

# BEHIND THE BITS

A CLOSE-UP VIEW OF UAT STUDENT INNOVATION



# MAKER STUDIO & FABLAB

**BOHEMIAN RHAPSODY**  
**STAR WARS EDITION**

13 NEW STUDENT SIPS

**BEAT DOCTOR**  
THE BEAT OF  
A NEW DRUM



ISSUE SIX

BEHIND THE BITS ~ ISSUE FIVE

UNIVERSITY OF ADVANCING TECHNOLOGY



EDUCATING STUDENTS IN ADVANCING TECHNOLOGY WHO INNOVATE FOR OUR

**Learn. Experience. Innovate.**

# FROM THE PRESIDENT



Welcome to *Behind the Bits*, our student showcase of advancing technology. The work chronicled in these pages is truly impressive, creative and cutting edge. But more than that, these student projects illustrate UAT's core reason for being—to advance global society by developing premier thinkers for a lifetime of innovation.

In this publication, you'll find a unique behind-the-scenes perspective that dives right into the creation and development processes, revealing the potential each student has to make a leading contribution in the constantly evolving world of advancing technology.

These projects also demonstrate the power of UAT's signature Synchronic Learning model. Synchronic Learning forms the framework for a vibrant, multifaceted academic experience, which encourages students to explore new and traditional concepts, and to independently and collaboratively practice what they learn in real-world applications. These completed works embody the challenge posed to them from the day they first step foot on campus: to learn, experience and innovate with advancing technology.

Fostering an environment of innovation means maintaining an atmosphere where students feel comfortable with the faculty, connected to their studies and share the same passions for new thinking as their peers. Our distinctive, private university campus helps foster this environment in which students can develop the innovative and agile thinking skills that future success in advancing technology will require.

I invite you to take a walk around our campus, where you will see groups of students working together on various technological innovations, 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 the first computer university 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 respected innovators in their fields of study. Our students are known as forward-thinking innovators and capable problem solvers.

As I reviewed these outstanding student projects, I couldn't help but be inspired myself. This work represents the essence of why this University was founded—to nurture the game changers of tomorrow to reach their potential. I hope that as you explore the pages of this issue, you are inspired as well.

Sincerely,

Jason Pistillo  
UAT President

BEHIND THE BITS

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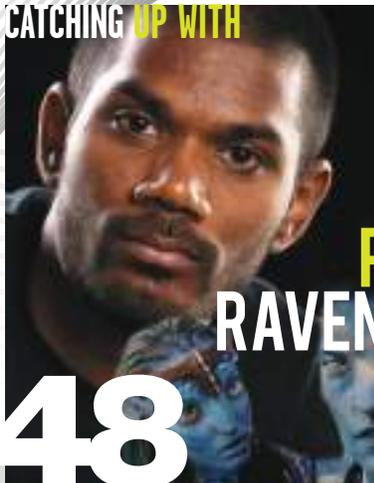


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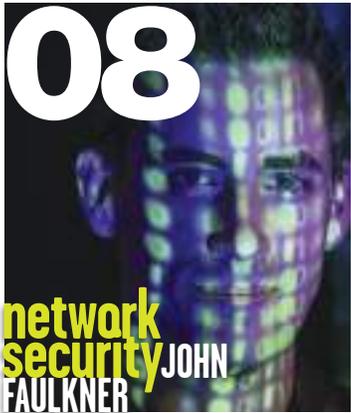
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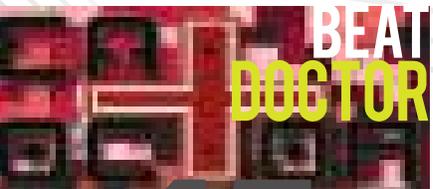
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# “GO” TIME FOR UAT ALUM INCLUDES LAUNCH OF

# MAGICIANS AND LOOTERS

## OVERVIEW

UAT alumnus Brian Clifton is in “go” mode in more ways than one. He’s a 2003 UAT graduate in Enterprise Software Development. He’s not only a senior software engineer at GoDaddy.com, the largest domain name registrar in the world; he also recently released a game on XBOX 360 through game company Margopolis titled *Magicians and Looters*.

*Magicians and Looters* is a funny, satirical game with a cast of three playable characters and an excellent soundtrack.

In this platform adventure game that’s a *Metroidvania* derivative, Versimos the Beardless has been kidnapped! Is there no one to lead his troupe of apprentices on a sword-fighting, fireball throwing, acrobatic extravaganza of daring rescue?

What will befall the forests and caves, the castles atop mountains, the big city underneath, if not under his watchful eye? What of the tasty nuts and the squirrels who collect them?

## HISTORY

During his time in high school in Florida, most of Brian’s friends and former classmates couldn’t relate to his passion and desire to write code and program. When he received a UAT brochure in the mail, he knew that’s where he needed to be.

Once he arrived at the technology University, he was introduced to great people who also liked writing code, many of whom he has stayed in touch with. He became a member of UAT’s Game Development Club where he partnered with other UAT alumni to begin the creation of *Magicians and Looters*. He also met Professor Phill Miller, one of Brian’s favorite professors who became his mentor and helped him realize software engineering was his true passion. Now a mentor himself, he recently returned to the college’s annual Tech Forum as a guest speaker and advises his team at work.

*Magicians and Looters* was actually a game project Brian started at UAT more than 10 years ago in a special projects class with other UAT alumni Dan Peschman and Justin Pereira. They always set their sights on finishing it. Brian has been writing software for computers since 1993; mostly C and C++ for Macintosh, Windows and Linux. Today, he’s more into technologies like ASP.NET w/ MVC, jQuery, RequireJS, and Ember.js.

## DETAILS

“*Magicians and Looters* is something we created in our free time. Our team grew up in the NES/SNES era and we love *Metroidvania* style games and there just aren’t enough of them out there. All the work they put into this title wasn’t for money, it was specifically to be enjoyed by gamers all over the world.”

System requirements:  
Windows operating system

1280 x 720 resolution or better  
1.5 GB disk free  
Keyboard (on-screen virtual keyboards on touchscreen devices will not work)

## THE FUTURE

*Magicians and Looters* has received critical acclaim since its release in August 2013. With *Magicians and Looters*

read more about brian at [uat.edu/alumni](http://uat.edu/alumni)



# OTERS

breaking into the top 100 of Greenlight in February of this year, Brian and his game development team have a real chance of getting the game in front of a large audience.

## WHERE IS HE NOW?

Working at GoDaddy.com since 2008 hasn't stopped other suitors from calling

on Brian. He's continually sought after by some of the biggest online companies on the planet, including tech giants Yahoo and Microsoft. For now, he's perfectly happy at GoDaddy.com. He feels it's a good fit, and it's reciprocal. He's one of the most liked and highest scoring people in his department. One day he aspires to be CTO.



## ALUMNI PROFILE

# JOHN FAULKNER

### OVERVIEW

Since graduating from UAT in 2012 Summa Cum Laude with his BS in Network Security/Engineering, John Faulkner has been working as a security analyst. His responsibilities include performing first level incident response and security monitoring; first for Apollo Group and currently (as an Associate Security Analyst) for Charles Schwab & Co., Inc. He also has his GIAC Certified Incident Handler (GCIH) and CompTIA A+ certifications.

### HISTORY

When did he realize technology was his passion? "I was always one of those kids who played with mom and dad's computer – usually breaking it and hurrying to fix it before mom and dad got home," explains John. "From that point, I kept wanting to learn and do more."

Fast forward to college. After attending a community college, he learned about UAT from a friend. Although he didn't know what area he wanted to pursue yet, he took the tour of the technology University. One of the tour stops was the nationally renowned Cyber Security Cave endorsed by the U.S. Department of Defense (DoD). He learned more about the field and was hooked.

Later he would realize he picked a rewarding career in one of the hottest areas of technology in the world.

## DETAILS

On a daily basis, John is tasked with identifying and eliminating potential threats to Schwab's network and the data and users that reside on it. Threats range from simple policy violations to advanced malware and possibly Advanced Persistent Threats (APT).

Well versed in Juniper and Snort IDPs, ArcSight SIEM, Splunk, McAfee ePO and RTIR, John provides security operations incident response and monitoring of the corporate network. He does this through the utilization of intrusion detection software and web proxy content filtering solutions through the implementation and maintenance of extensive Security Operations Policies and Procedures, and by adhering to the P.I.C.E.R.L. Incident Handling Process Model developed by the SANS Institute for security operations incident response.

John's daily roles and responsibilities include, but are not limited to:

- > Tier-1 incident response support
- > Primary monitoring for potential security threats reported via the ArcSight console, Security Operations Center (SOC) mailbox, SOC internal and external ticketing systems, and the SOC hotline
- > Support efforts of Security Analyst IIs, his Team Lead and/or Technical Directors during all phases of the incident response process
- > Internal system vulnerability scanning and ad-hoc security scanning
- > Continued maintenance and improvement of SOC documentation and procedures
- > Assist with the on-boarding and training of new information security analysts

## SUCCESSSES

John credits his professors, all the high-tech tools, hands-on projects and course content that taught him the general standards and regulations used within the network security industry for helping him to be prepared to meet the real world.

"Being exposed to all of that before letting me out into the field definitely gave me a very real advantage. If it wasn't for my mentors at UAT, I probably wouldn't have strived as hard as I did to get to where I am now," says John.

The mentors he's referring to are Professor Al Kelly (Network Security and Network Engineering) and Professor Vesna Dragojlov (Digital Media, Human Computer Interaction).

Their support not only helped him with hands-on projects like his SIP, it also helped him understand there is more than one way to look at something.

"The more inspired and the more enthusiastic I got, the more I established a connection to those who thought like me, had the same goals, not just to do homework but to take the school and all the opportunities we had and apply them – valuable opportunities like Tech Forum and Avnet Tech Games."

John's SIP (Student Innovation Project), the Visual Network Analyzer, resulted in the prototype for a system to detect network traffic and represent it in a different way.

## THE FUTURE

John wants to pursue additional certifications and become a specialist in intrusion detection, possibly as a senior technical director or a senior consultant.

The UAT community and the people he connected with fueled John to continue in his education, which speaks to one of UAT's core values to inspire lifelong learning.

Meet more UAT alumni visit:  
[uat.edu/alumni](http://uat.edu/alumni)



ULTRA SKETCH

# GOES TECHNO AND RETRO

## OVERVIEW

UAT students have taken classic game icons to an entirely new level. They've developed a new experience while preserving the nostalgia. That's the innovation born from UAT's distinctive approach to learn, experience and innovate. Resembling the classic Etch-A-Sketch most of us have seen or played, Ultra Sketch was developed by alumni Greg "Raj" James (Game Programming) and Frank Gamble, Jr., (Game Programming), and senior Josh Follis (Human-Computer Interaction/Tech Product Design, in UAT's Experimental Entertainment Technologies class.

"The class itself is a big plus here," says Follis. "While we have all this technology, a special topics class such as Experimental Entertainment Technology class gave us the situation where we had both multiple degree areas working together on a larger scale. The game degree usually never makes anything physical; students produce a good number of games but

a game with physical components is unique. Ultra Sketch and Robot Swarm were the first two; giving students the opportunity to work with students from other degrees helps fuel projects like the Ultra Sketch.

In UAT's Experimental Entertainment Class, Ultra Sketch meshed students from several degree programs – Game Design/Game Art and Animation/Game Programming, Robotics and Embedded Systems, Human-Computer Interaction and Technology Product Design.



## DETAILS

The 92-inch by 95-inch *Ultra Sketch* is made to be portable, weighing in at 80 pounds. The retro game station is made out of plywood with paint bucket knobs. It is run on a PC – Microsoft XNA framework – then, from the PC, it is hooked up to a rearview projector that displays on a giant screen.

Currently, *Ultra Sketch* has eight different games on it, but that number is growing. The game includes a Free Sketch mode that simulates the original *Etch-A-Sketch* as well as retro games like *Pong*, *Breakout*, *Light Bike* and *Connect the Dots*. Plus, Game Design students have had the opportunity to enter a competition to make new games for the console.

*Ultra Sketch* travels throughout the community to demonstrate its interactivity at such places as the Phoenix Art Museum, Phoenix Comicon and Geeks Night Out. When not traveling, *Ultra Sketch* resides in UAT's Commons Building

## CHALLENGES

*Ultra Sketch* was originally designed to include a way-finding element in accordance with an agreement established with the city of Tempe. However, because it moves from location to location and a mobile internet



connection is not always possible, the way-finding feature is not reliable; the team couldn't move it and have an updated map without a consistent internet connection.

## SUCCESSSES

Working on projects like this exceeded Follis's expectations. He realized after arriving at UAT he wanted to switch over from Game Programming to HCI after becoming interested in user experience and the user interface aspects. Taking into account the psychology of playing games, HCI is 80 percent psychology and 20 percent design; *Ultra Sketch* is the perfect project to express this. Creating the nostalgic factor was the goal for Follis. He achieved his goal, the project was a success to him.

Follis says seeing adults' reactions to the game has been loads of fun. He

loves watching people's reactions – not only adults who remember it from their childhood but a surprisingly large number of kids too, although he admits a good number of parents have to explain to kids what it represents. Follis himself loved playing it as a kid.



## WHERE IS HE NOW?

Josh Follis is a senior currently in his final semester.



DIM THE LIGHTS

# FLOWER CASCADE



Download the game at  
[uat.edu/flower](http://uat.edu/flower)

## OVERVIEW

"Grab some headphones. Dim the lights. Savor the original 'happy techno' music and bright fluorescent colors."

Flower Cascade is a fun puzzle game app for Android and soon for iOS. Available now for free download to a mobile phone or tablet with no advertisements through Google Play and Nullspace Entertainment, the single-player game app is a color matching puzzle complete with original "happy techno" music and bright colors.

Senior Stacy Layton wanted to make a game app for the casual gamer market, specifically teenage girls who can relate to and get excited about techno music and bright colors. She aspires to develop both game apps and casual games targeted toward women because she believes the market has shifted and the majority of gamers are now women. "I really want to be part of this emerging new world and give a female perspective," she says.

Flower Cascade is actually one of two games that comprise Stacy's Flair Project. The other game is Flower Burst, another free game app where you clear the required flowers as fast as possible to score points. It will be available for Android and iOS soon. Stacy took on the ambitious task of completing both mobile games in only 15 weeks.

## HISTORY

The Flair Project started as a PowerPoint presentation Stacy pitched in the UAT theater. She had to pitch Flair in order to get it approved, or "greenlit," as a studio class project. The next step was recruiting a team. Stacy took a very hands-on approach to this; talking to students directly and also warning them that her project would not be easy. She warned them the standards would be high and work would be required every week. The exciting steps the team took included taking each game to a QA class for live testing and spending weeks on game polish. Every minor tweak improved the game, until Stacy had a game anyone could play and enjoy.

## DETAILS

Don't let those colorful flowers fool you. Although Flower Cascade is easy to play, it's difficult to master!

The objective is to fill your garden with magical flowers by grabbing three or more of the same color as they descend from above. Flowers drop down from the top of the screen and disappear if they make it to the bottom. They fall faster and more colors are added the longer you play. Fill your garden up before time runs out. Think you've reached the end? Play again and unlock new achievements by creating color patterns in your garden. Stacy and her team used an Assembla website to organize and manage the development process. They used tickets to assign individual tasks and Subversion to merge their work back together. PowerPoint presentations helped illustrate the mock ups. The game also includes original music. Composers from across the country helped bring it together.

"Our games uniquely chose to focus on the music and art," explains Stacy. "The design and the programming were built around the theme and the mood set by the music in the game. For this reason, we wanted to use songs that no one had ever heard before. We ended up with eight original songs created by four different artists. Each musician created songs uniquely for the Flair Project – songs you won't hear elsewhere."

The team play tested Flower Cascade with the designers in one of their classes. "They found the bugs and let us know," Stacy says. "We received a lot of good feedback. Stacy is grateful to Professor Phill Miller for helping her team learn how to code and learn the languages behind it.

## CHALLENGES

The biggest challenge faced by the Flair Project came from getting the final artwork for the game. They struggled with blurry artwork and low resolutions before finally opting to pay for professional work that would match the quality of the games and the music.

## SUCCESSSES

The beta phase of the project brought many surprises including the challenge of finding solutions quickly enough to meet the impending deadlines. Everyone worked hard and the improvements were made rapidly. Every three weeks the team made public presentations to show their progress. Stacy says the greatest feeling of success came from having something new and fun to demonstrate during each presentation.

"We all learned what it is like to start and finish a game project," says Stacy about the team. "Seeing one game through to completion is valuable. Seeing two games through to completion and then releasing them to the market prepares us for the professional world in ways nothing else can."

"It excites me to see a small team of dedicated students come together, organize, and complete this much in such a short period of time," says Stacy. "The rewards speak for themselves. Dustin, the programming lead for Flower Cascade, got a job straight out of college and now works as a programmer in the Washington state area. I strongly believe the Flair Project will be key towards helping me find a job after graduation as well."

"Stacy demonstrated the skills and professionalism needed for a successful career in the game industry by completing and launching Flower Cascade during a development cycle supported by the advanced game development courses," says Lynn Understiller, UAT Professor of Game Art & Animation. "Stacy's vision and leadership kept her team on track with milestones and deadlines."

## WHERE IS SHE NOW?

A 2013 graduate Stacy currently is a Game Programmer at Nullspace Entertainment, LLC.

## THE FUTURE

Stacy's long term goal is to release both games to both the Android store and the Apple store. She hopes many people will download the games and write positive reviews. This means continuing to update the games and adding any bug fixes as needed.



Check out more alumni and student apps.

## RECIPE FOR LOVE FILM PROJECT

# When a cupcake finds love, so does a student in UAT's DV program.

### OVERVIEW

Gwyneth Christoffel's three-minute, stop-motion animation film, *Recipe for Love*, is a recipe for digital video success on an international scale.

In this silent film, a lonely yellow cupcake with pink icing realizes the need for a mate after seeing other pairs such as salt and pepper and cookie and milk. Deciding to make a chocolate cupcake mate, "she" goes through the steps to make the batter, pour it into a cupcake pan, bake it and frost it.

### HISTORY

Gwyneth's love for video production began when she was just 10 years old. She picked up her parents' video camera that had a stop-motion feature and began creating claymations.

When she was 16 years old and a just a junior in high school, she made the film in one week during her Spring Break. She created two cupcake puppets using expansion foam for the body, wall filler for the icing, pipe cleaners and Plasticine. A musician and actor, with talent that runs in her family, she composed original music and performed it herself using computer software.

She considered it more of a hobby than a career until *Recipe for Love* was created. "I knew I wanted to make a film, and I knew I wanted to make it stop-motion. That's what I had the most practice in."

"I love food, I love baking, I love cupcakes," says Gwyneth, whose favorite flavor is chocolate coconut.

### DETAILS

Gwyneth knew she wanted to create a film about cupcakes, and realized that meant making cupcake puppets that would withstand the rigors of filming. "After some trial and error, I discovered that I could use expansion foam for the body, drywall compound for the icing, pipe cleaners for the limbs, and plasticine for the hands and feet. I filled a cupcake liner with expansion foam and then painted the top. After it dried, I applied a mixture of drywall compound and pink paint to create the icing. Lastly, I stuck in the limbs, and I was ready to go!

In stop-motion animation, objects (human figures, animals, inanimate objects) are moved only a millimeter at a time. The camera captures one or two frames of a pose, then the objects are moved and the camera captures another one or two frames. When all the frames are played together at a higher speed, the figures or objects look like they're moving on their own.

"Watching *Recipe for Love*, I immediately could see that it had been crafted by a very talented young filmmaker with an innate skill for telling stories with an emotional hook," says Paul DeNigris, professor of UAT's Digital Video Program. "I mean, the film makes you care about the inner life of a cupcake! So I knew I wanted Gwyneth to come to UAT and be part of



my program, and in just her first semester, I've already seen her becoming the natural leader of her peer group and participating in DV Program projects and activities that freshman students usually don't pursue. The project she did after *Recipe for Love*, called *A Purrfect Pair*, clearly shows the trajectory she's on, continuing to tell heartfelt stories while adding to her technical skill. I am so excited to see the innovative projects Gwyneth will be leading in her junior and senior years here at UAT!"

## CHALLENGES

Gwyneth had trouble with the icing during filming. "It began to crack and wear off, so I had to be careful," she explained. "I also had a challenge when it came to keeping the cupcake upright. It always wanted to topple over! I ended up using different materials, like tape and clay, to keep it in the right position while filming."

Working alone was challenging at times when she needed more than two hands. "Between taking the photo, pouring the flour, and holding up the cupcake (for example) it could be difficult," she said. "I faced this challenge by getting creative. I purchased a remote control shutter release for my camera and even used different objects to hold the puppet up. I'm proud of myself for finding a way to cope with the problem."

## SUCSESSES

Not only has her video about two cupcakes finding love been recognized at more than 41 film festivals worldwide, her stop-motion animation earned Gwyneth a full scholarship to UAT. *Recipe for Love* has been shown at events in California, Florida, Montreal, Ottawa, Croatia, Singapore and the prestigious Chicago International Children's Film Festival. Gwyneth has won eight awards for the film.

In addition to her UAT scholarship, Gwyneth was awarded a scholarship from The Nova Scotia Talent Trust to supplement her studies here at UAT. The Nova Scotia Talent Trust is a not-for-profit registered charity that provides scholarships to Nova Scotians who demonstrate exceptional potential and commitment to become established artists in their chosen fields.

## FUTURE

Gwyneth plans to enter *Recipe for Love* and *A Purrfect Pair* into additional film festivals.

## WHERE SHE IS NOW?

As a freshman, Gwyneth is just beginning her Digital Video academic journey. She has a promising start to a career that includes vying for an Oscar someday, which is her ultimate goal. There's every indication she has all the ingredients to make it happen.

Now that she's at UAT, she's learning more about directing and live action film from Digital Video Professor Paul DeNigris, who she says is her primary mentor when it comes to learning how to direct film.

Watch *Recipe for Love*  
[uat.edu/loverecipe](http://uat.edu/loverecipe)



BORDERLANDS

# CHANGE OF HART





# Fan Film show- cases Digital Video Firsts

LEARN more at [uat.edu/SIP](http://uat.edu/SIP)



# CHANGE OF HART



## OVERVIEW

“Be careful who you become on the road to revenge.” The meaning is revealed in *Borderlands: Change of Hart*, a fan film project of UAT’s Digital Video program.

Combining the forces of digital video, game design and game art and animation, this film became an innovative side story rather than a prequel, reflecting the time period before the original *Borderlands* first-person shooter developed by Gearbox Software; directed and co-written by senior Alex Dinh, a Digital Video and Game Design student.

The unexpected occurs on Planet Pandora. Scientists Tiberius and Hally Hart face untold dangers when wildlife



awakens in the spring on this veritable wasteland where companies send workers, including two scientists, to explore the planet’s resources and conduct research. While he doesn’t want to give the story away completely, Alex provides one clue to the story that actually comes from *The Dark Night*, where you either die a hero or you live long enough to become the villain.

## HISTORY

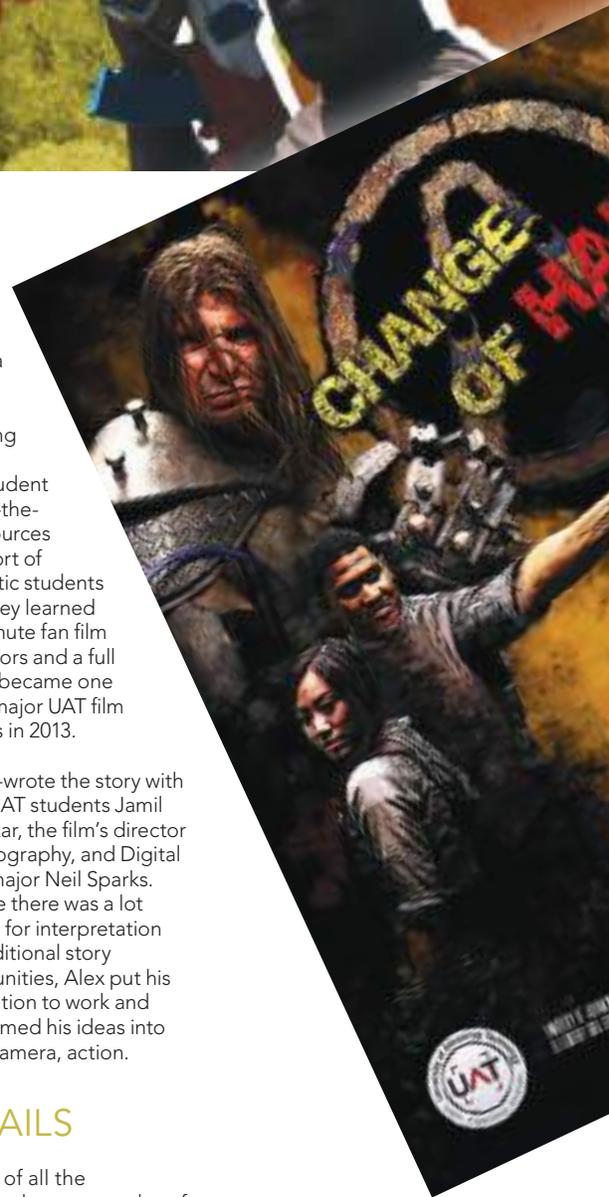
Hailing from Middletown, Penn., Alex never thought he’d work on projects like this at UAT or that his idea would be supported on such a large scale. He had a small film in mind less than five minutes long. But a funny thing happened on the road to creating it, Alex’s idea snowballed, as do many student ideas from UAT, because of the out-of-the-box thinking and industry leading resources students are provided. With the support of Professor Paul DeNigris and enthusiastic students who wanted to jump onboard when they learned about it, the project grew into a 15-minute fan film with actors and a full crew. It became one of two major UAT film projects in 2013.

Alex co-wrote the story with fellow UAT students Jamil Abubakar, the film’s director of photography, and Digital Video major Neil Sparks. Because there was a lot of room for interpretation and additional story opportunities, Alex put his imagination to work and transformed his ideas into lights, camera, action.

## DETAILS

Alex really liked this project because of all the innovative “firsts” that occurred. Plus, there were a lot of things he’d never done. “The movie is made from a real set, a digital extension from a real set and completely digital set,” he says. “So there are a lot of bits like that which were really neat.”

“There’s a cross realm that’s all about game engine technology to create the backgrounds for green screen movie in real time,” says Paul DeNigris, UAT Digital Video



professor, serving as the film's executive producer, helping to guide Alex and Jamil and making sure help is there when they need it. "The game environment responds in the real world."

Borderlands is innovative in being the first film shot on location in a dirt lot, with practical elements, where they had to build the set. The digital and design elements had to happen hand in hand. The film is also first in its use of the new Black Magic Cinema camera, a significant upgrade regarding capture technology. This camera is specifically designed for digital workflows. Shots go directly to a solid state hard drive rather than tape. Black Magic shoots in Avid's media composite native format. Features include:

- > Cuts down import time
- > Simplifies workflow
- > Designed to replicate a motion picture camera
- > The closest thing to shooting on film
- > Uses existing lenses

Borderlands was also made using DaVinci Resolve – a high-end professional color correction tool. "This gives us the ability to make colors in film that really pop the way they do in a Hollywood blockbuster," Professor DeNigris says.

Visual effects are incorporated into Nuke, an industry standard compositing software used in every big Hollywood production. Professor DeNigris' alumni recommended he move to Nuke. "They're my DV advisory board," he says. "They're out in the trenches and more than happy to give feedback."

"When we do something out-of-the-box, hey, it's just another day in DV," he adds. "We are leveraging tools in game art and game design to make what we do in DV faster, better, cooler. It's a mix of all disciplines working together."

Senior Cameron Wrightsman was art director on the project. He really liked the fact that he was able to utilize his 3D art skills to build models which will be used for film. He utilized the Wacom Cintiq machines to the fullest. The main aspect of 3D art production is using software. He used the Autodesk Maya 2013 and Photoshop Cs^, which UAT offers, to get the art assets completed.

## FUTURE

The film project is in post-production, slated for completion and release on YouTube by mid-2014. Watch the trailer at [uat.edu/borderlands](http://uat.edu/borderlands)

## 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

Alex feels very fortunate to have been on this project and for the opportunity to work with so many talented individuals and learn from them. That in itself is a success.

"Being able to direct people and I don't mean like barking orders but to be able to navigate the actors toward a performance for the film but also to work with them to create something dynamic." Alex says. "I value a lot from my actors and how they want to play the role so it's always been exciting to see what we can come up with."

"Seeing the actors in costume with their props on location was such a great experience," says Natasha. "It was at that moment, seeing all my hard work coming together, that I knew I truly loved filmmaking."

"This project provides a really great learning loop; you learn, apply, stumble, and repeat," says Professor DeNigris.

This was Alex's first Digital Video brainchild and a great learning experience. "Without Paul and the team, I wouldn't be where I am now," says Alex, whose ultimate goal is to be a film director. "I truly enjoy directing because you have a vision of the whole movie in your head even before you begin shooting. It transfers to the screen in a way others can enjoy, too. Definitely having the game perspective is an added bonus."



### CREW

ALEX DINH-Director  
2013 Graduate

NATASHA STRINGAM-Producer  
2014 Graduate

She plans on applying to as many production companies as possible as a production assistant, working her way up to the producer position.

PAUL DENIGRIS-Executive Producer

JAMIL ABUBAKAR-Director of Photography  
2013 Graduate

CAMERON WRIGHTSMAN-Art Director  
2014 Graduate

Cameron plans on staying in the Phoenix area and eventually breaking into the video game industry, possibly moving to the west coast eventually.

DYLAN WHITE-Assistant Director  
2014 Graduate

After he graduates, he hopes to find a small studio to make independent films with and become part of a team of people who are close to one another.

TREVOR SPOTTED EAGLE-Post Supervisor  
He currently is a videographer at University of Advancing Technology

PAUL ROSARIO-Editor  
2014 Graduate

REGINALD RILEY-Assistant Camera  
2014 Graduate

CLAYTON DOWELL-Key Grip

ANNIE WINN-Audio recorder  
2012 Graduate

DESIGN WITH ONLY YOUR MIND'S EYE

# NEURODRAW

LEARN more at [uat.edu/SIP](http://uat.edu/SIP)



Thomas' project harnesses the innovative concept of neuro-drawing, drawing with your mind directly onto a computer screen or canvas. This could open a new world for people with limited mobility in their hands, providing new opportunities for self-expression in areas such as art, architectural drawing and furniture and product design. His project also explores the possibility of a device that can hold a pencil/paintbrush and communicate with the headgear to create an image.

NeuroDraw would allow a person to create digital or physical art by wearing headgear and guiding a computer program with their thoughts or eyes to create the desired design.

"I have had a great deal of interest in oil painting and drawing all my life," says Thomas, a senior majoring in Technology Product Design who hails from Scottsdale, AZ. "This was a great way for me to express what I could not put into words. In addition, I have been around many people who have had to face disability challenges." It became Thomas' passion to create something for those who want to express themselves artistically with their hands but were limited.

Imagine the ability to use your mind to create designs – without lifting a finger. It's not the stuff of sci-fi movies; it's a very real concept being explored in Thomas Niemiec's NeuroDraw Student Innovation Project.

## DETAILS

While Thomas discovered in his research there are other products similar to the NeuroDraw, he says his innovation is the use of color, lines and textures to create and print the work in an effort to generate a means of expression and income. He adds NeuroDraw would have the ability to design architectural elements that again generate a source of income.

The headgear communicates a brain wave to deliver commands to a computer, aiding an artistic person who has a physical issue with his/her hands. When it is worn on an artist's head, NeuroDraw will draw or paint digital art in Photoshop. Built-in sensors will identify its user by voice or mind.

Using a Mindflex game headset, Thomas attached a Arduino Uno board. Downloading data using the Brain Library, he will program the innovation into the computer. Although Thomas is

going solo in the design and creation of his prototype, he adds "Professor Mark Fedasiuk has been very helpful. Neural type of computer innovations seems to be an area of interest to him. I appreciate him pointing out both positive and negative areas. Early on, Amanda McIntyre (senior majoring in Advancing Computer Science) also was very encouraging and could see the potential of this project. The link she sent me to look into set a clear direction for me."

## CHALLENGES

While his prototype is still in the development stages, Thomas already has learned a lot. "When all else fails... try again. And then try and try again. Persistence and believing there is a way. This thinking is influenced by my belief to always look at a product, building, restaurant, etc. and ask myself 'how can I make this better.'"

## SUCCESSSES

Thomas' project is moving forward, thanks to his exposure to different products such as Arduino and a staff willing to guide him.

Thomas believes he found the right advancing technology university for him. He was exposed to UAT through the Lego Robotics Competition. He realized UAT would provide the opportunity to create and be exposed to a wide range of technological products. "It definitely influenced my UAT decision," says Thomas. "Good decision!"

## THE FUTURE

Thomas would like to see NeuroDraw become a cost effective way for disabled people to generate income. "There is a misnomer of people thinking that if someone has a disability, they cannot generate income or think for themselves," he says. He believes NeuroDraw will help change that perception.



Following his graduation in May 2014, Thomas will explore job opportunities and is prepared to apply what he's learned at UAT in a career. He would also like to develop and bring more products to market.

BOHEMIAN RHAPSODY:

# STAR WARS EDITION

## OVERVIEW

Within the first week following the release, UAT's Digital Video degree program's Bohemian Rhapsody: Star Wars Edition not only went viral, but reached epic viewing proportions, exceeding 1.5 million views on YouTube. The comedic homage to George Lucas' space opera as well as to the operatic rock of Freddie Mercury and Queen premiered in December. Already considered by some as one of the greatest tributes to Queen and Star Wars, the video is quickly generating widespread attention for UAT throughout all social and mainstream media.

## HISTORY

It all began on Phoenix's 1-17 freeway. Professor Paul DeNigris, University of Advancing Technology Digital Video major professor was driving in his car, listening to a "classic rock" playlist on Pandora and began singing along to Queen's Bohemian Rhapsody. He's a diehard technology and film geek and longtime Star Wars fan.

Then it hit him - the idea of rewriting the classic Freddie Mercury lyrics to fit the Star Wars universe was born and realized with a team of University of Advancing Technology Digital Video students and the community.

Students Stephen Panagiotis and Jamall Richards jumped on Professor Paul DeNigris' epic idea to rewrite the classic Freddie Mercury lyrics to Bohemian Rhapsody fit the Star Wars universe.

They immediately set about reworking every line of the song with Professor DeNigris' guidance and input. Mercury's operatic and often nonsensical lyrics were transformed into a musical retelling of key moments from the Star Wars saga, from not only the Original Trilogy but also the Prequel Trilogy and the Expanded Universe of novels and videogames.

## DETAILS

Mandalorian Bounty Hunters, Imperial Stormtroopers, Droids, Jedi, Darth Vader, Obi-Wan Kenobi, Starkiller and more.

To include the characters, Professor DeNigris and student producer Panagiotis reached out to the Arizona geek community—specifically to the various Star Wars costumer groups

such as the 501st Legion Dune Sea Garrison, the Rebel Legion Mos Eisley Base, and the Mandalorian Mercs Shonare Vhekadla Clan to provide these costumes.

With the lyrics completed, Professor DeNigris reached out to his network of Arizona talent and found singer Adam Newton and music producer Joey Sawhill to execute the new version of the song. Newton was able to hit Freddie Mercury's original vocal register and to duplicate his phrasing of the song. The result is a new version of the old classic that sounds like Queen themselves could have recorded it.

Over several weekends, members of these groups converged on UAT's Green Screen Studio with their costumes. A group called "The Cantina Banned" showed up dressed as the alien musicians from Star Wars: A New Hope. A puppet maker and costumer in Tokyo, Japan, volunteered his Yoda puppet and his "Ewan McGregor" Obi-Wan to participate in the video, sending the UAT crew his footage via the Internet.

The Digital Video program immerses students in leading-edge technologies and environments that are essential to today's film, television, video production, newsgathering, animation, visual effects, gaming, web and interface design industries.



# STAR BOHEMIAN RHAPSODY WARS

BOHEMIAN RHAPSODY:

# STAR WARS EDITION



*UAT's Digital Video degree program and professor Paul DeNigris develop graduates who amaze the world. With the real-world, hands-on experience they gain, Digital Video majors often go on to join big-name films and represent the elite parts of the entertainment industry. They help to lead digital animation and production of films like Avatar and at companies like Disney. That's because as students, they gain real-world experience working together on professor-led teams to create film-festival entries that generate hundreds of thousands of YouTube views not to mention awards and film-festival honors.*

## CHALLENGES

With so many talented costumers lip-synching to the new lyrics, student editor Natasha Stringam found it challenging to assemble the video.

"Everyone did such a great job singing and there were so many funny moments in each person's performance that it was sometimes hard to decide which parts to put in and which to leave out," Natasha said. In the end, she finalized the cut and turned the video over to the visual effects team, who added backgrounds and other elements to put the characters into the Star Wars universe.

"When I tell people I'm producing a short film, or that I'm editing a Star Wars/Bohemian Rhapsody parody, their jaws drop and they say 'That's so cool. I'm jealous,'" says Natasha. "And then I'm reminded that I have the coolest major ever."

## THE FUTURE

The video project is continuing to attract both national and international attention in both social and mainstream media.

## SUCCESSSES

- > Just hours after its premier on Dec. 4, 2013, Bohemian Rhapsody: Star Wars Edition catapulted to more than 100,000 views, and within the first 72 hours surpassed one million views.
- > As one more in a long line of UAT firsts in advancing technology education, the professor-student collaborative video project is swiftly making its mark for creativity and innovation.
- > The video is continuing to attract attention on YouTube, with almost two million views.
- > More than 300 social media and news outlets carried the news.
- > The video project spawned broadcast interviews, blogs, reviews and social media commentary, including People Magazine, Fox News KSAZ Channel 10 Phoenix, Huffington Post, Global News and Mashable.com.



WATCH IT NOW »



uat.edu/dvtribute

**DIGITAL  
VIDEO  
TRIBUTE**

ROBOT SWARM

# THE LAST STAND



# ROBOT SWARM



## OVERVIEW

How many video games you know of are designed to have something actually pop out of the game console on which you're playing?

While you're playing the virtual robot arcade-style video game, *Robot Swarm: The Last Stand*, the project design calls for real robots to pop out from the game console at any given time.

That's just one of the innovations of *Robot Swarm: The Last Stand*, a single-player arcade-style shooter game designed for use among a wide range of ages.

The game was inspired by old arcade games such as *Area 51* that task the

player with using a physical gun to shoot enemies on the screen. The innovation for Dustin's SIP results from the combination of robotics and video games into one experience that mixes the virtual world with the real world.

Dustin Rodda, a Game Programming major, led a team in the development of his Student Innovation Project before he graduated in 2013. While still in the development stages, this project advanced to the prototype stage and serves as an impressive portfolio piece because of its scope and unique design.

"*Robot Swarm* pushes the boundaries and enters all new territory with its combination of robotics and gaming. It truly is the future of games," says

Stacy Layton, a Game Programmer on *Robot Swarm*.

Dustin never dreamed of working on a project like this in college and "never in a million years imagined that I would have the opportunity to work with robotic students. This experience has been truly amazing."

Dustin, who hails from Silver City, NM, chose UAT because the teachers really care about the students. "They want everyone to succeed. I feel like I have many mentors who've helped me with my future."

# THE LAST STAND



ROBOT BACKVIEW



ROBOT FRONTVIEW



ROBOT RIGHTSIDE VIEW



ROBOT LEFTSIDE VIEW



[uat.edu/SIP](http://uat.edu/SIP)

## DETAILS

The innovation of his Student Innovation Project comes from combining robotics and video games into one experience. "I cannot think of a game that incorporates real life robots in the design," says Dustin. "This project really opens the doors to what video games could be in the future.

The project idea was pitched for the Experimental Entertainment course by fellow UAT student and Game Design alum Jeff Sandefur. It sounded interesting to Dustin so he jumped on board, became lead programmer and adopted the project as his Student Innovation Project.

This project includes design of both the software and hardware that interfaces with a gaming computer and its display with one or two dozen small virtual robots. The player begins by picking up a laser rifle and shooting the robot images as they appear on the display. These digital robots gradually spawn faster and progress down a virtual hallway toward the bottom of the display, which gives the impression the robots are moving toward the player. If any of these robots reach the bottom of the screen, real robots come out and "attack" the player. The laser rifle is designed to interface with both the virtual and real robots.

UAT provided the team with a screen, projector, robotic parts and use of the University's 3D printer that helped the team create the outer shell of the robots. They also built and painted the game's infrared laser gun.

## CHALLENGES

The biggest challenge is recruiting and maintaining a dedicated robotics team. The team is currently looking for more robotics students to join the project.

## SUCCESSSES

Dustin has enjoyed being lead programmer on this project. It has given him unparalleled experience on how to run a team. For Dustin, the most exciting part of the project was when he was able to use the laser gun with the game. It was a great step to develop such a different experience for each player.

His project demonstrated leadership on an innovative project that had never been done before, and he believes it definitely helped him get a job.

## THE FUTURE

There is an exciting opportunity to further develop the game and complete it with the addition of more robotics students. Dustin's long-term goal is to take it around to trade shows and conferences.

## Where are they now?

**DUSTIN RODDA**  
Game Programming  
2013 Graduate

**JEFF SANDEFUR**  
Game Programming  
2013 Graduate

**KENDAL CORMANY**  
Game Programming  
2012 Graduate

**JOSH FOLLIS**  
Human-Computer Interaction  
2013 Graduate

**AMANDA MCINTYRE**  
Advancing Computer Science  
Current Student

**JAMIE SMITH**  
Human-Computer Interaction  
Current Student

**KASEY NORMAN**  
Robotics  
Current Student

**DIAMOND "KIT" ANDRADE**  
Game Art And Animation  
2013 Graduate

**NICK FERRI**  
Sound Effects  
Current Student

**JAMES ARNETT**  
Game Art And Animation  
Current Student

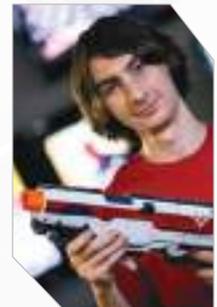
**TONY BARTYS**  
Game Design  
Current Student

**STACY LAYTON**  
Game Programming  
2013 Graduate

She currently is a game programmer at Nullspace Entertainment, LLC



KASEY NORMAN



KENDAL CORMANY



JOSH FOLLIS



STACY LAYTON

THESEUS FIRST FLIGHT

# BLOODLEAF STUDIOS



## OVERVIEW

With the blood, sweat and tears of hard work and determination, Bloodleaf Studios, LLC, has become an exciting video game and software company specializing in video game development, software development and technology consulting services. With a wide range of specializations, the Bloodleaf team develops multi-platform games, encompassing PC, Linux, iOS, and Android.

Bloodleaf Studios creates games that take an out-of-this-world direction providing new and varied game experiences for players.

Take *Theseus First Flight*, for example, the studio's first game, now available through Google Play in both the free and 99 cent ad-free versions.

The ISC Theseus spaceship is in trouble and needs your help to survive its test run. Seize the controls in *Theseus First Flight*, a side-scrolling, avoid-and-collect game in space. The first in a series of games developed by the studio, the story goes like this: After a lengthy war, the Imperial Strategic Command seeks to explore more of the galaxy and has developed a faster-than-light drive small enough to be used in fighter ships. The first test of this drive, in the ISC Theseus, goes horribly wrong and now it's up to you to help the ship survive. Players collect Realignment Rings in order to keep the Theseus alive, while avoiding oncoming asteroids, meteors and other ships that are caught in your path.

The Bloodleaf team is finalizing two more game projects: *The Theseus Effect* and *Draco the Savior*. They've got others in the pipeline that they're keeping under wraps until further developed. Plus, they're building business, currently in active talks with several business accelerators and incubators that may help jumpstart the company's growth. They're also looking at opportunities to donate their time in the community and looking forward to creating new jobs to help the local economy.



## HISTORY

Two of the three people who formed Bloodleaf Studios are UAT alumni and co-owners; Jacob Lanthier (Game Programming 2010) from Albany, New York, and senior Jeff Sandefur (Game Programming 2013) from southern California. Their team of 16, half being UAT students and alumni, have a new lease on life—and game development.

Bloodleaf Studios has its roots as Jacob's Ladder, Jacob's former studio. The new name reflects the "blood, sweat and tears" the team has put into the studio to bring it to where it is today, and the leaf represents regrowth and new beginnings.

## THESEUS FIRST FLIGHT

# BLOODLEAF STUDIOS



### DETAILS

First released in 2013, *Theseus First Flight* is being revamped by team Bloodleaf. They have been training and learning new styles and techniques, learning from industry experts and the gaming community to develop a more action packed game experience for everyone.

- > **Player Movement** - They will be working on unlocking the player from the one position the player is in at this time and will be giving free range on the screen.
- > **Health Pick-Ups** - You can't play a game without facing some damage; they're going to add health packs throughout game play.
- > **Shields** - As asteroids and comets are a constant danger, be sure to pack your shields. The team forgot a shielding system during initial release will be working to implement one.
- > **Bullets** - The team is working out a few bugs and their first job is to get the main weapons system up and running again.
- > **Missiles** - Once they work out kinks in the main weapon systems, the secondary weapon system is the next focus. They will be working on implementing missile systems on the ship.
- > **Fuel System** - Originally, the main goal was just to finish the game. Now, they're

ramping up the difficulty which means installing a fuel cell on the ship. Watch out! It does run out of power, so make sure you replenish your fuel once this feature is installed.

- > **Parallaxing Backgrounds** - In the first run of the game, the backgrounds were repetitive and very plain. They're currently reworking the backgrounds to incorporate more than just one static background.
- > **Level Re-Balance** - There are currently 50 levels in the game, making for very tedious game play. The levels are being reworked in hopes for more enjoyment.
- > **Point System Balance** - The team is going to be reevaluating the game's point system. This will be a major overhaul in order for the point system to work with all the new upgrades to the ship.
- > **A Few New Enemies** - Since the ship experienced a massive overhaul, the team is exploring the option of adding new enemies.

The Bloodleaf team is diverse in their capabilities and flexible in their style, which creates a wide range of game experiences. "We're open to new ideas and prefer not to be stuck in any one thing or style," says Jeff.

That's why they design games with the following styles and effects, always brainstorming new ideas and exploring cutting edge ways to create a new game experience for players:

- > 2D
- > 3D
- > Realistic
- > Cartoonish
- > Shooting
- > Role playing
- > Action
- > Adventure
- > Virtual card game

There's also room to expand this list, thanks to UAT's Synchronic Learning methodology that gives them the hands-on experience to become forward thinkers and technology innovators



## CHALLENGES

One of the biggest challenges is the financial burden of obtaining their first office. The team is generating community support through crowd-funding and establishing connections to demonstrate their desire to be an integral part of the community.

## SUCCESSSES

- > Input makes things better. The team is learning from industry professionals and players alike. They've taken these suggestions and are revamping *Theseus First Flight*.
- > Surprise, AZ, City Manager, Julie Neal, approached UAT students offering student game developers the opportunity to apply for space in the TechCelerator. The Bloodleaf Studios team applied and were given a lease that includes six months of free space.
- > Two games have been launched, with a third in the wings.
- > The company's owners are currently in active talks with several business accelerators and incubators in order to jumpstart the company's growth.
- > The *Theseus Effect* demo is being released in Spring 2014 at the Eureka's 4th Annual Gadgets and Demos.



## THE FUTURE

The future is bright for Bloodleaf Studios. In addition to redesigning *Theseus First Flight*, Team Bloodleaf is diversifying. In addition to video game development, they also are developing software for other companies and providing free services to the community, such as teaching free classes for the senior citizens.

## TEAM BLOODLEAF

### All Team Members Are Currently Working At Bloodleaf Studios:

Jacob Lathier

Video game programing Bachelors 2009 – also working toward master's degree in computer programming - 2014 or 2015

Jeff Sandefur

(current student)

David Houser

Harold Hiner  
(graduate)

John Daniel  
(graduate)

Nate Schroeder

Michael Rubino

Alexander Laurie  
(graduate)

Rene Estrada

Tyler Pfeifer

Andres Sierra

Heather Moffitt

Mike Berow  
(graduate)

Dan Oquendo  
(graduate)

Isaac Willimson

MY MUSIC MOSAIC'S REAL-WORLD IMPACT

# HIGHLIGHTED AT HCI CONFERENCE



"Music is a great tool for this, because it does not require the



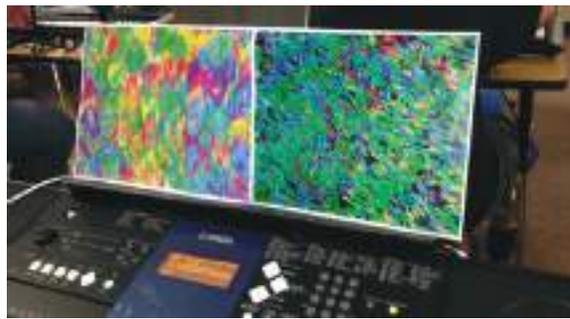
## OVERVIEW

Developed for the All Greater Good Foundation and the San Diego Center for Children, My Music Mosaic converges technology, music and art to help children and teens express their feelings and frustrations. In this innovative program that has the power to change lives, input from a musical keyboard is represented with different colored brushstrokes to demonstrate the music being played in a digital painting.

Senior Molly Satterfield (Human-Computer Interaction), senior Jaylyn Dawson (Human-Computer Interaction and Technology Product Design), junior Joshua Vargas (Human Computer Interaction) and senior Amanda McIntyre (Advancing Computer Science) created the project with faculty support that included design guidance from Vesna Dragojlov, Associate Professor of digital media, program champion for Human-Computer Interaction and Curator of Student Showcase.

Because four UAT students met a real-world need with My Music Mosaic, they were invited to present their project at the national HCI Conference in Las Vegas last summer. Quite a thrill and an honor.

My Music Mosaic transcends the boundaries of three respected UAT majors represented in their team.



## DETAILS

Completed from scratch, on schedule, in only one month, “the project gives an alternative method of expression for children who may not feel like they have a way to vent their feelings and frustrations,” explains Molly. “Music is a great tool for this, because it does not require the children to use words.”

Instruments are represented with colors in the form of brushstrokes. Making many color palettes available helps the users pick the colors that best fit their mood and the type of song. The longer the note; the longer the brushstroke. The more forceful the note is hit, the bigger it is, for example; splats represent quick notes. The result is a digital painting with different colored brushstrokes that is uniquely expressive and therapeutic.

Creating something both fun and therapeutic for children is the innovation. The design sets it apart from what’s currently out there. “Similar ones already out there focus on the novelty factor and are geared towards an older age range,” explains Molly.

The first thing the team needed to do was decide what exactly would happen when a user pressed a key on the keyboard. There were many variables they had to play with, such as pitch, duration, brush types, which instrument was being used (there were a few hundred different instruments on the keyboard) and where on the screen the notes would draw.

Once they figured out what they wanted out of the design, Jaylyn, Josh and Molly began working on different brush styles. They wanted each instrument to have a brush that represented how that instrument sounded; a drum note would look much different than a flute note. During this time, Amanda began looking at how to implement the design choices in Processing, the team’s chosen language.

After a few of the brushes were created and tested in the software, they revised a few design choices. The team also began working on the colors and the interface they would be using. Up until that point, they had been using random colors to test the brushes, so the outcome wasn’t always very pretty.

They created color palettes with seven colors that represented each note; high pitched notes would be a lighter color and low pitches notes would be darker. The color palettes were inspired by things in nature (like water, fire, plants, and rainbow) as well as by what the team thought looked nice (purple-pink palette and pastel colors).

The interface had to be designed from scratch. The team had long meetings determining the layout of the interface because they knew switching from a computer keyboard and mouse to a musical keyboard would add an extra challenge.

After the interface was designed and built, it was simply a matter of creating an installer and testing it out.

“We chose to do this project because it sounded like a great opportunity, not only allowing us to practice the skills learned in class, but we would be able to help children in tough situations. It was also a lot of fun to develop,” Molly explained. Our meetings didn’t seem like a bore, because all of us were excited to work on the project.”

“I think it’s been an amazing learning experience especially being part of a group because there are a lot of different ways you can tackle a problem and we each come from a different point of view,” says Jaylyn.

## CHALLENGES

Designing the interface was a long and drawn out process; the team had a three hour meeting just discussing the different ways to let users know how to access the menu once they were finished playing.

Since they only had about a month to complete the first version of the program, it was also difficult to balance project deadlines and homework.





## SUCCESSES

> The first success was putting the brushes into Amanda's program for the first time. It was proof the project could be accomplished.

> One success was the revamp of the brushes, giving the brush strokes a more natural look which was a huge accomplishment for the team.

> Once the color palettes and the brushes were added to the program, the artwork started looking much more natural and real.

> The "aha" moment for the team was finishing and delivering on time; they say it felt like a huge accomplishment.

> The most exciting part for Molly was getting to travel to San Diego to see the students using their creation. She enjoyed seeing their artwork and hearing their songs. The students also had great feedback for the next iteration of the project. Professor Dragojlov is proud of the students and the recognition they're receiving from UAT and industry alike and emphasizes it was totally the students' project.

"The students owned this project, and not many schools could pull this off," says Professor Vesna Dragojlov. She adds this was the first project to come out of UAT's Human-Computer Interaction program to exemplify the innovation that's only the tip of the iceberg for this

emerging technology field. UAT's Human-Computer Interaction degree is based on the interfaces and interactions between electronic devices and the users that rely upon them.

"The All Greater Good Foundation and San Diego Center for Children were ideal clients," Professor Dragojlov explains. "The project was beyond the foundation's expectations and provided a launching pad for these students in the future," she says. "They were really impressed."

"We've gotten so much support from the UAT community," says Molly. "Not only were Professor Dragojlov and other instructors fundamental towards getting us through, but the faculty and staff have been genuinely interested and excited about this project. It's been a gateway to so many good things, and I think we're all grateful for that."

## THE FUTURE

"We're all still working on My Music Mosaic and making improvements to its design," says Jaylyn. The effects of the program will be studied, and then it may move to other classes.

"We talked to the All Greater Good Foundation briefly to make sure they are okay with us continuing to work on and update the program. We plan on communicating with them again, once

the new version is up and running. In the future, we may decide to approach some schools in the Valley to see if My Music Mosaic is something they would like to use," says Molly.

## WHERE ARE THEY NOW?

**Molly Satterfield** – Molly is exploring internship opportunities and continuing to build her portfolio.

**Amanda McIntyre** – Amanda is working as a software developer at Clubessential in Austin, Texas.

**Jaylyn Dawson** – Jaylyn graduated in December 2014 and continues to refine her skills with a supplemental course while exploring job opportunities

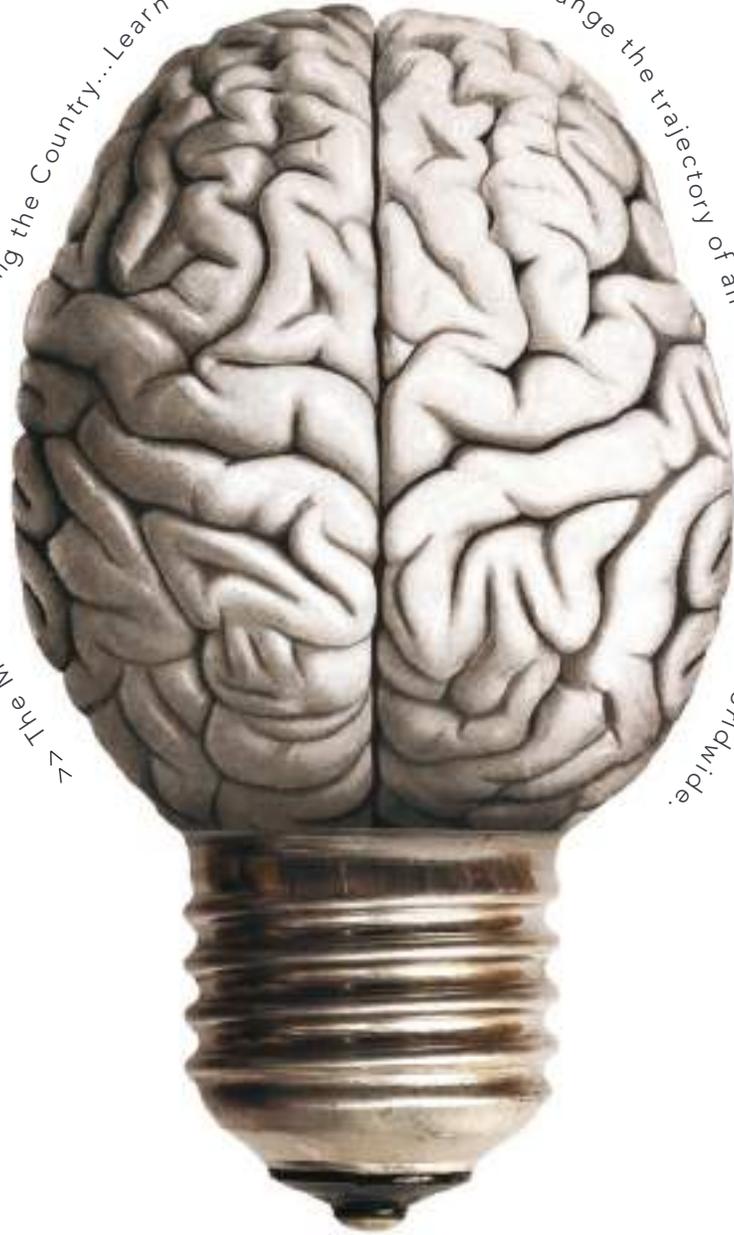
**Josh Vargas** – Joshua plans to graduate in 2015. He wants to pursue his masters in HCI and aspires to work as an interface designer for Apple or Canon.



MAKER STUDIO

# & FABLAB

The Makers Movement is Sweeping the Country... Learn how this revolution will change the trajectory of all industry and innovators worldwide.



## OVERVIEW

Enter the new revolution of makers, the Makers Revolution, that's as big for industry and innovation as the personal computer was and is as game changing as the Internet. It's roaring down the track upon us without brakes and those who join together to harness its powers will be riding the wave of a new frontier of innovation and capability; standing proudly on top of the biggest coming technology revolution since the Industrial Revolution of the 1920's.

In today's connected cloud-based world, making things has become digital. "Stuff" or physical objects start out as designs on screens; virtual, then tactile. These designs can then be shared online. It's 3D printers, maker bots, robotics and embedded systems, digital design and animation, laser cutters, open-hardware and software companies and desktop fabrication taken to the industrial and consumer level.

Those who can see the swell building—no, sweeping—throughout technology and industry will lead the metamorphosis of how ideas come to life in American business. It's a new way to think, design, conceive, prototype, test, manufacture and bring to market new innovations. This represents a shift that paves the way for innovators to introduce any innovation, transforming the way we will manufacture and make things for all time.

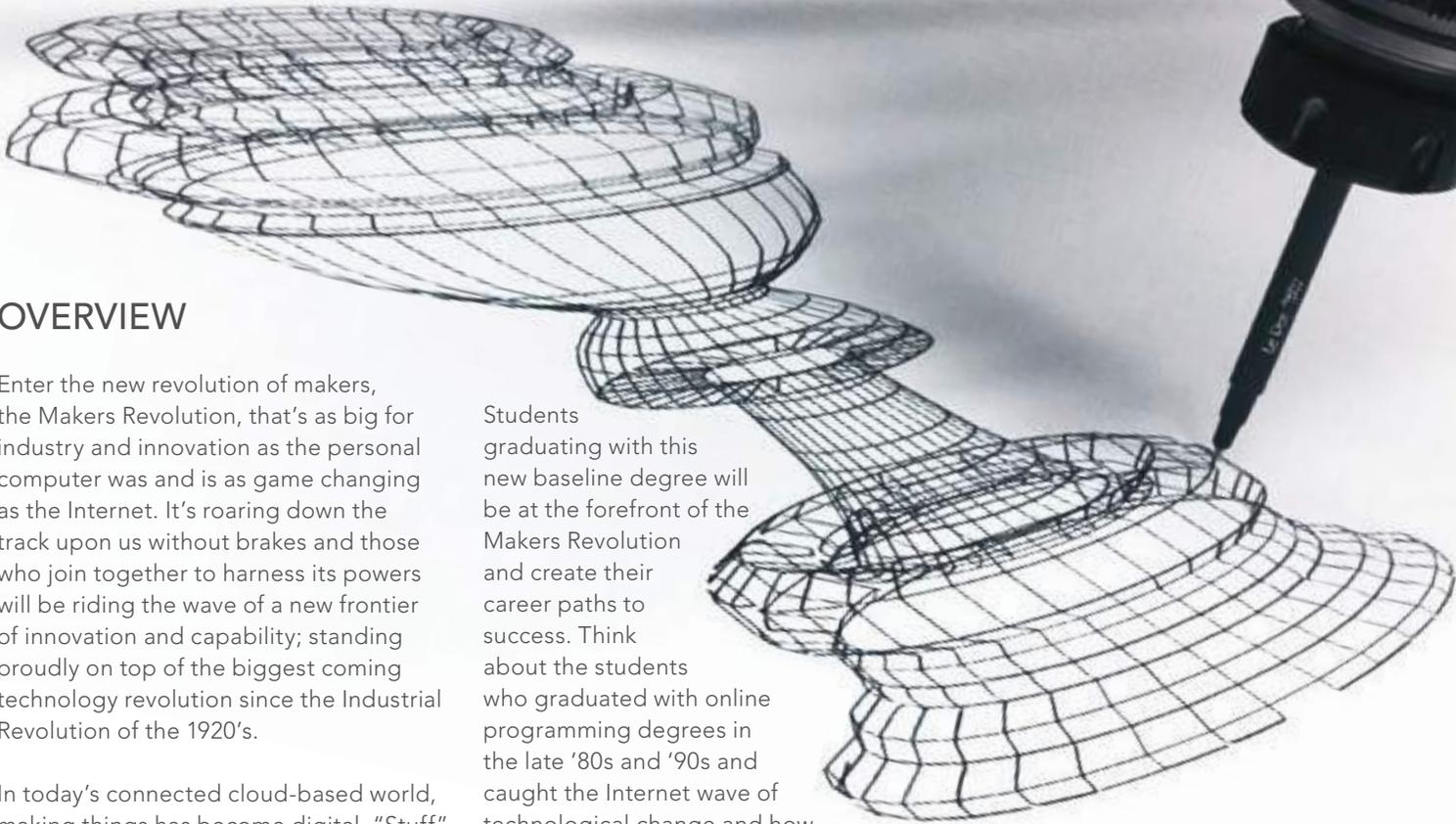
Excitingly, UAT is offering the first of its kind degree in making with the nation's first fully accredited Bachelor of Science degree in Digital Making and Fabrication. It will combine the multi-disciplinary skills of programming, design, robotics, virtual design and more.

Students graduating with this new baseline degree will be at the forefront of the Makers Revolution and create their career paths to success. Think about the students who graduated with online programming degrees in the late '80s and '90s and caught the Internet wave of technological change and how they shaped our economy and became the captains of innovation and change over the next 25 years. The graduating students of the classes of 2015-2020 will have the once in a lifetime chance to become educated experts in an area of technological change that will truly reshape this nation and the world. For more information on UAT's degree programs that will prepare you to be a maker and industry innovator, go to [www.UAT.edu](http://www.UAT.edu).

In October 2013, University of Advancing Technology (UAT) became the first university in Arizona to launch a digital maker fabrication lab on campus: the UAT Makers Fab Lab. The digital makers lab is designed to foster creativity and challenge student innovators in a 24/7 environment for those who seek to lead the new industrial revolution driven by the convergence of advancing technologies.

"Buy one (MakerBot) and you're not just buying a printer—you're buying a front-row seat to a cultural transformation."

—Chris Anderson, *Makers: The New Industrial Revolution*.



# MAKER STUDIO & FABLAB

## HISTORY

If you were born after 1980, you probably have historical images of what “shop class” was. If you ask someone over 45, they can probably give you some romantic “when I was a kid” version. Shop class was the 100-year-old grandfather of “making” or “fabricating” back in the day—before computers, before desktop printers, before the Internet, before design software. High school students were hunkering down in noisy, greasy, messy, warehouse-type classrooms and using lathes, sanders and hand tools to make stuff. Think of Thomas Edison’s garage.

In the early 2000s, this maker movement was only a vision of what could be: discontinuous innovation that could be a huge game changer much like the launch of AOL 1.0. In 2005, O’Reilly Media launched Make magazine and the first MakerFaire gathering took place in Silicon Valley. In 2007, RepRap arrived—the first open-source desktop 3-D printer. A consumer-friendly 3D printer called MakerBot followed, creating a whole new category that’s inspiring makers to become what some are now starting to reference as the desktop manufacturing revolution. These innovators from the Web generation need specific skill sets to harness the power of this powerful revolution—skills such as digital design, robotics, animation, programming and embedded systems as well as networking capability—which can be found in individual degree programs at top technology universities.

President Obama joined the maker movement in 2012 when he announced a program that would bring Makerspaces to 1,000 American schools over the next four years. These Makerspaces will house digital fabrication tools including 3D printers and laser cutters, just to name a few. This program aims to educate younger generations about the emerging Maker Revolution.

It’s natural that the Web generation would take hold of this idea and run with it because it brings out our true entrepreneurial spirit. Once ignited, hobbies can become careers and evolve into companies that forever change the way we live, breathe and exist.



Learn more [digitalmaker.com](http://digitalmaker.com)

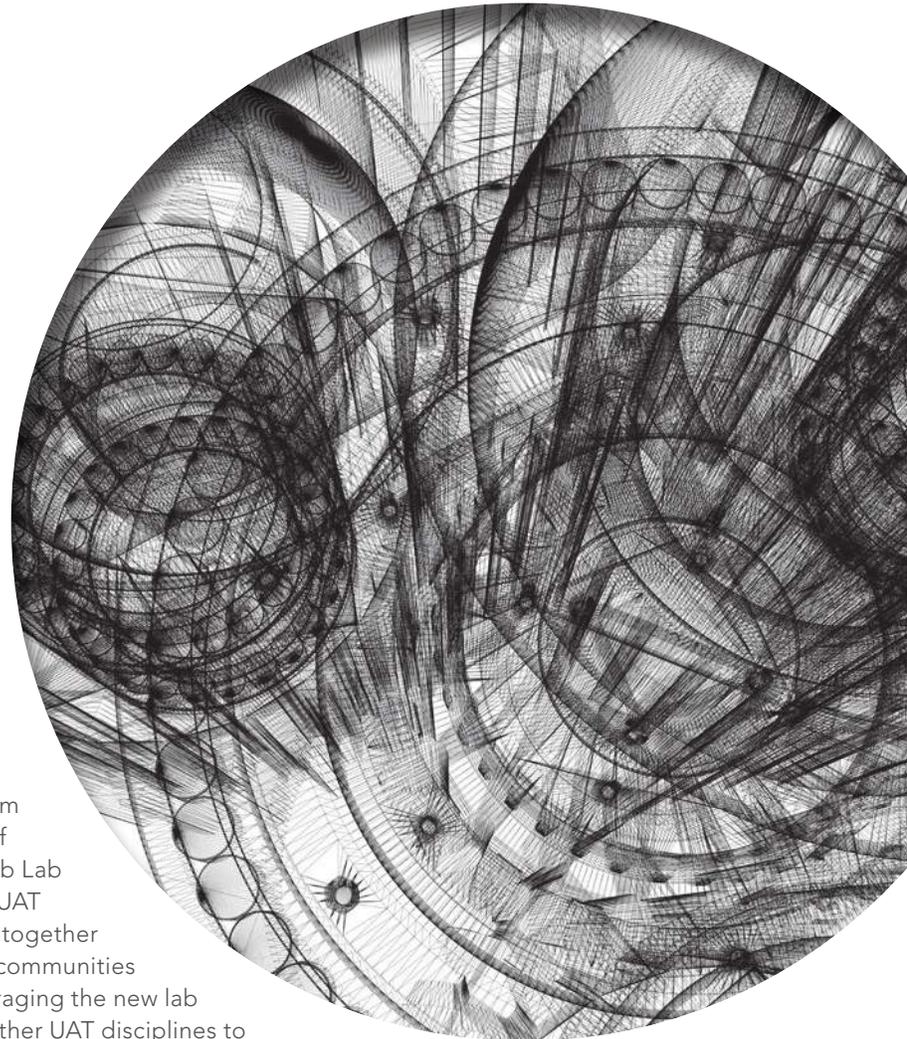


## DETAILS

So huge is this maker movement that websites such as Shapeways.com are already beginning to take off—they can take your 3D design, manufacture it and sell it for you. Another early industry-leading fabrication partner is Redeyeondemand.com. Companies in this space are seeing the growth that only happens before the wave of common awareness of a technological change of this magnitude. The UPS Store is even trying to break into the maker revolution by testing in-store 3D printing, available now at limited locations nationwide.

In UAT's recently built makerspace, the Makers Fab Lab, students will be able to make and create tech innovations their parents and forefathers could have only dreamed about. It's stocked with the latest 3D printers, laser cutters, maker bots and the theory, software and instructional skill-building guidance students need to put their minds eye to work. Plus, UAT's community of techno-geeks is joining together to start the first University-sponsored Makers Lab Club program in the Southwest US. The Makers Club will be designed to induce and challenge the true aficionados—the ones who still want more after a full day of classes on robotics, programming and digital design.

The sky's the limit in UAT's Makers Fab Lab, a machinery lab in a new space on campus separate from the existing robotics electrical engineering lab. The UAT Makers Fab Lab is equipped with the latest 3D printers (adding materials to craft a 3D object), milling equipment (subtracting materials from a block of material to craft a 3D object) maker bots, CNC cutters, hand tools, a Rube Goldberg machine and the software and guidance students need to bring their innovative ideas to life.



Modeled from the design of MIT's first Fab Lab community, UAT plans to join together the student communities already leveraging the new lab from many other UAT disciplines to start the first student-facilitated and University-sponsored Digital Makers Lab organization.

This is not your father's shop class. This is the next generation of the digital marketplace that is all around us, and it's here today and here to stay. Become a part of it! Find out what it takes to be a maker!

Makerspaces and Fab Labs, like the one on UAT's campus, leverage shared production facilities and are starting to form worldwide for those that have their eye on the trends that develop and lead to discontinuous innovations. There are nearly a thousand around the globe sponsored by industry. Shanghai is building one hundred of them.

# MAKER STUDIO & FABLAB

## CHALLENGES

UAT believes there will be a shortage of those possessing the capability to fulfill the yet unseen demand for industry, business and government that will be created by the new digital maker and fabrication movement: think web developers and computer programmers in the late 90's.

It's one thing to have ideas, it's another to fund them, which presents challenges for innovators. Crowd funding, such as Kickstarter, is further helping this maker movement because it provides venture capital, and more capital means we can feed the economic engine so critical to helping our economy grow and spurring innovators to change the way we do everything.

## SUCSESSES

Unique opportunity for career success. UAT is currently enrolling students in the Digital Making and Fabrication degree program's founding class of 2014 that begins this fall.

In the first year of this product design degree program, only 45 students will get the once-in-a-lifetime opportunity to become the first educated maker experts in an area of technological change reshaping the nation and world. Now, students can develop their own inventions in an exclusive, campus-wide, open-lab environment beginning their first year. As part of their curriculum, Digital Maker and Fabrication graduates will file for their own U.S. patent. They learn to take an idea from concept to prototype and how to raise venture capital to bring innovation to market. Scholarship opportunities for the digital maker and fabrication degree are available.

"Our new Digital Makers Fab Lab and advancing technology degree programs will provide UAT's graduates with the once-in-a-lifetime opportunity to become the first educated experts in an era of technological change that will reshape this nation and the world. We are doing all of this keeping in perfect stride with our mission by educating students in advancing technology who innovate for our future," says David Bolman, PhD., UAT Provost.





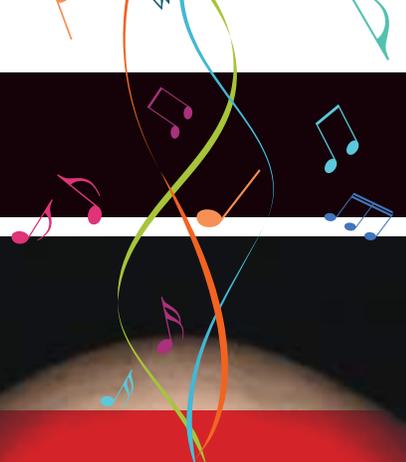
"We have a responsibility to both our students and nation to prepare for this explosion of technology breakthroughs that are catalyzing a change in how we bring innovation to the markets," says Jason Pistillo, UAT President. "We want to place our digital modeling and product design graduates at the forefront of the digital maker and fabrication revolution, opening new doors of capability most cannot even imagine yet."

## UAT Has A History Of Leadership Success.

On the cutting edge of technology and computer innovation since the dawn of the computing revolution in 1983, UAT continues the tradition with its Digital Maker and Fabrication degree program that leads the pack by educating the leaders that one day will run, innovate and lead our country's next industrial revolution from within these spaces. UAT is also well-known and respected for its leadership and innovation in building the first fully-accredited game design program that helped fill the industry with leaders and innovators to accompany the emerging capability of game design two decades ago. UAT is also highly respected for its development of one of the first elite network security and technology forensics programs in the country that now operates out of a high security Department of Defense (DoD) funded lab on campus and many of its students are whisked away to work on highly classified projects protecting our country's networks and information. You can be sure that this Digital Maker and Fabrication degree will also be innovative and produce highly-respected professionals at the top of the industry. At UAT, there is a mantra that the "other" schools' graduates work for UAT graduates.



# BEAT DOCTOR



The BEAT of a New  
Drum: Game concept  
combines music,  
interactive  
game styles.



# GAME CONCEPT HIGHLIGHTS INNOVATIVE MUSIC, INTERACTIVE GAME STYLES



## OVERVIEW

Music not only enhances, but drives your game experience in the new game concept, *Beat Doctor*, developed by UAT alumni Zachary Snader (BA Game Design 2013) and Tommy Turner (BS Game Programming 2013) as their Student Innovation Projects.

*Beat Doctor* is a musically-enhanced multiplayer platformer for the PC, allowing players to simultaneously enjoy the action of a rhythmically-charged experience and a fast-paced platform game.

The game's innovation is the combination of both game play styles to create one game play experience.

# BEAT DOCTOR

## THE FUTURE

While the game is playable, they say they still have a long way to go. Currently, the game only works on one computer; they envision evolving it so people can play each other from different locations.

### Future work to complete the game includes:

- Improved GUI
- More music
- Implementing art
- Addition of originally planned features:
  - Power-ups
  - Competitive multiplayer
  - Song specific art
  - User-uploading songs
- Story mode (Other modes & features are taking priority)
- Alternative Play Styles



## CHALLENGES

The artwork needs to be updated and more features still need to be added. The game is currently a multi-game player rather than a cooperative one. Time proved to be a challenge as Zachary and Tommy were both working full-time while developing the game. Currently, the game is still in development.

## HISTORY

The project started in September, 2012, when the idea for *Beat Doctor* was born in UAT's Experimental Entertainment Technology class, among others that morph into innovative new projects.

The game concept was first pitched to Student XP Boost, an internship program started by UAT alumni Tyler Coleman and Chris Jennowin, who are also the founders of Retora Game Studio. They created the internship program to give students real-world experience. Initially they didn't approve it.

"There was a game jam that same weekend we had the meeting, and they said if they could prove they could do the procedural generation of the music for the notes (based on frequency of music) in the game jam, then they had the green light for the project. They did it. The development of *Beat Doctor* could then be further supported," recalls Tyler.

Tommy, who hails from Newark, NY, took classes both on campus and online. He believes the intellectual resources and helpful faculty are what helped him foster the innovation of *Beat Doctor* from a game programming perspective, adding "The culture and friendliness make a lot of students comfortable."

Student XP Boost is a one semester internship designed to educate students about the challenges and rewards of developing games. Much like a startup accelerator, XP Boost aims to give students hands-on experience creating their games from start to finish. In the mentorship program, students are grouped with industry professionals to advise them during development. At the end of the semester, XP Boost helps publish the best games and the top game overall receives special commendations. The sponsors assist with costs and help students by providing software, hardware and other materials for the development process.

Rhythm games already exist as well as platforming games. They are in separate categories and are generally never put together. The only time they are combined is when rhythm platformers are made which have the player jumping over obstacles in time to the music. Nobody has ever combined the gameplay of a rhythm game to match notes with a platforming game. These are two separate gameplay styles coming together and interacting with each other, making it unique.

## SUCCESSSES

It was an "awesome learning experience" for Zachary and Tommy. While only 20 percent complete, they were able to make the game playable, despite all the challenges.



## DETAILS

*Beat Doctor* is being designed with Guitar Hero-styled note-matching and the platforming elements of *Bit Trip Runner* in mind. Combining these two gameplay styles makes for a unique gameplay experience.

**“The music effects and game play affect one another,”** explains Zachary who hails from Scottsdale, AZ. When a player performs an action, it creates an opportunity for another player.

**Genre:** Party Music Platformer. **Players:** Two players (Solo play can be achieved but greatly increases the difficulty). **Game Modes:** Cooperative Multiplayer, Competitive Multiplayer (To-Be-Implemented)

**Key Features Include:**

**Dynamic Game Play** - Based on how well the players are doing, it will make the game either easier or more difficult by altering the objects in the game.

**Xbox 360 Controller:**

> Triggers and Bumpers control, Face

**Triggers and Bumpers:**

> Right trigger, Left Trigger, Left Bumper, Right Bumper

**Face Buttons:**

> A,B,X,Y

**Technical Game Play Details:**

Each player is designated with a specific role. Player One is in charge of navigation - they constantly run through a scrolling level while platforming over obstacles and hazards (on the top part of the playing view). At the same time, Player Two is “creating” those obstacles by matching beats on a scrolling track. Both are simultaneously viewing the same experience while controlling

Fast Fourier Transform (FFT) is used to procedurally generate the notes in the trackpass so that the game can have unlimited replayability.

**Platforming:** Each obstacle is generated based on how well the Trackpass player is doing.

ed to be added to make it a competitive  
to be a challenge since Tommy and Zach  
ly, the game only works on one computer.

The first player matches notes that are procedurally generated by a song playing, while player two is avoiding obstacles underneath in the platforming game. Player two’s game is generated based on how well player one is doing in the note matching. If player one hits 4/4 notes a small obstacle will appear for player two to do a single jump over. Each note, player one misses out of a four note section, harder obstacles will be generated for player two to avoid. The programming to get the two gameplay styles to work together is fairly innovative as well because it allows the two games to play and work together. *Beat Doctor* is being developed with a player age range from 8-40 in mind. Anyone who loves music will love to play *Beat Doctor* because it allows them to interact with their music beyond just listening to it.

To create *Beat Doctor*, the project still needs help from game programmers, game designers, game art animators and audio engineers. *Beat Doctor* is a two-player rhythm platforming game for the PC.

**Modular Art** - The art in the game is going to be based on the style of song being played. For example, if a Hip Hop song was being played, the art style would reflect upon the backgrounds and objects that are shown (in this case, with graffiti textures).

**Local Co-Op** - Because the game is (primarily) played by two players within a local environment, the gameplay itself lends to an intimate and immersive experience. *Beat Doctor* will remind you of how fun it is to play an arcade-styled title next to another person.

**Original Soundtrack** - With an original soundtrack produced by Paul Diaz, *Beat Doctor* will have a sound and style all its own.

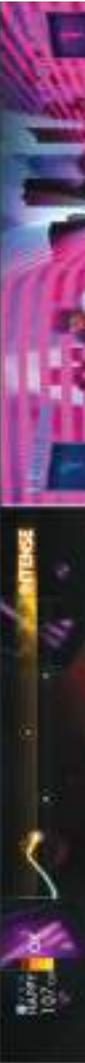
## CONTROLS

**Platforming Gameplay:**

> Keyboard strictly: SPACE to jump, S to slide.

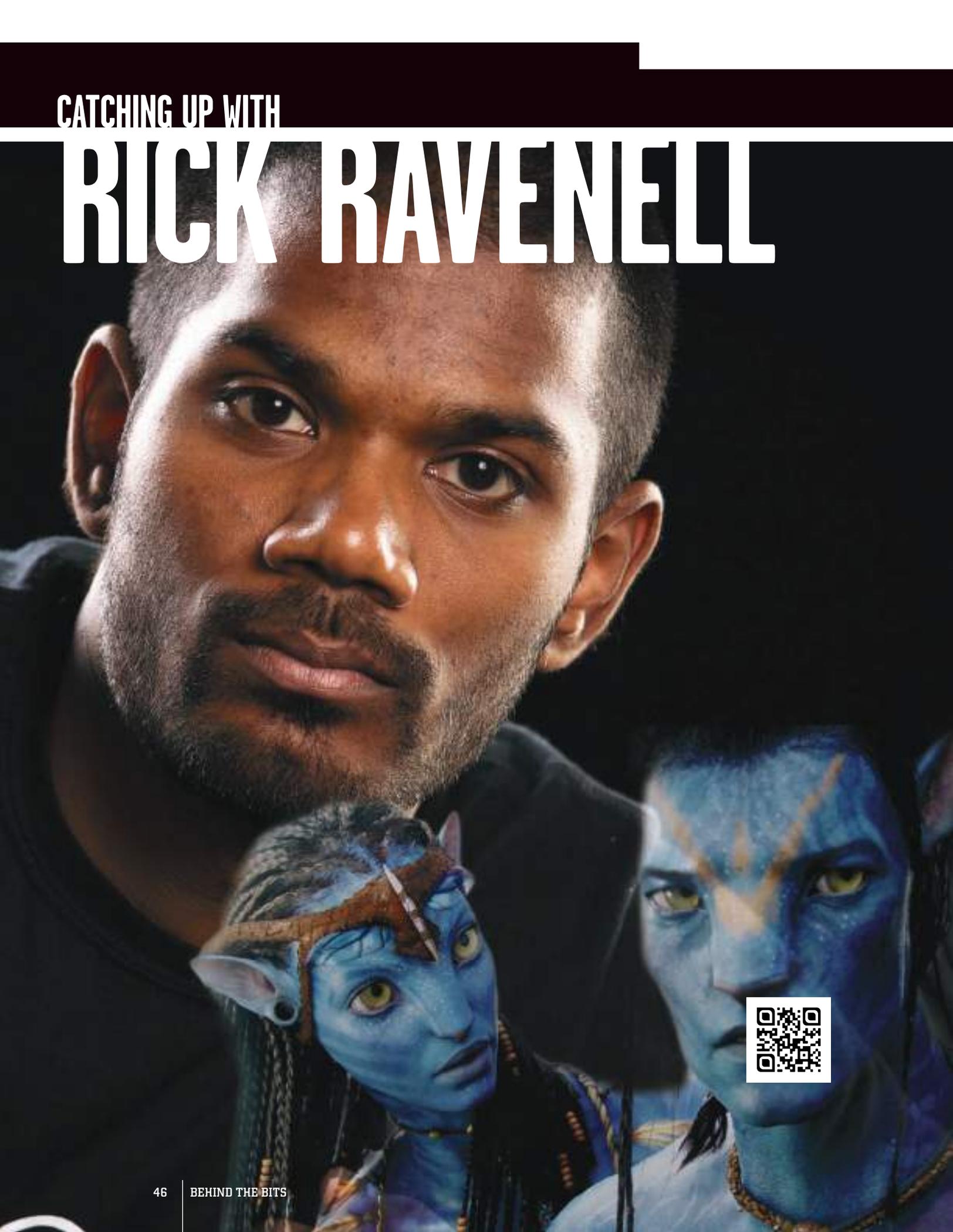
**Trackpass Gameplay:**

> Keyboard: Arrow keys to match the notes.



CATCHING UP WITH

# RICK RAVENELL



## OVERVIEW

For Behind the Bits, which delves deeper into innovative student careers and projects, it's only fitting that UAT alumnus Rick Ravenell reveal his formula for success: two parts talent, two parts education (UAT style), lots of hard work and networking. A 2007 graduate in Digital Video and Digital Animation, Rick is a freelance VFX artist and compositor currently working at Encore Entertainment in Hollywood, CA. He feels a true kinship to his alma mater and the people, crediting among others Digital Video Professor Paul DeNigris, who provided the mentorship and encouragement for Rick to go to California to pursue his career. That was the ticket.

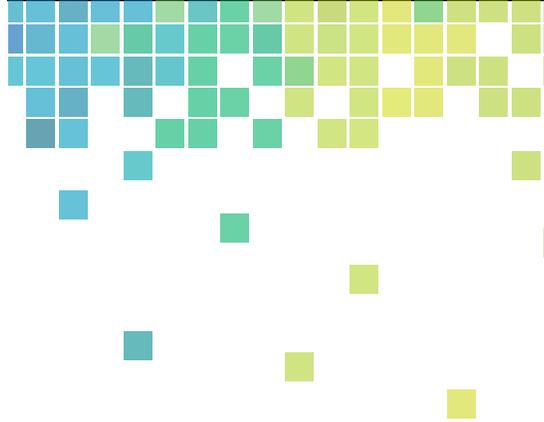
His specialties include composing, motion graphics, graphic design, PC and Mac workflow. When he returns to his alma mater to visit as a guest speaker at Tech Forum, he's got a lot of experience to share with UAT students. Tech Forum is a three-day event held twice a year for industry professionals to speak to students on various topics ranging from tips and tricks on how to get started in an industry to advanced techniques and process that are currently in development.

Rick is a busy, hardworking artist with the staunchest of work ethics who has built an impressive network of the industry's top professionals.

"I love my job. I get to sit there and make pretty pictures all day long, and I get paid for doing magic every day," says Rick. "Come on, it can't get any better than that."

## HISTORY

When Rick was growing up in Kauai, Hawaii, he loved watching movies with his mom and dad. He remembers watching Star Wars and wanting to know how it was made. He originally wanted to be a fighter pilot, then an aeronautical engineer and finally decided he wanted to make cool pictures of airplanes instead.



## CATCHING UP WITH

# RICK RAVENELL

Rick began his post high school education at the University of Hawaii in Hilo, where he completed core classes in traditional graphics. He knew art was what he wanted to do, he just wanted to do it with a computer; so he began to look for schools that specialized in computer graphics.

Rick found three schools, including UAT, the latter of which stood out not only for the elite level of education but also the small, private, geek university environment. When he called for more information, "they were the nicest people," he says. Between all that and the information packet he received with all the details, he applied and was accepted before ever stepping foot on campus.

Rick's visual effects career started in 2008 at MKVFX where he was a compositor and motion graphics artist on NBC's Knight Rider. He then went to Prime Focus for graphics work on Avatar and has been a freelance artist ever since. He has worked in television, commercials and feature films for companies that, in addition to Encore Hollywood, include Digital Domain, FuseFX, Sabertooth Interactive, Technicolor, Zoic, and Svengali Fx.

Already, he's been involved in almost 60 television series and mini-series (e.g. Knight Rider, The Office, House M.D., The Closer, The Good Wife), and approximately 20 movies (e.g. Avatar, Ender's Game, After Earth), and counting.

## DETAILS

Rick has the opportunity to work on different projects with different companies, including television and movies, which not only gives him the freedom to work on different types of projects, it keeps him in high

demand and his industry knowledge sharp. At Encore, he's currently busy working on television shows (names currently under wraps at the time of this printing, until their release) – pilots and series scheduled to air in summer 2014. During pilot season (January through April), television shows have a very fast turn-around time and it's not unlikely to be working on multiple episodes at once, across many different shows. This is when most of the networks are trying to get their new shows finished as quickly as possible so they can hopefully get a full season approved out of the pilot.

"Last year [2013], I think we did somewhere around 40 pilots within a couple months' time," says Rick. "Crazy, huh?"

One of his more recent projects was in the movie Ender's Game. His motion graphics work included designing holograms, doing interfaces that appeared on cellphones, tablets and computers, and other graphics. In movies, cell phones and tablets start out as black screens. He also did the compositing, which combines all the elements of a shot together near the final stage of production just prior to coloring and completion.

## CHALLENGES

The first major challenge Rick faced in his career was actually when he applied for his first job on Knight Rider. He had no experience doing graphics but decided to apply for the job anyway. He was able to get an interview but when he got there, the lead creative wanted to see a motion graphics reel (of which he didn't have). He told him he didn't have one with him. The lead creative told Rick to send him a graphics reel and he would watch it and get back to him.

Rick spent the rest of the weekend making a reel specifically for him and sent it off. He was so impressed that Rick had personally made him a graphics reel that they hired him, and he started three days later.

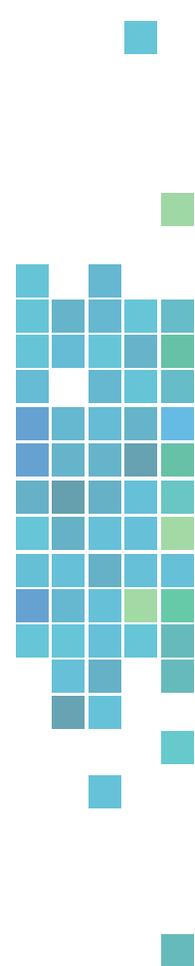
## SUCCESSES

To a large degree, Rick credits UAT's open, collaborative and supportive learning environment to where he is today. He was better prepared to navigate changes in the industry with what he learned and where he learned it, and also by developing key relationships that continually build bridges to new opportunities. UAT's high tech equipment, including green screen and video production facilities, definitely helped him develop skills he uses every day.

The more classes Rick took, the more he realized the power of a double major in digital animation and digital video and how much it could benefit him in his career. "If you do both, you understand more than someone who just goes to school in digital video or just goes to school in digital animation," he explains. "They're interconnected because when you do any type of animation work, you're looking through a camera and confined to a composition."

The relationships he's built have benefited him greatly in securing jobs in the entertainment industry. In fact, they're key. They're relationships that go deeper than just job contacts. He's friends with many of his colleagues and contacts, going hiking, playing Go Karts, going to dinner and movies, and celebrating victories and defeats together.

"Building friendships is more beneficial than just building contacts," he says.



Rick says his biggest career success thus far has been working on *Avatar*. Getting his notes from the great director James Cameron was definitely a high point. "The industry feels huge when you are trying to get in but once you start working your realize how small it really is," he says. "Everybody knows everyone else. The more people you work with the more connections you have—and those connections can help you get jobs in the future."

## WHERE IS HE NOW?

As a VFX artist/Compositor for Encore Entertainment, Rick is living in Los Angeles, CA, just outside of Hollywood. He's currently very happy as an artist and wants to continue doing what he loves, which supports his interests and hobbies including motorcycling and taking his Subaru (racecar) to the racetrack in his spare time.



## Rick's advice to UAT students:

- > Make sure you make friends, be nice to people, and keep track of them. They can all be important future connections in the industry.
- > Work hard, stay focused and you'll figure it out.
- > Pursue a double major in Digital Video and Digital Animation. "As soon as you look through a camera your composition comes into play," says Rick. "So understanding compositional techniques that you learn in digital video, you apply that to everything else, because your canvass is your composition. If you know both sides of the equation, you're better suited because if you don't understand what the digital video people are doing but you know what you want it to look like, you spend lots extra time trying to figure it out."

JAHEN SMITH WILL SMITH  
AFTER EARTH



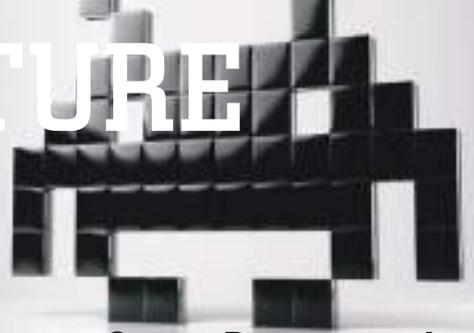
# TOMORROW'S TECH TODAY

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.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN GAME PROGRAMMING THAT ARE INNOVATING TECHNOLOGY.



## Game Programming



## OCULUS Communication

When is a hangout not a physical space? When it is a virtual hangout in a 3D interactive world.

Oculus Communications is a digital hangout that creates a social networking environment. To date, there is no application that involves the Oculus Rift VR technology for social networking purposes. The Student Innovation Project of Game Programming major Derek Mello; Game Art and Animation major Cameron Wrightsman and Game Programming major Karl Matthews gives the feeling of actually being inside a virtual reality environment. Thus, players experience more. Other team members include Game Programming major Nicandro Batista, Game Art and Animation major Devin Gaviria, and Game Programming major Harrison Snyder.

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 UAT's Game Art and Animation program will gain 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

- > Oculus Communication utilizes Oculus Rift VR technology and includes:
  - Interactive Environment—gives the player more to do and increases immersion for the player.
- > Real World 3D—makes the environment feel more like virtual reality.
- > Fully networked—so players can communicate with other players and interact with them inside the environment.

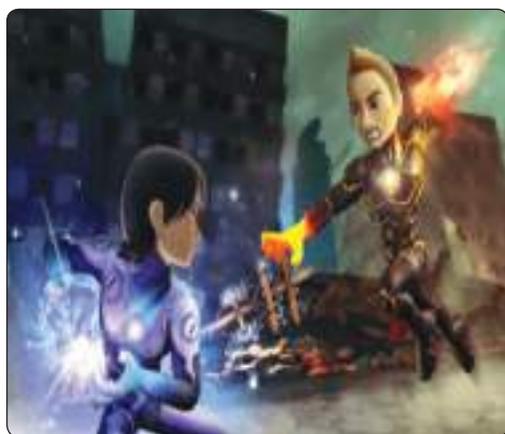
### The Next Phase of Student Innovation

As the project nears completion, the team is getting closer to the alpha testing phase as they finish the project's networking and polish the artwork.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN GAME DESIGN THAT ARE  
INNOVATING TECHNOLOGY.

Game Design/Game Programming



## PROJECT Cast

The power is in your hands with Project Cast, a new gaming experience created by Game Design major Dylan Gaither and Game Design major Eric Price for their Student Innovation Project—and also provides a real-world solution. Project Cast allows for a more immersive gaming experience and provides players who have decreased motor functionality the ability to enjoy motion controls with the same degree of finesse as anyone else. Other team members include Game Design major Robert Flad and Game Design/Game Programming dual major Trevor Stevens.

With UAT's Game Design degree, 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

Project Cast centers around the Kinect system, adding a function that allows the player to set his or her own motion controls for the game in order to create a more user friendly gaming environment. The Student Innovation Project:

- > Allows players to generate custom user inputs, using the power of the Kinect, then map those to different outputs, generating a unique and different level of immersion for each player.
- > Create recording process to integrate inputs into system.
- > Assign custom inputs to desired outputs.

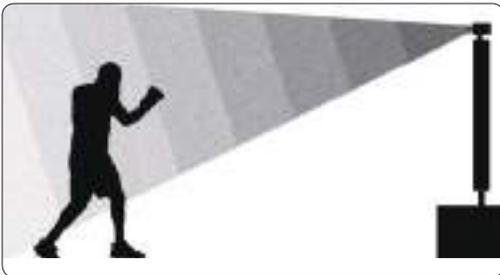
## The Next Phase of Student Innovation

The next steps will be to study the Kinect software itself to better understand the techniques involved in modifying its intended purpose. After this will come the development which will allow the Kinect to read and recognize custom player inputs; and finally will be developing a demonstrative scenario in which to test the new capabilities.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN GAME DESIGN THAT ARE  
INNOVATING TECHNOLOGY.

Game Art and Animation



## PROJECT HARDCORE **Kinect Game**

When you put the words “hardcore” and “game” together, it’s got to be game changing.

This Student Innovation Project is the creation of Game Art and Animation major Sabine Vecchio and her teammates Barret Gaylor, Game Design Major, and Andrew Baldwin, Game Design major. The project’s innovation is to create a game for the Kinect that will appeal to the hardcore gamer market, which has never been done successfully before.

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 objective of Project Hardcore Kinect Game is to make a hardcore game using the Kinect motion sensing input device and in doing so, fully utilize its power.

### The Next Phase of Student Innovation

Next steps to develop the game include:

- > First, learn how to develop on the Kinect while also developing a game design document for the actual game.
- > Once the document is written out, produce a game prototype.
- > Playtest the game.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN NETWORK SECURITY THAT ARE  
INNOVATING TECHNOLOGY.

Network Security



## PROJECT Obelisk

This Student Innovation Project is of the obelisk kind. Network Security major Luke Waletzko is designing Project Obelisk to be innovative in form as well as function. The project's innovation is the creation of a modern and compact game console that will utilize solid state media as game cartridges for faster loading times and a better gaming experience.

Designated as a Center for Academic Excellence in Information Systems Security Education, UAT offers this cyber security degree to provide the advanced industry-standard tools and skill development necessary to propel information network technology initiatives and ensure success in the network security field.



### The Project

Utilizing the new SteamOS, Project Obelisk is a video game console with a square base and sides that taper like a pyramid only skinnier.

### The Next Phase of Student Innovation

Next steps are to select the proper components in order to construct a powerful gaming system.

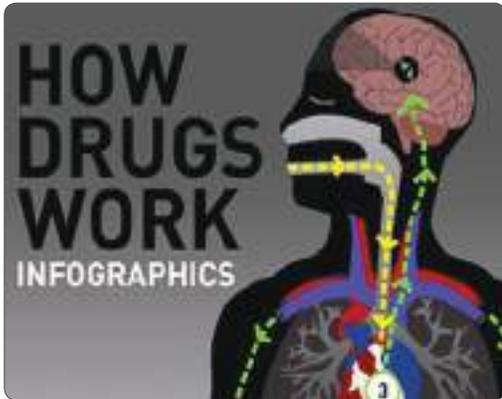
The project is divided into three phases:

- > Planning Phase
  - Designing the system
  - Selecting components
- > Building Phase
  - Assembling the system
  - Building the operating system
- > Testing Phase
  - System Functionality
  - Free from defects

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN GAME DESIGN THAT ARE  
INNOVATING TECHNOLOGY.

Game Design



## RACING On Drugs

Racing on Drugs is an educational game developed by Game Design major Luke Venchus which uses game mechanics and design to teach the player about the positive and negative effects of certain types of drugs on the human body.

Games are a great way to teach, and Luke understands just how powerful they can be. With this Student Innovation Project as his rocket fuel, he plans to create a fun-to-play educational racing game which will indirectly visualize the effects of drugs on the human body without presenting subjective, opinionated claims while instructing gamers what to do with the given information.

UAT 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

The platform for this game will be PC with basic mouse/keyboard controls. With Unity as the game engine, Racing on Drugs will inform the player of the positive and negative effects of each drug and allow the player to analyze the information independently.

### The Next Phase of Student Innovation

In the future, Luke plans to flush out the gameplay and game mechanic design. He also plans on implementing art assets into the game engine as well. Further down the road, he will be scripting the game using a visual scripting system.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN NETWORK SECURITY THAT ARE  
INNOVATING TECHNOLOGY.

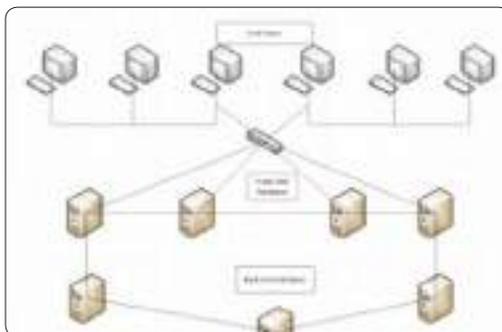
Network Engineering



## SECURITY Map

Security is Job #1 for Network Engineering major Gunner Howell, whose Student Innovation Project is Security Map, a network mapping program. The project's innovation is checking asset data of a device with the asset data that is saved on a back-end database.

UAT's Network Engineering degree provides graduates with a well-rounded knowledge base from which to draw upon. A strong foundational knowledge of network and systems engineering concepts form 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 will be explored in detail.



### The Project

The program saves all the assets from a device on a network to a back-end data base.

### The Next Phase of Student Innovation

The project is currently in the planning and development stages.

Next steps include:

- > Experiment with the programs.
- > Experiment with the possible network setups.
- > Begin creating prototype.
- > Test prototype.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN HUMAN COMPUTER INTERACTION THAT ARE INNOVATING TECHNOLOGY.

Digital Media & Video



## PROJECT Sparkle

It's time to rethink the traditional magazine design as we know it. Digital Media major Gabriella Peterson is developing a Student Innovation Project that "sparkles" with innovation. Sparkle is a new magazine prototype that encompasses a different layout, focus and target audience.

Magazines currently have the standard left to right layout. Sparkle's innovation is the utilization of unique design elements.

UAT's Digital Media degree is a multifaceted, interdisciplinary program that provides for the aesthetic, critical and technical perspectives vital for professional careers in contemporary art and design practice.

### The Project

Next steps include:

- > Research the common elements in magazines today.
- > Brainstorm a layout design that will be unique and innovative.
- > Tailor the design to an established target audience.

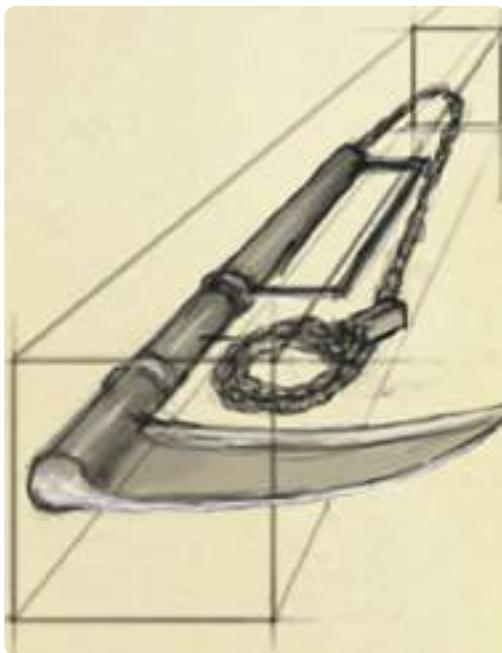
### The Next Phase of Student Innovation

The project is currently in the planning and development stages.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN NETWORK SECURITY THAT ARE  
INNOVATING TECHNOLOGY.

Virtual Modeling and Design/ Game Art and Animation



## STICKY Evolution

Imagine morphing a weapon to the size and shape you want as you play your video game. That's what Kerisa May Morin did and went one step further to create the concept for her Student Innovation Project. In doing so, she proposes a solution, thanks to all she's learning from her dual degree in Game Art and Animation and Virtual Modeling and Design. Current games with so-called evolving weapons simply make the weapon at hand a tougher or stronger version of itself, but never truly allow it to evolve in size, shape, form and function. Sticky Evolution does just that.

UAT's Game Art and Animation program provides students the 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

Applications in UAT's Virtual Modeling and Design degree program can vary in focus from using technology to develop 3D models, using electronic assets to visualize data outputs or linking the electronic assets and real-world assets together to enhance the understanding of the context of a situation.



## The Project

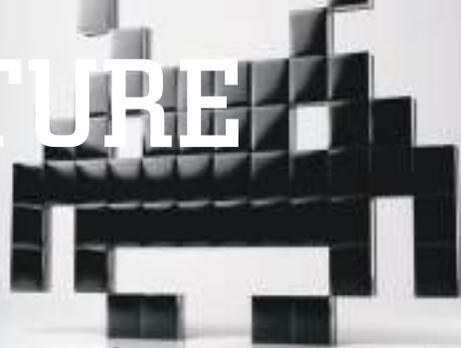
The project involves the creation of a hand-held weapon evolving from a stick with a mini of four stats on a stat sheet. Based on stats applied to the stick, it will morph to suit the needs of the user.

## The Next Phase of Student Innovation

Research weapons and make a spreadsheet for the projected weapons to be used. Then, concept and model out the weapons with textures and morphing applied. Finally, the task will be to display them with a stat screen in an engine.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN GAME PROGRAMMING THAT ARE INNOVATING TECHNOLOGY.



## Game Programming



## PROJECT **Unicontrolro**

Offering a more convenient way to handle the controls of video games—now that's game development innovation. The Student Innovation Project of Game Programming major Amanda Jaynes, Unicontrolro is a one-handed controller that offers a solution for disabled or injured gamers who want to play the video games their peers play. The innovation for this project lies in the creation of a one-handed, functional controller for everyday gaming use.



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

Unicontrolro is a third-party controller for every day gaming use that's played with one hand.

### The Next Phase of Student Innovation

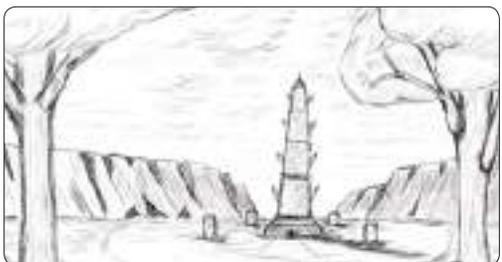
The project is currently in the planning and development stages. Next steps include:

- > Finish hand-drawn model.
- > Start 3D model.
- > Create a skeleton of the device driver.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN HUMAN COMPUTER INTERACTION THAT ARE INNOVATING TECHNOLOGY.

Digital Video



## PROJECT CrossRealm

Digital Video major Dylan White, Digital Video major Reginald Riley and Digital Video major Austin Prendergast are setting out to solve a very green, real-world problem. Their Student Innovation Project, CrossRealm, is a film incorporating the use of a game engine to produce a real-time background for green screen film work. This is an innovative way to make filming on a green screen easier and more efficient so a scene can be viewed properly as it is filmed.

UAT's Digital Video program immerses students in leading-edge technologies and environments that are essential in today's film, television, video production, newsgathering, animation, visual effects, gaming, web and interface design industries.

### The Project

The Digital Video majors are creating a real-time, malleable background seen by a director during production of a film, enhancing filmmaking quality and significantly increasing film completion rates.

CrossRealm uses the UDK game engine to render 3D environments, then composites them with live green screen footage in order to view the scene properly as it is being filmed.

### The Next Phase of Student Innovation

The project is currently in the development stages.

Next steps include:

- > Assemble the specialized computer for the project.
- > Compile all the parts and get the system ready for a test run.
- > Hold auditions for actors.
- > Begin work on costume design.
- > Begin test shots with current 3D environments.
- > Begin fixing errors in the system.
- > Begin actual filming.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN NETWORK SECURITY THAT ARE  
INNOVATING TECHNOLOGY.

Network Engineering



## PROJECT **Illuminabit**

Illuminabit shines light on new innovation in how we view data. The Student Innovation Project of Network Engineering major Alexander Wold, Illuminabit is a device concept that will transmit network traffic into a visual display of colors in an intelligent way.

UAT's Network Engineering degree provides graduates with a well-rounded knowledge base from which to draw upon. A strong foundational knowledge of network and systems engineering concepts form 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 will be explored in detail.

### The Project

The project will serve as a showcase aid and network tool.

Next steps include:

- 1) Create the first prototype.
- 2) Conduct the proper testing to ensure functionality.
- 3) Proper documentation will be done to implement future changes, if needed.

### The Next Phase of Student Innovation

The project is currently in the planning and development stages.

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS  
IN GAME DESIGN THAT ARE  
INNOVATING TECHNOLOGY.

Web Design



## JUST IN TIME Folios

DebeeAnn Boyd's Student Innovation Project is being developed "just in time" for many technology students who seek a better way to match their skills with prospective employers' needs. Just in Time FOLIOS is the Web Design major's one-stop posting site especially for technology portfolios. The innovation of DebeeAnn's Student Innovation Project is the design. Her website is the only one with a dual focus on posting technology portfolios and matching them with employers seeking particular expertise.

Combining the critical and best-of-class elements of web design and web development majors, UAT's Web Design degree program offers classes that comprise aesthetic principles including 2D web design, graphics for web design, as well as the typography and color theories required to help students become maestros of web design.

### The Project

Project objectives are to:

- > Display and update technology portfolios.
- > Serve as a hub for employers searching for technology expertise.
- > Provide a central location for technology career opportunities.
- > Deliver a toolbox complete with templates, tutorials and information for personal growth and business success.

### The Next Phase of Student Innovation

DebeeAnn plans to:

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

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN HUMAN COMPUTER INTERACTION THAT ARE INNOVATING TECHNOLOGY.

## Robotics and Embedded Systems



## NEURAL Prosthetic

People missing a limb can feel like they are missing a piece of themselves. Sure, there are prosthetics, but are they as effective as they could be? Not according to Robotics and Embedded Systems major David Strait, who is putting his ideas into life-changing actions with his Student Innovation Project—Neural Prosthetic. He is improving prosthetic function and accessibility with an open-source 3D printed project combined with the Emotiv EEG headset. He designed an interface to solve a real-world problem of timely, affordable access to quality prosthetics for wounded vets.

### The Project

David's Emotiv EEG headset interprets EEG brainwaves into useable Python code. Raw EEG data is translated with a Python program to initiate movement in the prosthetic device just by thinking.

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. David wants to create sensors that will go directly into a baseball or other cap or sleeve so it can be worn discreetly all day. This is possible utilizing Bluetooth technology. The Python program and David's user interface leverage the power of combining two technologies to make a true difference in the lives of vets and many other people.

UAT's Robotics and Embedded Systems major provides students the engineering foundation for the design, implementation and analysis of embedded systems, with an emphasis in autonomous robotic systems.

### The Next Phase of Student Innovation

By the time he graduates, David hopes to have fully-functioning robotic prosthetic devices – partially 3D printed. Ultimately, he wants to make them cost efficient so that more vets can afford them.

# UAT DEGREE PROGRAMS

## FIND *What's* OUT *next*

### CALL YOUR FELLOW GEEKS OUT

#### ON-CAMPUS PROGRAMS

Bachelor or Associate of Science degrees are offered in the following disciplines:

- Advancing Computer Science
- Artificial Life Programming
- Digital Maker and Fabrication
- Enterprise Software Development
- Game Programming
- Human-Computer Interaction
- Network Engineering
- Network Security
- Open Source Technologies
- Robotics and Embedded Systems
- Strategic Technology Development
- Technology Forensics
- Technology Studies
- Web Design

Bachelor or Associate of Arts degrees are offered in the following disciplines:

- Digital Media
- Digital Video
- Game Art and Animation
- Game Design
- Serious Game and Simulation
- Virtual Modeling and Design

#### MASTER OF SCIENCE

Master of Science degrees are available on-campus or online in the following disciplines:

- Advancing Computer Science
- Emerging Technologies
- Game Production and Management
- Information Assurance
- Technology Leadership

#### UAT-ONLINE PROGRAMS

Bachelor or Associate of Science degrees are offered in the following disciplines:

- Advancing Computer Science
- Game Programming
- Network Security
- Technology Forensics
- Web Design

Bachelor or Associate of Arts degrees are offered in the following disciplines:

- Game Art and Animation
- Game Design
- Virtual Modeling and Design

More online at [www.uat.edu/majors](http://www.uat.edu/majors)

WHERE TO FIND WHAT YOU NEED



#### [uat.edu](http://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](http://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](http://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](http://uat.edu/SIP)

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

#### [uat.edu/wall-of-app-fame](http://uat.edu/wall-of-app-fame)

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

If you, or someone you know, is not plugged into the 411 community of ultimate geekdom, sign up for GEEK 411 magazine and receive a free UAT shirt.

Go to [www.10.alphageeknation.com](http://www.10.alphageeknation.com)

## Want More?

If you think you're geeked enough to explore further, there's more information of the extreme social kind. Connect with UAT's vast social network for all the action. Cool new developments, photos, videos, demos, activities and much more can be found on:

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