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LOOK FOR THESE QR CODE TAGS!

S N A P   I T

Just go to your favorite application marketplace and download a QR code reader app.

THROUGHOUT THIS ISSUE OF GEEK 411 AND TAG THEM TO GET MORE OF THE STORY OR BONUS CONTENT.

WHAT IS MOBILE TAGGING?

IT'S INSTANT INFORMATION & ENTERTAINMENT. It's technology that has the potential to turn nearly everything in the world into a three-dimensional hyperlink. That's right, physical objects can now be interactive in a whole new and less personal way — by pointing your phone at a storefront or a tee shirt or a sign, you can get instant access to information and entertainment online. The game of "tag, you're it" is likely as old as humanity, which is how you techno-geeks out there might feel about Microsoft Tags — the little colorful square grids you see throughout this issue of Geek 411.

HOW DO I GET STARTED?

STEP 1

Go online with your mobile devise to **your application market and download your choice of QR Code reader.**

STEP 2

Look for QR Code Tags in this issue of Geek 411.

Open the Tag App on your phone and point the camera at the Tag.

STEP 3

Be amazed by the instant access to more content online and tell all your friends about it!

WHERE ELSE WILL I SEE IT?

Mobile tagging is already being used in a number of interactive communication applications in the USA:

• Movies - Link ads and posters to movie trailers and show times

• Advertising - Link print advertising to an online campaign

• GPS - Link web content to download directions

• Personal - Link to your profile, blog, site, or contact info

• Music - Link music lovers to the latest releases

T.O.C.

FEATURE STORIES

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Please see www.uat.edu/fastfacts for the latest information about degree program performance, placement and costs.

UAT
Alumnus
Builds
Lab for
"**Scientists**"

New laser cutter >

A smorgasbord of code >

Electronic music night >

Mold making and resin casting >

A completed Boarduino! >
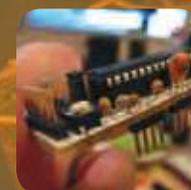
Sock plushie class >

ALUMNI PROFILE

NAME: Jeremy Leung
PROFESSION: Security Engineer, Cryptographic
                         Services Team—Wells Fargo;
                         Founder—HeatSync Labs
ALUMNUS: Class of 2007
MAJOR: Network Security
ORIGINALLY FROM: Germany

scrambled for HeatSync Labs—founded by UAT alum and tech [Jeremy Leung].

Jeremy Leung is a 2007 UAT graduate and past president of DC480—the University of Advancing Technology's hacking club. Today, he works as a security engineer for Fortune 100 companies like Wells Fargo. That's during the workday.

The rest of the time, Jeremy is chairman of HeatSync Labs—the Phoenix metro's preeminent hands-on hangout for hackers.

Jeremy—a featured speaker at UAT Tech Forum in 2011—came up with the idea for HeatSync Labs shortly after graduating. The lab is a membership-supported nonprofit that gives tech entrepreneurs and inventors access to expensive technology and professional-grade, high-tech tools they couldn't possibly afford on their own.

"We call it a hackerspace, with the idea that if you attribute a positive connotation to the word, it brings the word back to its original meaning," says Jeremy. "Hackers just take a system and break it up to create something new—it's not malicious."

Members pay a small fee (starting at $50/month) for 24/7 access to HeatSync's computers and other high-end technology—within reason. At least one member of HeatSync is always on hand to monitor what members do.

Beyond that, though, the very concept of HeatSync Labs is to create an open environment. Tech entrepreneurs modify software and hardware on their own. Recently, for instance, a member turned an ordinary microwave oven into an oven that could melt metal. Or members collaborate on projects.

"A big project the whole community is working on is a do-it-yourself scanning electron microscope," says Jeremy. "We're trying to make it an open-source design that we can put online, with a list of all the parts you'll need for it. Then, you can make something for significantly less money than you'd pay for it."

Jeremy and HeatSync Labs have been getting a lot of attention from city officials. In a sure sign that HeatSync Labs is more than just a hacker hangout, the nonprofit has been courted by city officials,

including those from Mesa, Phoenix and Tempe. In 2011, HeatSync said it had outgrown its space in Chandler and was looking for a new headquarters. City officials wooed Jeremy and HeatSync Labs in the hopes of linking their city to a technology innovator.

Last May, Mesa snagged the win. HeatSync set up shop near the Mesa Arts Center.

"We're really excited to be part of the budding and thriving geek community that is forming in downtown Mesa," says Jeremy.

So, how did he go from UAT student to a tech entrepreneur who's getting text messages and phone calls from mayors and city council members?

Jeremy made a name for himself at UAT by taking advantage of the many chances he had to chat up the tech industry's top executives—for instance, at DEFCON.

Jeremy, who majored in Network Security, went there in 2005 with a group of UAT students. They worked on ICARUS (Internet Controlled All-Purpose Reconnaissance Unmanned Sphere)—a clear 18-inch rolling ball with a camera inside. It's controlled from a website. ICARUS was a huge hit at DEFCON, one of the world's largest hacking conventions.

"A lot of what I got from UAT is great industry contacts," says Jeremy. "You get to talk to a lot of people, especially at events like DEFCON."

After graduating, Jeremy got a job at CWIE—an Internet service company. He was a junior administrator. It was a high-pressure job where Jeremy and his coworkers were always on deadline. They worked on getting clients' websites working. Plus, he had to constantly make sure there were no problems with the clients' websites.
"It's an 'eyes on all systems, at all times environment,'" says Jeremy. "If you're not watching

it, you need to make sure someone is. If you need to use the bathroom or want to get food, someone needs to know about it."

Jeremy says his job at CWIE gave him a good foundation for higher level network security positions. He zoomed up the corporate ladder.

"I like being hands on," he explains. "I worked my way up to the point that, when one of the managers was leaving, I was slated to move into that position."

Instead, Jeremy struck out on his own as a security engineer contractor, mostly for Wells Fargo.

"I'm on their cryptography team," says Jeremy. He builds and implements secure communications between Wells Fargo and other banks. "It's contract work, but it's 40-plus hours per week, depending on the project."

Jeremy credits his career trajectory in large part to UAT, its professors, clubs and environment—where students, professors and industry leaders are always collaborating with each other on next-gen tech.

At UAT, Jeremy was influential in launching a custom class called Hardware Hacking and UAT's fabrication lab—he worked closely on those with UAT's former IT manager, Raymond Todd Blackwood, and fellow student Brian Bernstein.

"When I finished school, it left this huge gap," says Jeremy, in explaining why he founded HeatSync Labs. "It's a 'we love what we're doing' organization." ■

Read About Jeremy's EL Wire inventions at UAT.edu/JeremyLeung

EVENTS

TECHNOLOGY FORUM 2012

WELCOME TO TOMORROW

www.uat.edu/techforum
Tempe, AZ
Spring
March 21 - March 23, 2012
Fall
October 31 - November 2, 2012

UAT brings industry's leading technology experts on campus for three extraordinary days of breakthroughs, insights, trends and challenges.

One of the best times to come see the campus! Go to **www.uat.edu/techforum** to register.

FLY-IN G33K PROGRAM

LISTEN to the industry's experts talk about hacking and programming. Get information about UAT's degree programs from deans, faculty and students. Learn about financial aid, housing and enrollment and tour the campus!

ARE YOU GEEK ENOUGH?

March 24, 2012
June 23, 2012
July 14, 2012
November 3, 2012

www.uatflyingeek.com
Tempe, AZ

TECHNO FORENSICS AND DIGITAL INVESTIGATIONS CONFERENCE

www.technosecurity.com
Myrtle Beach, CA
June 3-6, 2012

The Techno Forensics & Digital Investigations Conference is founded on the principles of standardization in the field of digital evidence investigation.

DEFCON

www.defcon.org
Las Vegas, NV
July 26-29, 2012

The Largest Underground Hacking event in the World! Several of DefCon's organizers are UAT faculty members.

GAME DEVELOPERS CONFERENCE SAN FRANCISCO

March 5-9, 2012
www.gdconf.com

The Game Developers Conference® is the world's largest professionals-only game industry event. Presented every spring in San Francisco, it is the essential forum for learning, inspiration and networking for the creators of computer, console, handheld, mobile and online games.

Tyler Coleman
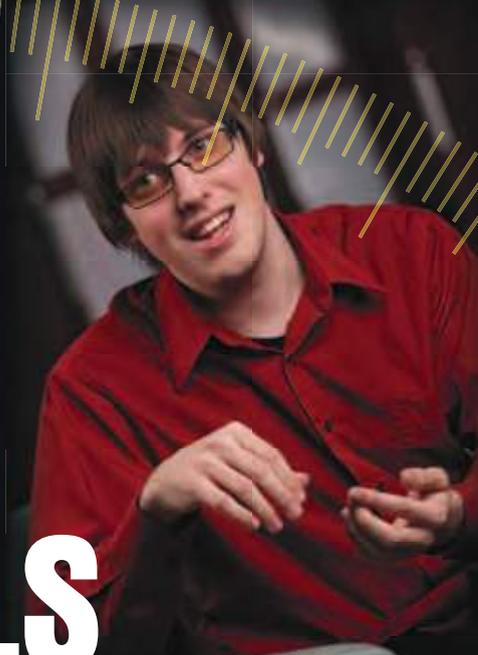
# TYLER TELLS
TEDx
A THING OR TWO

TED (Technology Entertainment and Design) is a non-profit organization, devoted to "Ideas worth spreading" via a global series of conferences. Founded in 1984 as a one-time event, the TED conferences now take place annually, throughout the year in locations around the world. Participants enjoy an increasingly wide range of topics about research and applications regarding science and culture. TEDx is an off-shoot of TED which allows individuals or groups anywhere in the world a way to organize local, independent TED-like conferences.

UAT Junior Tyler Coleman was recently a presenter at a Phoenix TEDx. He spoke on "The Future of Gaming," focusing on the increasing ease in development as new technology evolves. As an example, Tyler said, "A 12-year-old can make a successful game. This leads to the fact that, if everyone can make games, we will see a bigger variety of games in the future."

Tyler has been a long-time member of the International Game Developers Association (IGDA) and contacts he made there helped him get the opportunity to present at the Phoenix TEDx conference. He has experience developing games independently as well as on UAT student teams.

His presentation was well-received and was a great experience for Tyler. As he says, "Having events that are external to UAT, as well as the hands-on experience I've gotten through UAT, on my resume and portfolio has made me stand out compared to other job applicants at game studios."

During his time at UAT he has worked at two game studios near campus and started his own game development company as well. Tyler's ultimate goal is to work at Bethesda Studios, as a AAA game developer, in his home state of Maryland. ∎

STUDENT STEPS OUT

Watch videos from the last TEDx Phoenix event.
Go to www.uat.edu/tedxPHX

alpha gamer
watch out for the imposters

UAT is the only university to teach the entire game spectrum with 5 game specific degree programs.

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learn

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Bachelor of Arts > Game Art and Animation, Game Design, Serious Game and Simulation
Master of Science > Game Production and Management

come study at the university that's been producing alpha gamers for over 15 years

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Please see www.uat.edu/fastfacts for the latest information about degree program performance, placement and costs.

TELLUS

a global

resource

management

world

STATS:

WHAT:
Winning concept for a global resource management game in the SaveEarthGame competition sponsored by the IEEE Committee on Earth Observation.

WHERE:
GDC 2011 in San Francisco, CA.

WHO:
Multidisciplinary team of UAT students and alumni (including on-campus and online students) directed by Professor David Wessman.

DEVELOPMENT TIME:
1.5 semesters as of GDC, (5 semesters and counting as of spring 2012)

TOOLS:
Unity3—integrated authoring tool

www.playTell.us

Tellus

The annual Game Developers Conference (GDC) is a thrilling information overload. It's also completely nerve wracking when you're there with a game that's in development and you realize those 20,000 people are gamers, designers, programmers and publishers who can determine your future. Among those people was UAT's Professor David Wessman, who was overseeing Tellus, a team of 16 UAT students and alumni—on-campus and online students; in-state and out-of-state students; undergraduate and graduate students.

Among those people was UAT's Professor David Wessman, who was overseeing *Tellus*, a team of 16 UAT students and alumni—on-campus and online students; in-state and out-of-state students; undergraduate and graduate students.

"One of the hardest things about getting a job in this industry is the chicken-and-egg thing," notes Professor Wessman. "A lot of job listings say, 'You must have had a title published.' To get something published while you are in school may not be the same thing as doing this in a full-time job, so the more polished and higher the quality, the better."

Tellus is a global resource management game that lets players guide research and development in five key areas (energy, production, health, ecological awareness, and earth observation technology.) The challenge is to save the earth and improve the quality of life on our planet. (Tellus is a Latin word for "earth" and the name of the Roman Earth Mother goddess.)

The game models a lot of complex relationships in a simple and accessible way, and the data underlying the simulation is all based on real-world Earth Observation data that tells players how well their use of technology and their implementation of policies are working.

The origins of *Tellus* began about two years prior to GDC 2011 when Wessman discovered that the IEEE Committee on Earth Observation had a two-phase SaveEarthGame competition. The IEEE challenged gamers to create a game that would raise awareness for Earth Observation data and systems to solve real world problems. The first phase was to write a concept.

"In the Introduction to Game Design class, that's basically what you're learning to do," says Wessman. "So, I made it an assignment."
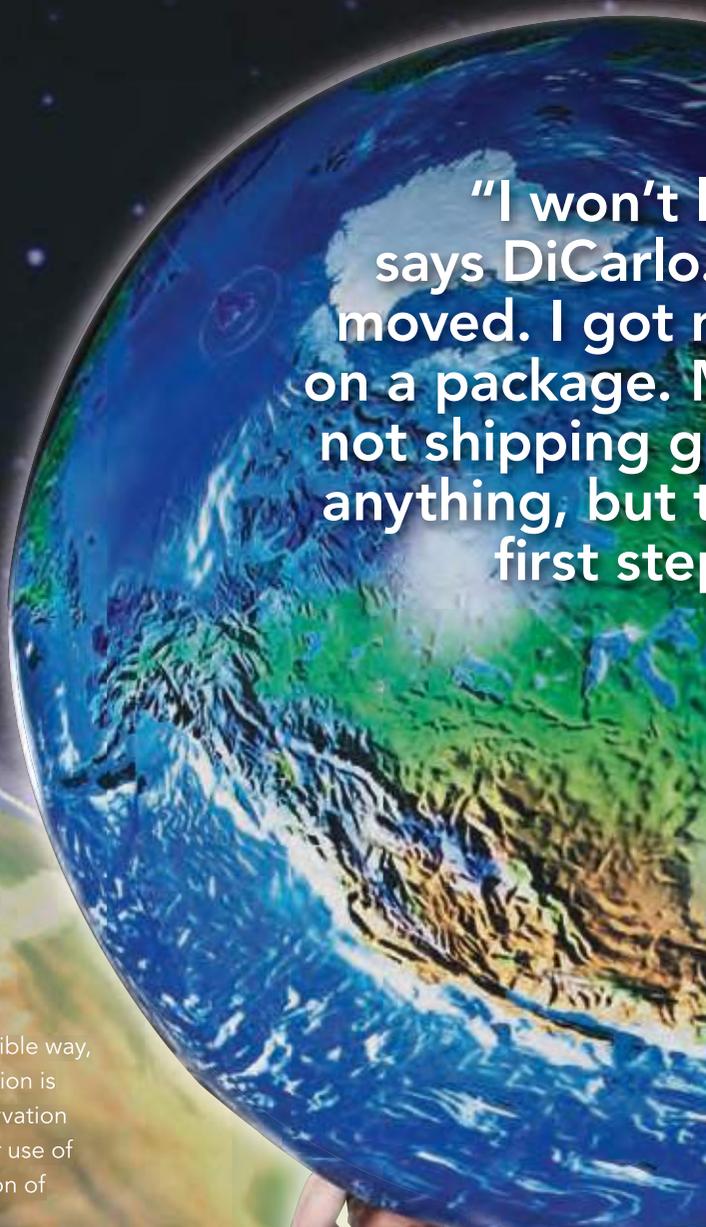
," "I was name aybe it's bally or t's the "

"This is a wonderful testament to the talent and skill of our students and their ability to create world-class innovative technology products," said Professor Wessman beaming with pride.

To play *Tellus*, and to see how it has evolved since GDC, go to:
www.UAT.edu/Tellus
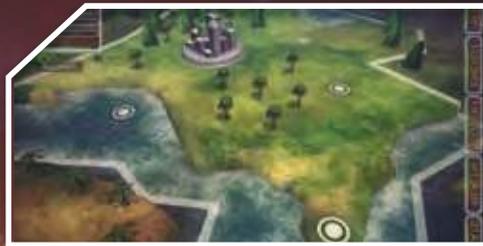
Nearly one year later, in 2010, Game Design major Ian DiCarlo got a phone call from an IEEE liaison saying he won, which meant the team could proceed to Phase 2.

That phase called for the creation of a playable prototype. Wessman scrambled to assemble Team *Tellus*. He added a class to his already full schedule—GAM 405 Applied Game Development—to make sure his students had every resource they needed to create a functioning game they could be proud of in the competition and at GDC.

Contributing to *Tellus's* reception at GDC was the fantastic networking that Game Design major Tyler Coleman performed on the convention floor to make the game more visible by getting Team *Tellus* invited to the Unity booth prominently located front and center at the entrance to the expo floor!

"The students did a great job representing themselves and UAT. Plus, we had some publishers interested and even arranged a meeting with Valve."

Turns out, those 20,000 people weren't so intimidating, after all. Since GDC, the prototype was submitted to SaveEarthGame competition's second phase. Word just in at the time of publishing hails Tellus the winner of Phase 2: Playable Game.

Since GDC, the prototype was submitted to SaveEarthGame competition's second phase. Word just in at the time of publishing hails *Tellus* the winner of Phase 2: Playable Game.

TEAM TELLUS AS OF GDC 2011

Professor David Wessman
Creative Director/Producer

Sean Weiland
Audio Lead

Michael Viscio
Art Lead

David Payne
Project Director/Design

Ian DiCarlo
Concept/Design Lead

Bryan Clark
Programming Lead

Megan Stevens
Art

Evan Prichard
Design

Brian McBride
Design

Daniel Loo
Art

Todd Lasswell
Music

Scott Gladstein
Design

Brandon Gilmore
Environment Art

Matt DeJesus
Art

Robert Coburn
Art

Tyler Coleman
Design/Quality Assurance
Public Relations

UAT buzz

Read more UAT news at www.uat.edu/buzz

avnet tech games

Jason Carter, John Faulkner and David Kazlas were three of seven UAT students to each win a $1,000 scholarship at the 6th annual Avnet Tech Games.

More than 180 college students from around Arizona competed in the event, which has more than a dozen competitions. It lures in big-name companies like Microsoft, Advanced Micro Devices and title sponsor, technology distributor Avnet, the largest Fortune 500 company headquartered in Arizona.

Avnet puts on the Games each year to spark innovative ideas from college students from around the state. The Games also give students a chance to meet other geeks and to network with potential employers.

Jason, John and David competed in the Accenture Green Data Center Challenge. They presented a few proposals to provide alternative-fuel power to businesses.

"We walked in there with the mindset that we were selling this to them," says David. "We weren't educating them on green servers."

Meantime, Sylvia Domenech-Gimeno won the Android App Challenge. Plus, a UAT team (Noah Corradin, Adam Visser and Annie Winn) won the Patch Panel Madness competition, where they were in a race to build a data network.

slideluck potshow

Slideluck Potshow. It doesn't exactly roll off the tongue. But for artists in the world's cultural epicenters, like Paris, New York, Barcelona, Rio and San Francisco, Slideluck is a major event to showcase the work of new artists and established artists to an international audience of artists, gallery owners and celebs.

So, it was no small feat that UAT digital media major Ty Graham was selected to be one of only 28 artists to have her work featured last April at the 1st annual Slideluck Potshow in Phoenix.

See Ty's artwork here: http://slideluckpotshow.com/galleries/tylene-graham.

Each artist has five minutes to present their work, however they choose. It could be an oral presentation or something funny or even something musical. But, each artist presents their work as a slideshow.

Ty displayed 15 images of shredded pantyhose that were manipulated with randomly generated algorithms.

"One of my pieces was just a print, but someone bought it," says Ty. "That felt great! It's cool to think that some of my art is hanging around in someone's house."

Prior to the artists presenting their work, there was food—a potluck. Hence, the mashed up name of the event: Slideluck Potshow.

"It was a really well-attended event," says professor Vesna Dragojlov. Ty is one of the professor's students. "There was just a really great, positive energy."

Slideluck Potshow is a New York-based nonprofit. The events are meant to encourage local communities to get together to share food, art and music. Artists are selected by a panel of judges. The artists are then asked to donate artwork. The sale of those artworks, and a modest ticket price of $10, funds the shows.

community service

uat club raises funds for japan earthquake relief

In support of the Japanese people after this year's earthquake, tsunami and nuclear disaster, students in the UAT Japanese Club, led by the club's faculty sponsor, professor Gavin Regnaert (he teaches Japanese, Mandarin Chinese and East Asian Film), stepped up with an innovative fundraising effort.

The club purchased wristbands from an online supplier to sell for a minimum five dollar donation, with all profits going to the Red Cross for relief efforts in Japan. The wristbands are black and red (UAT colors) and say, "UAT for Japan" in English and "Ganbare Nihon" in Japanese, which means "Good Luck in Japan."

Regnaert reports, "Presently, we are almost done selling the original batch of wristbands and we will have made $1,000 in profits, all for the Japan Red Cross for relief efforts. I can also tell you that many UAT students, faculty, and staff, as well as family members and friends of club members, enthusiastically and happily bought wristbands from the club and wore them in proud support of Japan."

uat walks for breast cancer awareness

Making a difference and creating a better tomorrow. It's in UAT's mission: Learn. Experience. Innovate. And it's in the university's commitment to community service that promotes well being. Support for breast cancer research is one example of this commitment, through the American Cancer Society's annual "Making Strides Against Breast Cancer" walk. This UAT tradition involves students, staff, family and friends.

A total of 15 participants walked the 3-mile course on October 29, 2011—during National Breast Cancer Awareness Month—at Tempe Beach Park. But many more people supported in some way, through sponsoring a walker or team, volunteering, or making a general donation. The event and corresponding silent auction raised almost $1,000 for breast cancer research, treatment and support programs; celebrated breast cancer survivors; and raised awareness about the disease.

"Each step we take is personal; each donation is helping to save lives," says Keziah Diaz, manager of Student Affairs and coordinator for UAT's community service activities. "Making Strides Against Breast Cancer is more than just the name of a walk; it describes the progress we're making to save lives by helping people get well, stay well, find a cure and fight back. Together, we'll create a world with less breast cancer and more birthdays."

Spring 2012 NACAC Schedule

City	Date	Time	Venue
PITTSBURGH	Wed., Feb. 8 Thurs., Feb. 9	9:00a.m. - 12:00p.m. 6:00p.m. - 9:00p.m. 9:00a.m. - 12:00p.m.	David L. Lawrence Convention Center Pittsburgh, PA
ATLANTA	Sun., Feb. 12	12:00p.m. - 4:00p.m.	Georgia World Congress Center Atlanta, GA
MIAMI	Sun., Feb. 19	12:00p.m. - 4:00p.m.	DoubleTree Miami Mart/Airport Hotel and Convention Center Miami, FL
LOUISVILLE	Sun., Feb. 26	2:00p.m. - 5:00p.m.	Kentucky International Convention Center Louisville, KY
TAMPA	Sun., Feb. 26	12:00p.m. - 3:00p.m.	Tampa Convention Center Tampa, FL
SPRINGFIELD	Sun., March 4 Mon., March 5	1:00p.m. - 4:00p.m. 9:00a.m. - 11:30p.m.	Eastern States Exposition (The Big E) West Springfield, MA
SYRACUSE	Fri., March 9 Sat., March 10	9:00a.m. - 12:00p.m. 11:00a.m. - 2:00p.m.	SRC Arena, Onondaga Community College Syracuse, NY
CHARLOTTE	Sun., March 11	12:00p.m. - 4:00p.m.	The Park (formerly the Charlotte Merchandise Mart) Charlotte, NC
ROCHESTER	Sun., March 11 Mon., March 12	1:00p.m. - 3:30p.m. 9:00a.m. - 12:00p.m.	Rochester Riverside Convention Center Rochester, NY
GREATER RALEIGH	Tues., March 13	4:00p.m. - 8:00p.m.	Raleigh Convention Center Raleigh, NC
METRO DETROIT	Tues., March 27	8:30a.m. - 12:00p.m. 6:00p.m. - 8:00p.m.	Burton Manor Banquet and Conference Center Livonia, MI
WEST MICHIGAN	Thurs., March 29	8:30a.m. - 11:30a.m. 6:00p.m. - 8:00p.m.	DeVos Place Grand Rapids, MI
HARTFORD	Tues., April 3 Wed., April 4	9:00a.m. - 11:30a.m. 6:30p.m. - 8:30p.m. 9:00a.m. - 11:30a.m.	Connecticut Expo Center
BUFFALO	Tues., April 3 Wed., April 4	9:00a.m. - 12:00p.m. 6:00p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Buffalo Niagara Convention Center Buffalo, NY
DALLAS/ FORT WORTH	Mon., April 9	4:00p.m. - 8:00p.m.	Irving Convention Center at Las Colinas Irving, TX
AUSTIN	Tues., April 10	5:30p.m. - 8:30p.m.	Austin Convention Center Austin, TX
HONOLULU	Thurs., April 12	8:30a.m. - 11:30a.m. 5:00p.m. - 8:00p.m.	Hawaii Convention Center Honolulu, HI
HOUSTON	Thurs., April 12	12:30p.m. - 2:30p.m. 6:00p.m. - 8:00p.m.	Reliant Center Houston, TX
SAN FRANCISCO	Sat., April 21	1:30p.m. - 4:30p.m.	Concourse Exhibition Center San Francisco, CA
CLEVELAND	Sun., April 22	1:00p.m. - 4:00p.m.	Wolstein Center Cleveland, OH
NEW YORK	Sun., April 22	11:00a.m. - 4:00p.m.	Jacob K. Javits Convention Center New York, NY
ORANGE COUNTY	Sun., April 22	1:30p.m. - 4:00p.m.	Anaheim Convention Center Anaheim, CA
INLAND EMPIRE	Tues., April 24 Wed., April 25	6:00p.m. - 8:00p.m. 9:00a.m. - 12:00p.m.	Ontario Convention Center Ontario, CA
MONTGOMERY COUNTY	Tues., April 24 Wed., April 25	9:45a.m. - 12:45p.m. 6:30p.m. - 8:30p.m. 9:45a.m. - 12:30p.m.	Montgomery County Agricultural Center Gaithersburg, MD
NEW JERSEY	Wed., April 25 Thurs., April 26	9:00a.m. - 12:00p.m. 6:00p.m. - 9:00p.m. 9:00a.m. - 12:00p.m.	New Jersey Convention and Exposition Center Edison, NJ
PRINCE GEORGE'S COUNTY	Thurs., April 26	9:30a.m. - 1:00p.m. 6:30p.m. - 8:30p.m.	Prince George's Sports and Learning Complex Landover, MD
SAN DIEGO	Thurs., April 26	9:00a.m. - 12:00p.m. 6:00p.m. - 8:30p.m.	San Diego Convention Center San Diego, CA
PROVIDENCE	Sat., April 28	12:00p.m. - 3:00p.m.	Rhode Island Convention Center Providence, RI
NASHVILLE	Sun., April 29	1:00p.m. - 4:00p.m.	Nashville Convention Center Nashville, TN
GREATER LOS ANGELES	Mon., April 30 Tues., May 1	6:00p.m. - 9:00p.m. 9:00a.m. - 12:00p.m.	Pasadena Convention Center Pasadena, CA
VENTURA/TRI-COUNTY	Tues., May 1	5:30p.m. - 8:30p.m.	Ventura County Fairgrounds Ventura, CA
GREATER MEMPHIS	Tues., May 1 Wed., Mary 2	6:00p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Agricenter International Memphis, TN
BOSTON	Thurs., May 3 Fri., May 4	9:00a.m. - 12:00p.m. 6:00p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Boston Convention & Exhibition Center (BCEC) Boston, MA

WE'RE COMING TO A TOWN NEAR YOU.

TRAVEL SCHEDULE

SPRING 2012

ROCHESTER, NY

BUFFALO, NY

SYRACUSE, NY

SPRINGFIELD, MA

BOSTON, MA

GRAND RAPIDS, MI

HARTFORD, CT

PROVIDENCE, RI

DETROIT, MI

PITTSBURGH, PA

NEW YORK, NY

CLEVELAND, OH

EDISON, NJ

LANDOVER, MD

SAN FRANCISCO, CA

LOUISVILLE, KY

GAITHERSBURG, MD

RALEIGH, NC

VENTURA, CA

ONTARIO, CA

MEMPHIS, TN

NASHVILLE, TN

CHARLOTTE, NC

LOS ANGELES, CA

ANAHEIM, CA

TEMPE, AZ

ATLANTA, GA

SAN DIEGO, CA

DALLAS/FORT WORTH, TX

AUSTIN, TX

HOUSTON, TX

TAMPA, FL

MIAMI, FL

The UAT Road Show is on its way across the country to spread the word about this unique educational opportunity. If you're a seriously geeked student who wants to conquer the technology world, attendance is mandatory. It's the fastest way to get face-to-face with a UAT representative and get the information you need to make the most important decision of your life.

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**www.uat.edu/
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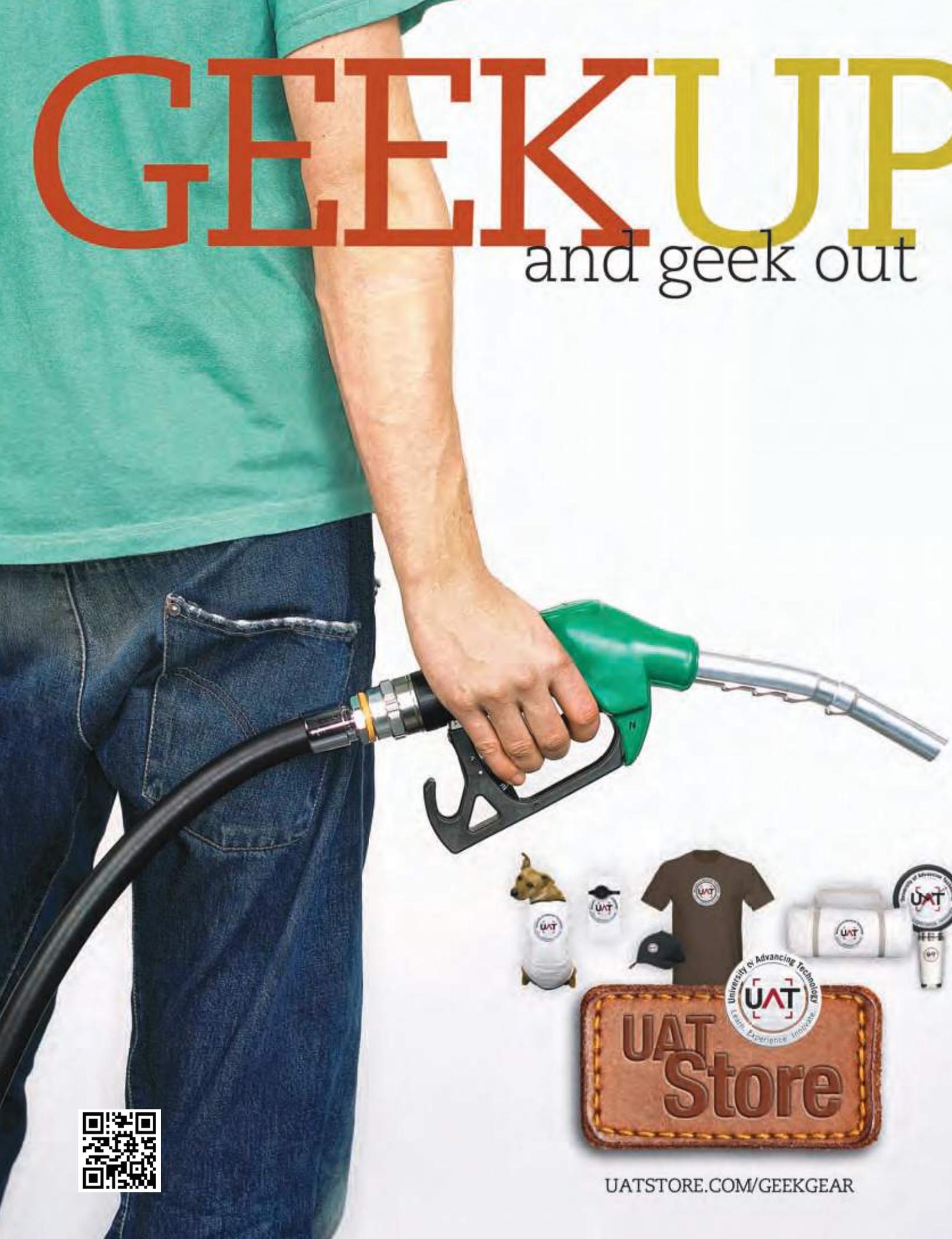
SURVIVAL OF THE SYNCHRONOUS

What:	*Trade Secret*—a Web-based multiplayer co-op game.
Where:	Game Developers Conference 2011 at the Moscone Center in San Francisco.
Who:	Two dozen UAT students and professor David Wessman.
Development Time:	1+ years and counting.
Tools:	Unity3—Award-winning 3D game authoring software.

LEARNING THROUGH EXPERIENCE

Which came first, the chicken or the egg? Just about everyone knows how this works. In gaming, publishers will hire you only if you have experience. But, how do you get the experience if no one will hire you?

You get experience at school, although not just any school. Just ask Dennis Pishik, a UAT double major (Game Design Game Programming) who graduated in 2011. "The point is really to have a finished product to show a potential employer and say, 'I can start something and finish it to completion,'" says Dennis. He was the quality assurance (QA) lead and a level designer on *Trade Secret* a Web-based multiplayer co-op game built using Unity 3D.

Two dozen UAT students accompanied by Professor David Wessman brought *Trade Secret* to the massive Game Developers Conference (GDC) in San Francisco. GDC is the must-go event for game developers and publishers and the gaming press. Nearly 20,000 people attend, including the industry's biggest names. "People were coming over and playing our game," says Dennis. "We got mostly positive feedback. People were saying things like, 'Make this more responsive.' 'Move this over there.'"

THE SONS OF SALVAGE

Trade Secret is a polished, 2.5D action adventure game that sports an innovative z-axis mechanism which allows players to traverse a 3D environment while keeping the gameplay in a 2D plane. In the game, a team of up to four players work cooperatively as the Sons of Salvage. According to the lore developed by the team and lead writer James Clark, the Sons of Salvage are trying to climb up through five levels of the subterranean world to reclaim the surface of the Earth.

The Sons of Salvage are several generations removed from an unspecified Armageddon in which the planet's surface was destroyed. The Sons' ancestors had technology to predict that Armageddon was coming, but not enough time to do anything about it. So, they built a habitat underneath the Earth's surface called Under Haven. The problem is, after all these generations, Under Haven is a chaotic, dangerous place as people fight over dwindling resources.

As the Sons try to climb out of the subterranean, they collect "old technology" to craft new weapons, armor and tools. They face a number of enemies, including dangerous mutant creatures, plus a sinister and incredibly powerful group called the Guild. Jealously guarding their power, the Guild steals the Sons' mega-drill. The Sons' journey centers on trying to reclaim this mega-drill.

COMMERCIAL POTENTIAL

"This game has commercial potential," says Wessman. As studio director and executive producer, he's been overseeing the project from the start. "It's really coming along. It has a key feature that is more and more important these days— multiplayer co-op. So, four buddies play together, but not against each other."

In fact, the genesis of Trade Secret began in one of Wessman's classes. "My summer 2010 GAM405 Applied Game Development class had a bunch of students who had been in my GAM390 Experimental Gameplay class where they were the first UAT students to create games for the Microsoft Surface," he says. "They were the core of the team, and they wanted to do an ambitious project. I was all in favor of that. Plus, their successes with the Surface had earned them a solid reputation for actually getting things done. This allowed them to recruit the large team they would need, and critically, this included a healthy contingent of some of UAT's best artists."

Ambitious, indeed. Up to this point, 31 students plus Wessman have worked on some aspect of Trade Secret. That's the essence of Synchronic Learning—UAT's method of teaching, where a student (or multidisciplinary team of students) works side-by-side with professors, mentors and industry leaders on short and long-term projects.

Like the game itself, the marketing and publicity that's been used to promote Trade Secret has been ambitious. Project Manager and Level Designer Andy Maul had the great idea of capitalizing on the game's artwork, (arguably one its main strengths), and making the business cards "collectible" by using Game Art & Animation major, Dima Goryainov's concept art for four of the iconic game characters and splitting that art down the middle. To see the whole image you had to get another card from someone else on the team. To complete all four, you had to collect at least 8 business cards from the team! "Everyone said our business cards were very professional and that we handled ourselves very well," noted Dennis.

Will Tate, who worked on Trade Secret's 2D effects and textures, says the entire experience of working on the game and bringing it to GDC has been "awesome." "I feel like I'm a lot more marketable now," says Will, a Digital Media major who's graduating in 2012. "I have something to take to the table. If I go to a convention, I could say, 'Hey, I worked on this.' Plus, the fact that this could possibly be published is even better."
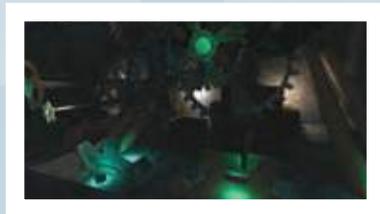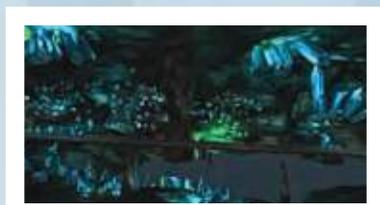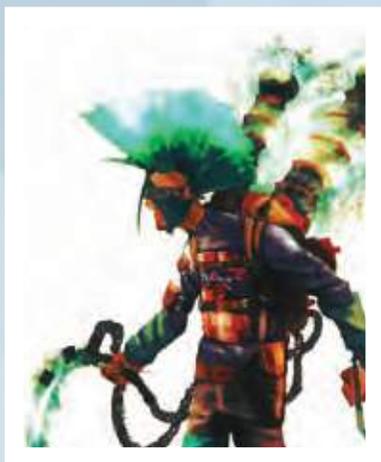
THE TRADE SECRET TEAM

David Wessman	Studio Director/Executive Producer
Kyle Brannon	Producer
Bryan Clark	Lead Programmer
James Clark	Lead Writer/Combat Designer
Brendan Erquiaga	Concept Designer
Austin Langston	Lead Level Designer
Andrew Maul	Project Manager/Level Designer
Dennis Pishik	QA Lead/Level Designer
Zachary Robinson	Lead Artist
Sean Weiland	Lead Audio Designer
Blake Bierke	3D Modeler/Textures
Elissa Claire	Concept Artist
Tyler Coleman	Designer
William Courtney	System Designer/ Programmer
Cody Furr	Level Designer
Shawn Geary	2D Artist/Textures
Giovanni Gonzales	Scripter
Dmytro Goryainov	Concept Artist
Kim Mann	Texture Artist
Ariel Navarette	3D Modeler
Renee Nejo	3D Modeler
Tyler Paneitz	3D Modeler
Dennis Porter	3D Modeler
Winston Powell	3D Modeler
William Tate	2D Artist/Textures

ADDITIONAL CONTRIBUTORS

Spencer Blount	Scripter
Sean Clark	Concept Artist
Steve Faila	Concept Artist
Tim Feid	Web Designer
Chris Felch	3D Modeler/Textures
Storm Kiernan	A.I. Programmer
Rystian McDermett	Music Composer

FALLOUT

Paul DeNigris and his UAT students use the same film production equipment and software that Hollywood filmmakers use. It shows. Among the topnotch gear were HD camcorders, Avid Studio software, HP workstations, Avid Media Composer, Adobe Creative Suite, Autodesk 3ds Max and Autodesk Maya.

UAT FILM "FALLOUT" WINS COPPER WING AWARD AT PHOENIX FILM FEST

It took more than a year to write, film and edit. It involved more than two dozen multidisciplinary UAT students to create its visual effects, music, costumes and props. Plus, it required countless hours of hard work, dedication and passion from director Paul DeNigris (UAT professor) to oversee its production from beginning to end.

It all paid off with industry recognition for *Fallout*— DeNigris' award-winning 17-minute short film. It was one of several movie awards that UAT students and the professor snapped up in 2011.

DeNigris is a longtime filmmaker with a slew of credits, including *Cowboy Dreams* with comedian Bill Engvall.

Fallout won the Copper Wing Award for Best Arizona Short film at the 11th annual Phoenix Film Festival. The film fest brought out stars like Cuba Gooding, Jr., and featured films starring Keanu Reeves, John C. Reilly, Rachel Weisz and many others.

"Every one of the movies in our category was really solid," says DeNigris. "Each had good acting, good writing and good production values. So, I was really proud to be part of that program of short films."

Fallout is a highly polished, sharply crafted action-adventure movie that takes place 50 years in the future. In *Fallout,* a team from the Department of Homeland Security tracks down terrorists transporting a nuclear device. Their mission goes bam! Literally. With more than 300 VFX, the story unfolds in a nonstop series of action sequences. It's fast, furious and fantastic.

The topnotch equipment, and the UAT talent, catapulted *Fallout* into a megahit on the film festival circuit. Besides the Phoenix awards, *Fallout* raked in a number of other honors, including three nominations at the Action on Film International Film Festival, three wins at the Los Angeles Reel Film Festival, three more at the LA Movie Awards, and many other film fest screenings.

Meanwhile, other UAT films were honored in 2011, too. Among these was *Somewhere (dot dot dot),* which the Cox cable service selected for its on-demand IFP/Phoenix Showcase. In addition, *Backup Plan* won two awards (Creative Excellence and Technical Excellence) at the Spring 2011 Inter-College 48-Hour Film Challenge. ∎

Check out director Paul DeNigris' behind-the-scenes commentary about the award-winning film, Fallout, at » UAT.edu/FalloutAward

THOSE WHO CAN DO...
TEACH!

Professor Ron Floyd, who recently retired from UAT to devote his full energies to managing the very successful art gallery he opened a couple of years ago, certainly disproves the old, silly cliché that teachers can only teach. Ron is a recognized abstract artist, with close to 25 exhibitions and public art projects, and has had numerous art-related articles published in magazines nationwide. But, even before coming to UAT as an instructor in art, Floyd was a "doer" in every sense of the word.

After earning a BFA and an MS from the University of Tennessee, Floyd served two tours in the Vietnam War. Then, he lived the American dream. He got married, had two kids, bought a nice house and had a lucrative career as a high-level marketing executive

"His true passions have always been art and teaching."

for an international electronics firm. As the North American director of that company, he traveled the world overseeing all the advertising and marketing that supported the company's brands.

At UAT, Floyd taught drawing, 2D design, 3D modeling and color theory. He had been teaching at UAT since 2002 and takes great pride in seeing students transform from high school grads, who sometimes expect to create art only on computers, into talented artists skilled in traditional art as well as digital art. "Digital art and traditional art are the same thing," says Floyd. "It's just that one requires a brush and one is done on a computer. The digital art students at UAT tend to have an appreciation for traditional art, and the animation studios are telling them that they need to develop those skills."

SUPPORTING LOCAL ARTISTS
For most people, being a university professor and a well-known, highly respected abstract painter (who has had exhibitions and shows around Arizona and the country), would leave no free time to do anything except plop down on a couch, exhausted. Floyd is also a passionate, outspoken supporter of local artists, who, he says, are overlooked by the country's big arts festivals. He has been making a difference in the lives of local artists for more than a decade. He touts them, and their work, in a blog he writes for the Arizona Republic. In 2006, he founded the nonprofit group East Valley Art Guild. In 2009, he opened the SunDust Gallery in Mesa, which primarily puts local artists' work on display.

"I do overextend myself—I admit that," says Floyd. "But, I have so much fun doing it. I have the best of all worlds. I get to teach art. I make art. I get to be around artists. And I get to help traditional artists and digital artists. It's just my personality not to sit down. I get restless."

SunDust Gallery offers one of the largest collections of affordable local fine art and collectables in the Valley. The gallery was founded on the belief that Arizona artists should have a dedicated space that allows art lovers a distinctive southwest art collecting experience. SunDust Gallery offers over 5,000 square feet of gallery space, including an award-winning Basement Art Outlet and private instruction in the arts.

CREATING AN ARTS FESTIVAL
In addition to all this, the professor and his family—a wife and two adult sons—recently launched the SunDust Arts Festival in Mesa, Ariz. "We have embraced local artists and

emerging artists, who aren't welcome in the big arts festivals," says Floyd. The festival drew over 200 local artists and thousands of visitors. The focus of the festival is to showcase local Arizona artists and crafters. SunDust Gallery was event headquarters.

International marketing executive, artist, art professor, gallery owner and now, founder of a major arts festival in the southwest, former UAT professor Ron Floyd has turned the old cliché on its head. This is one teacher who can do and is doing today, to advance the cause of art, local artists and his community. ∎

For a guy who grew up in a 200-year-old farmhouse outside of Philadelphia, UAT graduate James Grant sure knows how to make his way around the globe. Not long after graduating from UAT in 2009, with a BS in Advancing Computer Science, James had a one-year residency at Fabrica in Italy. There, he worked on an amazing interactive display called Unravel for Benetton stores.

Now, the onetime UAT student president says he's thinking about living overseas again, maybe in Dubai, to break into the international ad agency business. He credits professor Vesna Dragojlov with sparking his interest in traveling the world.

"Vesna is the reason I had the chance to work at Fabrica," says James. "I had already graduated when she contacted me about going to a workshop in Europe. It was a workshop with Zach Lieberman who created the program that I used to create Unravel. So, I was learning the program language from the guy who wrote it."

The workshop was a big draw for UAT students, according to Dragojlov.

"Several students wanted to come," she says. "It was a one-day workshop and Fabrica was inviting someone to come back for a year. James had a really great project that he was working on, which he proposed. So, he won."

The director of Fabrica's interactive department asked James to work there for one year, which he did—with more than 40 other innovators from all corners of the world. Their one commonality was they all spoke English.

James says the moment he arrived for his first day at work was a bit nerve wracking. But all of his coworkers formed a supportive community where they spent most of their time living and working together.

"It was kind of intimidating at first," he says. "But, it becomes kind of like a little bubble within Italy. It's like 45 people who hang out with each other all the time." James spent the last three months of his time at Fabrica developing Unravel. It's an interactive display that shows images of Benetton products, like a sweater, on a big floor-to-ceiling display in store windows.

When customers walk up to the display, the image of the product shatters into thousands of dots and blobs. These dots then move around in the image of the person standing in front of the window.

James used openFrameworks to design Unravel.

"It's an open-source coding environment, based on C++, which is designed to help graphic designers," James explains. "I learned that at the workshop in Europe and then, working with the guys at Fabrica, I picked up a lot more. You can post questions to the forum and get answers or find answers that are already answered." Unravel makes a huge impression in malls, with people stopping, staring, jumping up and down, laughing and shouting. You know, interacting with the store display. That's what retailers dream about—having customers interact with the store in a fun way that gets them thinking about the store and buying its products.

"James is one of the few people who really found his niche," says Dragojlov. "He didn't know what he wanted to do for a couple of years. Then, he started to take classes at UAT and suddenly it clicked." ∎

NAME: James Grant
WHAT: Interactive Window Display Unravel
ALUMNUS: Class of 2009
MAJOR: Digital Art and Animation

James Grant and professor Vesna Dragojlov

IGNITES THE WORLD.

UNITED COLORS OF JAMES GRANT

See the Unravel window display in action. Go to www.uat.edu/Unravel

TECHNOLOGY FORENSICS AND NETWORK SECURITY MAJORS

Jacob Parks was 18 years old on his first day at UAT. By the time he graduated in summer 2011, less than two years later, he was 19 and embarking on the type of life that movies are made about.

Jacob now has a job with the federal government (they asked him not to say more about it than that). He has two degrees—a Bachelor of Science in both Network Security and Technology Forensics. And, Jacob, who grew up in Bakersfield, Calif., is most likely going to be living and working somewhere on the East Coast.

As of last spring, he wasn't sure where he'd be living or what he'd be doing, or when.

"I'm still waiting to get a start date from the federal government—that's the way I've been advised to discuss this," he says. "I did pursue a couple of

opportunities with them. But, the one I'm going for now started with them sending an email, saying, 'Hey, would you be interested in this?'"

Still, his job is a bit of a mystery.

"They don't tell you much," says Jacob. "But, it's going to play close to my Network Security degree."

While Jacob's story is awesome, he isn't the first UAT student to get snapped up by the federal government a few months before graduation.

One of the reasons the government heavily recruits from UAT is because it's a Center of Academic Excellence for its Information Assurance coursework. That's a hard-to-come-by designation from the National Security Agency and the Department of Homeland Security that professor

Shelley Keating played a key role in securing.

"Before I got here, I thought the CAE was interesting, but I really didn't know what it meant," says Jacob. "When I got here and started working with professor Keating, I really started to appreciate its importance."

UAT has been transformative for Jacob. However, his success hasn't come just by going to UAT, although that helped. More significant is what Jacob made of his time at UAT. Bottom line, he worked tirelessly to earn two degrees in less than two years.

Most semesters, Jacob took seven classes. Plus, he took advantage of UAT's year-round curriculum. None of it was easy, but all of it was worthwhile.

"That first summer when you're doing class work, your

alumni profile:

jacob parks

NAME:	Jacob Parks
PROFESSION:	US Federal Government (Classified)
ALUMNUS:	Class of 2011
MAJORS:	Network Security and Technology Forensics
ORIGINALLY FROM:	Bakersfield, CA

FROM ACTING TO NETWORK SECURITY

In the 1990s, when Jacob Parks was a young kid in Bakersfield—a dusty outpost 112 miles north of Los Angeles—he didn't start becoming a self-taught computer programmer until he was nearly nine years old.

No, he was too busy acting for that. In fact, he was a child actor who made enough money to pay for college and to buy a home, all before he could legally buy a beer (which, he still can't).

"Every dime I made got put into an account for my education," says Jacob, who was also a professional stage actor and had bit parts in a couple of movies. "I did a decent number of commercials—obviously, enough to pay for my whole tuition. But, my thought was never that I wanted to make a living doing it."

Jacob's parents were supportive, especially his mom. She was the one chauffeuring him two hours each way, to and from LA for auditions.

"I went up to my mother one day and said that I wanted to be an actor," says Jacob. "She said, 'Don't you want to be a fireman?'"

Turns out, Jacob wanted to be a Network Security pro who acts on the side. He put acting on hold in high school when his incredibly intense education took off. He finished high school with enough AP classes to skip his freshman year at UAT.

Then, by the time he was 19, he finished two BAs (Net Sec and Tech Forensics).

That intensity caught the attention of the federal government, who snapped Jacob up long before he physically took hold of his UAT degrees. That intensity didn't knock out Jacob's acting bug, though—far from it.

"I'll pick up acting again the moment I have a spare minute," he says. "Theater is my escape. That's what I do when I want to get away."

mind is telling you to shut down because it's been conditioned to do that for 12 years," he says. "I had moments when I thought, 'Why am I doing this to myself?' But, looking back now, I wouldn't have had it any other way. I'm really happy the way it turned out."

Plus, UAT's Synchronic Learning was an adjustment. It has you simultaneously work on short-term and long-term projects, on your own and in collaboration with multidisciplinary students, professors and industry leaders.

"That was a really good thing for me," says Jacob. "You have to play both sides. You focus on one thing until it gets done. But, you also work on everything at once."

Interestingly, Jacob's life-changing experience at UAT began with a Christmas card.

It was three years ago. Jacob was a high school student figuring out his future. He already requested information about UAT's Network Security major, but he still wasn't sure where he'd go. Then, he got a card in the mail.

"I was considering going to UAT, but what really sold me is that Heather Beaman—one of the school advisors—sent me a handwritten Christmas card," says Jacob. "That said to me, 'You're not going to get lost at a large school. You're not going to just be a number.' The fact that it was handwritten meant they cared." ■

A DAY IN THE LiFE OF A DORM STUDENT

FOLLOWING FOUNDER'S HALL RESIDENT, **AMBER VANHECKE** AS SHE GOES THROUGH HER DAY.

7:30 AM — WAKING UP!

8:30 AM — BREAKFAST OF CHAMPIONS!

9:30 AM — CLASS BEGINS

10:45 AM — CREATING FENCING CLUB DISPLAY
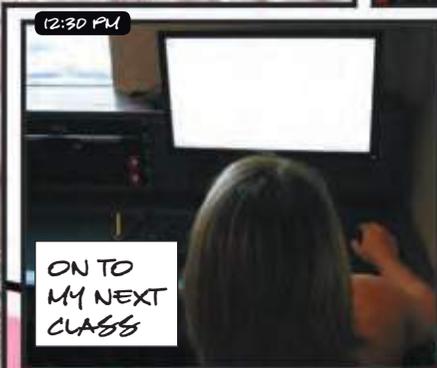
12:30 PM — ON TO MY NEXT CLASS

1:30 PM

2:00 PM — GETTIN' A PART-TIME JOB

2:30 PM — ONE MORE CLASS TODAY

4:00 PM
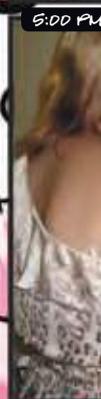
5:00 PM

8:45 AM — GETTING READY FOR CLASS

8:50 AM — THESE TEXAN BOOTS ARE MADE FOR WALKIN'!

TAG THIS TO SEE MORE ABOUT STUDENT LIFE

9:20 AM — MY SHORT WALK ACROSS THE COURTYARD TO CLASS. NICE!

12:00 PM — QUICK LUNCH

EN GARDE!

12:10 PM — SUITING UP...

12:15 PM — TIME FOR A FENCING DEMO IN THE COURTYARD
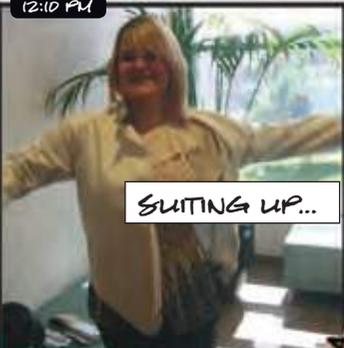
PLAYING POOL WITH FRIENDS

HEADING BACK TO MY ROOM
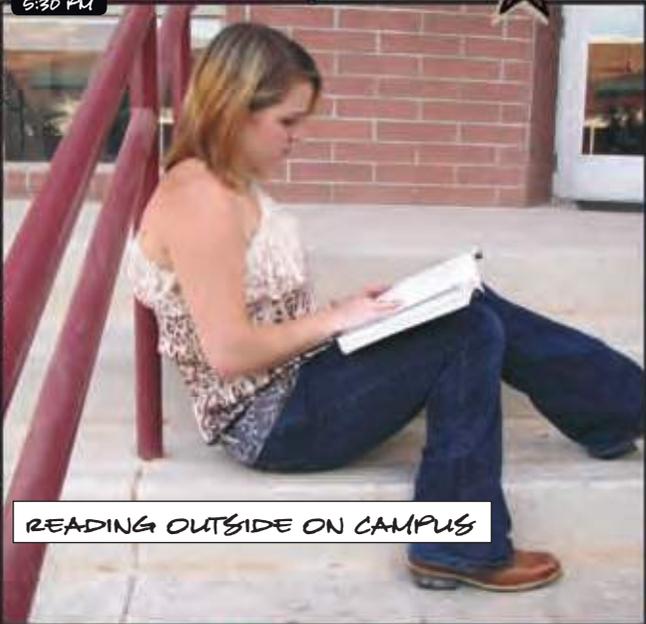
5:30 PM — READING OUTSIDE ON CAMPUS

5:45 PM — JOINING FRIENDS IN THE CAFÉ

10:00 PM — BED TIME...

END.

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> Support corporate, law enforcement and legal communities in the investigation and analysis of digital data.

> Evaluate, select, deploy and assess computer forensics measures to respond to and alleviate a security incident to prevent loss or corruption of sensitive information.

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You know HAL if you've ever seen *2001: A Space Odyssey,* the iconic Stanley Kubrick movie from 1968 that got people to wonder: **When will computers have conversations with humans?**

Flash-forward 40-plus years and we're not much closer to that day than when Kubrick introduced us to HAL (an amalgam of heuristic and algorithmic—two learning processes). If you don't know HAL, he was an intelligent talking computer on a spaceship, where he was the crew's companion, guide, friend, and… Well, you'll have to watch *2001* to see what became of HAL.

All these years later, HAL makes technophiles like us wonder if we'll ever have in-depth conversations with computers and robots. To be blunt, while progress is being made, technologists, linguists and academics don't hold out much hope. The problem is that human language is amazingly complex.

Just think how complex this gets with thousands of human languages!

There is good news, though. Progress is being made, mostly by various institutions storing a multitude of words and phrases. Google, for instance, has created Google Translate (http://translate.google.com), which does a decent job of translating written and spoken languages. Plus, Google Scribe (http://scribe.googlelabs.com) uses something called n-grams (essentially, a sequence of words), which you see in action when Google "guesses" which letter and word you'll type next.

Linguists are busy trying to understand language so that technophiles can create a talking computer like HAL. Let's just hope he doesn't get too smart.

Want to have some fun with a talking robot, or maybe help a linguist? **Go to:** UAT.edu/TalkingRobots

ROBOTIC CONVERSATION

The essence of the problem (and, a challenge for technophiles) can be summed up in three words:

• **Homophone**. Words like "bank," "film" or "table" that have more than one meaning. (For example: Let's table this conversation until tomorrow. I'll leave the documents on the table.)

• **Polysemy**. These are words that have many closely related meanings, often requiring the context of a conversation to distinguish which one is being used. (For example: It's only natural that Jessie would know which brand has the most natural ingredients. She's a natural-born nutritionist.)

• **Pronoun**. There are almost limitless nuances when it comes to pronouns that people intuitively understand, but that computers don't. (For example: He betrayed his friend, who he thought was more than a computer. He wasn't.)

The problem facing linguists and technophiles is gargantuan. *Scientific American* magazine estimates that storing every six-word phrase (which would give computers most, but not all the smarts they'd need to hold conversation) would require 1,024 combinations of words, or roughly 10 trillion exabytes of information. That's for a language with only 10,000 words—English has more than 1 million.

Someday, we will have conversations with robots as easily as we talk to another person. There will be no awkward pauses and no gaffes, where the computer thinks "bank shot" means you're taking hostages at a financial institution, not scoring two points off the backboard.

Talking robots that have in-depth, instantaneous conversations are likely a long way off. Although, the idea has been around for generations, famously including HAL, the talking computer in the 1968 movie *2001: A Space Odyssey*.

The problem is this: The human language is almost impossibly complex.

Still, technophiles, like the students at UAT, don't like to give up on a challenge.

So, linguists, academic institutions and corporations are busy trying to better understand how language works, and the nuances and distinct meanings of countless words and phrases. □

GO TO DICTIONARY.COM AND TYPE IN "NATURAL" TO GET A SENSE OF THE VAST NUMBER OF DEFINITIONS THAT TALKING COMPUTERS HAVE TO SORT THROUGH.

DON'T WORRY YOUR AVATAR WILL

TAKE CARE OF IT

Sometimes, life is just too awkward. Think about every embarrassing situation you've been in, like hitting the dance floor for the first time, or asking a girl out or telling your mom that you're a geek! Or, how about the struggles you've faced with more serious challenges like losing weight or speaking in front of a crowd.

No need to sweat the small stuff anymore. Life's challenges are a whole lot easier now that we've got avatars (yeah, the digital versions of ourselves). Avatars, like those we create for *World of Warcraft* or Facebook, can have a huge impact on our brains.

"The experience of watching your digital lookalike…is real enough, research suggests, to help you learn to cope with similar situations in the actual world," writes Samantha Murphy in a recent issue of *Scientific American* magazine.

We identify so closely with our avatars, it turns out, that we can learn to overcome an obstacle by first watching our avatars do it. For instance, if you watch your avatar eat a carrot instead of chocolate, your mind thinks you did it. So, later on in real life, you pick up a carrot and push away the chocolate.

This isn't as crazy as it sounds. Although, the scientific name for it is: **The Doppelganger Effect**. The more our avatars look like us, the more our minds play tricks on us.

"A mere three to five minutes of watching this digital representation of you…can literally change your mind, improve your behavior in social situations, calm your anxieties, sway your view of a person or a product and help you make better lifestyle or financial decisions," Murphy writes.

The effect on our minds is so intense that we can actually see our future.

Just imagine a 70-year-old you. A professor at Northwestern University did just that. What he found out: People who saw older versions of themselves were much more likely to save money for retirement than people who didn't see their old avatars.

That's the Doppelganger Effect. The implications for it are huge—we can improve our lives by learning from our avatars. While the effect that avatars have on our lives is likely to be positive, the Doppelganger Effect can be misused, too.

Just think of how some shady politicians, or even your professional rivals, can manipulate your avatar for their own good. Yikes. Actually, let's not think about that. ■

THE DOPPELGANGER, THE SCIENCE

Researchers at universities like Stanford and Northwestern have found that people are easily tricked into thinking we've done something—like, exercising or overeating—when, in reality, our avatars did it.

Researchers have found that our brains react the same way to situations our digital lookalikes experience as they do to real-life situations we experience, even after watching our avatars for only a couple of minutes.

- Neuroscientist Kristina Caudle had gamers spend 23 hours a week watching their avatar on *World of Warcraft*. Later, these gamers' medial prefrontal cortexes lit up like Christmas trees when they saw their avatars. That's the part of the brain where we focus on our high-priority needs.

- At Stanford University, students watched their avatars get fat when those avatars chose to eat chocolate cake instead of carrots. Later, the female students in the study were much more likely to choose carrots over chocolate.

- At Northwestern University, researchers had students watch their digital avatars progressively age, from youth to 70 years old. Later, they were asked to allocate $1,000 to whatever they wanted. Most chose to save it for retirement.

Now, as ethical technophiles, it'll be up to us to use the Doppelganger Effect for good. Got any ideas for how our avatars might help us in the future?

NETSEC: SECURING THE OPPOR

In the real world, there are no do-overs, no timeouts and no "Oops, sorry"—not when you're charged with protecting data and systems that, if compromised, could take down the world's economy.

That's just what a team of UAT students faced last March. As soon as they sat down at a bunch of computers, the Securities and Exchange Commission (SEC), which the team was working for, was being attacked by cyber terrorists. The SEC oversees the country's stock exchanges and investors' money.

Fortunately for the world's economies, UAT's team was taking part in a rigorous three-day competition—the Western Regional Collegiate Cyber Defense Competition (CCDC)—not a real-life situation. The CCDC is an annual event at Cal State Polytechnic University at Pomona. UAT takes part every year.

"Six schools compete," explains professor Al Kelly. "These teams are the best of the best."

The UAT team in 2011 consisted of: UAT graduate Kevin Kadium, who majored in Network Security; Network Security students David Kazlas, Steve Durham, Bryan Fisher and Scott Fraser; Alexander Boden, a Network Security and Technology Forensics double major; and Jason Carter, a Software Engineering major. Justin Engley and Andrew Sullivan were alternates.

"You go into an environment where a company is miserable at their job and everyone has been fired," Kevin says about the competition. "They hired a new team to bring the company back on line and get the servers up in a respectable amount of time. You also do things like get a new mail server and other services back up. You have to document everything and back up everything."

The students are blue teams and the attackers are the red team. The red team in 2011 was attacking the SEC's systems. The blue teams had to create a backup response center to protect the SEC's systems and reestablish communications.

"Basically, in the competition, we were running around like chickens with our heads cut off," says David Kazlas.

"The action starts right away and zooms through three grueling days," explains Jason Carter.

"Friday, you get in and it's a half day," he says. "On Saturday, it's all day—literally, all day. It just doesn't stop. The second we turned on the computers, we were under attack before we could even change the passwords or anything."

David Kazlas | Kevin Kadium | Alex Boden | Jason Carter | David Wells | Ian Scott | David Adams | Joshua Minor

TUNITY TO LEARN AND IMPRESS
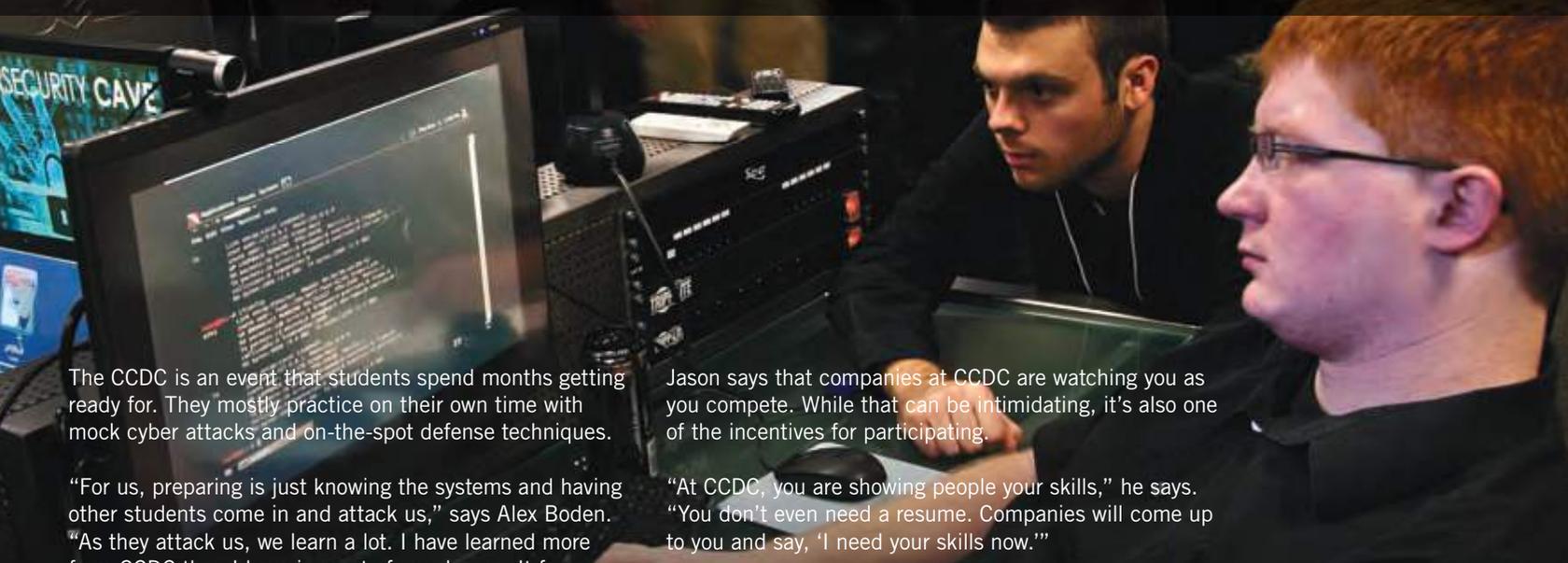
The CCDC is an event that students spend months getting ready for. They mostly practice on their own time with mock cyber attacks and on-the-spot defense techniques.

"For us, preparing is just knowing the systems and having other students come in and attack us," says Alex Boden. "As they attack us, we learn a lot. I have learned more from CCDC than I have in most of my classes. It forces you to learn—it gives you motivation to learn. You end up spending all your free time on these projects."

The team, as in past years, was coached by professor Kelly. He helps students get ready for CCDC by teaching them cyber defense techniques and giving them technical guidance. He doesn't know too many details about the competition before the students arrive at Cal Poly Pomona.

He coached the UAT team to a third-place finish, out of six teams. That's up one notch from 2010. This is enormously impressive when you think about the caliber of companies that sponsor CCDC—and that hire students.

The competition's sponsors include high-tech companies like Boeing, Intel, McAfee, Cisco, plus corporations such as Southern California Edison and Deloitte. Several of these companies hire the competition's winners and the runners-up.

"What normally happens with Boeing is that they usually offer jobs to the winning team—that's huge," says Kelly. "But, what we have found is that even the non-winning teams have the opportunity to have interviews with companies who are very interested in security students. Several internships come out of it. There are job offers and there are future job offers."

Jason says that companies at CCDC are watching you as you compete. While that can be intimidating, it's also one of the incentives for participating.

"At CCDC, you are showing people your skills," he says. "You don't even need a resume. Companies will come up to you and say, 'I need your skills now.'"

The CCDC is a prestigious network security event. And, it's incredibly good at getting Network Security students ready for what's coming after graduation.

"One of the ways to look at it is that the competition takes everything you learn in the classroom and puts it in a semi-real-world environment," Kelly explains. "It's very intense. We might take something that happens over a year or two in the real world and condense it down into a weekend." ∎

Al Kelly

Before coming to teach at UAT, Professor Kelly spent over 20 years in the Air Force, lived all over the world, and was head of the Information Technology office for one of the largest Title Escrow companies in Nevada. Learn more about his exciting history in Meet the Faculty on page 55 of this issue.

Da Vinci Society
Dr Edgar Mitchell
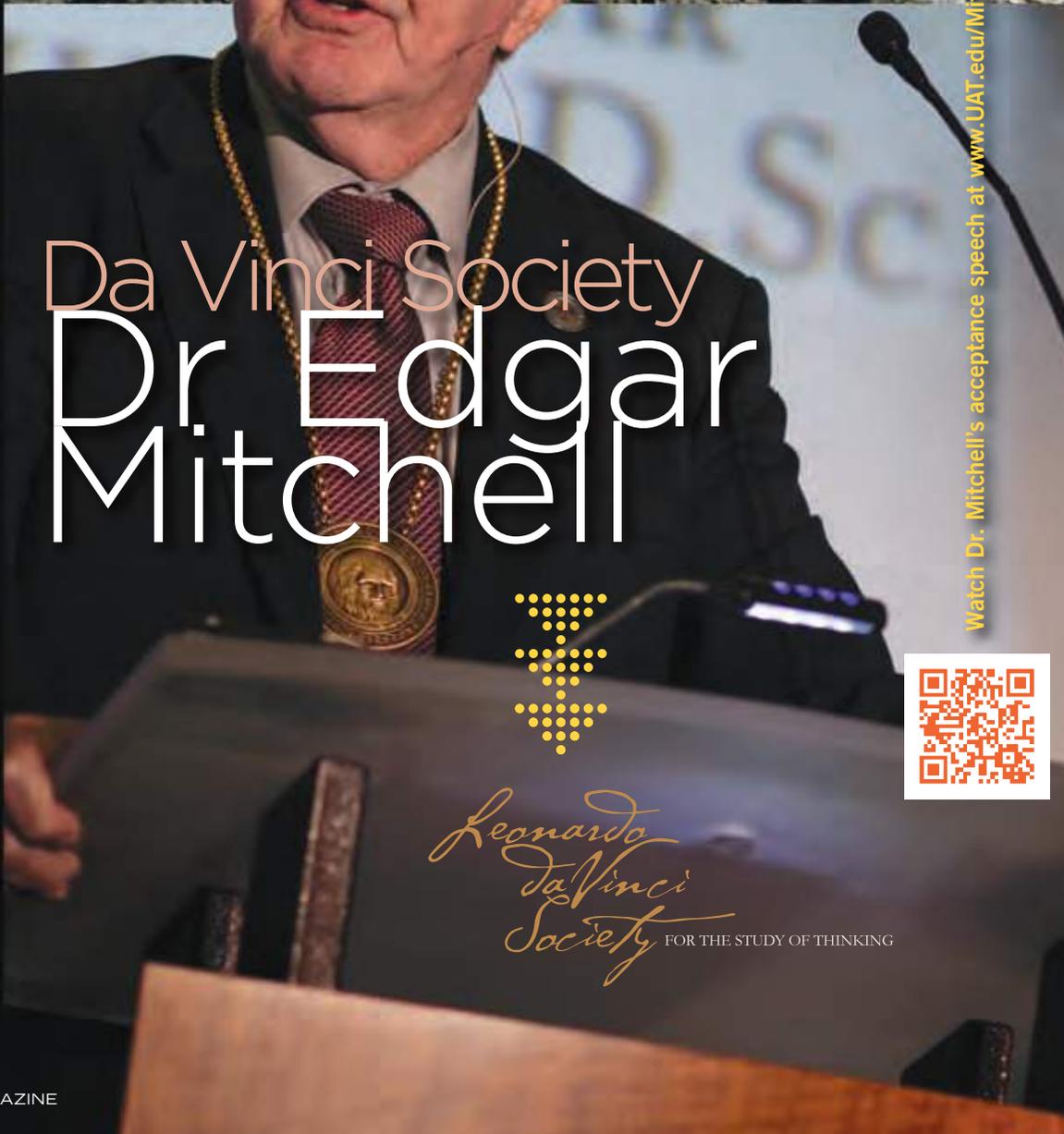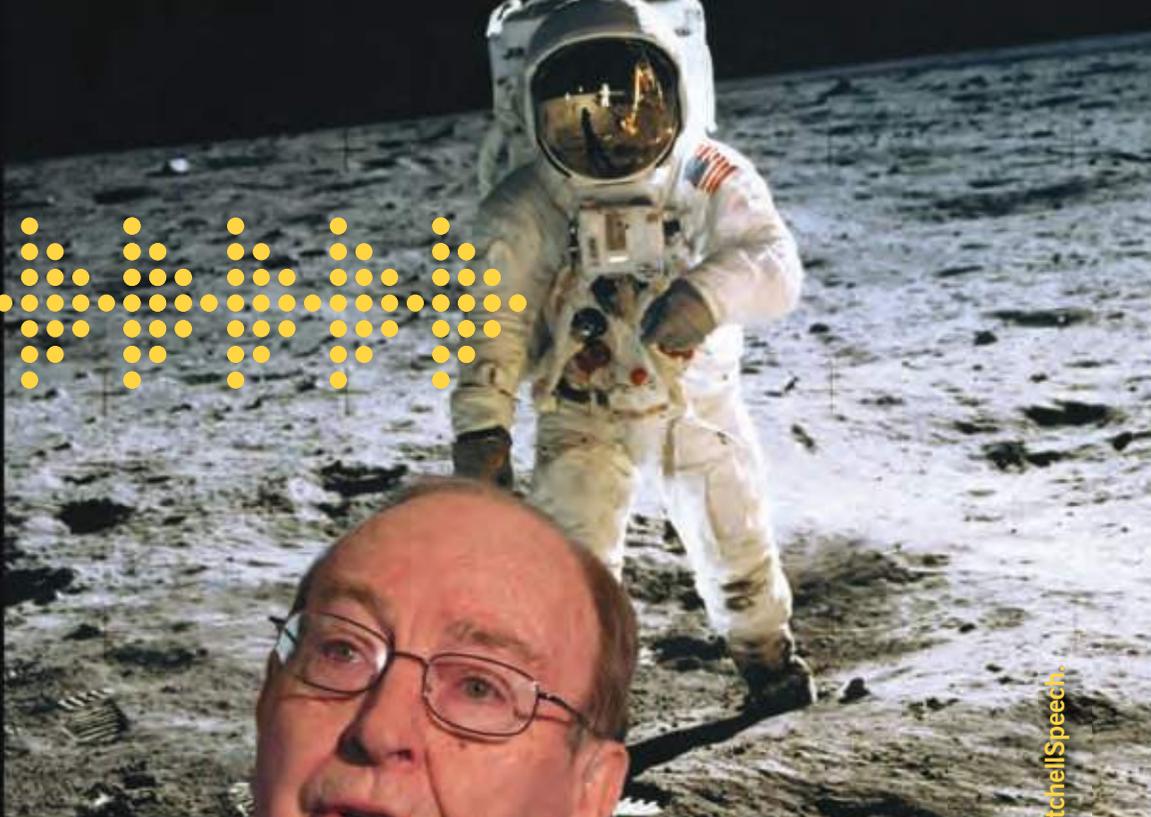
Navy Captain Edgar Mitchell D.Sc., became the sixth man to walk on the moon. For nine hours on Feb. 6, 1971, he conducted experiments and scientific research on the lunar surface.

Since then, Dr. Mitchell has been racking up awards. He was awarded the Presidential Medal of Freedom, the USN Distinguished Service Medal, three NASA Group Achievement Awards, and countless others. He was inducted into both the Space Hall of Fame and the Astronaut Hall of Fame. In 2005, he was nominated for the Nobel Peace Prize.

Additionally, 38 years ago, Dr. Mitchell started the Institute of Noetic Sciences, which promotes the advancement of human potential. He authored academic papers and has written two books, *Psychic Exploration* and *The Way of the Explorer.*

On June 3, 2011, Dr. Mitchell was inducted into UAT's prestigious Leonardo da Vinci Society for the Study of Thinking.

"I feel very honored to be part of this august group," said Dr. Mitchell upon receiving the award. He spoke about a lifelong mission that was ignited when he was walking on the moon.

"When we go Mars and look back at this tiny little planet, it'll be foolish to say, 'I came from the United States, Canada, England, Israel, Germany or wherever,'" said Dr. Mitchell. "No, 'We came from Earth.' Yet, we are not ready to say that as a civilization. We need to learn to survive as a civilization—that is my message."

UAT founder Dominic Pistillo said, "At UAT, we strive to not only provide an enriching educational environment, but to raise the bar with innovation, systems thinking and programming that will carry us through the 21st century. In that regard, we are honored to present such a distinguished thinker as Dr. Edgar Mitchell with the da Vinci medallion." ∎

Watch Dr. Mitchell's acceptance speech at www.UAT.edu/MitchellSpeech.

Leonardo da Vinci Society FOR THE STUDY OF THINKING

LIGHTS, CAMERA, MOVIE, MAGIC!

IT'S WHAT YOU DON'T SEE THAT MAKES UAT ALUMNUS DAVID SHOREY AN EMERGING FORCE IN HOLLYWOOD.
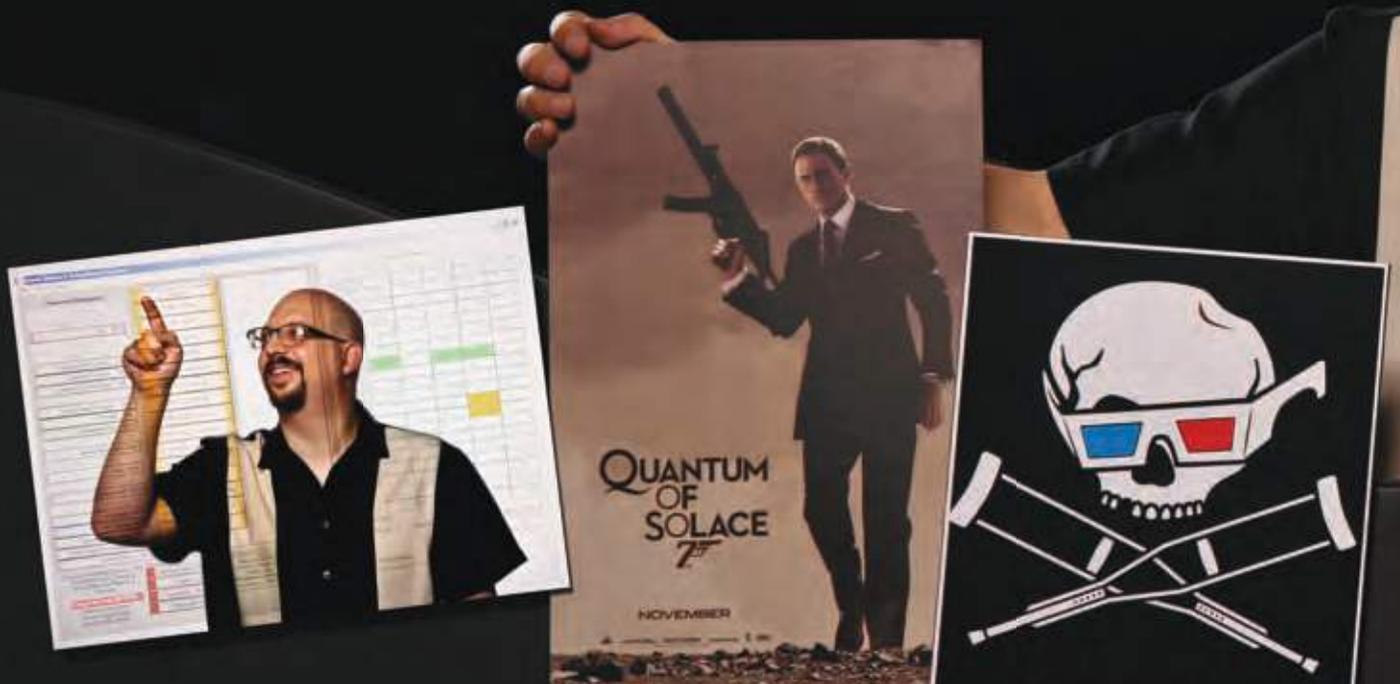
AS A FREELANCE VFX (VISUAL EFFECTS) ARTIST AND A BA IN MULTI MEDIA, DAVID SHOREY HELPS TO CREATE THROUGH SPECIAL EFFECTS AND ART DESIGN, VIDEO

Originally from Madison, Wis., David has worked on many movie and television projects—wielding his artistry in VFX, 3D Depth, CGI, post production, graphic design, stereoscopic composition, animation and restoration. To date, David has been involved more than 50 Disney movie trailers and over 10 movies including the 007 movie *Quantum of Solace, Mission Impossible - Ghost Protocol and Bobby.* In the exciting and challenging new field of 3D conversion, David has been part of teams for *The Last Airbender, The Green Hornet* and *Jackass 3D.* His most recent accomplishments include work on the Nickelodeon television show *Supah Ninjas* and the movie *Fred 2: Night of the Living Fred.*

So, what happens behind the scenes when a visual effects artist is working on a big movie or television show?

"Typically, my area of specialty is invisible art, kind of the artistic clean-up crew," David says. "I finalize the look of shots so that any rigging wires or other objects that should not be there are removed, blemishes magically disappear, physical features are enhanced to coincide with the role or movie theme. Sometimes, I get to have some extra fun, like in *Fred 2: Night of the Living Fred* when I superimposed a skinny guy's head on a muscle man's body."

"During the making of a film or tv show, you're working with a team of other design artists, as many as 250 people. So much of what you do is collaboration and team work, which was an important aspect of my education at UAT that translated to the real world. You've got to have the 'We're all in this together' mentality because collaboration is essential to meeting your goal. During movie

production, work hours can get crazy, like the 12-14 hours a day for 6-7–week stretch we experienced during production of *The Last Airbender.* And then there's the time I worked on four different trailers at three different computers in one day. But, you're learning and experiencing so much that the hours just fly. I wouldn't trade it for the world."

David also has become a teacher, presenter and mentor to students throughout the country, and most recently presented at UAT's annual Tech Forum November 2-4. He wants to share all he's learned by giving back.

Returning to UAT for Tech Forum was the first time he had been back on campus since his graduation. He was impressed with the growth and development that has occurred in the eight years he'd been away, such as the "awesome" Robotics Lab, which is where he

Here are the top ten lessons David learned that helped him rise to the top 10% of the industry.

10 Research the future direction and needs of your industry and prospective/current employer.

9 Tailor/apply your skills, resume, portfolio and demo reel to meet those needs.

8 Develop contact lists. Networking is key, along with creating LinkedIn and IMDB site pages. Know the big players.

7 Your reputation will precede you. Word gets around and people talk.

6 Offer them a trial period to demonstrate your skills.

5 Understand what the expectations are from the start, even before you land a job. Be prepared for fast deadlines and long days.

4 Social skills are important to help you meet new people.

3 Be adaptable, and willing to learn and try new things. Have the desire and ability to take on challenges.

2 Understand there is a high level of expectation out there, especially when you're in the big pond of a major city like LA.

1 Stay focused while you're looking for jobs. Make a list of the areas you want to pursue and the types of jobs you want. Think outside of the box.

2003 GRADUATE OF UAT WITH A [...]E MOVIE AND TELEVISION MAGIC [...]ESTORATION AND ANIMATION.

said he would have spent much of his time.

David also was thrilled to have the opportunity to reunite with his former instructor and mentor, Phill Miller. They were excited to see each other and had a brief chance to catch up.

"It is one of my greatest joys as a professor to see an alumnus like David Shorey come full circle and return to UAT to provide the benefits of his experience to a new generation of students," said Miller.

David remembers the support he received from Miller and UAT's environment of innovation that inspired him to explore and invent. When he was registering for classes, he saw an opportunity to develop an alternate interface for the student class registration program and consulted with Miller on his

project. The creative process David went through helped him realize how important it is to support future inventors. He since has been inspired to give back and help others by opening a school for inventors in the future. That same registration interface is one he plans to use to help students register for classes at his new school.

"Professor Miller's been an inspiration to me and provided tremendous support while I was a student," said David. "It was because of him I felt connected to the campus and my visual effects profession, and I'll always be grateful. He made a genuine difference in my career aspirations." ■

David came back to UAT as a speaker at the 2011 Tech Forum event. See this year's speakers at **www.uat.edu/tfspeakers.**

STUDENT PROFILE: JUSTIN LULEJIAN

A giant security guard abruptly stopped Justin Lulejian about 20 feet from the front entrance to the FBI office.

"Take your hands out of your pockets," the FBI guard ordered the UAT double major and his Hack Back team. They did! Yet, the guys just casually continued into the FBI office in downtown Phoenix. They were guests of FBI special agent Paul Schaaf, after all.

The special agent was interested in Justin's Legal Counter Intrusion project. Justin's team had been studying legal cases to find out if someone who's been hacked can legally hack back the hacker.

"He talked to us and directed us to the resources that helped us draw our final conclusion," says Justin, who's graduating in 2012 with two degrees—Network Security and Technology Forensics. "There

aren't any laws that lay out defense on the Internet. So, if you get hacked and then hack back, it's treated as two separate illegal acts—just like if someone vandalizes your car and then you vandalize their car."

When Justin started the Hack Back project, he wasn't envisioning the FBI getting involved. The independent project was inspired by UAT's Security Essentials class.

"Our professor was talking about how Information Assurance is all about defense," says Justin. "And I thought, 'Why do we always have to defend?' There's this idea that if someone hits you, you hit them back. I wondered if that applied to Network Security."

Justin put together a team of UAT students including himself, Jason Carter, Zachary Julian and Nicholas

Thomas. They met every Tuesday and Thursday night to go through legal cases and statutes. They were hoping to come up with their own conclusion. When they couldn't, they called in the big guns—the FBI.

"My teammate Jason Carter came up with a brilliant idea," says Justin. "He said, 'Why don't we contact the people who would enforce this?'"

Jason sent an email to the FBI's cybercrime unit. "The head of cybercrime emailed him back and said he'd like to talk to us—the head of cybercrime at the Phoenix FBI office!" says Justin. "I could only reason that they know what UAT is and that, technically, we have skills that could be used for bad."

Justin worked on the Hack Back project on his own time. Time is something he doesn't have a whole lot of as a double major on track to get both degrees in just

GOOD vs EVIL

When Justin Lulejian graduates from UAT in 2012, with two degrees, he'll head off to his family business. First stop, law school.

Justin is from Pismo Beach, Calif., and his dad is the Senior Deputy District Attorney for Santa Barbara County. Justin knew since he was a kid that he'd become a lawyer. It was only in recent years that his interest in technology began merging with his lifelong interest in law.

"When I was born, my mom knew I'd be a lawyer," says Justin. "My parents let me do my own thing. But, I always had that interest."

There were a couple of bumps in the road, though. After graduating high school, Justin went to the University of California at Santa Barbara for two semesters. He was gearing up for law school. At this point he had an interest in computers and started taking Computer Science courses. However he just didn't feel like he fit into the program and, after trying Political Science instead, decided that UCSB just wasn't working out for him. He decided to try something different.

He went to an unaccredited law school for a while. He was hoping he could skip getting a BA and just go take the American Bar Association exam. He almost made it. Instead, Justin went to work in his father's office for about a year.

"I went to work in my dad's office as an intern, but not with my dad because I wasn't an attorney," says Justin. "I worked with the investigators and the IT department."

It was while working with the IT guys that Justin realized he could have a career that includes both of his interests—technology and law. That led him to UAT.

"When I looked at the programs and looked at the classes, I thought, 'Wow, they are teaching me skills in every class.' Most schools focus on theory—I'm not interested in that," says Justin.

two years. Plus, he's working on an independent student project. And, he works 10 hours per week as a tutor at UAT.

On top of all that, he's actively involved in a lot of the opportunities that UAT provides for technophiles, like hanging out with the Net Sec industry's most influential players.

He's gone to DEFCON—a major convention for hackers. Even cooler, in 2010, he worked as a volunteer at Black Hat. That's the most prestigious and hard-to-get-into Network Security conference in the world. Professor Russ Rogers has connections at Black Hat, and he chooses which students go.

"There's an application process," explains Justin. "You have to send your GPA. You have to write a 500-word paper saying why you want to go and why you think you should go. It's incredibly prestigious. The only other way to become a volunteer is to be a very high-level person in information security." ∎

Read about Justin's independent student project, Forensic Teaching Toolkit, at:

www.UAT.edu/ForensicToolkit

Justin Lulejian's Forensic Teaching Toolkit
Justin plans to leave something behind when he graduates in 2012, destined for law school and a career fighting cybercrime.

DO you want to have some fun with technology while possibly uncovering the answer to a scientific mystery?

Try This: First, put on light-colored clothes, preferably white. Second, turn off all the lights so that you're standing in the dark. Next, looking down at your body, have a friend take a flash photo of your body with a digital camera. Don't forget the flash—that's key.

Here's The Cool Part: Still in the dark, slowly look up. You'll see a ghostly image of yourself floating around. Careful, you might feel wobbly on your feet. That ghostly image is called a negative afterimage (more on this in a minute).

VISUAL AFTER IMAGES

HERE'S THE SCIENTIFIC MYSTERY

Early-stage medical studies have shown that negative afterimages can reduce pain in patients. These chronic pain sufferers felt a change in their pain level while looking at their body's negative afterimage (usually, less pain). This is where technology could play a role in solving a serious problem that affects millions of people (a bit of ammo the next time someone tells you that tech is nothing but fun and games).

Scientists don't know why ghostly negative afterimages alter a person's sense of pain. But, it probably has something to do with the way our brains are wired. Essentially, our brains don't know how to distinguish the ghostly image from our real bodies because, over millennia, our brains haven't had the chance to learn what ghostly images are. So, the pain from the real body is transferred to the negative afterimage, as if it's real, too.

A LITTLE BACKGROUND

Ghostly afterimages—and other visual mysteries—are all part of scientific fields of study like neurophysiology.

People see negative afterimages, scientists have learned, because our eyes don't naturally fixate on images. When they do, that image (like our body in white clothes described above) gets stuck on our retinas. In real life, our eyes are constantly in motion, so images don't get stuck. Someday, technological devices such as digital cameras and other imagery equipment may help scientists understand how to reduce a patient's pain by having them look at negative afterimages.

Until then, the tricks our eyes play on us are just fun.

Scientists are using technology to understand why our eyes play tricks on us (like when we see ghostly images of ourselves after someone takes a flash photo of us in a dark room). Scientists think it has something to do with images getting "stuck" to our retinas and our brains being unable to process what we're seeing. ■

While scientists work on figuring out the hard stuff, for now visual tricks are just fun. Here are a few worth trying (adapted from Scientific American magazine): ▼

➡ *Bright White Disk:* Have a friend take a digital photo of you, with a flash, while you're in a dimly lit room. An image of a bright white disk will get stuck to your retina. Here's a mystery: Our brain thinks the image is real, so if you stare at a piece of paper up close, the disk appears to be tiny. But on a faraway wall, the disk is huge.

➡ *Shrinking Body:* Create a negative afterimage of your body (wear white clothes in a dark room and stare at your body as a friend takes a digital photo with a flash). When you see the negative afterimage of your body, still in the dark, walk close to a wall and move your neck backward and forward. The negative afterimage of your body will appear to get smaller as your move closer to the wall and bigger as you pull back, even though (of course) the image isn't real.

➡ *Ghostly Hand:* In a dark room, point a laser-style light on your hand and stare at it. From behind you, have a friend take a digital photo with a flash. Look up and you will see a ghostly image of your hand. Put your real hand close to your nose, and the ghostly image will appear to shrink.

➡ *Brain Freeze:* Using the Ghostly Hand experiment above, hold your hand up so you are looking at your real hand and its ghostly image. Move your real hand away and the ghostly image crumbles into pieces. Why? Our brains can't process the discrepancy between our hand moving away and the negative afterimage of it remaining in front of our eyes.

Meet New Freshmen

Karl Matthews

Major: Game Programming
Home State: Michigan

Hailing from the picturesque village of Paw Paw, Mich., Karl already had decided on a school closer to home when he was doing a little online research in his degree program and stumbled upon UAT. When he weighed all his options such as size, location and job prospects, he changed his course and couldn't be happier.

"My experience here already has been far better than I imagined. I love the friendly student body and staff, along with all of the exciting events we have going on here. I feel like I belong."

Vanessa Schell

Major: Virtual Modeling and Design
Home State: Arkansas

When she saw an ad in MAKE magazine, she was hooked by the catch phrase "Go Geek, Not Greek." By her sophomore year of high school, she knew she wanted to attend UAT. Originally from Pottsville, Ark., and graduating from a high school class of 30, Vanessa really enjoys the smaller "supremely geeky" learning environment and the fact that students are a lot closer and friendlier with one another.

"I love all my classes and that UAT has activities that interest the majority of students, because they know what we like."

Kyle Ferrara

Major: Network Security, Network Engineering
Home State: Nevada

A college fair in Las Vegas and an ad in Game Informer magazine was all it took for Kyle to know UAT was meant for him. He's enjoying the learning environment, dorm life, being in clubs and "you can't beat the hire out of college rate" in these fields. He aspires to work for the government when he graduates.

"UAT seems to be more of a lifestyle than a school. You get to learn more about what you're interested in and have friends around all the time to give moral support. I definitely feel that UAT gives me the tools to accomplish my dreams."

STuDent BLOGs

H.A. Caraway

Tech Forum is this week, and so far it has been awesome. We have had tons of speakers, and we're only on day 2. Another awesome thing going on is the Portrait Platoon. They are raising money to go to Italy next summer, so they are drawing portraits for anyone willing to donate. They have digital and traditional artists out and about. It is a good way to donate and get an awesome drawing. Better yet, some of them let you customize what you want the image to look like—so you can go a little bananas with it.

I think that about covers the awesomeness this week, so stay tuned until next week. I may or may not reveal something awesome.

Find out how H.A. is doing at www.uat.edu/meetha

Molly Satterfield

Whew, this has been one full week. In case you missed it, UAT's been busy with Tech Forum events. There were all sorts of presentations going on around campus. I really enjoyed this one. The speakers were very interesting and enthusiastic. We even had a few UAT alumni. Hearing what they've done since graduation was really inspiring. Plus, I won a free shirt!

Besides Tech Forum, I've been getting ready for Fly-in G33k this Saturday. As an ambassador, I help make sure the event runs smoothly. It's pretty fun, and usually the clubs have events going on at around the same time.

Keep reading! Get an update on Molly at www.uat.edu/meetmolly
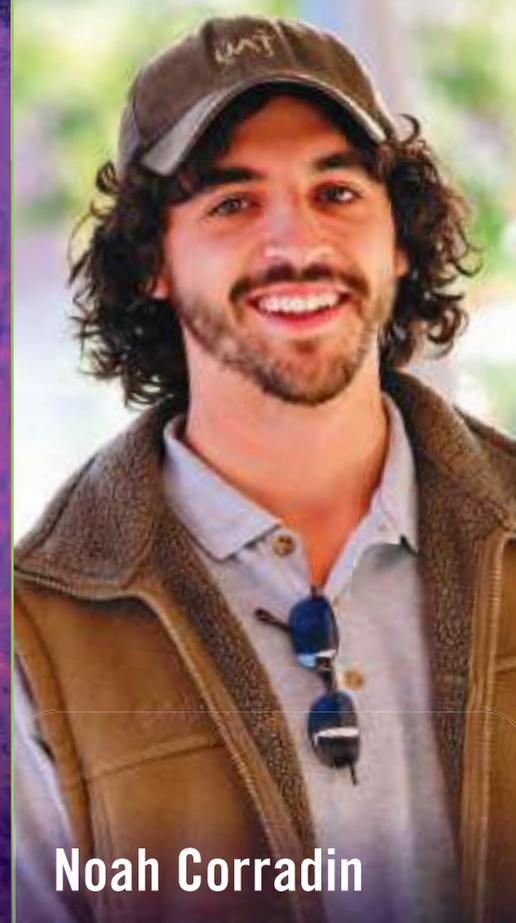
Noah Corradin

This weekend was bumping at UAT. On top of having Fly-In G33k we also had Root the Box, 48 hour film challenge, and Game Jam going on. With some of the biggest events in three different majors going on, any of the prospective students had the opportunity to see what it's truly like to be a UAT student.

I myself competed in the Root the Box challenge that ran all Saturday night. A team would root a box, grab the MD5 of a garbage file and then upload that hash to obtain points. With a very successful and fun weekend behind me, this week couldn't look any better.

See what else Noah is up to at www.uat.edu/meetnoah

A HOP ACROSS

UAT's International Exchange

UAT EXCHANGE STUDENT: ABY BAGULAY

British student Aby Bagulay has a vision for the future. It involves UAT students spending semesters at overseas universities, and overseas students spending semesters at UAT.

"Both schools would work together in game development disciplines, and on projects," Aby says. "That possibility could mean a major flush of advanced students into the industry. That would be great!"

Aby was hugely instrumental in kicking off that future. She was the first-ever international exchange student to spend a semester at UAT. She exchanged places with UAT double major Raul Garcia, Jr., who spent one semester at Aby's school, De Montfort University in Leicester—about two hours north of London.

Aby is a Game Art major at De Montfort. One of her professors told her about the opportunity to become an exchange student at UAT. However, Aby's family had never heard of UAT.

"I explained to them that UAT is like my one technology class, but a whole establishment covering a range of technology subjects," she says. "As an art-based course, De Montfort's focus is on traditional art and 3D software. So, the range of technologies covered by UAT was very interesting to me and my family."

She says she was amazed that UAT had entire majors dedicated to subjects like Network Security and Robotics & Embedded Systems.

"It was wonderful to experience such a wide range of subjects in one place and so close together," she says. "It's like a family unit."

Aby says that UAT has had a lasting impression on her, and helped her to gain the highest degree level (4.0 GPA equivalent) when she graduated in June of 2011, and has been invaluable to her professional development.

"From a learning point of view, the thing I like most about UAT is the combination of various practices all housed and nurtured together," she says. "I loved that there were game artists, programmers, designers and animators all essentially under one roof. UAT is a hub of activity and potentially endless development."

THE POND

Students Share Their Experiences

Piazza del Campo, Tuscany, Italy

NAME: Raul Garcia, Jr.
CLASS OF: 2012, University of Advancing Technology
MAJOR: Virtual Modeling and Robotics & Embedded Systems
ORIGINALLY FROM: Bakersville, CA

Art professor Paul Andrus is going to show UAT students the world. Well, at least a really nice part of it.

Professor Andrus has been actively raising money to offset the costs for 15 UAT students to go to Siena, in the Tuscany region of Italy, for a two-week trip in summer 2012.

Once in Italy, Andrus will oversee UAT students researching The Palio—the historic horse race that has taken place every year since the 1600s.

The students are going to use their findings and the artwork they create to complete a computer game based on The Palio.

"Learning about other cultures outside the United States is extremely valuable to understanding the world and broadening one's education and life experience," says Andrus. "Plus, meeting new people and making connections can be very valuable in the future."

DE MONTFORT EXCHANGE STUDENT: RAUL GARCIA JR

It wasn't the food that got to Raul, a UAT double major (Virtual Modeling; Robotics & Embedded Systems). It wasn't the unfamiliar setting. It wasn't the local accent, and it wasn't even that he missed his family and friends, who were 5,400 miles away.

No, the biggest challenge for UAT's first-ever exchange student was the cold weather. He spent the spring 2011 semester at De Montfort University in Leicester, England (100 miles north of London).

"I've always been a desert punk, so I'm more comfortable with the heat," says Raul, an El Paso, Texas native. "I just piled on several layers of clothes on cold days, and I also kept myself active by going to the gym."

The cold didn't detract from the experience, though. Not at all. Raul immersed himself in school.

"I was really happy with the Game Art Design honors program," he says. "De Montfort emphasizes traditional and realistic art. Students were encouraged to draw every day. Then, those skills were applied to their textures and maps to make great-looking 3D assets."

While in the UK, Raul stayed in touch with his friends and family using Skype. Plus, he kept busy making lifelong friends and business contacts.

"I made connections with several new friends in Europe," he says. "A couple of friends work at Codemasters. And a Ph.D. neurology student from France is now helping me with my UAT Student Innovation Project."

gadgets + Gizmos

Sony's Crazy 3D Head-Mounted Display ▲

The Sony HMZ-T1 visor-like space-aged head-mounted viewer offers a personalized, immersive 3D experience that, according to Sony, is better than any TV. The result is an extremely high-definition 3D display. The viewer has two small screens (one in front of each eye) along with non-replaceable headphones. A cable, for power and data, runs from the headset to a small black box, about the size of a Nintendo Wii, which in turn plugs into any gadget you want. The HMZ-T1 uses two 0.7-inch OLEDs, close enough to your face that it appears about the same size as a 150-inch screen at 12 feet. Sound comes in the form of built-in headphones that slide down from the headset, providing 5.1 surround sound.

Projected list price: $750 to $800

◀ Fanatec Forza Motorsport

Fanatec's line of Forza Motorsport accessories now includes the new CSR Wheel, CSR Elite Pedal Set and CSR Shifter Set. The Forza Motorsport CSR wheel's new features provide the ultimate sim racing experience on Xbox 360 in Forza Motorsport 4. The wheel's force feedback is powered by a Mabuchi RS550 motor, with two additional actuators simulating motor and ABS vibration. Pedals are fully adjustable; a pressure-sensitive brake pedal can be tuned to mimic any car. The shifter set features a six-speed H-pattern design and can be mounted on either side of the steering wheel.

Projected list price: CSR Wheel - $250, CSR Elite Pedal Set - $150 and CSR Shifter Set - $60

▲ Sealander Amphibious Camping Trailer

Available in 2012, Sealander is a two-in-one vehicle combining features of an electric power boat and camping trailer. This super-light trailer (838 pounds) can be towed by subcompact cars without extra mirrors or gear, and serves as a kitchen, a tent and a boat. Inside, seats become a deck, cooking/sink areas become heaters and refrigerators, and there's an option for the roof to open. Outside, the trailer measures 12.8 feet long, 5.25 feet wide and 6 feet high.

Projected list price: $20,500

▲ Virgin America and Lufthansa Systems In-Flight Entertainment System

In-flight entertainment soars to new heights, beginning in late 2012. That's when Virgin America will start rolling out a new system, developed with help from Lufthansa, called BoardConnect. It will include an HD touch-screen seatback monitor in every headrest, improved WiFi connectivity, and the ability to interact with your personal electronics. Each seat will have a QWERTY-equipped remote for navigation and playing games, as well as chatting with other passengers via in-flight IM. In addition to live TV, music, games, flight tracking and on-demand movies, passengers can also order in-flight meals and peruse what most likely will be an electronic version of SkyMall. While not available publicly yet on Virgin America aircraft, back-end testing of the new system already is underway on one of its Airbus 320 aircraft aptly named "#nerdbird."

Projected list price: $549.99

Sony DEV-5 Binoculars ▲

Sony's high-end HD camcorders take an additional form – as binoculars. That means they record in both 720p and 3D with not one but two lenses from both the HandyCam camcorder and CyberShot camera. They shoot 2D and 3D plus take 7MP still photos. You can focus on an object as close as a centimeter away. Both binoculars boast 10x optical zooms, but the DEV-5 also offers a 20x digital zoom and a built-in GPS receiver that can geo-tag your photos and video clips.

Projected list price: DEV-3 - $1,400 and DEV-5 - $2,000

On your mark...
get set...
JAM
GLOBAL GAME JAM AT UAT

Time Keeps On Ticking

There's no syllabus, and you've got 48 hours to complete a project that normally takes weeks, with no advance notice on what it's about. You work night and day throughout the weekend but excitement infuses you with energy and motivation. So, what kind of class is this? It's not a class, it's Game Jam!

Game Jams are conducted several times each year at UAT, thanks to Game Design major Tyler Coleman. They serve as extracurricular opportunities for budding game developers to come together and make game prototypes. Tyler began hosting student-led game jams in April 2010 and has conducted 10 and counting, including the Global Game Jam (GGJ) involving other schools. GGJ, the world's largest annual game jam event, is a project of the International Game Developers Association (IGDA). UAT is the only Arizona location for GGJ. Assisting Tyler in conducting them are Game Design major Joe Gohn, Game Programming major Alex Bascom and Game Design major Donald Allen.

"If you're wondering if it's is really possible to make a game prototype in 48 hours, the answer is yes."

Preparing for the Jam

So how do you prepare? Tyler recommends sleeping the day before, bringing your laptop and lots of enthusiasm. Game theme is announced when the event begins to prevent participants from advance planning. Student teams are randomly formed and each one decides on the development environment in which to work (Flash, Unity, C#, C++, Java, etc.).

Collaboration is Key

While Game Jams include judging and awards, the goal is not to compete as much as it is to collaborate together and learn as much as you can. It's an environment where everyone wants everyone else to succeed. If you're wondering if it's really possible to make a game prototype in 48 hours, the answer is yes. About 75% of games are playable and working after a game jam.

"We take great pride in our high success rate," Tyler says.

If you do fail, you learn from it, which is why it's important to participate often and make as many game prototypes as possible. UAT is all about real-life lessons while you're still in school, and Game Jams are no exception. You learn everything from team dynamics and time management to game engine construction. You're ultimately better prepared to find a job and be successful. Tyler has made/prototyped 20 games in total. These include special class projects and game jams.

Games Lure Buyers

And, if you don't think much comes of the game prototypes developed during Game Jams, think again. During last September's Game Jam, Tyler and his team created a game that actually interested a buyer. He is also in negotiation with an internationally known game company on another large scale project.

"Game Jams and UAT have given me wings," Tyler says. He graduates in spring 2012, and will name successors to ensure game jams continue. ∎

Watch a video of one of the Game Jam events at UAT. Go to www.uat.edu/gamejam

WHAT IS YOUR GEEK IQ?

What kind of geek are you?

Chic Geek? Scatter Geek?

Or are you a Gamer Geek?

If you've pulled yourself away from your computer long enough to read this, **GET BACK TO YOUR MONITOR!**

Are you an average Geek or do you belong in the Geek Olympics?

Find the answers and your geek IQ at www. G33KTEST. com and forward to a friend to find out theirs.

University of Advancing Technology

UAT

Learn. Experience. Innovate.

14 road trips near UAT

ARIZONA SCIENCE CENTER: PHOENIX
One of the most popular technology attractions in the state of Arizona. The current facilities include more than 40,000 square feet of gallery space; an IMAX Theater; the modern, computerized Dorrance Planetarium seating 200; and over 300 permanent exhibits. http://www.azscience.org/

BIOSPHERE 2: ORACLE
This biosphere was originally built to be an artificial, materially closed ecological system. Constructed between 1987 and 1991, it was used to explore the complex web of interactions within life systems in a structure that included five areas based on natural biomes and an agricultural area and human living/working space to study the interactions between humans, farming and technology with the rest of nature. http://www.b2science.org/

METEOR CRATER: NEAR WINSLOW
The world's best preserved meteorite impact site, Meteor Crater is the breath-taking result of a collision between a piece of an asteroid traveling at 26,000 miles per hour and planet Earth approximately 50,000 years ago. Today, Meteor Crater is nearly one mile across, 2.4 miles in circumference and more than 550 feet deep. http://www.meteorcrater.com/

MUSICAL INSTRUMENT MUSEUM: PHOENIX
The collection includes instruments from more than 200 countries and territories around the world. Some larger countries such as India, China, Russia, the United States, the Democratic Republic of the Congo, and others have multiple displays with subsections for different types of ethnic, folk and tribal music. http://www.themim.org/

THE TALLEST WATER FOUNTAIN: FOUNTAIN HILLS
The fountain, driven by three 600-horsepower (450 kilowatt) turbine pumps, sprays water at a rate of 7,000 gallons per minute through an 18-inch nozzle. With all three pumps under ideal conditions, the fountain reaches 560 feet in height, though in normal operation only two of the pumps are used, with a fountain height of around 300 feet (91 meters). When built, it was the world's tallest fountain and held that record for over a decade. http://www.fh.az.gov/about-fountain-hills.aspx

ARCOSANTI: 70 MILES NORTH OF PHOENIX
The goal of Arcosanti is to explore the concept of a city combining the social interaction and accessibility of an urban environment with sound environmental principles such as minimal resource use and access to the natural environment. The population varies between 50 and 150 people, based on the number of students and volunteers on the site. Ultimately the town is intended to hold 5,000 people. http://www.arcosanti.org/

LOWELL OBSERVATORY: FLAGSTAFF
A wonderful observatory located for more than 100 years at 7,200 feet elevation. http://www.lowell.edu/

KITT PEAK NATIONAL OBSERVATORY: TUCSON
Home to 24 optical and 2 radio telescopes, Kitt Peak, part of the National Optical Astronomy Observatory (NOAO), supports the most diverse collection of astronomical observatories on Earth for nighttime optical and infrared astronomy and daytime study of the Sun. http://www.noao.edu/kpno/

KARTCHNER CAVERNS STATE PARK: BENSON
This "live" cave, discovered in 1974, is host to a wide variety of unique minerals and formations. Water percolates from the surface and calcite formations continue to grow, including stalactites dripping down like icicles and giant stalagmites reaching up from the ground. http://azstateparks.com/Parks/KACA/

PIMA AIR AND SPACE MUSEUM: TUCSON
One of the largest air and space museums in the world, and the largest non-government funded aviation museum. You'll see more than 300 aircraft and spacecraft including many of the most historically significant and technically advanced craft ever produced, both from the United States and throughout the world. http://www.pimaair.org/

TITAN MISSILE MUSEUM: SAHUARITA
The only publicly accessible Titan II missile site in the nation. Tour the underground missile site. See the 3-ton blast doors, the 8-foot thick silo walls, and an actual Titan II missile in the launch duct. Visit the launch control center, experience a simulated launch and more. http://www.titanmissilemuseum.org/
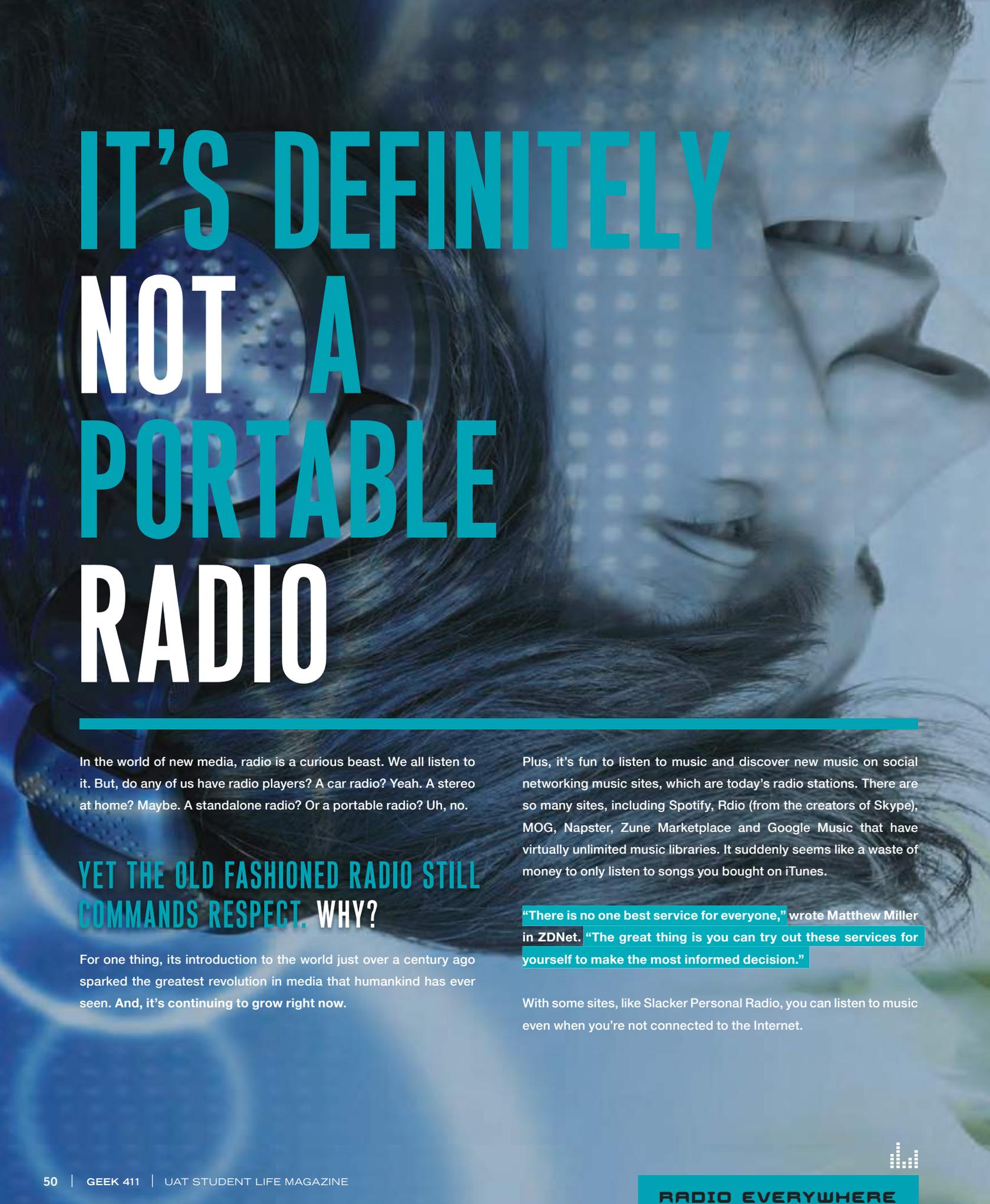
IT'S DEFINITELY NOT A PORTABLE RADIO

In the world of new media, radio is a curious beast. We all listen to it. But, do any of us have radio players? A car radio? Yeah. A stereo at home? Maybe. A standalone radio? Or a portable radio? Uh, no.

YET THE OLD FASHIONED RADIO STILL COMMANDS RESPECT. WHY?

For one thing, its introduction to the world just over a century ago sparked the greatest revolution in media that humankind has ever seen. And, it's continuing to grow right now.

Plus, it's fun to listen to music and discover new music on social networking music sites, which are today's radio stations. There are so many sites, including Spotify, Rdio (from the creators of Skype), MOG, Napster, Zune Marketplace and Google Music that have virtually unlimited music libraries. It suddenly seems like a waste of money to only listen to songs you bought on iTunes.

"There is no one best service for everyone," wrote Matthew Miller in ZDNet. "The great thing is you can try out these services for yourself to make the most informed decision."

With some sites, like Slacker Personal Radio, you can listen to music even when you're not connected to the Internet.

RADIO EVERYWHERE

These days, "radio" is all about streaming music that's portable from one device to another (say, from your iPad to your Android phone to your dad's PC). **It's called Radio Everywhere.**

Radio Everywhere is undergoing a huge transformation—far more than anyone could've imagined just a few years ago (when everyone was saying, "radio is dead").

Music, as we've come to know it, is digital—buying songs and albums online. Up ahead, radio is about listening to millions upon millions of songs for free, or for a small fee.

That's where sites like Spotify come in. The Swedish music site, which is huge in Europe and catching on in the U.S., has about 15 million songs. But, more than that, it has the latest social networking functionality.

On Spotify, and most other streaming music sites, it's really easy to connect with friends to see their playlists.

Most services, like Spotify's premium edition and Zune Marketplace, charge a fee of roughly $5-$15/month for unlimited access to songs.

So, why buy a few songs that you'll listen to just a few times, when you can get unlimited access to virtually every song you'll ever want to hear?

But, maybe the best feature of these social networking radio sites is that you can listen to the radio just like it's a radio station. Instead of just listening to your playlist, you can just randomly play music (maybe a specific genre) from these sites' vast libraries. You know...radio. ∎

WHICH STREAMING MUSIC SERVICE IS RIGHT FOR YOU?

NOT SURE WHICH STREAMING MUSIC SITE IS WORTH PAYING FOR? DON'T WORRY. SOME SITES ARE FREE (AD SUPPORTED), LIKE PANDORA AND SPOTIFY'S BASIC SERVICE. BUT EVEN SITES THAT CHARGE ABOUT $10/MONTH OFFER A FREE TRIAL PERIOD.

HERE'S A RUNDOWN OF A FEW OF THE STREAMING MUSIC SITES, INCLUDING INFORMATION ABOUT PRICING AND SOCIAL MEDIA FEATURES.

1. LAST.FM

- SOCIAL MEDIA: LATE TO THE GAME BUT HAS WHAT'S BECOMING STANDARD SOCIAL NETWORKING CAPABILITIES, MEANING FACEBOOK AND OTHER CONNECTIONS TO SEE WHAT YOUR FRIENDS ARE LISTENING TO.
- # OF SONGS: UNCLEAR, BUT CBS (WHICH OWNS LAST.FM) CLAIMS IT'S THE LARGEST MUSIC LIBRARY ONLINE.
- COST: FREE.

2. RDIO

- SOCIAL MEDIA: EASY-TO-USE SOCIAL NETWORKING, INCLUDING DISCOVERING NEW MUSIC BY LISTENING TO YOUR FRIENDS' PLAYLISTS.
- # OF SONGS: 10 MILLION AND COUNTING.
- COST: $4.99/ONLINE ONLY; $9.99/MUSIC EVERYWHERE.

3. SLACKER RADIO

- SOCIAL MEDIA: EASY TO FIND FRIENDS ON FACEBOOK.
- # OF SONGS: 8 MILLION AND COUNTING.
- COST: FREE, PLUS TWO PREMIUM SERVICES: $3.99/MONTH; $9.99/MONTH.

4. SPOTIFY

- SOCIAL MEDIA: EASY TO FIND FRIENDS, INCLUDING A SUPER-EASY CONNECTION TO FACEBOOK.
- # OF SONGS: 15 MILLION AND COUNTING.
- COST: FREE, PLUS PREMIUM SERVICE IS $9.99/MONTH.

5. TURNTABLE.FM

- SOCIAL MEDIA: AS OF SUMMER 2011, THE ONLY ACCESS TO TURNTABLE.FM—WHICH SINGERS LADY GAGA AND KAYNE WEST HAVE INVESTED MONEY IN—IS THROUGH FACEBOOK
- # OF SONGS: UNCLEAR.
- COST: FREE FOR A LIMITED NUMBER OF SONGS.

HOT

ONLINE EDUCATION

JAMES JUSTIN
Associate Professor: UAT-Online:
Ethics in Technology, Foresight
Development
BS, Arizona State University
MA, University of Phoenix
PhD, North Central University

Independent game development. 30 years ago, near the dawn of the game industry, many games were developed by small teams working at small studios. Anyone with access to a PC and a compiler could make a game. The rise of the console and rampant piracy on the PC changed all that. Self-publishing games became a virtual impossibility for all but the largest of the independent developers. However, the pendulum is swinging in the other direction. More powerful phones and handheld devices have allowed small handheld games to go from a niche market to one that's threatening the dominance of the AAA console game. Most importantly, self-publishing these games is cheap. Many handheld marketplaces take a fixed cut of the gross sale price, with minimal upfront costs. For those looking to make small console games, digital distribution on XBLA and PSN allow small developers to get games out on the console for a tiny fraction of the cost of a AAA title.

NOT

Facebook games. Zynga was the talk of the town just a few months ago, the fact remains that they bet the farm (if you'll pardon the pun) on Facebook. But Zynga has had a hard time duplicating that success on the handheld market. As a result, many developers of Facebook games have moved to the marketplace that isn't yet dominated by anyone. And thus, the dominance of Facebook in the small games marketplace is clearly over.

HOT

ROBOTICS AND EMBEDDED SYSTEMS

RYAN MEUTH
Professor: Robotics & Embedded Systems
PhD Computer Engineering, Missouri
University of Science and Technology

The smallest electric motor ever, made from a single molecule, is definitely "Hot." Such a tiny motor may seem insignificant, but it represents the state of our capability to manipulate matter precisely at a small scale. There are many engineering challenges between this and having nanites swimming through our bloodstream, but this is a significant step in that direction.

NOT

http://www.terrafugia.com/. Flying cars are finally here, and they're ugly as hell. I will eat a shoe if that company is successful.

**Do You Know What's Hot & What's Not?
If So, Let's Hear It. Email us at
whwn@uat.edu.**

For more what's hot
visit www.uat.edu/whwn

GAME DESIGN AND PRODUCTION

PHILL MILLER
Associate Professor: Systems Development
BA, Arizona State University
MBA, North Central University

The recent passing of such luminaries as Steve Jobs, Dennis Ritchie and John McCarthy offers us an opportunity to pause and reflect on the space we have traversed in the relatively short lived computer era. While Steve Jobs is a household name, fewer people know Ritchie and McCarthy and their equally significant contributions. Dennis Ritchie was the creator of the C programming language and the co-creator of the UNIX operating system. John McCarthy coined the term "Artificial Intelligence," and invented the LISP programming language.

NOT

What's Not: Right now, everything else :(

HUMAN-COMPUTER INTERACTION

VESNA DRAGOJLOV
Associate Professor: Algorithmic Art, Advanced Photoshop, Multimedia Theory, Principles of Interactivity, 2D Computer Arts, Flash
BA, University of Novi Sad
MA, University of Belgrade
MA, University of Denver

This past July 2011 I went to the HCI International Conference where I had this great opportunity to see what is currently going on in the world of HCI from a global perspective, as well as attend a few workshops. Professor Norbert Streitz from Smart Future Initiative (smart-future.net) gave a very inspiring workshop on Designing Interactions for Ambient Intelligence Environments. Because his company is heavily funded by either government or other educational Institutions such as Cumulus, he is able to work on projects that reach out into immediate as well as far into the future, where technologies will be seamlessly embedded in our working and living environments, such as rooms, homes and whole cities. He questions the technologically advanced environments and what the place of humans is there.

Another important and very popular trend nowadays that created a lot of buzz at the conference is BCI—Brain Computer Interaction. Asian countries are the leaders in this field as they look deep into the brain waves and how, using them, we can control our environment.

NOT

As we know, if we look at the research into all of our five senses and how they have been exploited in HCI, it is obvious that vision still gets a heavy focus, along with haptic environments and touch, and auditory. However, olfactory senses have been so far under explored. At the conference there were several papers that address the possible uses of them. Those senses can easily be abused in any interaction design, because they are very personal and different people react differently to them. It is yet to be seen how they can be used for more user-friendly environments.

READY SET GO

The UAT admissions process can begin as early as your sophomore year in high school. This can be a great benefit to you, since it allows you to create a relationship with a representative from the University who can help guide you every step of the way. In addition, applying early helps ensure acceptance, and:

> Gives you access to UAT's Intranet
> Gives you access to your enrollment coordinator so they can help you and your family with this decision
> Keeps you connected with campus events and news
> Helps you become part of the UAT community

Who's admitted to UAT?

UAT welcomes exceptional students who are passionate about learning in every phase of their life. Just as important in the admissions process is your passion and aptitude for technology. For instance, a good student who has been programming or building websites or advanced robots is of more interest to UAT Admissions than someone who has not demonstrated an aptitude for technology, but has good grades and test scores. In other words, we're looking for people just like you!

So...what's Next?

Prospective students may apply online at www.uat.edu/apply. Admissions requirements and the online application are both found on this page. Soon after your application has been received and reviewed by our Acceptance Committee, you will be notified of your acceptance status. If you need help or advisement with the admissions process, or if you just have questions, please contact our Communication Center at 877. UAT.GEEK.

Spring 2012 Semester

Semester:	January 9 - April 27
Orientation:	January 5
Midterm Break:	March 12-16

Summer 2012 Semester

Semester:	May 7 - August 17
Orientation:	May 3
Midterm Break:	July 2-4

Fall 2012 Semester

Semester:	September 4 - December 19
Orientation:	August 29-31
Midterm Break:	October 19-21

Academic Scholarships

Due April 16 for May 2012

Due August 14 for September 2012

www.uat.edu

Meet the Faculty

One of the hallmarks of UAT is faculty who are as passionate about teaching as the students are about learning. UAT instructors engage and challenge students, whether in technology-based courses or general studies courses, to help them explore their passions and achieve their full potential.

Shelley Keating

Professor: Network Securities, Information Security and Assurance

PhD, Business Administration, Northcentral University (Projected Graudation: 2013)
MS, Information Technology, Capella University
BS, Training and Development, University of Houston

Originally from Houston, Texas, Shelley Keating has been teaching for more than 26 years, nine of those at UAT. Prior to UAT, Keating was a Corporate Technical Trainer and earned industry certifications from such tech giants as Microsoft and Cisco, to name a few. She teaches in the classroom (CyberSecurity Cave) and also online via the UAT Café, UAT Garden and Facebook.

"UAT is fast paced and always changing because of the close relationships with technology and industry."
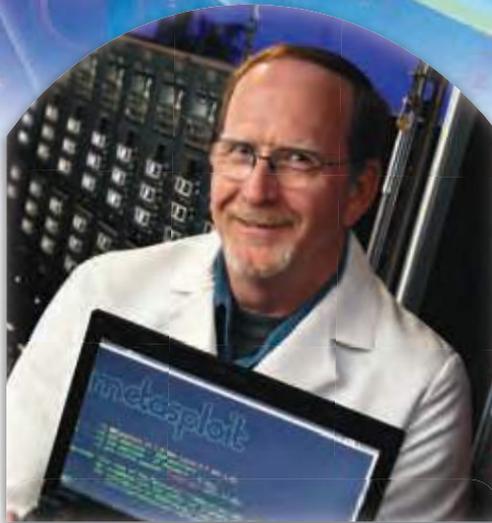
Al Kelly

Associate Professor: Network Security

BS, Embry-Riddle Aeronautical University
MS, Computer Information Systems, University of Phoenix

Professor Kelly's life sounds like fiction. He was in the U.S. Air Force for 20 years. He was a go-to computer geek before PCs. He's an F-15 flight instructor, a painter, a teacher, a car nut and he rebuilt Saudi Arabia's entire student accounting system! Plus, he's lived everywhere, including throughout America, Europe, the Middle East and even Guam. He's also been key to UAT earning its CAE designation for Information Assurance from the NSA, and creating UAT's way-ahead-of-the-curve Cyber Security Cave.

"We're a hot commodity," he says. "Students are hearing about this and saying, 'I'm coming to UAT because I want to be a security professional.'"

Lynn Understiller

3D Modeling and Animation, 2D Art and Animation, Ecorché Sculpting, Concept Art, Storyboarding

Classically trained in the atelier method with over 20 years experience in the game industry, Lynn spent most of her life in California before moving to Arizona. An artist since childhood, she is a life-long learner who has taken every opportunity to study at universities and atelier art schools with professionals in fine art, digital art and animation. At ASU, she continues her study of anatomy and bronze sculpture, and has attended Scottsdale Artists School to study anatomy, figure painting, and biped and quadruped sculpture with professionals from all over the world.

"I love the UAT work hard/play hard culture, the enthusiasm and initiative of many of the students, as well as the passion of the faculty to create the best learning experience possible."

UAT UNIVERSE OF DEGREE PROGRAMS

Managers who lead the game development process from idea and marketing opportunity through, design and production to, delivery and maintenance

graduate — Game Production Management

Programmers who create and test the systems envisioned by designers and artists to create functioning games on many types of devices

undergraduate — Game Programming — online

Managers and leaders who oversee complex programming projects where needs are identified, methods are applied and production is lead from concept to delivery and implementation

Game & Entertainment

undergraduate — Game Art Animation — online

Digital artists who create the 2D and 3D images, textures, interfaces and objects used in games of all types

undergraduate — Game Design — online

The designers who create the stories, interactions and concepts that makes games entertaining and prepares these designs for production

undergraduate — Serious Game Simulation

Programmers and developers who apply design principles of gaming to serious applications — medical, therapeutic, military and education

undergraduate — Artificial Life Programming

Programmers who can model patterns found in nature and apply them to create innovative programming solutions

Designers, programmers and builders of integrated devices and services in cars, homes and offices to give the consumer a content-rich, context-driven experience

undergraduate — Technology Product Design

Masters of a unique combination of technical, strategic, critical, financial, analytical and managerial skills that excel in high-demand management areas

undergraduate — Strategic Technology Development

Applied Technology

Leaders within organizations who create the policies, systems and teams who ensure that data and sensitive information remain secure

undergraduate — Web & Social Media Technologies

Creators of the content, service portals and infrastructures used to link people and organizations over the internet

graduate — Technology Leadership

Managers whose knowledge and understanding makes them skilled at learning technology projects that organizations depend on to succeed

undergraduate — Technology Studies

Develop an interdisciplinary understanding of technology's great opportunities and challenges in the 21st century

Investigators who support organizations, law enforcement and government agencies through the ability to discover and recover data contained in most any device

undergraduate — Technology Forensics — online

map key

- centers of excellence
- degree programs
- master's programs
- **UG** on-campus undergraduate degree programs
- **Online** online undergraduate degree programs
- **Grd** graduate degree programs

Advancing Computer Science (graduate)

The ability to diagnose a programming need and apply a matching methodology using new computer science technologies to create solutions

Implementers of the hardware and software used to create mobile and embedded robotic systems

Designer of complex, but intuitive computer interfaces that ensure a positive, productive experience for the user

Advancing Computer Science (undergraduate / online)

Robotics & Embedded Systems (undergraduate)

Human-Computer Interaction (undergraduate)

Programming

Applied Digital Science

Enterprise Software Development (undergraduate)

Network Engineering (undergraduate)

Emerging Technologies (graduate)

Open Source Technologies (undergraduate)

Developers whose specialty is in developing software data and web solutions needed and used by organizations

The architects of network systems that link business process both physically and digitally

Forecasters who can examine technology trends and apply this analysis to future planning

Programmers who are skilled in the tools of the open source community and can apply them to create innovative and evolving solutions

Information Assurance (graduate)

Digital Arts & Technology

Virtual Modeling & Design (undergraduate / online)

Digital Video (undergraduate)

Digital Media (undergraduate)

Digital Security

Protects organizations and individuals by designing and deploying systems and processes that ensure data and networks are safe from intrusion and failure

Technology artists who apply digital tools, with an eye for design, to create media and interfaces

Innovatively applying the skills of directing, production, composition and writing with digital tools and techniques to create films and effects

Modeling of data in virtual 3D spaces to create simulations, animations and entertainment media

Network Security (undergraduate / online)

Please see www.uat.edu/fastfacts for the latest information about degree program performance, placement and costs.

DECIDE WHICH ONE IS RIGHT FOR YOU

The University of Advancing Technology (UAT) is the technophile's college experience—a geek-friendly community uniquely suited to provide students passionate about technology an ideal place to live and grow. UAT is a private university for geeks that merges the values of the traditional academy with the modern technology campus, a fusion that enhances our ability to fulfill the mission of educating students in the fields of advancing technology to become innovators of the future.

Learning at UAT extends from our students, staff and faculty to the institution itself. UAT's dedication to learning is reflected in our efforts to create and develop new ways of learning that focus on the personal mission and vision of every member of the UAT community.

UAT strives to foster knowledge creation and achieve academic excellence. We are at the forefront of developing academic programs that tend to be unique among academia or emerge years ahead of other school, such as Artificial Life Programming and Robotics and Embedded Systems, as well as our established Game Development majors that merged artistic and programming aspects long before other colleges chose that focus for themselves.

At the heart of UAT's curricula is a technology-infused campus in Tempe, Arizona. This fusion of the traditional academy with the technology-focused curricula creates a distinct, non-exclusionary and geek-friendly university in which students learn to value their own uniqueness and the power of technology in education.

ACCREDITATION

UAT holds accreditations and certifications from such organizations www.uat.edu/accreditation, the Council for Higher Education Accreditation and the US National Security Agency's Information Assurance Courseware Evaluation program.

UAT is accredited by the Higher Learning Commission and a member of the North Central Association.

HIGHER LEARNING COMMISSION
30 N La Salle St.
Chicago, IL 60602-2504

LOCATION

Tempe, Arizona (Phoenix Metropolitan area)

2012 TUITION

Undergraduate tuition: $10,050.00 per semester
Graduate tuition: $6,350.00 per semester
UAT-Online tuition: $5,820.00 per semester
For more information on UAT Tuition please visit www.uat.edu/tuition

ALUMNI

UAT produces graduates who go on to great success with some of the country's largest companies, game studios and production houses. Companies such as Intel, Microsoft, Blur Studios, Sony Online Entertainment and Motorola have hired UAT graduates. Visit www.uat.edu/careerservices to see who has hired UAT alumni.

UAT IS COMPRISED OF

1000 plus students from all

50 states and

4 of the seven continents that average a

3.1 incoming GPA with a

11:1 student-to-faculty ratio, an average class size of

13 students who score an average of

1590 on SAT, and

24 on ACT, and are supported by

75 full- and part-time faculty members who are leaders in both industry and education.

* Information based on data collected from the September 2010 class of incoming freshmen.

The National Centers of Academic Excellence in Information Assurance Education (CAEIAE) Program is an outreach program designed and operated initially by the National Security Agency (NSA) in the spirit of Presidential Decision Directive 63, National Policy on Critical Infrastructure Protection, May 1998. Additional information regarding the National Centers of Academic Excellence in Information Assurance Education Program may be obtained by contacting the Public and Media Affairs Office at (301) 688-6524 or by email at nsapao@nsa.gov.

TAG THIS TO READ MORE STUDENT Q&A OR VISIT www.uat.edu/askastudent

ASK A UAT STUDENT

Q. HOW DID YOU FIND OUT ABOUT UAT?

It was more subliminal than I thought. Back as a freshman in high school I knew I wanted to do game development work, but it wasn't until a sophomore year that "signs" started to show up. Like seeing the advertisement in my Game Informer magazine. When I finally decided to look for schools, I came across UAT again. They had me right there and then because the program is great.

"I recommend UAT because the school has its own 'techy' style where you can be as geeky as you want and no one will judge you. It is also somewhat of a family since the school is smaller and you have a tighter community."

Alex Dinh
Class: Sophomore
Major: Game Design and Game Programming
Home Town: Middletown, Pennsylvania
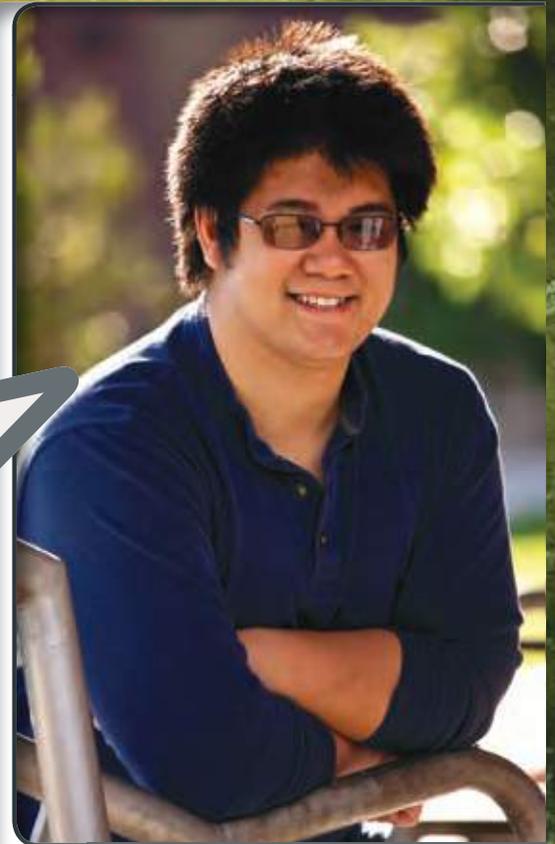
Meet the Staff

The staff at UAT is as passionate about technology as the students and faculty. And, they are just as passionate about their mission to assist students in every facet of their college experience. We are unique because we have created, and continually nurture, a community of students and staff—self-styled geeks, many of them whose personal and professional lives revolve around technology.

Nell Graves

Career Services Advisor

BA, Southwest Minnesota State
MA, South Dakota State

Born and raised in Estherville, Iowa, Nell offers career counseling, and prepares and supports students along their chosen career path. But, she doesn't stop there. She also helps students learn interviewing etiquette and connects UAT with companies to explore job opportunities. Nell learned about UAT from a professional website when she was living in South Dakota. She always wanted to live in a warm climate and a large city, and now calls both UAT and Arizona her home.

"I love many things about UAT, but the one thing that rises to the top is the personalized environment and opportunities to get to know and partner with students on a number of different levels. The rich supportive culture is so personalized and Geek Friendly."

Lori Wiegand

Accounting, Student Accounts Representative

If you don't know her yet, you will. She's the one who handles students' payment for tuition, housing, meal plans, books and fees. She also verifies all charges on students' accounts, collects and processes payments, posts Financial Aid, issues Stipend/Refund Checks and maintains all student accounts. It didn't take Lori long to find UAT and apply after arriving in Phoenix from Lake Crystal, Minn. Her first position was at the Student Support Desk and transitioned to her current position one year later.

"What I like most about UAT is the people and the environment. They're my second family and so supportive. Because I interact so much with students and their families, I love the relationships we develop."
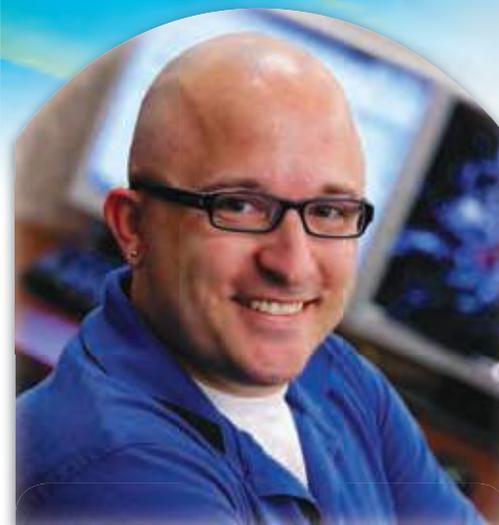
Jason Reynolds

VA Certifying Official

BA, Vanguard University

A native of Tempe, Ariz., Jason helps U.S. Military Service Members and Veterans utilize their education benefits, according to their eligibility, in pursuit of a degree from UAT. He found out about UAT through an employment website and knew immediately it was a position that felt right.

"I enjoy UAT's environment that promotes innovation and UAT's culture that reinforces the importance of continual learning."

G33KOSYSTE

Microsoft Surface

Innovative Tools
The UAT Technology team is investing heavily in cloud services so students can access software from anywhere in the world.

Latest Technology
The University now gives students access to the latest in game development and human-computer interaction through the EMOTIV.

Emotiv Headset

Updated Workstations
The University deploys enough workstations for local system usage for all users. One-third of them on-campus are replaced each year. These workstations have a minimum of 4GB of RAM (about a third of the workstations have 6GB of RAM), Nvidia video cards, and connect to the server environment with a 100MB switched Ethernet connection.

When necessary, the University deploys additional, specialty workstations for specific uses. Above you can see the Emotiv Headset; to the right, a PlayStation 2 TOOL development workstation; and at lower right, a 3D printer that copies and builds three-dimensional models.

PS2 TOOL
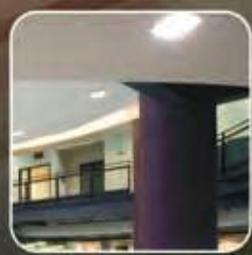
Updated Software
The University offers, at no charge to students, access to professional-level applications that directly relate to their technology field of study.

We call ourselves the University of Advancing Technology and we're quite serious about that, especially the Advancing part. The University's mission is "To educate students in the fields of advancing technology to become innovators of the future." **It would be impossible to innovate the future if our own technology on campus was not constantly upgraded.** Here's a behind the scenes peek at just the most recent upgrades to the geek's playground we have created for UAT students.

Green Screen Room

Updated Infrastructure

Our capabilities are built on Microsoft enterprise server architecture. Our user accounts are managed through Active Directory and through a series of Single Sign-on technologies seamlessly connected to 26 different data systems. The University's datacenter contains more than 60 physical servers and more than 30 virtual servers dedicated for production and student use.

The University is connected to the Internet through a Metro-E fiber connection that allows for upload and download speeds of up to a gigabit per second. Using a combination of Boarder Gateway Protocol and Policy Base Routing, the University has connected the student dorm, Founder's Hall, with a 125 MBit WiMax wireless connection encrypted with Advanced Encryption Standard (AES-256). The Policy Based Routing ensures that if either provider fails, the University maintains connection.

The campus offers free wireless coverage to all students and visitors and maintains a separate network for the University administrators.

To the right you can see a few of more than 60 campus servers and new equipment being utilized in the Green Screen room.

The Cyber Cave

"The Cave" is the new Cyber Security Electronic Classroom where students test tomorrow's information assurance technology.

3D Printer

Log on to **www.uat.edu/g33kosystem** to get the skinny on the latest advances around the UAT campus.

NOT YOUR FATHER'S OS — About the same time your family's desktop computer was being fired up in the late '90s, most likely the original version of Windows was on it. Microsoft was a young adult when a small company named Google was born. Today, Google is a mega force trying to break the long-standing grip of 36-year-old big brother Microsoft in the battle for supremacy. The competition has been fierce and shows no signs of letting up. The real battle now is in the cloud, with Apple inching its way toward a sneak attack. And, as reported in a Nov. 4, 2011, article in *Data Storage Today*, Google and Microsoft already have started a public war of words this year as they compete to sign up businesses, government agencies

Google Chrome OS VS Windows 8 OS

GOOGLE CHROME AND CHROME OS

The competition heated up between Google and Microsoft with the recent launch of Google's Chrome OS for the PC. This Linux-based operating system is designed by Google to work exclusively with web applications. Google announced the operating system in 2009 and made it an open source project, called Chromium OS, later that year.

Unlike Chromium OS, which can be compiled from the downloaded source code, Chrome OS is only available on Chromebook laptops. Since Google Chrome OS is targeted at users who spend most of their computer time on the Internet, the only application on the device is a browser incorporating a media player and a file manager.

Speed, simplicity and security are the key aspects of Google Chrome OS, which changes the concept of what a computer platform is. Unlike Windows, which acts as the foundation for applications, Chrome OS is a platform for services. The user interface is minimal to stay out of your way, and most of the user experience takes place on the web. Google is redesigning the underlying security architecture of the OS so that users don't have to deal with viruses, malware and security updates.

These updates, along with Google's counter attack on Microsoft Office/Exchange/Sharepoint, is fueling the "Go Google" ad campaign and viral marketing via Twitter to promote Google apps. The message? Give your employees shared documents, calendars, email, etc., without the hassles of managing email servers or rolling out software updates. Customers are sent to google.com/gogoogle.

"As a developer and as a 'power user,' I believe that the best software out there is one that is open for the community and is more accessible," says Mali Hirsch, a Scottsdale, Ariz., based web and social media expert. "Google's Open Source philosophy makes its products more approachable for developers from all levels to use. It's easier and cheaper to build something great using the Google platform as opposed to anything else, really. Apple doesn't have the open source philosophy but they just make amazing products that make the User Experience (UX) incredible. That alone creates a cult around it and gives it the advantage over Microsoft."

and universities for their respective cloud-based productivity software.

Many feel Google is pushing the envelope when it comes to innovation and giving new generations what they want. Others feel Microsoft has the edge on functionality. Google is making inroads, while Microsoft clearly still has its strengths. How do the two compare in the recent launch of new cloud-based operating systems, and where does Apple fit in? Who will emerge the victor? You decide.

COMPETITION with Apple

Apple has experienced strong growth for the past few years. The iPod, iPhone and iPad are thriving and generating increased profits and since its iCloud service connects to the cloud, Google's and Microsoft's paths are beginning to cross with Apple more often. Following are two recent examples of direct competition:

Microsoft- Competing with the iPad

So, while Windows 8 can run computers that use mice and keyboards, it will also be Microsoft's first full-fledged attempt to compete with the iPad in tablet computing. The company demoed the new operating system on a variety of devices with touch interfaces including tablets and laptops and one device was an oversized monitor with tiles that could be touched to launch or opened with a mouse.

But, unlike Apple, which only allows application sales for the iPad through its App Store, Microsoft will also let developers sell their programs directly to users.

But, will consumers want one device that doubles as a tablet and PC? Apple is betting not, at least for now, because the iPad runs a different operating system than its MacBooks and Macs. Microsoft hopes to convince users that one device will be all they'll need.

Google-competing with iTunes

Google Music recently was launched in a tug-of-war effort to take the lead from Apple and Amazon.com in audio entertainment distribution. Near the same time, Apple launched its long-awaited iTunes Match service.

Although they have a very different look and feel, both services function similarly: manage music on your computer and mobile devices, store music for you in the cloud and make it easier to access music on different devices, even if the music files aren't on those devices.

Both services work with PCs and Macs, but the Google service is optimized for Android devices while Apple's is designed for Apple's iOS devices. Google Music will play on an iPhone from the Google Music website.

For a comparison of Apple, Google and Microsoft, go to www.uat.edu/OSComparison.

MICROSOFT WINDOWS 8

The turf war intensifies in 2012. Windows 8 will send Microsoft's generations-old desktop platform airborne, into the clouds. In addition to its use on a PC, this new approach to system management will include a new operating system (OS) built for the tablet, and Windows Server 8 built for the cloud.

In the new OS, the new Metro user interface is built for touch and personalized, interactive use. Say goodbye to the familiar desktop screen dotted with file and application icons. The new interface features square or rectangular tiles. Some are static, such as Internet Explorer or Control Panel tile. But most have information useful for you flowing to the surface, rather than opening the icon to search for your information deep within. The calendar tile, for example, includes details of upcoming appointments. A weather tile has the forecast for your chosen city. And a music player can show the album art and the track listing of a song playing in the background.

Featuring a new user interface, Windows 8 will include a set of features built to disrupt or disable malicious code. "Windows has had the operating system market covered for many years now, even though they really don't innovate that much," says Yoni Novik, web designer. "I believe for an alternative operating system to succeed, it can't require too much of a user-experience adjustment (which is difficult). I can see Chrome OS working for a very light-weight system that just needs basic browsing, etc. One issue with Chrome is you can't install Photoshop, Outlook, etc.—you only have available what's on a website or Google-created apps."

CLUBS & GROUPS

www.uat.edu/clubs

PROGRAMMING_CLUB
The Programming Club was founded to create a group environment for members to work on projects and to share knowledge regarding the C/C++ language. The group develops a combination of game and application projects in an effort to build skills, foster teamwork and expand knowledge.

BUILD CLUB
The Build Club was established to share knowledge about various game engines and how they work. All levels of experience come together in this group to learn and teach the fundamentals of building game mods.

THE_ACADEMY
The Academy helps game design and animation students build powerful portfolios by meeting to share new information, give tutorials, critique and offer peer-to-peer training. The Academy focuses on modeling/texturing, animation, 2D and 3D art.

TRADING_CARD_GAME CLUB
The Trading Card Game Club plays a variety of Trading Card Games with an emphasis in Magic: The Gathering. The group offers both casual and tournament play.

TAPS
The purpose of T.A.P.S. (The Academic Paranormal Society) is to explore the world of the paranormal and the technology that is used to conduct paranormal investigations. The group conducts investigations and reports news regarding paranormal activity.

WEB_DEVELOPMENT
The purpose of this group is to gain a better understanding of working on websites in a group environment.

JAVA_USER_GROUP
To join the Phoenix Java User's Group, all you need to do is register and attend. This group is aimed at anyone with an interest in Java technology. There are no membership dues.

ANCIENT_GAMES
The Ancient Games Club is for games that are considered "ancient" to the student body because they are not electronic in nature. Our goal is not just to play games but to learn from them by not just exercising our mental muscles, but learning why games should be taught to children. For each game we will learn how to play it, but also strategies for winning, how to teach it, what it teaches and how to best use the game for educational benefit.

PC_USER_GROUP
Phoenix PCUG is based on the idea of users helping users learn computers. The Phoenix PCUG is a member of the Association of Computer User's Group (APCUG). The Phoenix PC Users' Group meets three times a month to reach users all across the Valley of the Sun. Come join us!

HATS
The H.A.T.S. Club is a network security group that focuses on expanding the art of Net Sec. The group seeks out and discusses new ideas in the hacking field and shares ideas about information security technology.

PHOTOGRAPHY
The UAT Photography Club takes regular trips around Arizona and surrounding communities to take photographs. The club hopes to showcase a lot of its work in coffee shops and galleries around the Greater Phoenix Area. The club will be going over many technical and artistic techniques with photography.

NET_SECURITY
DC480 is working on creating a device that will be entered in the annual DefCon conference for hackers. The DC480 group gets its name from DefCon (DC) and the local 480 telephone area code.

RHYTHM_GAMES
DDR (Dance Dance Revolution) is a game with a simple concept: it is based on hitting arrows that are flashing to the beat of the music. To achieve this, you must step on the appropriate arrows on the dance pad under you with accurate timing—hence it makes the illusion of dancing. Songs range from slow and easy to technical and fast—meaning there is a wide selection of difficulty. As you progress in game play the concept behind the four arrows begin to evolve into the coordination of foot movement and, if desired, dance ability. And that's all there is to it!

ANIME_CLUB
The purpose of the Anime Club is to bring together fellow students to watch and discuss anime, how it has evolved, where it is going and how the students can find a niche if they want to work in or with anime. Our goal is to promote Japanese anime.

PAINTBALL
Paintball team – Team Adrenaline! In-season games will take place January – April and then break for five months, then pick back up for October and November. Off-season takes place May – September and then back on for two months before we end the season in December due to finals and holiday events.

COLD_FUSION USER_GROUP
Adobe's RIA technologies enable you to rapidly build and deploy the most engaging applications across browsers and on the desktop. The Phoenix Cold Fusion Users Group hosts special events to share exciting new information on Adobe's platform tools and technologies for building RIAs. Be part of the fun and excitement and join the rest of the Adobe developer community by participating in this group!

EXTREME_SPORTS_CLUB
UAT's Extreme Sports Club offers skateboarding, rock climbing (indoor and outdoor), BMX biking, surfing and snowboarding!

FENCING_CLUB
We just recently competed against some of the best fencers in the country. Five fencers went into the competition electrically and two non-electrically. Come join our team!

BIBLE_CLUB
The UAT Bible Club exists to provide a forum for the study and discussion of The Bible. We have a relaxed, informal atmosphere where everyone is equal and free to be heard. All are welcome to participate, regardless of beliefs.

QUARTER CIRCLE_FORWARD_ CLUB_(QFC)
We are the fighting games club. We do everything from SF: 3rd Strike to Tekken to Melty Blood, we play it all. Discuss techniques, moves, combos, etc. Not good at fighting games? Come anyway and practice with us!

Did you know...
There are more than 20 student clubs and organizations, such as TAPS, the Paintball Team, Net Security Club and the Photography Club. See more at uat.edu/clubs
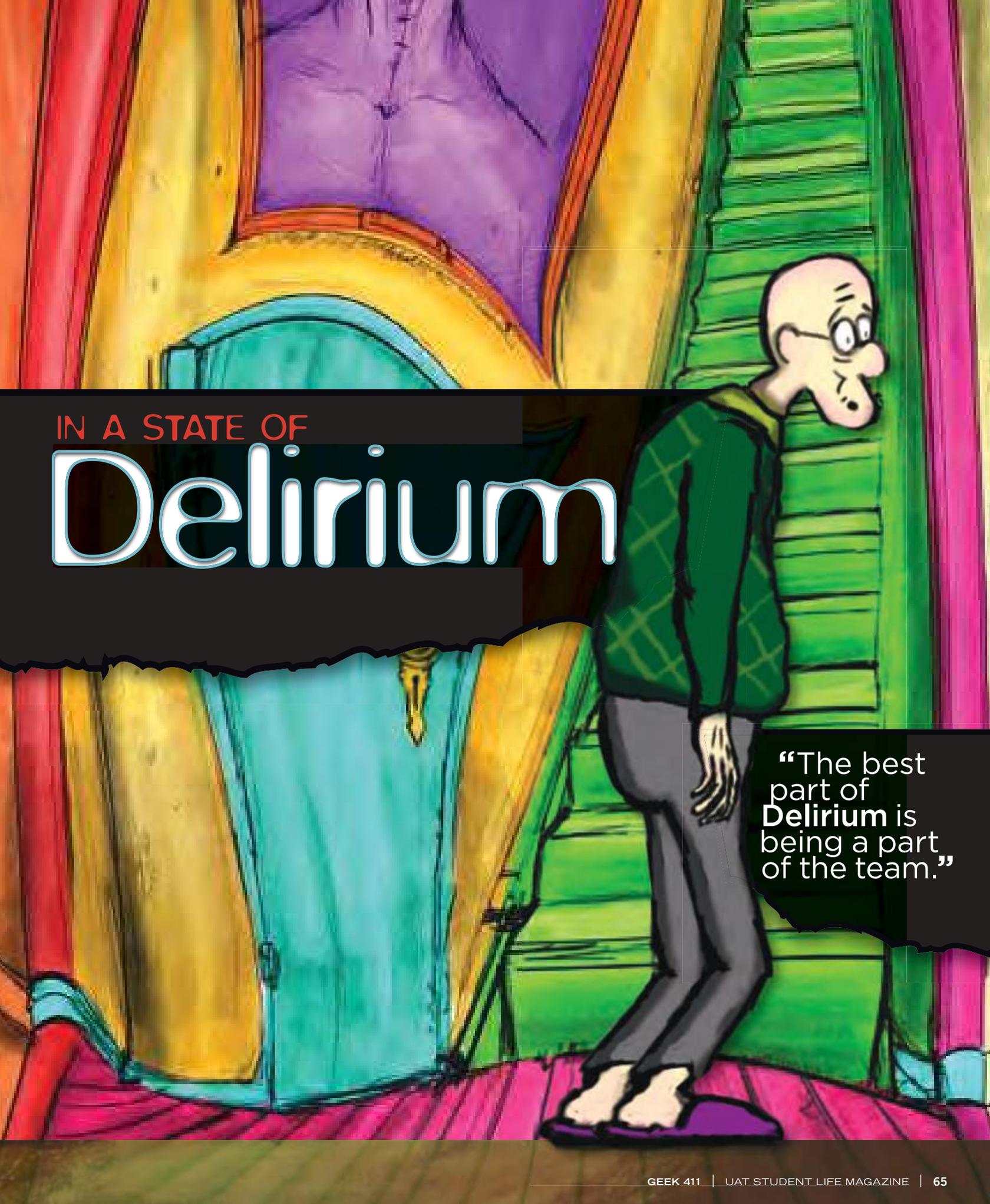
IN A STATE OF
Delirium

"The best part of **Delirium** is being a part of the team."

Fast forward 50+ years.

THE TEAM

Pralie Dutzel	Project Manager, Lead Game Designer
William Tate	Designer
Brian Hartong	Lead Artist
Ryan Ellis	Lead Programmer
Elvin Natal	Artist
Raul Garcia	Designer
Patrick Roy	Artist
Cody Furr	Designer

"The game is definitely unique in the sense that there aren't many projects similar out there."

You're an aging man living in a rotting house who wakes up to find yourself in a demented dream world where you're forced to confront your fears and inner demons, one by one. You're in a state of delirium; that, or you're just playing the amazing new game *Delirium*.

Few games provide thrills while also taking you on a mysterious, introspective, thought-provoking journey of self discovery. *Delirium* is the new XNA game that will soon be available for download on the Xbox Live Indie (independent) Games Channel at the cost of only $1.00 with hopes of one day getting published by Microsoft.

Delirium is a horror-themed, 2D action-adventure platformer design with a unique art style. Players begin a reverse journey through time where they begin the game as an old man, and through a series of events, are forced to relive their lives—reverting back to childhood, teen and adult years—and confront their worst fears. The game helps players reflect on their lives, ponder how things could have been different and what would have happened had other choices been made. A haunting parallel to real life, in some ways.

Delirium

William Tate

" I've always had a passion for the horror genre. I've written horror fiction as a hobby, and I thought it was time to put my skills to the test," says Pralie Dutzel, a Game Design major from Galveston, Texas. "I'd love to continue developing these types of games and possibly open my own studio. **"**
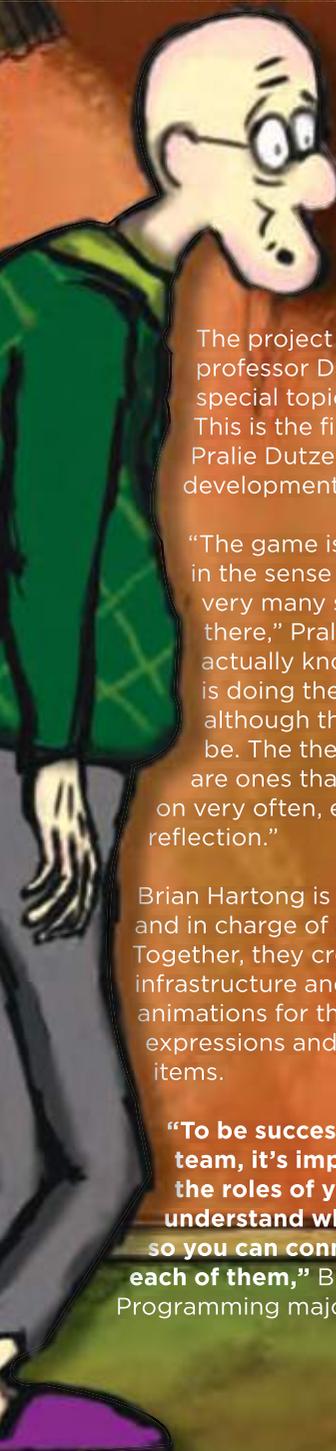
The project was initiated in professor David Wessman's special topics class, SPT323. This is the first time project lead Pralie Dutzel has led an entire development team.

"The game is definitely unique in the sense that there aren't very many similar games out there," Pralie says. "I don't actually know of any game that is doing the same thing we are, although there certainly could be. The themes in the game are ones that aren't touched on very often, especially personal reflection."

Brian Hartong is lead programmer and in charge of a sub team. Together, they create the infrastructure and character animations for the game, like facial expressions and locations of the items.

"To be successful on a game team, it's important to learn the roles of your teammates, understand what they're doing so you can connect better with each of them," Brian says. The Game Programming major from Bridgewater,

N.J. adds, **"The best part of *Delirium* is being part of a team that works well together."**

Utilizing colorful scenes, the game features environments such as a twisted dream version of the house, a lonely forest and a prison camp. Utilizing emotional horror rather than traditional horror shock tactics, the game creates environments of claustrophobia and plays on other fears.

"I definitely wanted to do something different," Pralie says about the art style. "Most horror games you see, even 2D ones, they're very, very dark and boring."

Digital Media major William Tate, from Laken Heath, United Kingdom, serves as lead artist for the project. William had been given a lot of freedom to determine the art style of the game as long as it was not monochrome and grungy. "It is no secret that horror games over the past decade or so have really only had a few color palettes, so aiming for a more colorful and vibrant set of shades would vastly benefit the originality of the project," he says. His work on this project is inspired by the art of Alex Pardee, known for

his use of full color and bold lines in his surrealistic and horrific scenes. William's other major responsibility is making sure that the artists under him are producing work that is consistent with the overall style of the game.

"I've learned so much about how this project actually works in the pipeline," William says. "Seeing it come together is magical."

As they work on finishing the game, the Delirium team is preparing to pitch the game for sponsorship to attend the next Game Developer's Conference, where they can present it next spring for feedback.

In late December, Team Katastrophe received the exciting news that *Delirium* was selected for UAT sponsorship to the Game Developers' Conference (GDC) 2012. Team members will head to San Francisco in March to present the game to gamers, designers, programmers and publishers for an opportunity to learn more about game development and get *Delirium* noticed by those who can determine its future. ∎

For current updates on *Delirium* and more information on the team, go to www.uat.edu/Delirium

When you can watch an inanimate object spring to "life" or react before your eyes, it's either a science fiction movie or the union of technology and art in UAT senior Raul Garcia's Student Innovation Project (SIP): Ferrofluid Sculpt.

Combining his love for art and passion for technology, the El Paso, Texas, native is creating a stand-alone sculpture for public display. Target for completion is mid 2012.

You can call Raul a sculptor. His degrees in Virtual Modeling and Design (summer 2011) combined with Robotics and Embedded Systems (summer 2012) help him approach his SIP from both technological and artistic points of view to create a unique work of art.

Made of metal, his sculpture will include ferrofluid, a liquid composed of nanoscale magnetic particles which respond to a magnetic field. There are many sculptures that incorporate this strange liquid to create spiked shapes with the help of electromagnets and electricity, including those by Japanese artist Sachiko Kodama. Inspired by her work yet wanting to take his project to new heights, Raul is exploring different reactions and unique new shapes with ferrofluid. To do this, he wants to develop kinetic art that interacts with people.

"A unique twist to the sculpture will be to allow the audience to control the reaction of the ferrofluid substance to a point where more dynamic shapes and actions are displayed," Raul says. "That reaction will be generated by Neurosky or Emotive mind-reading headsets worn by each observer. The thought of using your brain to move objects, psychokenisis, has intrigued many for hundreds of years," he adds.

The sculpture will stand approximately 6 feet high, 2 feet long and 2 feet wide. Sections include:
1st: Main display made out of glass. Containing water, ferrofluid and a metal sculpture of the human head placed in the center of the display.
2nd: Electromagnets are connected to metal rods touching portions of the cranium of the metal head.
3rd: Contains a computer which collects data from the mind-reading headsets and sends signals to the electromagnets, and a power supply.

"Raul's SIP is fostering his love for exploration and his desire to innovate," says Digital Media associate professor Vesna Dragojlov. "I'm very impressed with Raul's level of research; he's a true intellectual who takes advantage of everything at UAT," she says.

"My passion is learning new things, which is why this project and my time at UAT is so fulfilling," Raul says. "I love being a student."

ART OR SCIENCE FICTION?

NAME: Raul Garcia, Jr.
CLASS: Class of 2012
MAJORS: Virtual Modeling and Robotics & Embedded Systems
ORIGINALLY FROM: Bakersville, CA
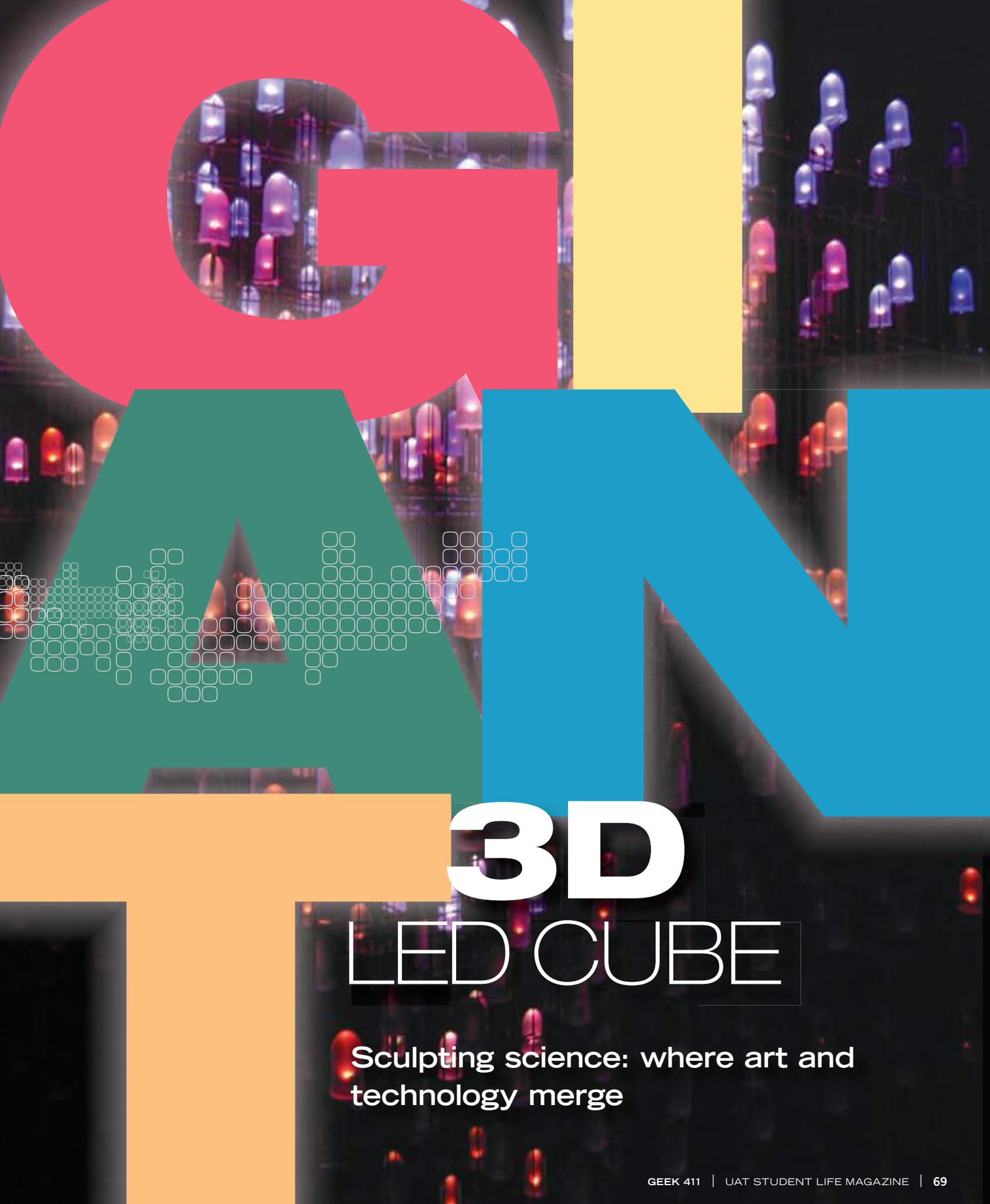
3D
LED CUBE

Sculpting science: where art and technology merge

Sometime around the end of 2012, there will be a massive, glowing, multicolored 3D LED cube on display at UAT. You might even see a 3D image of yourself dancing inside the cube—or, maybe just a 3D version of yourself standing there in awe.

It's a project that Ryan Carmain and Raul Garcia, Jr., have been intensely working on, with guidance from professor Ryan Meuth, since October 2011. Ryan and Raul are Robotics and Embedded Systems majors—both are graduating in 2012. Their LED project started out as an idea for a small 3D cube, but it has exploded in size, complexity and awesomeness.

Their 3D LED cube is now on track to become a huge display at UAT. It will be used by students in the future to develop 3D applications such as games, art and robotics.

"It can be a platform that students can design games for," says Meuth. "The Arts and Animation students can write displays and animate models. This is a prime platform for Human-Computer Interaction students because the sensors and modeling are things those students deal with."

An LED cube of any size, unto itself, is a complicated project. Some companies have created big 3D LED cubes. But, not many exist and almost none of them have been created by students.

"Large companies will make these cubes for fancy displays, but they have a team of engineers," says Meuth. "These guys are pulling it together from really simple parts that are commonly available."

Ryan and Raul's 3D LED cube is being developed with openFrameworks, which is an open source system for creative coding. Typically, the C++ language is used.

The guys are incorporating Microsoft's Xbox Kinect into their design. Kinect uses infrared cameras to detect a person's image. Then, it transports a 3D image into a video game. The idea is to literally put yourself inside the game.

"We started to talk about how just building an LED cube is not enough for UAT," says Raul. He's working on his second degree at UAT after getting his first in Virtual Modeling and Design. "We thought about adding a touch-screen interface. Then, I suggested we use Kinect. Everything is going wireless, so I thought that would be a good idea."

The 3D LED cube will ultimately be 24" x 24" x 24" and it'll be made up of 13,824 LED lights—each displaying three colors. Their 3D LED cube will contain more than 41,000 control signals.

Just to put all that in perspective, Ryan and Raul spent about five weeks building a single 8" x 8" panel.

Ryan is working on the hardware, including using UAT's 3D printer to create a prototype of the jigs that will house those nearly 14,000 LED lights. Raul is using openFrameworks to incorporate the Kinect 3D camera technology into the cube.

Both Ryan and Raul came up with the idea for a 3" x 3" x 3" LED cube to apply for UAT's Artistic Innovator Scholarship. Ultimately, they each received a $1,000 scholarship as a result of the project. "They built a small cube of LEDs," says Meuth.

Monitor the team's progress at www.uat.edu/ledcube

"Normally, you'd have a flat sheet of LEDs. Now, they're taking a flat sheet and stacking them on top of each other to create a cube."

"It started out as an idea for our scholarship," says Ryan, who grew up about 45 miles north of Indianapolis. He's planning to work for NASA after he graduates. "From there, we decided we could contact the school and get funding for it. Then, I got the suggestion to turn this into my Student Innovation Project, as well."

Ryan and Raul's next step will be a steep one—fortunately, at UAT, Ryan and Raul have all the resources they need to make it happen.

"What I like most about UAT is how open the hardware lab is," says Ryan. "It's easy to walk up here and just say, 'Hey, I want to build that,' then talk to a professor about doing it." ■

Keep up with Raul and Ryan's progress on the UAT robotics blog. Go to www.uat.edu/LEDCube

Robo-Slider Dolly

Christopher Burns, a sophomore from Thorton, Colo., is planning to start a company that builds devices to make it easier for disabled people to interact with technology. Chris has been getting hands-on training in UAT's Hardware Studio— the robotics lab.

He recently completed a Robo-Slider Dolly in the lab at UAT. It's a mechanized system that precisely carries a movie camera along train-track-type rails.

His reason for creating it is so UAT's Digital Media students and filmmakers can take the exact same shot, at the same speed, every single time.

"The problem with the current rig is that the cart is not automated," says Chris, who's majoring in Robotics and Embedded Systems. "You are not getting the same consistent speed every time. They needed a rig they can bolt on whenever they want and take it off when they don't need it." He delivered the rig for use to the digital video department and is still working in conjunction with them for suggestions and ideas for future upgrades.

While most of the work has been done on his own, UAT students Ryan Carmain and Kasey Norman helped out with the software.
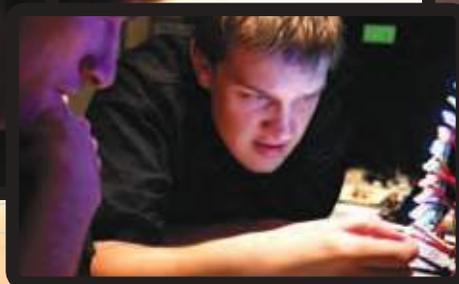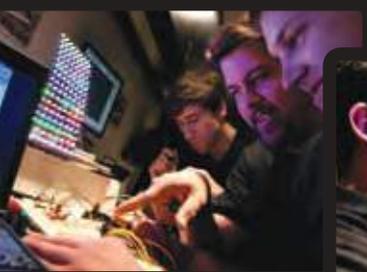
STUDENT'S INNOVATION IS FARSIGHTED

UAT STUDENT CREATES A GAME AND CONTROLLER FOR THE VISUALLY IMPAIRED

It's hard for Game Design student Sara Wakeman to imagine anyone not playing a video game who wants to, especially those with a physical challenge. That's because she's loved video games—playing and dismantling them to see how they work—since she was a child in her home town of South Salem, N.Y.

Sara's passion for games inspired her Student Innovation Project (SIP)—an interactive, audio, role-playing game (RPG) and Braille controller that might just be the first full-fledged design of its kind in the country. Her game is unique because it represents both aspects of the game, designed together, whereas other games for the visually impaired are often designed as puzzles. Sara's is more complex.

The goal for her SIP (encouraged for every UAT student) was to design and create a functional RPG video game demonstration that can be played in its entirety without visuals. In addition, she modified an Xbox 360 game controller to include Braille language markings for visually impaired and blind users.

INNOVATIVE THINKING

"I realize millions of people have visual impairments, but just because their vision is limited, doesn't mean they shouldn't be able to enjoy games," Sara says. "Video games are branching out to be so much more than just a visual medium and there is a lot of room to expand their access and their purpose, for entertainment and beyond," she adds.

Sara's innovative thinking was encouraged by Sara's professors—including Craig Belanger and Ken Adams—who provided the hands-on learning environment and support needed for her to create a project addressing real-world needs.

"Sara's project is exactly what we should expect from technology students in the early part of the 21st century," said Craig Belanger, who teaches the PRO300 (Student Innovation III) course as part of series of courses leading to completion of SIPs at UAT. "She clearly put some thought into what she was going to create and then made good use of the available resources to come up with a unique, functional piece of work. What impresses me most, however, is the thinking behind the project—she figured out a way to make gaming more inclusive for a forgotten class of gamers. If we want our students to change the world for the better, we have to guide them toward an understanding of what the world needs. Sara is clearly walking that path already."

INSPIRATION FROM ART HISTORY

Inspired by what she learned in an Art History class, Sara chose the game title Fragments of Ara Pacis (Ara Pacis is Latin for Altar of Peace) to depict the actual historical altar created in honor of Augustus which represented a time of peace.

In Sara's fictional story, the player's character (Jeina) is "marked" by the gods and believed to be a chosen sacrifice. Everyone wants her slain to appease them and ensure that peace continues within the land. She escapes her public execution and eventually learns of a lost altar of peace which had since fallen apart but could be restored by finding its missing artifacts. She goes on a journey, along with several allies she meets along her journey, to rebuild the altar of peace as a way to communicate to the gods, trying to save Jeina's life and restore peace among the god-fearing land, all while fighting off those who want her dead.

SEEING ISN'T ALWAYS BELIEVING

What's even more unique about this story is how it's experienced. Rather than having a video screen, the screen in Sara's visually impaired adaptation is completely blank. Transforming this game to something that doesn't rely on visual memory was a challenge because Sara and her team had to flip to a physically descriptive platform. Compared to visual storytelling where, for example, a room can be described by color and general appearance, she designed the game to verbally describe temperature or textures like "The room is cold" or by what could be felt and recognized within the area. The game becomes an interactive story book, where your pathway choices impact what occurs and ultimately impacts the game's conclusion. When the story describes a scene and then provides verbal options, the gamer can choose the pathway by hitting the Braille-labeled buttons on the controller to achieve the desired result.

The concept controller was first created with UAT's specialized 3D printer, which literally creates a 3D model of the concept based on the digitally constructed model. After printing, the project is immersed in an acid bath in order to remove excess printer support materials. Amazingly, it was printed all at once with a honeycomb interior (to save materials) and was the largest single-printed structure ever created at UAT. Following its print, Sara did not have to reassemble anything.

Even more than the challenge of flipping the game concept on its head and modifying it from a different point of view, was the challenge of working with the limited timeline Sara and her team gave themselves for this project—a single four-month semester.

Sara's SIP has caught the attention of many people, including administrators at UAT. She was awarded UAT's Needy Innovator Scholarship for addressing a real-world need with her innovation. Sara plans to put the $1,000 she received toward her continuing education. ∎

FLIGHT OF THE MELVIN

3~2~1 Blastoff!

Zac Robinson

Erica Faccone
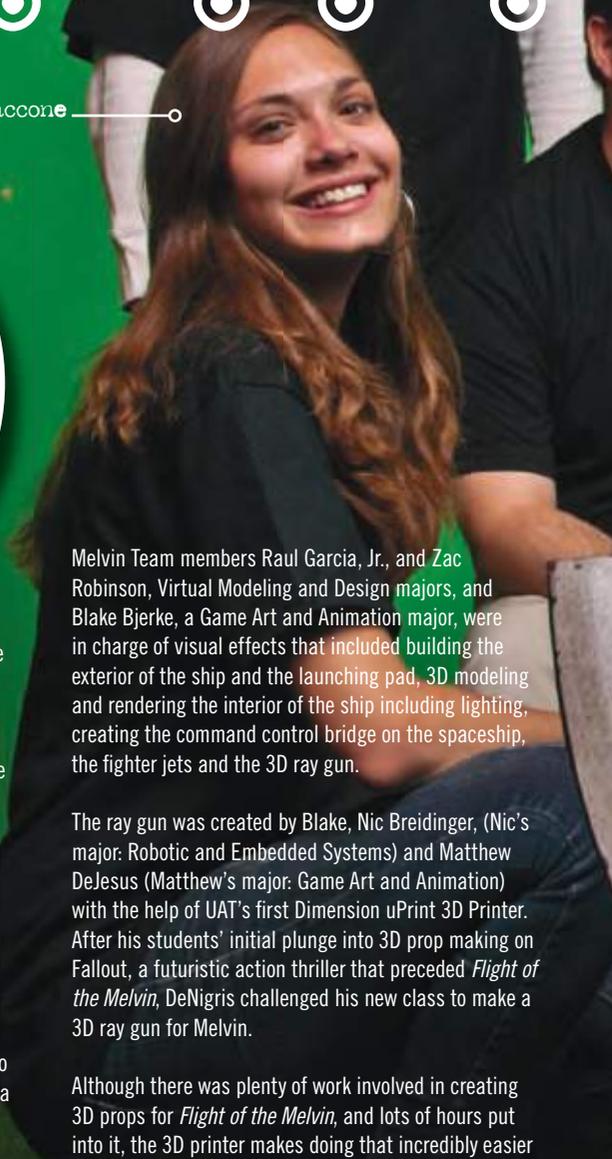
The newest student short film *Flight of the Melvin*, is out of this world, but with real world benefits for 15 students who created the film under the direction of Digital Video professor Paul DeNigris.

The story, set in the early 1970s, is about a 14-year-old space geek named Melvin, who is constantly nagged by his mom to "clean the danged birdcage." Already intrigued with space travel and fed up with the nagging, Melvin gathers some spare parts, builds himself a jetpack, fires it up and flies away.

Once airborne, Melvin collides with a spaceship, finds himself in the middle of an invasion and is taken aboard. Eluding his captors, Melvin destroys the spaceship and saves the world. Did Melvin dream all of this or did it really happen? The full story unfolds, and the surprise ending revealed, for those who view the 7-minute film themselves.

The film's array of visual and sound effects, and creative story writing is what makes it an intergalactic success. From producing to compositing, design work and visual effects, Team Melvin designed and built all props and created each visual and sound effect. Props included the spaceship, launcher, ray gun and jetpack. With the help of a green screen and other special effects technology, Melvin becomes an action packed, 3D, "sci fi" fantasy.

"The Digital Video program at UAT makes possible endless opportunities to bring stories to life in imaginative and innovative new ways," says DeNigris. "The end result is a professional, high quality finished product they can include in their portfolios to give them a foot in the door and help launch their careers related to digital video," he adds. "Not only did the students learn a lot, but they also had a great time, too."

Melvin Team members Raul Garcia, Jr., and Zac Robinson, Virtual Modeling and Design majors, and Blake Bjerke, a Game Art and Animation major, were in charge of visual effects that included building the exterior of the ship and the launching pad, 3D modeling and rendering the interior of the ship including lighting, creating the command control bridge on the spaceship, the fighter jets and the 3D ray gun.

The ray gun was created by Blake, Nic Breidinger, (Nic's major: Robotic and Embedded Systems) and Matthew DeJesus (Matthew's major: Game Art and Animation) with the help of UAT's first Dimension uPrint 3D Printer. After his students' initial plunge into 3D prop making on *Fallout*, a futuristic action thriller that preceded *Flight of the Melvin*, DeNigris challenged his new class to make a 3D ray gun for Melvin.

Although there was plenty of work involved in creating 3D props for *Flight of the Melvin*, and lots of hours put into it, the 3D printer makes doing that incredibly easier

Raul Garcia

Matt DeJesus

Paul DeNagris

Jarred Oppie
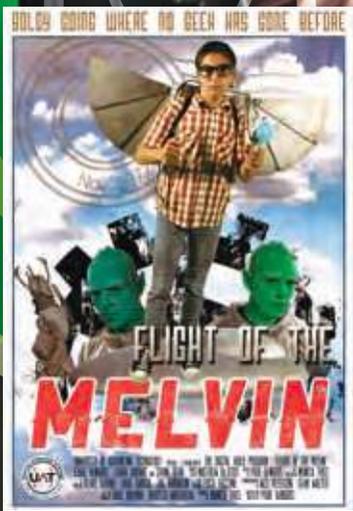
TEAM MELVIN

Blake Bjerke
visual effects

Raul Garcia
visual effects

Nic Breidinger
electronics

Austin Jensen
2D design

Matt DeJesus
design work,
concept artist

Alyssa Mann
design work,
compositing

Jason Dye
grip on production
prop fabrication,
design work

Jared Oppie
grip and electric

Erica Faccone
model-making,
production sound,
compositing

Zac Robinson
visual effects

than if students had to make handmade props. "What a great collaboration we had, working together," said Erica Faccone, a sophomore majoring in Digital Video who worked on the movie's sound, post production and compositing. "It was ok to discover we didn't get it right the first time but ultimately learned and succeeded by doing it together. There's nothing quite like the hands-on experience you gain and the teamwork that occurs," says Erica Faccone. "You pull together to make it happen. It's real life."

Melvin's producer, Monica Thies, is a recent UAT graduate who now lives and works in LA as a production assistant on the new NBC tv series *Awake*. "Working on *Melvin* was so much fun, I loved it and am so proud of this film," she says. "Professor DeNigris's class was the best and a good prep for the real world. We had a really strong production team which taught us the importance of collaboration. One of the best parts was making the jet pack. It was Paul's idea to make it out of Igloo

thermos bottles.

Through it all, the teacher-student relationship remains strong, even after graduation. "Professor DeNigris is a great mentor," Monica says. "I still connect with him to ask him a question or two now and then, even in my new job, and he is always so happy to help. Now that's support that's light years ahead!"

Flight of the Melvin has been submitted for consideration in Phoenix's International Horror and Sci-Fi Film Festival. The film will ultimately be submitted to about a dozen film festivals and travel the circuit around the world. Films created in DeNigris' class traditionally are accepted into film festivals and have won several awards. The student film *Fallout* is a prime prime example, having already earned two awards at the LA Movie Awards, Award of Excellence and Best Editing. ■

Thinking in
3D

PRINTER INTRODUCES MULTIFORM TANGIBILITY

Take one ultra cool printer about the size of a compact refrigerator, mix with "sky's the limit" innovation, a whole lot of imagination, and you get 3D projects and movie props that create a whole new world (or eerily bring back an old one).

Thanks to UAT's Dimension uPrint Personal 3D Printer, ray guns, full-length swords and even game controllers are being made. "While small-scale items often get made with the printer, I encourage students to think bigger and stretch the outer limits of the 3D printer's capabilities," says English Literature professor Micah Chabner. After the printer made its much anticipated arrival in 2009, projects are not only getting bigger but also more innovative.

JOSH FOLLIS: The Knight Sword (King Arthur-themed blade)
MAJOR: Human-Computer Interaction
GRADUATION: Summer 2013

When you're an avid fan of the medieval time period and must complete a midterm and final project in ENG415 King Arthur Literature, what do you do? Josh Follis from Fredericktown, Mo., decided to build a life-size sword, thanks to the university's Dimension uPrint Personal 3D printer. Follis has a passion for medieval weaponry and designing swords/sabers. After inventing his own one-of-a-kind design, he printed the four-foot sword which became the largest design project to be produced by the printer to date.

"The process took me more than 36 hours to complete, including painting," said Follis, "and taught me so much about how to design 3D projects in a real-world, professional manner."

SARA WAKEMAN: Braille Modified Xbox 360 Controller and Interactive Audio Role-Playing Game (both for visually impaired users)
MAJOR: Game Design
GRADUATION: December 2011

Inspired by the innovation and encouragement from her professors to address a real-world need in her classes, Sara wanted to share her love for playing and modifying games with those who are visually impaired. Her Senior Innovation Project (SIP) was a Braille-modified Xbox 360 controller and interactive audio role-playing game, Fragments of Ara Pacis "Alter of Peace" (see the full article on page 72 of this issue.) To date, the Braille adapted controller is the largest single-printed structure to be produced. "It took me 48 hours to print it, including acid bath, and I didn't have to reassemble anything after it came off the printer," says Sara, who hails from South Salem, N.Y.

Blake Bjerke, Nic Breidinger and Matthew DeJesus: Ray Gun

BLAKE BJERKE:
MAJOR: Game Art and Animation
GRADUATION: May 2011
NIC BREIDINGER:
MAJOR: Robotic and Embedded Systems
GRADUATION: May 2011
MATTHEW DEJESUS:
MAJOR: Game Art and Animation
GRADUATION: May 2011

When you work on a project that is intent on saving the world, how far do you go to accomplish your mission? Above the clouds and back. Blake Bjerke, Nic Breidinger and Matthew DeJesus developed the ray gun as a prop for the short student movie— *Flight of the Melvin* (see full article on page 74 of this publication).

Overall, the ray gun took 15 hours to complete. "It was done in high detail, so the layers are really thin," says Blake, who worked on *Flight of the Melvin* before he graduated last Spring. "I had to design each individual piece and assemble it. Then, I'd print it and dip it in acid wash for a few hours at a time." Blake worked off a design created by Matthew DeJesus. "I looked at movies like *The Day the Earth Stood Still*," says Matthew.

The final step in making the 3D ray gun was Nic Breidinger's. "I took the ray gun and basically hollowed it out," says Nic. "I wired it up, put batteries in it and stuck a trigger on it." The ray gun is the size of an oversized pistol, can fit in your hand and shoots a blue light.

Team Members

Terry (Joe) Gohn - Texture artist
Major: Game Programming
Year: Sophomore

Dima Goryainov - Concept Artist
Major: Digital Media
Year: Senior

Odom Keo - Character Concept Artist
Major: Game Art and Animation
Year: Senior

Daniel Loo - Environment artist
Major: Game Design
Year: Junior

Joshua Morrison - Concept Artist
Major: Game Art and Animation
Year: Freshman

Winston Powell - Character Artist
Major: Game Art and Animation
Year: Senior

Devin Sherry - Senior level designer
Major: Game Design
Year: Sophomore

James Scott - Lead Character Artist
Major: Game Art and Animation
Year: Senior

William Tate - 3D Environmental Artist
Major: Digital Media
Year: Senior

SURVIVAL OF THE FITTEST
AFFLICTED

Michael Nathan Benson - Systems Designer
Major: Game Art and Animation
Year: Sophomore

Tristan Parrish Moore - Project Lead
& Game Designer
Major: Game Art and Animation
Year: Senior

Chris Jennewein - Project Manager
Major: Game Production and Management,
Masters program
Year: Second semester

Daniel Strayer - Lead Programmer
Major: Game Programming
Year: Senior

Estevan Lopez - Lead Level Designer
Major: Game Design
Year: Sophomore

Patrick Gantt - Lead Artist
Major: Game Art and Animation
Year: Senior

Zack Sparks - Writer
Major: Game Design
Year: Senior

Alexander Bascom - Programmer
Major: Game Programming
Year: Sophomore

Alex Dinh - Level Designer
Major: Game Design and Game Programming,
Year: Sophomore

Blake Bjerke - Senior Environmental Artist
Major: Game Art and Animation,
Year: Alumnus (2010)

Chu Cheung - Level Designer
& Systems Designer
Major: Game Design
Year: Senior

TEACHERS
David Wessman
Ken Adams

Limited resources. Riots in the streets. Survival of the fittest. It's not even planet Earth we're talking about. Real life scenarios meet science fiction to create *The Afflicted*, a large scale, three-team multiplayer shooter game set in the context of a collapsing militaristic society.

The game is meant to simulate the experiences of the LA riots of the '90s and the recent riots in Europe, only in a science fiction setting on another planet. The story centers on the fictional planet Helios, once terraformed by corporations for sustainable life. With a mysterious problem that makes the planet uninhabitable, its companies and people jump ship and the remaining residents fight over what's left of their surroundings.

Players are dropped into a free-for-all battle of survival, utilizing a free-running movement system (similar to parkour) to navigate the world. Three online teams, each with up to eight players, compete for food and resources via cultivation, combat and rummaging—like a real-time strategy game, with individual contributions controlling the game's outcome. The game is heavily focused on rewarding teamwork and cooperation. Real-world applications are in play.

Teams loot to gather what they need to defend themselves and survive. They collect food, water, weapons, construction equipment and more. Players have the ability to shape the play space by creating barricades, destroying obstacles and moving through multiple locations as the rounds progress.

"What's key in this scenario is coordinating with a group of players to survive in this riot simulator," says Tristan Parrish Moore, Game Art and Animation major who served as project lead and game designer. "We don't want people to feel like it's this team versus that team; we want it to feel like it's a group of people struggling for survival."

In addition to Tristan's role, *The Afflicted*'s team of 20 students was supported by four UAT faculty members. Game Design professor Ken Adams served as sponsor and Game Design professor David Wessman also provided assistance through his GAM405 course. The game has also become a Student Innovation Project (SIP) for several students, who were assisted by SIP professors Craig Belanger and Roy Trouerbach.

"The team was very focused, dedicated and driven," says Adams. "If they didn't know how to do something, they would figure it out themselves. That's how it is in the real world. The project was a lot of fun and very cool."

There are many unique aspects in *The Afflicted*. Game play; use of time; the creation of a different, militaristic environment; and innovative player movement systems are just some examples. The game is high energy with more complexity than the average shooter game. Combat is encouraged, but not

THE AFFLICTED

necessary, to gather resources though you can eliminate other teams by stealing their goods (like food) to prevent re-spawning. The game ends with the team garnering the most goods declared the victor.

Daniel Strayer, a Game Programming major, served as lead programmer for *The Afflicted*. "We built many of the game's hard-core movement systems from scratch, such as the barricades and collecting items in the field. We're taking existing concepts and adapting them to create innovative designs that are unique to our game," he says.

The game's art style also is a signature factor. "We're trying to emulate professional industry standards," says lead artist Patrick Gantt, a Game Art and Animation major. "It's great to work as a team because you produce a much higher quality project than working alone."

Work on *The Afflicted* began in 2010 when Moore pitched the game idea to the Unreal Development Kit club, a student-led group that comes together whenever a game project idea arises and students want to use the club's software to create a game.

The Afflicted team hosted a public pre-alpha playtest last July to find bugs and glitches in the game. Moore was excited to see players take to the game, sometimes for hours on end. "We had people who stayed the entire two hours, which was really awesome." He added that running the playtest and seeing people enjoy the game was one of the most rewarding moments at UAT. "I had goosebumps."

Tristan's advice for students: "Make projects, make games, do something on your own outside of classes.

Take what you learn from class and multiply it by 10 or 15 to make as many games independently as possible." *The Afflicted* is his seventh video game.

The team is looking at two or three more phases of game development, with a goal of finishing it by year's end and releasing it initially for free. They already have established connections with a small independent gaming company that is strongly considering an investment in this project. Inroads to Valve & Steam make it possible for this to be published as a legitimate game. ◼

See the game in action.
Go to **www.uat.edu/Afflicted**

M. Vixi

[GEEKED SINCE BIRTH]

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