fast hands-free application
- > Works in tandem with hand mouse
- > Dark Pupil algorithms for accuracy in most lighting situations
- > Opportunity for those with limited usage of their hands

The Next Phase of Student Innovation

After testing the operation and security of the project, the virtual network was set up successfully and works as intended and designed.



PHYSICAL SECURITY Secure. Contain. Protect.

A secret horror locked away by the thickest walls has finally been unleashed.

Digital Video major Nicholas Francia is hoping to bring a very personal nightmare to the big screen with his Student Innovation Project: Secure. Contain. Protect.

"SCP" is a short horror comedy film that's innovative because it borrows plots and ideas from a horror database that the audience can write in to. Thus, he is creating a show driven by the audience for the audience. It is much more real for them and in turn, much more scary.

UAT's Digital Video Bachelor of Arts is a film production degree that prepares students to take on the challenge of storytelling with contemporary relevance. Our digital video production degree immerses students in leading-edge technologies and environments that are essential to today's film, television, video production, news gathering, animation, visual effects, gaming, web and interface design industries

The Project

Linked to the popular horror database SCP-Foundation, SCP is a short horror film that generates a nightmare based on the audiences' choosing.

The Next Phase of Student Innovation

Nicholas wants to have world-wide network distribution as well as conversion to a Netflix original.





PROJECT Flub Fighter

It stemmed from the likeability of party fighters like Super Smash Bros, Towerfall and Spelunky. But Andrew Raabe and his team knew their Student Innovation Project had to be different. So Flub Fighter was born, with its claim to fame being the main indirect damage mechanic. Players cannot damage other players. Instead, they must punch them into hazards to kill their opponent.

Game Design students focus on the design principles, skills and techniques required to create mechanics, design documents and functioning prototypes for innovative game projects.

UAT's Game Programming degree prepares students to develop a broad skill set, and become comfortable with many platforms and languages. Video game programmers develop games for web, console, PC and mobile devices.

The Project

In Flub Fighter, up to four players battle it out in hazard filled arenas. Players cannot deal direct damage to each other, but must instead knock opponents into hazards to kill them. This will be achieved through punching your opponents and using items to push them into environmental hazards. Items can also be used to enhance the user's abilities as well as hinder the opponent. Players can move, jump, punch and interact with items. Aimed at those who enjoy multiplayer versus experiences, the game is built in Unity and is going to release to PC.

The Next Phase of Student Innovation

In this build, the team will be working on GUI, basic level select with five levels, animated characters, several items, four players and full use of the mechanic. The levels are complete with final art and character models. A description of how to play will be included.



PROJECT Malstrom

Now, there's a better way to store threat intelligence indicators from open source intelligence feeds and private investigations.

That's the innovation of Malstrom, the Student Innovation Project of Bobby Argenbright (Technology Forensics), fulfilling a real-world need in the area of threat tracking and digital forensics to have a platform to stage, organize and view threat intelligence data. This data can be in the form of singular indications of compromise (IOC), or indicators of attack (IOA) which manifests itself as patterns correlated from multiple IOCs.

Graduates in Technology Forensics will possess the knowledge of systems, investigative techniques, and technical and presentation skills to produce evidence and provide testimony regarding data crimes in a court of law. The degree program will also prepare you to anticipate and understand new and emerging technologies in order to ensure your success in the rapidly changing environment of technology forensics.

The Project

Malstrom's key features include:

Threat Intelligence

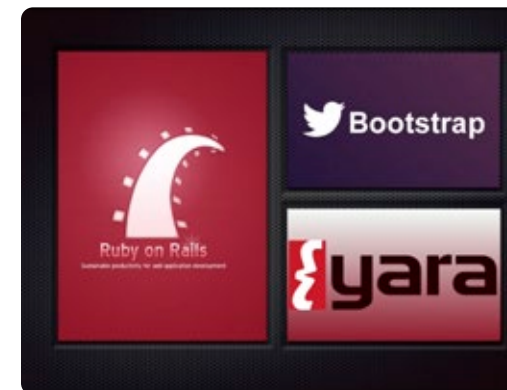
Allows for storage and classification of intelligence data known as Indicators of Compromise and Indicators of Attack. This data is used in Malstrom to build Threat Profiles.

Malware Analysis

Allows for quick and efficient identification of key aspects of a suspicious file or artifact as part of a threat profile to aid in malware analysis for Incident Response and Digital Forensics cases.

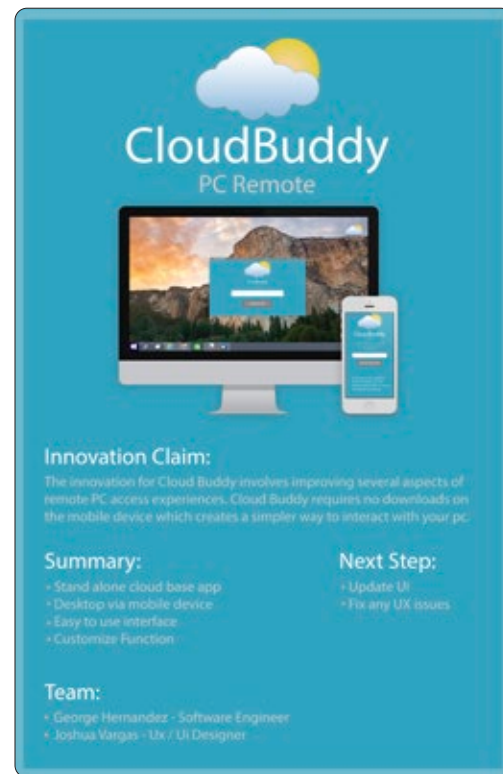
FOSS (Free and Open-Source)

Malstrom was built with open-source tools and technologies, including: Ruby on Rails, VirusTotal, Bootstrap CSS Framework, YARA and much more.



The Next Phase of Student Innovation

This project is under development. What will be created is a platform for storing, utilizing, correlating, and analyzing cyber threat intelligence data, everything from malware samples and domain name indicators to attack patterns and code signatures.



PROJECT CloudBuddy

Connecting to your various devices from the Cloud was never so easy or innovative. CloudBuddy is the Student Innovation Project of George Hernandez (Advancing Computer Science) and Joshua Vargas (Human Computer Interaction). It's a Windows application that allows you to perform various tasks on your Windows machine via your mobile phone device from a RESTful approach.

The innovation for Cloud Buddy involves improving several aspects of remote PC access experiences. Cloud Buddy requires no downloads on a mobile device which creates a simpler way to interact with your PC. All you need is an internet browser. It allows you to be anywhere, any time. You don't even need to be using the same WiFi to gain access.

Students in the Advancing Computer Science undergraduate program will be prepared to take software engineering positions in a variety of organizations. Computer science degree graduates will demonstrate a mastery of multiple software engineering languages and become fluent in the most current software development methodologies.

Human-Computer Interaction (HCI) is an interdisciplinary field that attracts researchers, educators and practitioners from many different disciplines. HCI has gained even more attention during recent years as technologies have moved forward at an accelerating pace. Human-Computer Interaction has its foundations on the interfaces and interactions between electronic devices and the users that rely upon them, that will ultimately lead to the creation of tomorrow's new user interface software and technology.

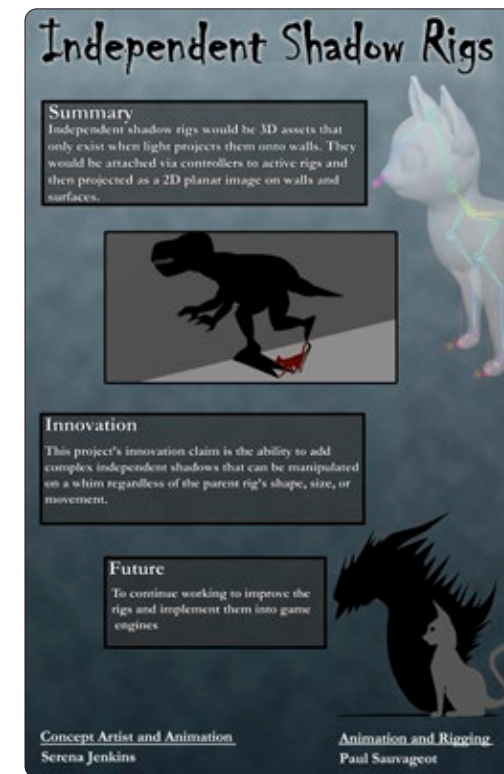
The Project

CloudBuddy features include:

- > Stand-alone, cloud-based app
- > Desktop via mobile device
- > Easy to use interface
- > Customize function

The Next Phase of Student Innovation

- > Update UI
- > Fix any UX issues
- > Exploration of marketability



PROJECT Independent Shadow Rigs

Shadow Rigs is the Student Innovation Project of Paul Sauvageot (Game Art and Animation) and Serena Jenkins (Game Art and Animation). The inspiration for their project came from years of watching 3D animated movies. Often in these movies, shadows provide additional emotional emphasis on scenes. Shadows can be foreboding and threatening, or a reminder of one's self, and that's only scratching the surface. So why not take shadows a step further and create rigs that would drastically increase the emphasis a shadow puts on a scene? Rather than being in the background, these shadows can become the center of attention. The innovation is the ability to add complex independent shadows that can be manipulated on a whim, regardless of the parent rig's shape, size or movement.

Students in the Game Art and Animation program will gain an insight into what is involved at all levels of game development to create 3D art assets for multiple video game platforms such as PC, consoles, handheld games, Internet, phone and other hybrids.

The Project

The project will be utilizing 3DS Max for modeling and rigging. Maya will be used for animation, Photoshop for storyboards and concept work, Audacity for sound editing and After Effects for post-production.

Independent Shadow Rigs will be 3D assets that only exist when light projects them onto walls. They will be attached via controllers to active rigs (with dynamic shadows disabled) and then projected as a 2D planar image on walls and surfaces. These will be created and animated using splines, controls, and two dimensional rigging, and will all be put together to create an animated short film.

The Next Phase of Student Innovation

To continue working to improve the rigs and implement them into game engines.



PROJECT Alchemica

Will Atu's brain win out over brawn? You'll find out in Alchemica, a single player, top down puzzle-strategy game for mobile devices that's the Student Innovation Project of Andrew Raabe (Game Art and Animation/Game Design) and a team of 13. Innovative in its design, Alchemica is played by using your mind against opponents rather than resorting to violence. The objective is to search for the ultimate healing herb to cure your ailing mother, and use your knowledge of alchemy and magic to outwit the monsters along the way.

Students in the Game Art and Animation program will gain an insight into what is involved at all levels of game development to create 3D art assets for multiple video game platforms such as PC, consoles, handheld games, Internet, phone and other hybrids.

Game Design students focus on the design principles, skills and techniques required to create mechanics, design documents and functioning prototypes for innovative game projects.

The Project

As Atu, you try to get through a monster-filled jungle. Guide the boy by tapping the screen of your mobile device. Tapping on an herb will cause Atu to pick it up, and you can use them to cast spells. Core gameplay consists of your collection and use of herbs in order to sneak, deceive and trick your way past your enemies. The way the herbs are used is up to you, dynamically changing game play through player perspectives.

The Next Phase of Student Innovation

Team Alchemica took the game to GDC and ultimately got the game released. It's currently available for free download on Android and iOS. There have been more than 1,000 downloads to date.



PROJECT Fun Finder: Mobile App

Fun finder is a mobile app for iOS and Android developed by Thiago Pereira (Game Programming), Adam Visser (Advancing Computer Science), and Mario Castaneda (Game Art and Animation), as a parent's new best friend to help them find kid-driven events and activities plus giveaways, contests and local deals. The project's innovation is the solution that responds to a real need for convenience and value.

UAT's Game Programming degree prepares students to develop a broad skill set, and become comfortable with many platforms and languages. Video game programmers develop games for web, console, PC and mobile devices.

Students in the Advancing Computer Science undergraduate program will be prepared to take software engineering positions in a variety of organizations. Computer science degree graduates will demonstrate a mastery of multiple software engineering languages and become fluent in the most current software development methodologies.

The Project

Available for free download on iOS and Android, Fun Finder features hundreds of events each month. Hot new deals are added weekly. The app integrates with your calendar and can filter events by age, price and distance.

- > Easily find fun and creative activities and events to keep kids of all ages happy
- > Locate money saving deals and offers from trusted local merchants that are relevant to your needs
- > Connect with local parenting resources as well as other parents in your area
- > All within an easy to use, well organized one-touch app!

The Next Phase of Student Innovation

The app has grown in popularity to the extent that an office has been opened in Downtown Phoenix in the beautiful CityScape Office Tower.

- > Start copyright certification.
- > Continue web design education.
- > Continue web design.
- > Begin fixing errors in the system.
- > Begin actual filming.

BREAKING NEWS ON UAT STUDENT PROJECTS THAT ARE INNOVATING THE FUTURE

GAME STUDIES



PROJECT Blind Man

UAT's Game Jams can be the genesis of great innovation. That's how Tyler Bason and his team's idea for Blind Man grew into their Student Innovation Project. Blind Man is both a game and a mechanic. They allow a way for a game to be played without using sight. Rather, they provide direction using sound and vibrational cues.

Game Design students focus on the design principles, skills and techniques required to create mechanics, design documents and functioning prototypes for innovative game projects. Game Design students will also develop the leadership skills to see projects through from initial concept to publisher-ready final product.

UAT's Game Programming degree prepares students to develop a broad skill set, and become comfortable with many platforms and languages. Video game programmers develop games for web, console, PC and mobile devices.

The Project

This kind of mechanic can be applied to any simple game where players can guide themselves using cues other than visual. Blind Man, for example, is a co-op game where one player is blind, and the person who plays as the dog barks to indicate direction. If the dog is close enough, the person playing the blind man can use the vibration function to find out where and how close the dog is based on how much the controller is vibrating. If the person is not blind, he/she can cover their eyes for an authentic experience.

The Next Phase of Student Innovation

This project prototype is complete. Future plans include adding additional levels, testing mechanics and adding more assets.

UAT Academic Programs and Majors

UAT offers undergraduate and graduate degrees in more than 20 areas of concentration.

ADVANCING BUSINESS TECHNOLOGIES

- > Business Technology
- > Technology Leadership
- > Technology Studies

CYBER SECURITY

- > Information Assurance
- > Network Engineering
- > Network Security
- > Technology Forensics

DIGITAL ARTS

- > Digital Media
- > Digital Video
- > Web Design

GAME STUDIES

- > Game Art and Animation
- > Game Design
- > Game Production and Management
- > Game Programming
- > Serious Game and Simulation

HARDWARE CREATION

- > Digital Maker and Fabrication
- > Emerging Technologies
- > Human-Computer Interaction
- > Robotics and Embedded Systems

PROGRAMMING

- > Advancing Computer Science
- > Artificial Life Programming
- > Enterprise Software Development
- > Open Source Technologies

More online at
www.uat.edu/majors

> Online degrees available.

BEHIND THE BITS // ISSUE SEVEN

FIND what's OUT next

WHERE TO
FIND WHAT
YOU NEED

uat.edu

UAT is a unique, technology-infused NCA-accredited private university that was founded by a techno-geek for techno-geeks. Our mission is to educate students in advancing technology who innovate for our future.

uat.edu/faculty

UAT faculty members come from all around the world and all share a passion for technology and teaching. Our faculty is here because they love the thrill of teaching you, the next generation of technology leaders.

uat.edu/alumni

Every year the graduating students from this top technology university impress the world around them as they go on to become respected innovators in their fields of study. During college, they transformed, their destiny was manifested and empowered.

uat.edu/SIP

Students are serious about innovation projects and take them to heart. Student projects at UAT the equivalent of state school's master's thesis but are much more fun and become leading projects in the student's portfolio when they graduate and enter the workforce.

uat.edu/wall-of-app-fame

UAT's Wall of App Fame highlights examples of innovation in app development that offer an immersive game experience - anywhere. Now that's leading-edge game development fueled by the leader in advancing technology education.

SUMMER 2015 SEMESTER

Semester: May 11 — August 21
Midterm Break: July 2 — 4

FALL 2015 SEMESTER

Semester: September 8 — December 18
Midterm Break: October 23

>> See
[uat.edu/
academic-
calendar](http://uat.edu/academic-calendar)



info

2625 W. Baseline Rd. > Tempe, AZ 85283
Phone 877.UAT.GEEK > www.uat.edu