geek 411

The University of Advancir… e Magazine

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LOOK FOR THESE MICROSOFT TAGS

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 phone to **http://gettag.mobi**
Or go to **www.microsoft.com/tag/content/download/**

STEP 2

Look for Microsoft 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.

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uat.edu/robotics

THE INVASION HAS BEGUN

ROBOTICS ARE TAKING OVER.

> Learn how to design and implement intelligent software systems for autonomous robotics platforms.

> Use the UAT Hardware Lab to build, create and test robotics utilizing industry-standard software and engineering processes.

> Design and implement software subsystems for autonomous mobile robots, including power, motor, communication, feedback and control subsystems.

> Use the principles of physical computing as they apply to human/machine interaction to develop new robotic methods and innovations.

UAT's Robotics offerings build a solid foundation of understanding to expand upon deep and emerging areas of our future.

Bachelor of Science >
Robotics and Embedded Systems
Artificial Life Programming
Open Source Technologies

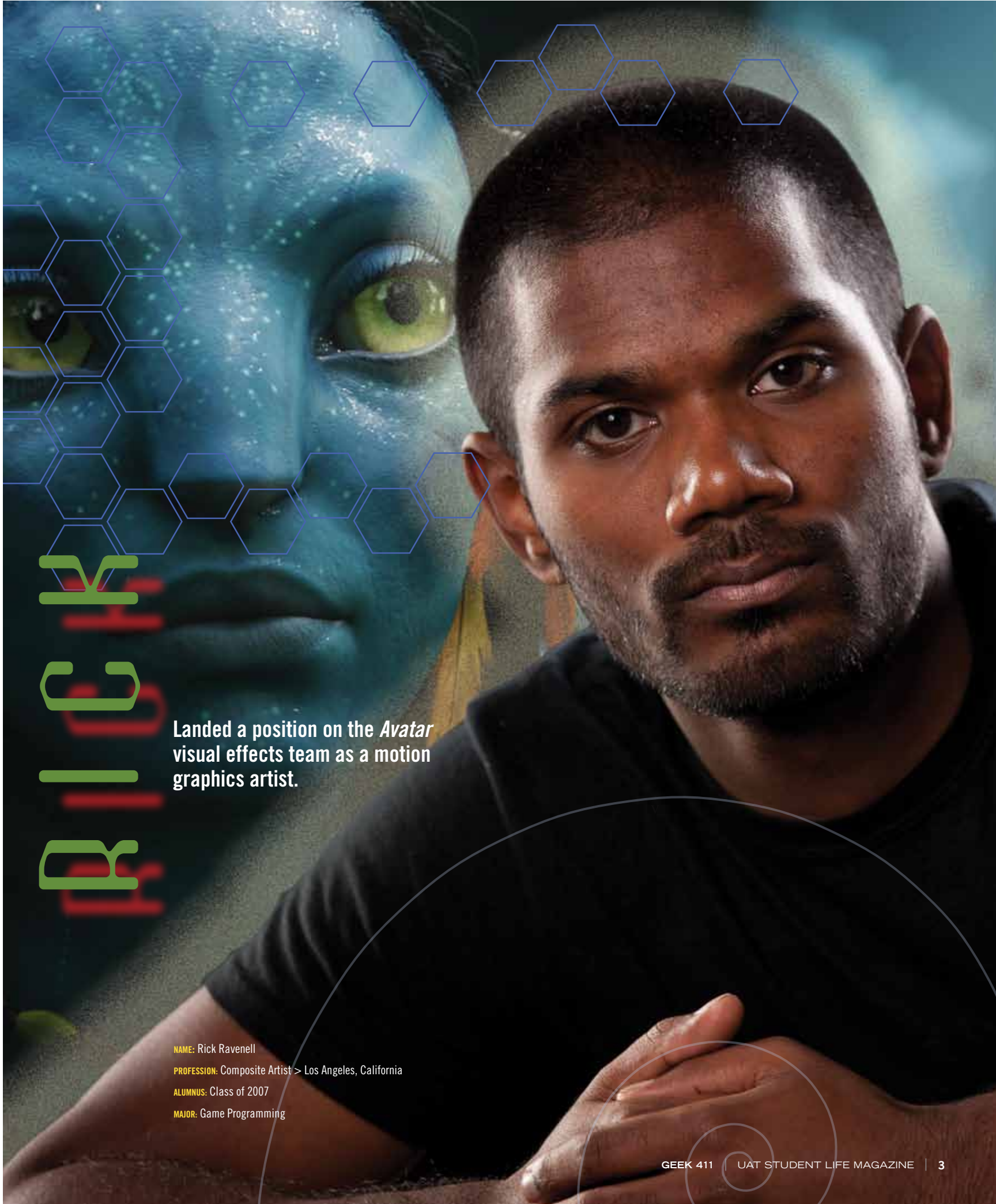
⚠ CLUSTERGEEK WITH CAUTION

LEARN, EXPERIENCE AND INNOVATE WITH THE FOLLOWING DEGREES: Advancing Computer Science, Artificial Life Programming, Digital Media, Digital Video, Enterprise Software Development, Game Art and Animation, Game Design, Game Programming, Human-Computer Interaction, Network Engineering, Network Security, Open Source Technologies, Robotics and Embedded Systems, Serious Game and Simulation, Strategic Technology Development, Technology Forensics, Technology Product Design, Technology Studies, Virtual Modeling and Design, Web and Social Media Technologies

IT'S ALL ABOUT THE EMBEDDED SYSTEMS!

See why> uat.edu/robotics

University of Advancing Technology
UAT
Learn. Experience. Innovate.



RICK

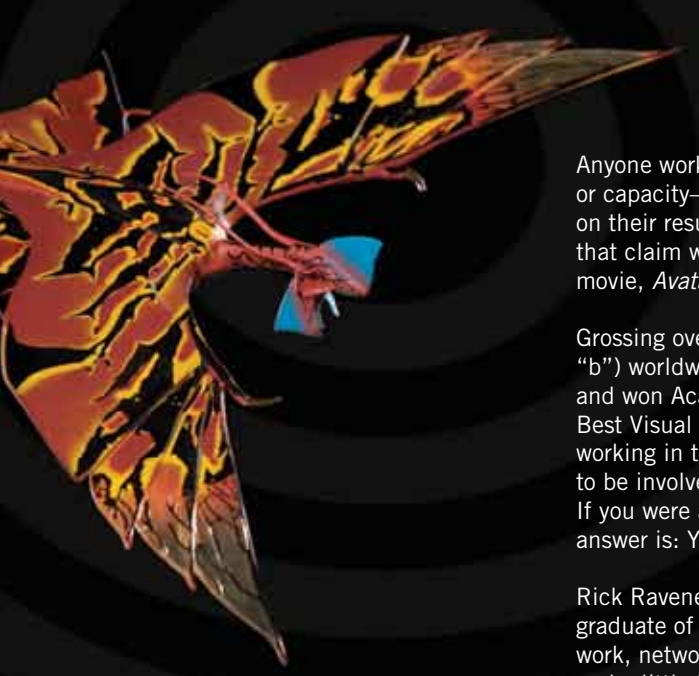
Landed a position on the *Avatar* visual effects team as a motion graphics artist.

NAME: Rick Ravenell

PROFESSION: Composite Artist > Los Angeles, California

ALUMNUS: Class of 2007

MAJOR: Game Programming



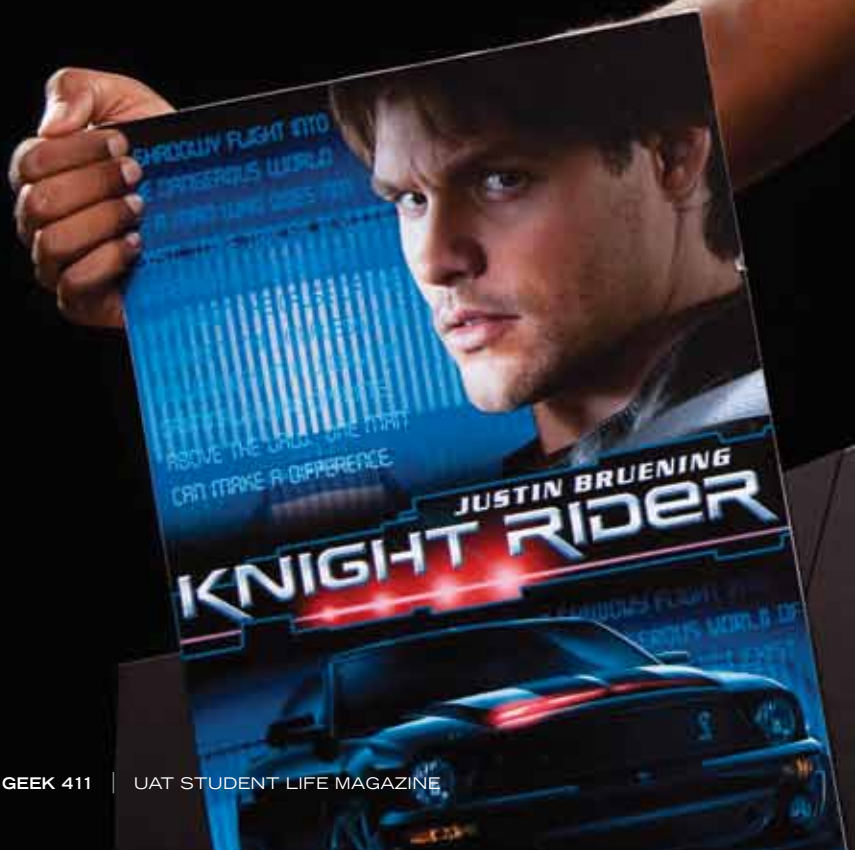
Anyone working in the movie industry—in any role or capacity—would love to have a mega-hit film on their resume. Anyone lucky enough to make that claim would love to have the biggest mega-hit movie, *Avatar*, on his or her resume.

Grossing over $2.77 billion (that's billion with a "b") worldwide, *Avatar* smashed box office records and won Academy Awards for Best Cinematography, Best Visual Effects and Best Art Direction. Anyone working in the field of computer graphics would kill to be involved with that, right? The question is: If you were a part of it, what do you do next? The answer is: You go to work!

Rick Ravenell is a freelance compositor and 2007 graduate of UAT. Through the usual mix of hard work, networking with alumni contacts, good timing and a little luck, Rick landed a position on the Avatar visual effects team as a motion graphics artist. After many hours of intense, imaginative and creative work, Rick's visual effects appear in numerous scenes throughout the movie.

[Catching Up With Rick Ravenell]

Life as a Freelance Artist: Budgeting Time is the Key to Success



That's enough of a recap for those of you who didn't read all about Rick's *Avatar* success in the last issue of Geek 411 Magazine. When we caught up with him again, Rick was visiting his old stomping grounds for Tech Forum where he was slotted to give a presentation. Right when he sat down to talk with us though, we couldn't get a word in before his old mentor, Arnaut Ehgner, passed by and gave him a hearty high five and one-armed man hug, just like old buds. They exchanged greetings on the fly, and Arnaut took off down the stairs telling Rick to come over to his house for dinner before he leaves town. It's a tight bond that students form with their mentors at UAT, and this interaction demonstrated that.

No Rest for the Weary

Since finishing work on *Avatar*, Rick's been a very busy man. Despite a seemingly nonstop work schedule, he was able to come back to UAT for Tech Forum and give us a few minutes of his time. Serving as his own agent, Rick works as a Freelance Composite Artist.
A composite artist's job is working with some of the latest hardware and software fusing together elements such as live action footage, 3D animation, stock footage, and other sources into a single picture. The goal may be a photo-realism or an exaggeration of the world. A composite artist might also take on other tasks such as modeling and rendering a 3D object or element.

Companies such as Encore Hollywood and Sabertooth Interactive provide Rick a steady stream of projects. Encore Hollywood specializes in digital workflows (DiTV) and visual effects for episodic television, MOWs, commercials, music videos and feature films. In addition to *Zombieland*, Encore's feature film, credits include *Casino Royale*, *Evan Almighty*, *Spider-man* and *Talladega Nights*, to name a few. Television credits include FOX's *House*, CBS's *NCIS*, HBO's *Entourage*, and NBC's *My Name is Earl*.

These companies have offered him staff positions but he prefers to freelance, because this approach allows him to pursue other job opportunities while working. A staff position would include a contract with a non-compete clause. Rick values the freedom to work on any type of project, for anyone, at any time.

A self professed workaholic, he works as much as possible. That means days, evenings and weekends. His projects with Encore in Hollywood requires him to work daily from 1pm to 10pm on location where he has his work station set up just so. But before that, he's down in Venice from 8am to 12pm for a half-day stint with Sabretooth.

To read more about Rick's life after Avatar, go to www.uat.edu/ravenell

EVENTS

LEARN MORE

tag this or visit us online at www.uat.edu/events

TECHNOLOGY FORUM 2011

WELCOME TO TOMORROW

www.uat.edu/techforum
Tempe, AZ
November 1-3, 2011

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!

Sat., May 28, 2011
Sat., June 11, 2011
Sat., November 5, 2011

www.uat.edu/flyingeek
Tempe, AZ

TECHNO FORENSICS AND DIGITAL INVESTIGATIONS CONFERENCE

www.technosecurity.com
Myrtle Beach, CA
June 5-8, 2011

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 29-31, 2011

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

GDC S.F.

www.gdconf.com
February 28 - March 4, 2011

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.

GEEK WEEK

Tempe, AZ
February 14-18, 2011

Other universities might call it "Homecoming," but at UAT, it's a week for geeks, so we call it... well, Geek Week. Our Student Life and Residence Life teams put together seven days full of everything geek – from movie nights to Pi-Off and Dodgeball Tournaments – for fun and prizes.

Master the Ghosts in the Machines

> Master the art of programming with the perfect combination of advancing technology and application of new algorithmic structures, code metaphors and programming languages.

> Graduate with the ability to work in a variety of development environments by gaining coding experience across numerous applications and platforms.

> UAT's continuous incorporation of the latest programming languages offers learning at the highest relevance.

Gain comprehensive knowledge of advancing application development, database and object-oriented programming.

Bachelor of Science> Advancing Computer Science, Artificial Life Programming, Enterprise Software Development, Open Source Technologies, Robotics and Embedded Systems, Web and Social Media Technologies

Master of Science> Advancing Computer Science

⚠ CLUSTERGEEK WITH CAUTION

LEARN, EXPERIENCE AND INNOVATE WITH THE FOLLOWING DEGREES: Advancing Computer Science, Artificial Life Programming, Digital Media, Digital Video, Enterprise Software Development, Game Art and Animation, Game Design, Game Programming, Human-Computer Interaction, Network Engineering, Network Security, Open Source Technologies, Robotics and Embedded Systems, Serious Game and Simulation, Strategic Technology Development, Technology Forensics, Technology Product Design, Technology Studies, Virtual Modeling and Design, Web and Social Media Technologies

CONJURE YOUR CALLING
as an innovator in the realm of the machines with a coveted Advancing Computer Science degree from UAT> uat.edu/acs

UAT students get an early crack at Microsoft's Adaptive Keyboard.

did you know...

Every UAT graduate completes a professional portfolio of work in their chosen technology field, which makes it easy to demonstrate to graduate schools and potential employers that you would be an excellent choice.

UAT students Nic Breidinger, Ryan Cabral, Zak Robinson and Doug Shannon hit the streets of New York City last October for the 23rd annual User Interface Software and Technology (UIST) symposium. It was organized by the Association for Computing Machinery (ACM).

The guys weren't there just to listen and learn, though. They were competing in the 2010 Student Innovation Contest. They came armed with their modified version of Microsoft's adaptive keyboard.

That's a next-gen keyboard that's still in prototype. The keyboard sits on top of an LCD display. Images on the keys can change into virtually any function and image you need.

For example, you can switch from the English alphabet to the Russian alphabet to the French alphabet or other alphabets. Or, you can put all the PowerPoint function keys onto specific keys on the keyboard.

Plus, and this is the part that really sets this keyboard apart, there's a touch-screen strip at the top of the keyboard for additional functionality.

The guys spent about a month modifying the Microsoft keyboard. There were only 40 keyboards available, so UIST cut down the list of more than 100 teams who wanted to participate to about 40. UAT made the cut.

"From receiving the keyboard to presentation day, we had only 28 days," says Nic. "We spent between 150 and 200 man-hours working on the project over that four-week period."

No ordinary keyboard

Microsoft's adaptive keyboard is pretty cool, even without any modifications made to it.

The idea behind it is to make it easier for people to use keyboards, so they can save time and be more productive. Keyboards like Microsoft's adaptive keyboard are also meant to have common-sense functions so you're not spending minutes or hours trying to figure out how to use a software program's functions.

For example, instead of using a mouse to click through layer upon layer of folders looking for a file, you can save frequently used files onto Microsoft's adaptive keyboard's touch-screen strip.

If there's a PowerPoint file you'll be updating over and over for a few days, save an image of it to the touch-screen strip. When you're ready to access the file, touch the image and the file opens up on the monitor.

And once you have that file open, rather than spending a few hours trying to figure out the functions for a particular program like PowerPoint, you can change the images on the keys of this dynamic keyboard to represent those functions.

Say you want to add a pie chart into that presentation, just select the key with the pie chart image for it to be instantly put into the presentation instead of messing with your mouse and keyboard looking for that function.

The team's enhancement was to create a virtual clipboard they called "Clippings." When a file is copied, a reference is stored on the keyboard's touch-screen. If it's an image, a thumbnail is saved; if a document, a small identifiable portion of it.

Microsoft's adaptive keyboard does a whole lot more than change the alphabet or save PowerPoint files and pics. It can adapt and change and save images on the touch-screen strip with changed key functions for just about any program you use.

The UAT team's challenge: Ramp it up

The UIST 2010 Student Innovation Contest went far beyond making Microsoft's adaptive keyboard prettier (which, by the way, you can do by having photos or other images appear on the keys as well as the touch-screen). Students were challenged with making the keyboard better.

Nic was the project lead and he handled some backend programming. Ryan was the lead designer and Doug was the lead programmer. Zak handled the presentation at UIST.

WHAT: User Interface Software and Technology Symposium
WHERE: New York City
THE CHALLENGE: Take Microssoft's Adaptive Keyboard and make it better
MODIFICATIONS: Adding images to touch-screen for immediate access
TEAM
NIC BREIDINGER: Project Lead and Backend Programmer
RYAN CABRAL: Lead Designer
ZAK ROBINSON: Visuals and Presenter
DOUG SHANNON: Lead Programmer

Read about the keyboard modifications the team made at: www.uat.edu/uist2010

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

academic palooza brings challenges and rewards

Started just three years ago, UAT's Academic Palooza, a wild mix of mental and physical challenges for students, has become so popular that it's now scheduled twice a year. In the most recent Academic Palooza in October, students used their brains and physical skills to compete for geekilicious prizes in a murder mystery game, a VCR modification challenge and interpreting the University's motto: Learn. Experience. Innovate.

As to previous Paloozas, the most popular event was "Warren Jones and the Temple of Doom," named after UAT's Residence Life Coordinator, who is one of the driving forces behind the event. Warren said, "This year's 'Doom' was far more entertaining to watch because of the physical challenges. My favorite part is creating the event. It's also fun to hear students talk trash about how fast they are going to finish it." It took this year's winning team, 1337 Haxors (students Bryan Phan and Joseph Costa), an entire afternoon and evening to complete all their challenges.

In the VCR mod challenge, students Raul Garcia and Manuel Barberena spent nearly 20 hours completing the adaptation of a VCR into a fine functioning toaster.

Watch clips from the Academic Palooza challenges, go to uat.edu/palooza

uat students are up to the department of defense challenge

The annual DC3 Digital Forensics Challenge, hosted by the U.S. Department of Defense's Cyber Crime Center, is based on individual scenario-based, progressive level challenges as a call to the digital forensics community to pioneer new investigative tools, techniques and methodologies. There are 21 challenges that can be completed and they are divided into 5 different groups ranging across varying degrees of difficulty. Government, civilian, commercial, military and student teams from around the world gathered to solve such challenges as Missing File Header Reconstruction, Registry Analysis, Password Cracking, Windows 7 USB Thumb Drive Encryption, and Steganography.

Two teams comprised of UAT undergraduates placed very well in the competition. Team "sIUethAT" (Dan Dean, Chris Biscoe, Christial Pihl and Joe Darhun) placed 14th overall out of 79 total teams competing. They were 2nd among U.S. undergraduate teams and 6th out of all 39 teams entered from the U.S. Team UAT007 (Eric Montellese and Dan Chun), placed 16th out of the 79 teams, 4th in the U.S. undergraduate competition and 8th out of all 39 U.S. teams.

Dan Dean, leader of SIUethAT, told us how it all came about. "Our forensics professor, Diane Barrett, introduced us to the competition in class. We did all of the work and research on our own with a few tips—but no direct assistance—from Professor Barrett at the very beginning. This was very much a learning experience for all of us because we had to research how to solve some of the challenges on our own and even get in contact with people in the forensics industry to get a better understanding of some of the challenges. We completed the challenges over the course of the summer semester at UAT. We would get together as a team and work on specific challenges and submitted our entry before the deadline."

Eric Montellese of Team UAT 007 said, "UAT does a great job of introducing students to concepts and theories regarding digital forensics. UAT also gets students involved in such things as the DC3 challenge, which provides us the opportunity to demonstrate the practical application of these concepts in unique and challenging ways. The team effort, the need to research and learn more, and the satisfaction of solving one challenge after another was incredible. Next year's Challenge (2011) recently opened up and I plan on registering immediately. This is something I plan to do now and for many years to come."

community service

Sometimes the University of Advancing Technology's motto: Learn. Experience. Innovate. applies to life outside the classroom, too.

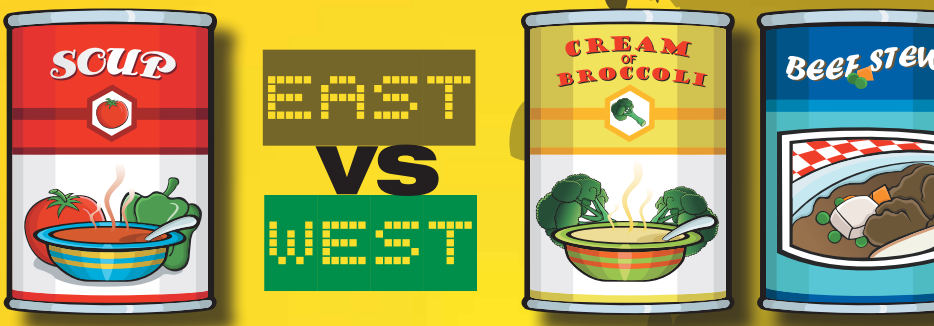
That was the case in the weeks leading up to Thanksgiving. Everyone living in Founder's Hall collected canned food, which was donated to Matthew's Crossing Food Bank in Chandler.

"We collected 407 pounds of canned food from this event," says Elizabeth Healey, director of Founder's Hall. "That was 157% of our goal."

Rather than just collect cans, though, dorm residents split into two groups and competed to see who would collect the most cans. It was the East wing versus the West wing.

Ryan Cabral, 2nd floor R.A., encouraged people in the East wing to go out and buy a few cans of food to donate. That strategy led to the East wing winning.

But, more than that, it benefited people in need.



information assurance workshops

As UAT launches its newest Master of Science program in Information Assurance, the school underscored its commitment to the program with a two-day workshop on Oct. 7 and 8. Professors Al Kelly, Russ Rogers and Greg Miles presented information on various aspects of online security.

Professor Kelly presented information on protecting your digital identity and some of the steps to take if your identity is stolen. One of his suggestions for keeping your online identity safe is to go directly to a site's URL rather than use links to get there. And don't give out your information to any company that contacts you by email. Contact them by phone instead.

Professor Rogers handled two presentations: Covert Channels and Security Clearances.

WE'RE COMING TO A TOWN NEAR YOU,

TO GEEK YOU UP

Spring 2011 NACAC Schedule

PITTSBURGH	Thurs., Feb. 3 Fri., Feb. 4	9:00a.m. - 12:00p.m. 6:00p.m. - 9:00p.m.	David L. Lawrence Convention Center Pittsburgh, PA
ATLANTA	Sun., Feb. 13	12:00p.m. - 4:00p.m.	Georgia International Convention Center College Park, GA
LOUISVILLE	Sat., Feb. 19	2:00p.m. - 5:00p.m.	Kentucky International Convention Center Louisville, KY
MIAMI	Sun., Feb. 20	12:00p.m. - 4:00p.m.	DoubleTree Miami Mart/Airport Hotel and Convention Center Miami, FL
SPRINGFIELD	Sun., March 6 Mon., March 7	1:00p.m. - 4:00p.m. 9:00a.m. - 12:00p.m.	Eastern States Exposition (The Big E) West Springfield, MA
TAMPA	Sun., March 13	12:00p.m. - 3:00p.m.	Tampa Convention Center Tampa, FL
HARTFORD	Tues., March 15 Wed., March 16	9:00a.m. - 11:30a.m. 6:30p.m. - 8:30p.m. 9:00a.m. - 11:30a.m.	Connecticut Expo Center Hartford, CT
SAN FRANCISCO	Sat., March 19	1:30p.m. - 4:30p.m.	Concourse Exhibition Center San Francisco, CA
CHARLOTTE	Sun., March 20	12:00p.m. - 4:00p.m.	The Park (formerly the Charlotte Merchandise Mart) Charlotte, NC
GREATER RALEIGH	Tues., March 22	4:00p.m. - 9:00p.m.	Raleigh Convention Center Raleigh, NC
SAN DIEGO	Thurs., March 24	9:00a.m. - 12:00p.m. 6:00p.m. - 8:30p.m.	San Diego Convention Center San Diego, CA
INLAND EMPIRE	Mon., March 28	9:00a.m. - 12:00p.m.	Ontario Convention Center Ontario, CA
VENTURA/TRI-COUNTY	Tues., March 29	5:30p.m. - 8:30p.m.	Ventura County Fairgrounds Ventura, CA
WEST MICHIGAN	Tues., March 29	8:30a.m. - 11:30a.m. 6:00p.m. - 8:00p.m.	DeVos Place Grand Rapids, MI
BUFFALO	Tues., March 29 Wed., March 30	9:00a.m. - 12:00p.m. 6:00p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Buffalo Niagara Convention Center Buffalo, NY
GREATER MEMPHIS	Tues., March 29 Wed., March 30	6:30p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Agricenter International Memphis, TN
GREATER LOS ANGELES	Wed., March 30 Thurs., March 31	6:00p.m. - 9:00p.m. 9:00a.m. - 12:00p.m.	Pasadena Convention Center Pasadena, CA
METRO DETROIT	Thurs., March 31	8:30a.m. - 12:00p.m. 6:00p.m. - 8:00p.m.	Burton Manor Banquet and Conference Center Livonia, MI
ROCHESTER	Fri., April 1 Sat., April 2	9:00a.m. - 12:00p.m. 1:00p.m. - 4:00p.m.	Rochester Riverside Convention Center Rochester, NY
ORANGE COUNTY	Sat., April 2	1:30p.m. - 4:30p.m.	Anaheim Convention Center Anaheim, CA
SYRACUSE	Sun., April 3 Mon., April 4	1:00p.m. - 4:00p.m. 9:00a.m. - 1:00p.m.	The New York State Fairgrounds Syracuse, NY
NEW JERSEY	Wed., April 6 Thurs., April 7	9:00a.m. - 12:00p.m. 6:30p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	New Jersey Convention and Exposition Center Edison, NJ
NEW YORK	Sun., April 10	11:00a.m. - 4:00p.m.	Jacob K. Javits Convention Center New York, NY
BOSTON	Tues., April 12 Wed., April 13	9:00a.m. - 12:00p.m. 6:00p.m. - 9:00p.m. 9:00a.m. - 12:00p.m.	Boston Convention & Exhibition Center (BCEC) Boston, MA
MONTGOMERY COUNTY	Wed., April 13 Thurs., April 14	9:45a.m. - 12:45p.m. 6:30p.m. - 8:30p.m. 9:45a.m. - 12:30p.m.	Montgomery County Agricultural Center Gaithersburg, MD
DALLAS/ FORT WORTH	Thurs., April 14 Fri., April 15	6:30p.m. - 8:30p.m. 9:00a.m. - 12:00p.m.	Irving Convention Center at Las Colinas Irving, TX
PRINCE GEORGE'S COUNTY	Fri., April 15 Sat., April 16	9:30a.m. - 12:00p.m. 10:00a.m. - 12:00p.m.	Prince George's Sports and Learning Complex Landover, MD
HOUSTON	Tues., April 19	9:30a.m. - 12:00p.m. 6:00p.m. - 8:00p.m.	George R. Brown Convention Center Houston, TX
AUSTIN	Thurs., April 21	9:30a.m. - 12:00p.m. 6:00p.m. - 8:00p.m.	Austin Convention Center Austin, TX
PROVIDENCE	Sat., April 30	12:00p.m. - 3:00p.m.	Rhode Island Convention Center Providence, RI
CLEVELAND	Sun., May 1	1:00p.m. - 4:00p.m.	Wolstein Center Cleveland, OH
NASHVILLE	Sun., May 1	1:00p.m. - 4:00p.m.	Nashville Convention Center Nashville, TN

did you know...

UAT's Liaison Team talks to over 1,000 students per year.

TRAVEL SCHEDULE

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.

Check us out online at www.uat.edu/nacactravel and see if we will be in your area. If you'd like UAT to visit your school, ask your guidance counselor to contact a UAT high school Liaison Coordinator at 877-UAT-GEEK (877-828-4335).

FOR MORE INFO VISIT US AT
www.uat.edu/
nacactravel


WAY MORE THAN JUST
a BOOKSTORE
The UAT Bookstore stocks all the books, supplies and study materials you'll need. It's also the world's only known source for rare, highly sought-after UAT Geek Gear.
UAT BOOKSTORE
UAT GEEKGEAR Online
TWO WAYS TO GET WHAT YOU WANT!
BUY YOUR UAT GEEK SWAG RIGHT NOW ONLINE, OR VISIT THE UAT BOOKSTORE IN PERSON WHEN YOU ARE ON CAMPUS.
Visit uatstore.com/geekgear to get your logo'd gear today. You know you want it.
GEAR UP AND GEEK OUT!
UATSTORE.COM/GEEKGEAR

Google™ IN THE DRIVER'S SEAT

Google is taking the type of driverless technology that the U.S. military uses to fly pilotless drones and is sticking it into cars.

This isn't for some secret-mission government vehicle, though. This is tech for all of us. By last October, Google had already racked up 140,000 driverless miles on cars it's testing on Northern California roads.

But why? The ultimate reason for having driverless cars isn't clear, yet.

But this technology, which is much like the tech UAT Robotics & Embedded Systems majors develop, could cut down on pollution if groups of commuters are picked up by driverless cars instead of each person buying a car.

Plus, driverless cars could be safer than cars driven by humans, especially when you consider the people you see texting while driving.

A high-tech car, like Google's driverless car with video cameras, radar, GPS, laser technology and rotating motion sensors would be on constant alert, with no distractions.

So, sit back, text all you want, and leave the driving to Google.

See this car in action at: www.uat.edu/googleride

Hidden Messages in The VCR?

Can your old VCR transfer hidden messages? Chances are, it can't. Besides, VCR's were never intended as steganography machines. Funny thing is, many of the devices we use today are the result of someone making them perform a function they were never intended to do. To most geeks, this is the true original meaning of the term "hack." To the general public, however, the word has more dubious and negative connotations. It suggests illegal activities like identity theft or malicious computer viruses.

With the recent ruling in July that made hacking iPhones legal, we decided to sit down with Dave Bolman, Provost and Dean of UAT, to discuss the concept of hacking, its history, and the ethical questions raised through such activities.

At UAT, students are encouraged, and in fact challenged, to "hack." A recent Innovation Challenge competition at UAT had student teams hacking a VCR. We also spoke with Manuel Barberena, Raul Garcia, Stephen Smith and Iggy Krajci, all members of winning teams, and discussed the challenges they faced, how they overcame them, and their results.

To Hack or Not to Hack – That is the Question

Dave Bolman has been involved with computers, programming and advanced technology for decades. As Provost and Dean of UAT, he guides an institution of higher learning dedicated to educating the technology innovators of tomorrow. One of the challenging issues he faces is guiding young, ambitious innovators through the murky and often uncharted waters of the ethical questions resulting from innovative activities such as hacking.

Given his experience and expertise, Dave is well prepared for this task; surely he has done some hacking in his day. When asked about his favorite hacking experiences, Bolman smiles with his reply:

"There are so many of them. As a kid, around 12 years old, a couple of my friends and I hacked the control systems of our model rocket launchers so we were able to fire them horizontally instead of vertically. Our intention was to create Rube Goldberg type machines. A rocket fired a distance would then push a model car at a certain speed into another object causing a series of chain reactions. When we decided it would be more exciting to fire the rockets through bags of gasoline en route to the model car, law enforcement got involved."

Dave recalled that his most enjoyable hack involved his TiVo machine. The early models had very limited hard drive storage. Dave learned of a published hack, allowing users to daisy chain multiple hard drives to expand storage capacity. With a little soldering and some simple programming, his device soon had ten times the original storage capacity. In Dave's perspective, this is an example of a legitimate hack.

"The root of all great technology starts with a need, not from a long design cycle. An existing device, combined with something, solves something,"

iPhone Jailbreak Hacking
Kevin Kadium and Dave Bolman

Hacked VCR Toaster
Raul Garcia, Manuel Barberena

Hacked VCR Steganography Machine
Stephen Smith and Iggy Krajci

notes Bolman. “Cross-pollinating two technologies and creating something interesting.

“I would bet that if you examine the history of technology and innovation, when you got into new areas, nearly everything looks like that. The Wright brothers' airplane was two parts bird and two parts bicycle, refinement comes later on.”

Concerning the iPhone jailbreak hack ruling, Dave says, “The iPhone scenario is a little bit different. There you have a refined product. Apple has the view that the computer is a consumer device, something we use all the time, like a pen, so they want to make sure that it works and works all the time. A lot of their hacks are things they engineered in, but at the design phase said, ‘This is not working perfectly, so we’re not going to support it officially.’ It won’t be in the tech manual or the user's guide. Historically, Apple doesn’t mind if you play…hacks are OK as long as you’re not violating a revenue stream. It won’t be supported but it’s OK to play…that’s the form of hacking, it’s interesting and it’s legal. You’re not trying to harm anybody."

Hacking Ethics 101

Ethical hacking involves innovation, creating something that fills a need and does not harm another party. Dave’s TiVo hack is an example of this. Customers wanted more storage capacity and portability. The hack filled these needs. TiVo learned from this and later model recorders included these features.

Dave describes an example of an unethical hack as well. "In the ‘80s, a known hack of Cox Communications' cable boxes unlocked all the premium channels. A person was able to pay for basic cable service but receive everything. An interesting hack but not ethical because it resulted in a loss of revenue to the cable provider.”

His example of a much harder case to distinguish goes like this: “Suppose I pay for a data plan on a smartphone. I pay for that service. If I do a software hack where it links my computer up so I no longer need a data plan for my computer, is that ethical or not? I am paying for the data plan but it is not intended to use for my computer. Is it taking out someone else’s revenue stream? This is where it gets hard. This is one of the hardest examples.”

How does Dave guide UAT students when it comes to these hard to distinguish issues? He referenced the UAT Values Statement. He pointed out that, “Integrity is part of the Values Statement. It reads: Integrity - We promote positive social responsibility and good global citizenship, and we always act with integrity, honesty and ethics that are above reproach.

“We are teaching our students to be good digital citizens, to play a role in clarifying technology by exemplifying its best use to advance humanity. Our students take many courses in ethics and courses in thinking. They have to learn to make good decisions, to be informed about the issues, and to make the right call.”

This Isn’t Your Father’s VCR—The UAT Hacking Challenge

Another way UAT provides an opportunity for students to exercise new ways of thinking is through their Student Innovation Project contests. These student projects are ethical hacks. Recently, a student competition involved teams of students taking a VCR and hacking it, making it serve some other function.

Dave described the challenge as an exercise in brain perspective. “Students really have to innovate. They have to look at what they have, think of it in different terms, then accomplish the task with a budget of only $25.”

First prize in the contest went to the team of Manuel Barberena and Raul Garcia, both seniors. Their hack transformed a VCR into a toaster. Manuel is majoring in Robotics; Raul has a dual major in Robotics and Virtual Modeling.

Check out more hacking projects here: www.uat.edu/hack

did you know...

UAT is a Center of Academic Excellence, as designated by the National Centers of Information Assurance Education, sponsored by the National Security Agency and the Department of Homeland Security.

It's the Dream

Robert Lewis
Software Engineer,
Currently employed at
Tennessee Heart and
Vascular Institute

Paris, Tennessee

NAME: Robert Lewis

PROFESSION: Software Engineer, Tennessee Heart and Vascular Institute

ALUMNUS: Class of 2009

MAJOR: Programming

Originally from Paris, Tennessee, Robert Lewis found his way back home to the Volunteer State after graduating from the University of Advancing Technology in 2009. Robert is now making a real difference in the medical field as a software engineer at the Tennessee Heart and Vascular Institute. Robert uses C# to write pragmatic solutions for the healthcare industry. He is currently developing a software platform along with other developments such as EMR-Electronic Medical Records and PHR-Public Health Records. There are already more than 200 vendors in the category, so it will pay to build a better mousetrap.

After graduating from UAT, Robert started applying for jobs and learned of an opening at the Heart Institute. It was for a senior position, but they asked Robert to show them what UAT taught him. "They sat me in front of a Compiler and said show me some recursion and some SQL. I did, and they hired me the same day."

The Tennessee Heart and Vascular Institute is an official site for GE Healthcare. Robert and the software engineering team developed their own EMR. Doctors from around the world come to train with it and provide feedback so that it has been able to evolve over time. The idea behind the software platform is to take it from a stand-alone product to something that can eventually aid the medical field worldwide.

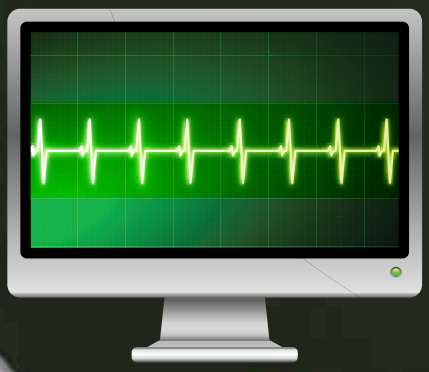
So, what originally brought Robert to UAT? "Initially, I wanted to do game programming, but I changed it to software engineering because I didn't want to limit myself. Not a lot of schools have a software engineering program, and I felt that being well-rounded and well-versed would benefit me. When I looked at various schools that offered such a degree, UAT instantly came up. UAT focused more in depth on things I felt were relevant."

He considers Phill Miller his mentor, inspiring him to excel in his field.

"I learned a lot in his A-Life class and software engineering. He is definitely a mentor to me and a great guy. And Vesna Dragojlov's Web design class made a great impression on me." Like many UAT success stories, Robert has kept in touch with his professors.

"We've had a couple of needs at the Institute for Web and graphic design. Vesna is always my first resource and she has recommended students. In fact, I've met with a couple of them while speaking at UAT's annual Tech Forum. It's good to know that UAT continues to be a place I can count on."

Healthcare is the third largest industry in the United States and continues to grow. Where does Robert see the industry going? "I see everything moving into the Cloud in terms of healthcare. That typology has really come to fruition for the past few years and healthcare is definitely high on technology. It's all going to jump there…whether it's us doing it or someone else."



Did you know...

UAT alumni land jobs at some of the top companies in their industry. Read alumni stories at uat.edu/alumni

Learn more about Robert at uat.edu/robertlewis

Just What The Doctor Ordered

The days of carrying clipboards with pages of patient info are long past. With today's information overload, managing a client's healthcare records can indeed be a matter of life or death. Mobile Clinical Assistants (MCA) are the paperless answer to supplement a doctor's bedside manner. It means the info bedside care is becoming the norm these days whether it's a rolling workstation or a handheld PDA. Many lack hard drives, to protect against crooks. So if you take them out of the hospital, they don't operate. Tablet PCs designed specifically for healthcare need to be lightweight to be carried throughout the shift. They must be durable and completely sealed so they can be frequently sanitized without causing damage to the components. They must contain security software for guarding a patient's records. And they need reliable battery power to stay on the job without failure. Now add in Wi-Fi capability, a barcode reader, and the ability to be read, day and night, in a myriad of lighting conditions. Here are some of the latest medical gadgets that are just what the doctor ordered.

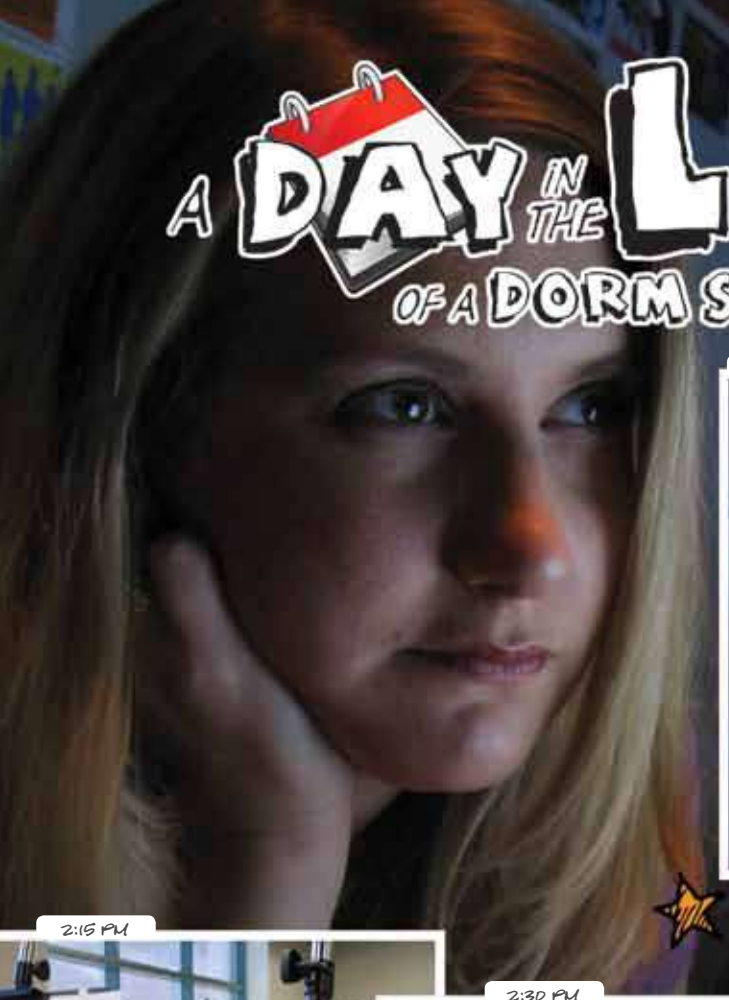
Motion C5v

The Motion C5v was the first MCA to incorporate a handle so it can be carried around like a briefcase, rather than precariously tucked under an arm. Now, almost every MCA has this feature. http://www.motioncomputing.com/products/tablet_pc_c5.asp]

MediSlate MCA

Its swappable battery packs means no down time in the 24/7 world of hospital activity. It is easily disinfectable and can be dropped from 4-feet and stay alive to help save lives. http://www.tabletkiosk.com/products/medislate/i1040xt_overview.asp

A DAY IN THE LIFE OF A DORM STUDENT



9:30 AM

10:45 AM

DRY MY HAIR...

BRUSH MY TEETH

11:00 AM

2:15 PM

2:30 PM

WORKING ON SMILES IN DRAWING CLASS

3:00 PM

BACK TO MY DORM ROOM

POW!

7:00 PM

6:00 PM

A LITTLE GAME TIM

3:45 PM

WALK TO CLASS

4:00 PM

PRESENTING IN FAIRYTALES AND FOLKLORES CLASS

FOLLOWING FOUNDER'S HALL RESIDENT,

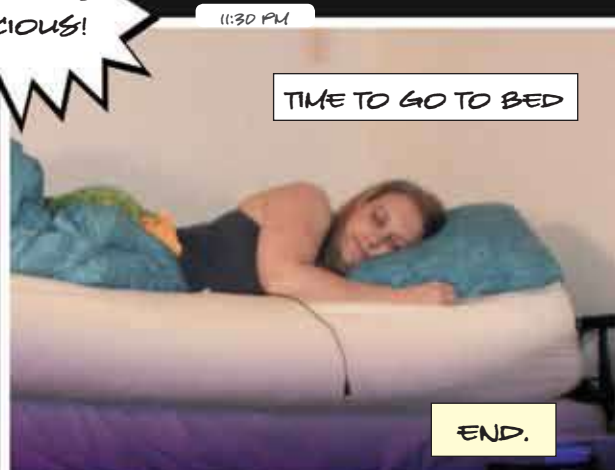
DEVON O'MARA

AS SHE GOES THROUGH HER DAY.

TAG THIS TO SEE MORE ABOUT STUDENT LIFE

7:30 PM

THAT LOOKS DELICIOUS!



geeked at birth

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

We don't just teach how to use hardware and software; students are immersed in all levels of video game design, from initial story boarding to the final, polished project.

Learn from professors who have real-world industry experience.

www.gamedegree.com

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Professor Hartley is currently teaching:

> CSC100 Introduction to Programming Concepts
> CSC203 Java I
> CSC215 C/C++ I
> CSC263 Java II
> CSC275 C++ II

Phil Hartley
Associate Professor, Computer Science, Systems Development, Programming
BS with Honors in Computer Science from the University of Edinburgh, Scotland

"I love watching students actually grasp the craft of programming."

Professor Hartley grew up in East Kilbride, a suburb of Scotland's largest city, Glasgow. His work in software development brought him to the U.S., where he eventually settled to live full time in 1987. A recognized expert in object oriented programming, he arrived at UAT after a successful career working with IBM, American Airlines and Object Technology, Inc., in Phoenix, Arizona, providing systems engineering for a broad range of needs, from mainframe to PC. In 1995, Professor Hartley formed his own software development company, Unity Software Systems, which he continues to operate in his spare time. He brings this extensive software and systems experience to his students every day. He has also taught programming at Arizona State University.

He says, "I love watching students actually grasp the craft of programming. It's so important that students understand it's not just about hacking together any old code. When you're developing software for a company, you are creating an essential asset for them. It has to be high quality work. That's the awareness I try to pass on in the classroom."

Professor Hartley believes that UAT students have a distinct advantage over other schools in being small enough that every student gets quality time with his or her professors. Also, because the administrative decision-making process is more efficient, the entire programming curriculum was completely revamped in just eight months, a process that could take years at a larger college. This means that the courses and technology at UAT are, as Professor Hartley says, "bang up-to-date." UAT courses and on-campus technology reflect the very latest concepts, methods and trends in industry.

Strangely enough, this former Scotsman is a Minnesota Vikings fan. In the '80s, when he became disillusioned with soccer, he changed his allegiance to rugby, which led him to BBC broadcasts of NFL football games and a passion for the Vikings. His real pride and joy however, are his two children, Dan and Katy.

Ed Fries

The Man behind Word, Excel and Xbox does it again with FigurePrints

Ed Fries, the former head of Microsoft Game Studios and a key player in the launch of the Xbox, is in the news again, but not for creating the latest and greatest new game for the Xbox. This time he is taking a giant step backwards with his acclaimed game, Halo. His Halo 2600 is a two-dimensional "demake" that compresses the key elements of Halo into a simpler gameplay formula for the 33-year-old Atari 2600. It was America's king of game consoles from its 1977 introduction until game-changer Nintendo made the scene in 1985. Fries owned an Atari 2600 in his youth, but never programmed for the console until now. He's also running a new business that creates personalized action figures for gamers.

Fries talked with Geek411 after his recent presentation at UAT's annual Tech Forum.

Ed Fries: "The Atari 2600 runs on 128 bytes of memory, so that's not very much memory. If you compare that to now, everything is a million times more, a billion times more. It's just a completely different world. When I graduated from college, I interviewed at a few other places before I accepted the job at Microsoft. One of the places I interviewed at was Cray, the first big name in supercomputers. That was really exciting to go and see Cray. They showed me the fastest computer in the world at the time, the Cray-2. They told me it had a gigabyte of RAM and that was just

Seattle, Washington

NAME: Ed Fries
PROFESSION: Software Developer
COMPANY: FigurePrints
HOMETOWN: Seattle, Washington

unbelievable to have that much memory. It was like a work of art. They pumped liquid Freon through and under the floor and it would spray up into a glass dome like a fountain to cool the computer. You knew the Defense Department guys were like, 'I gotta have that.' Now you can go to Fry's Electronics, across the street from UAT, and pay twelve bucks or less for the same thing. That to me is an example of how things have changed. This phone, for example, has 32 gigabytes of storage. That's where things have come since 1986."

Geek411: Have Microsoft Word and Excel applications changed from the time you worked on them?

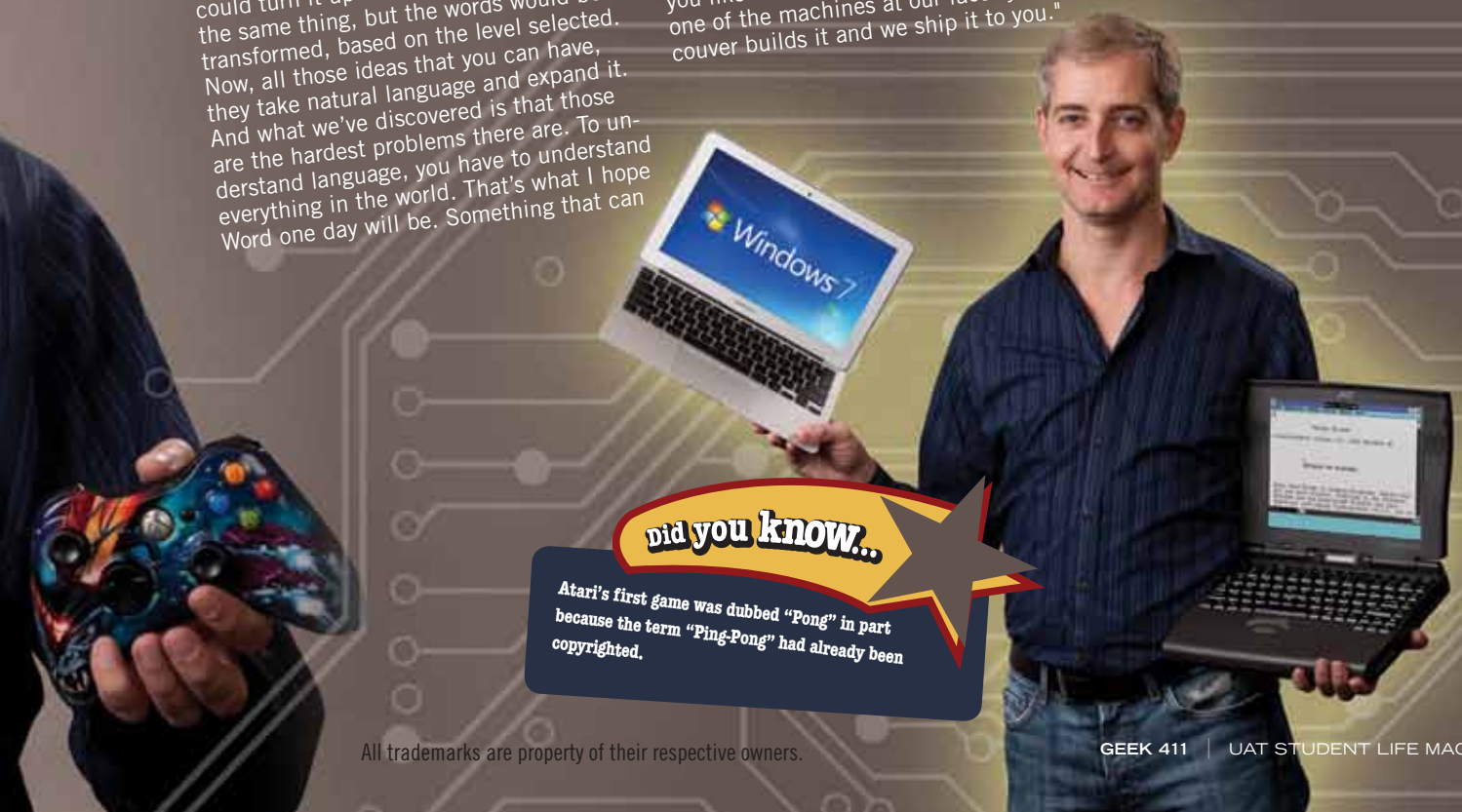
Fries: "In some ways they haven't changed that much. The last thing I worked on for Excel before I left was pivot tables, and that's still kind of a big feature. Computer science is kind of funny that way. The things that we thought would happen haven't happened. There's still a lot of work to be done. If you had interviewed me when I was in college, maybe we would have talked about a computer that would be more human, or computers that could fool humans into thinking they're alive, or read documents and know what they mean. Those are some of the things we worked on that Word still can't do very well. We really want word processors to be word processors, not letter processors. I always thought Word should have things I call 'knobs.' A knob would be for reading difficulty and I could tune it down to second grade level…or I could turn it up to PhD. It would still say the same thing, but the words would be transformed, based on the level selected. Now, all those ideas that you can have, they take natural language and expand it. And what we've discovered is that those are the hardest problems there are. To understand language, you have to understand everything in the world. That's what I hope Word one day will be. Something that can really understand things and not just juggle characters around. It just shows how much work there is to do."

Geek411: Tell us about FigurePrints.

Fries: "I run a little company that uses these amazing machines called 3D color printers. They look like copy machines, but they make three-dimensional objects. They make anything you can design on a computer, just about. You send the specs for a model into this machine and it builds the object up just a layer at a time, using thin layers of plaster powder. It spreads a thin layer of the plaster powder on a platform and print jets come out and print on it and the ink solidifies the powder everywhere it touches. And then the platform moves down 1/250th of an inch, another layer is spread and the process repeats over and over again. Over time, the platform moves down and the entire 10" x 14" area fills up with this white powder. Anywhere the print heads have printed, the powder solidifies. Then you raise it back up and blow out all the loose powder and you're left with just the object. It's cool technology and of course, since I work in the game business, I'm interested in how you take cool technology and use it for people's entertainment. That's what we do. The biggest game in the world is World Of Warcraft. There are 12 million people around the world who play WoW. It's a billion dollar business, just that one game. You go to our website —figureprints.com— type in the name of your character from the game and we can create a three-dimensional rendering of the character. You can pose it. It's got all your weapons and armor from the game. You basically design your own custom statue on the screen. When you like the way it looks, you hit print and one of the machines at our factory in Vancouver builds it and we ship it to you."

See UAT's 3D printer in action... go to page 46

Find out more about Ed at www.uat.edu/edfries



did you know...

Atari's first game was dubbed "Pong" in part because the term "Ping-Pong" had already been copyrighted.

NOOKED:

KEVIN KADIUM'S REAL-LIFE HACK JOB

Have you ever wondered how someone goes from being a regular college student to a network security expert working for the government?

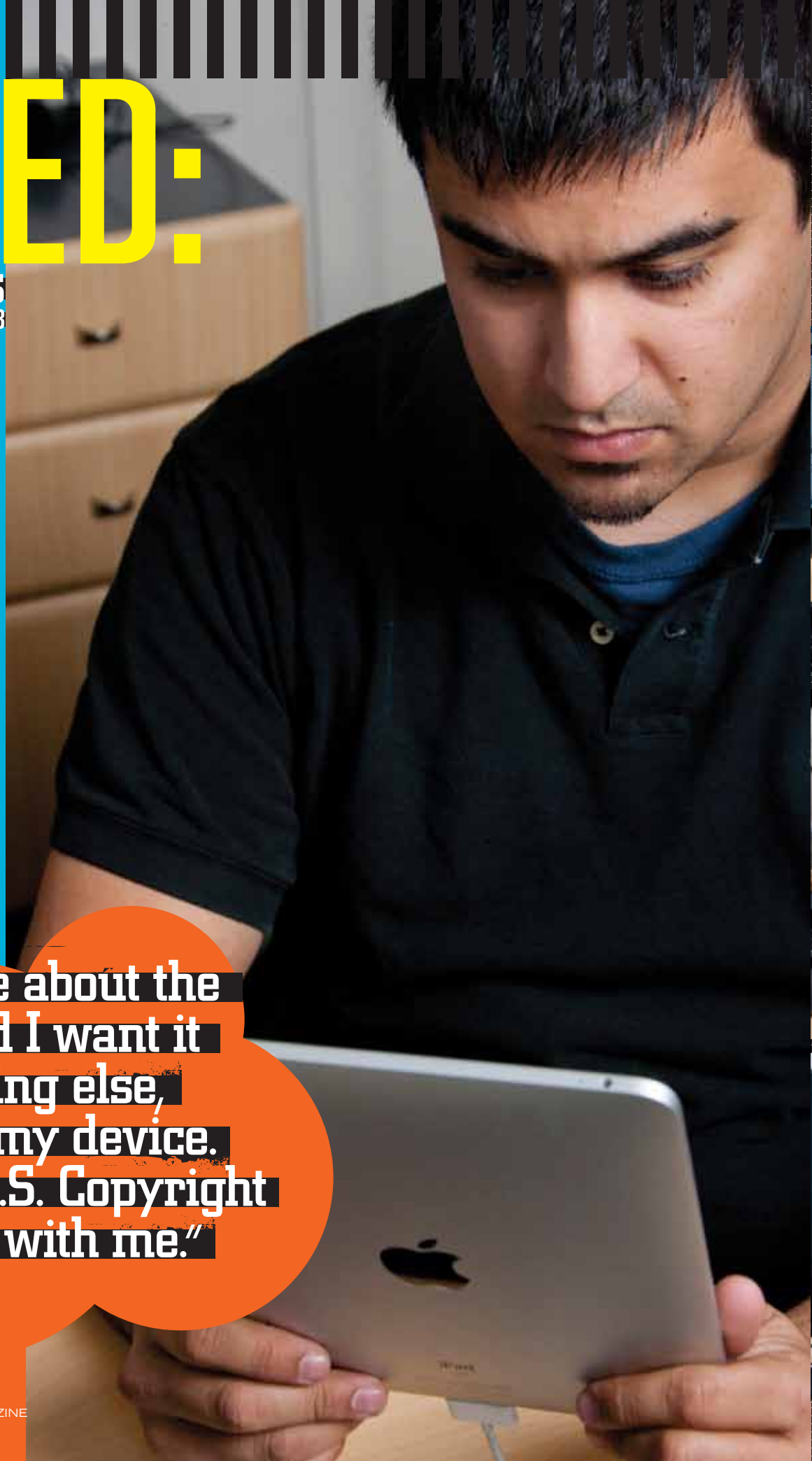
Well, for Kevin Kadium, a senior double majoring in Network Security and Technology Forensics at UAT, the steps he's taking to eventually land a top-level national security job include taking classes like Applied Exploits.

But, here's the twist, Kevin's approach to getting a national security job also includes doing a whole lot of hacking. Yeah, hacking.

The idea is if you know how to break into a security system, you can do a better job of securing it.

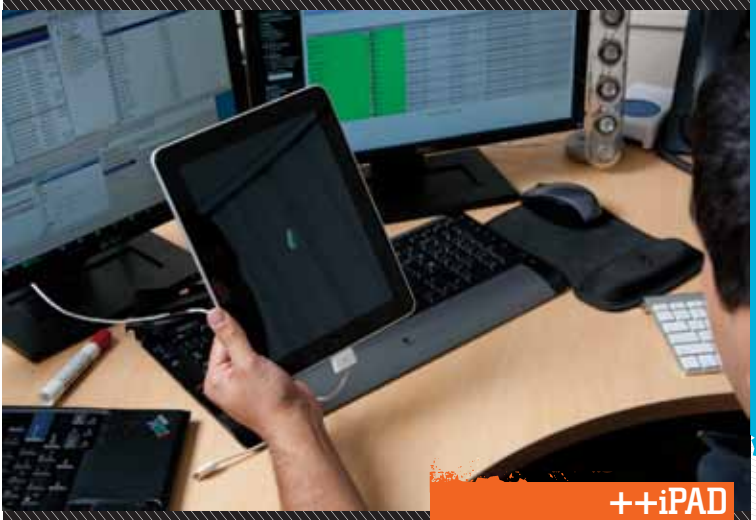
Kevin's been hacking iPhones, iPads and pretty much every other electronic device he owns. He's been hacking at UAT, and even at his internship in North Scottsdale, where he recently hacked Amazon's Kindle and Barnes & Noble's Nook—because his boss asked him to.

Kevin has been interning at an interactive marketing agency since 2009.



"If I don't care about the warranty, and I want it to do something else, why not? It's my device. At least the U.S. Copyright Office agrees with me."

++THE SET-UP



++iPAD

++KINDLE

++NOOK

For the most part, he's not just handling simple IT requests. No, Kevin has pretty much overhauled the company's network security and phone systems. And, while he may just be an intern, Kevin is left on his own to fix servers and other IT equipment that cost tens of thousands of dollars.

So, it's no surprise that Kevin's boss came up to him one morning last November and handed him a box, saying: "Here, hack this."

Kevin's boss just wrote a book about interactive marketing. He wanted to give a copy of the book to each of his clients. Not only that, he wanted to give them a copy of the book on the Kindle with the book cover saved as its home screen.

The problem?

The Kindle didn't have that image available to save to its home screen. Problem solved, though, Kevin just hacked it.

He hacked it ethically, of course. Like every UAT student, Kevin has taken classes like Ethics in Technology. It's all about being a good digital citizen.

"What does it mean to be good digital citizens?" asks provost and dean Dave Bolman. "We have a role to use technology to its best use, so that it advances and helps society and humanity. What we try to do here, as much as possible, is have students take a lot of courses on ethics. That's so they can make their own call, like 'Did I take another guy's idea or not?'"

HACKING HOW-TO

So, how did Kevin hack his boss' Kindle?

STEP 1:
He started where any good hacker starts, online, on websites like Hack a Day. There's no point in modifying a device from scratch if someone has already done it.

"I started searching forums and online communities to find out what had already been done," says Kevin. He found a modified version of Kindle's firmware.

STEP 2:
Next, Kevin knew he'd probably give up the warranty if he hacked the Kindle. He made sure his boss knew what was going on.

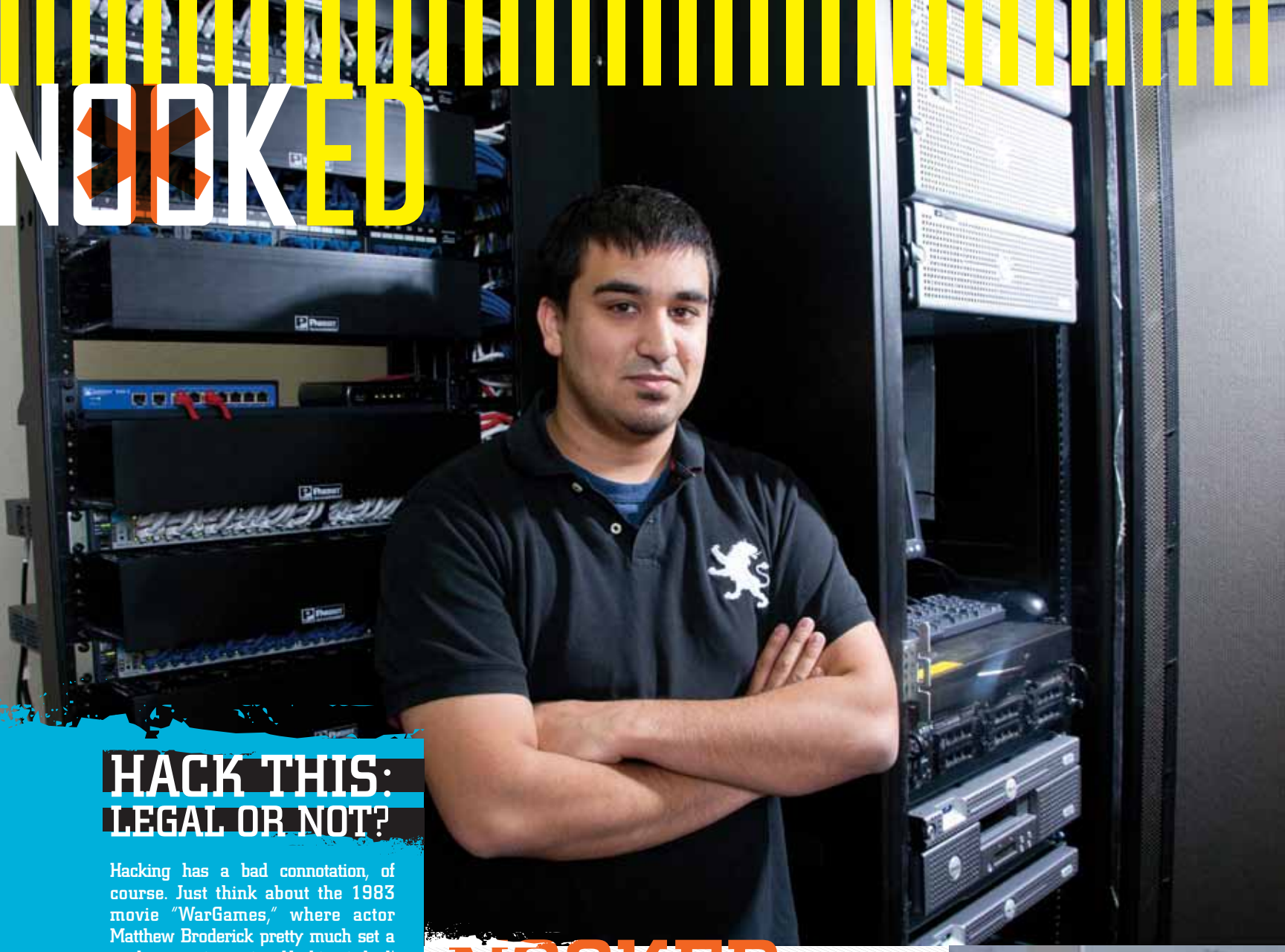
"If I don't care about the warranty, and I want it to do something else, why not? It's my device. At least the U.S. Copyright Office agrees with me."

STEP 3:
Next up, he downloaded the hacked Kindle firmware: "From there, you are able to put apps on it or, in our case, our screensaver."

STEP 4:
Of course, the original purpose of the hack was to get Kevin's boss' book cover onto the Kindle. Did he do it? Yeah, within a few minutes.

"I went to the designers and asked for an image," says Kevin. "They were able to toss me an image by email. So, the screensaver is on the device."

NOOKED



HACK THIS: LEGAL OR NOT?

Hacking has a bad connotation, of course. Just think about the 1983 movie "WarGames," where actor Matthew Broderick pretty much set a nuclear war in motion. Hacking is bad!

As it turns out, hacking can be legal.

In fact, a big decision was made in 2010 that made many forms of hacking perfectly legal. In 2008, the Electronic Frontier Foundation (EFF) had asked the U.S. Copyright office for permission to hack Apple's iPhone.

Just recently, the EFF was given permission to do just that, freeing up everyone to legally jailbreak their smartphones.

"This is about opening up a device and digging in," says Dave Bolman. "Especially with hardware, users are allowed to dig in. It's different with software because you probably signed something that says, 'I will not change this.'"

NOOKED IN THE HEAD

Maybe the Kindle hack was too easy for Kevin. But easy isn't usually how real-life works, is it? Which is exactly what Kevin found out about three days before his boss was giving out more than 30 hacked Kindles.

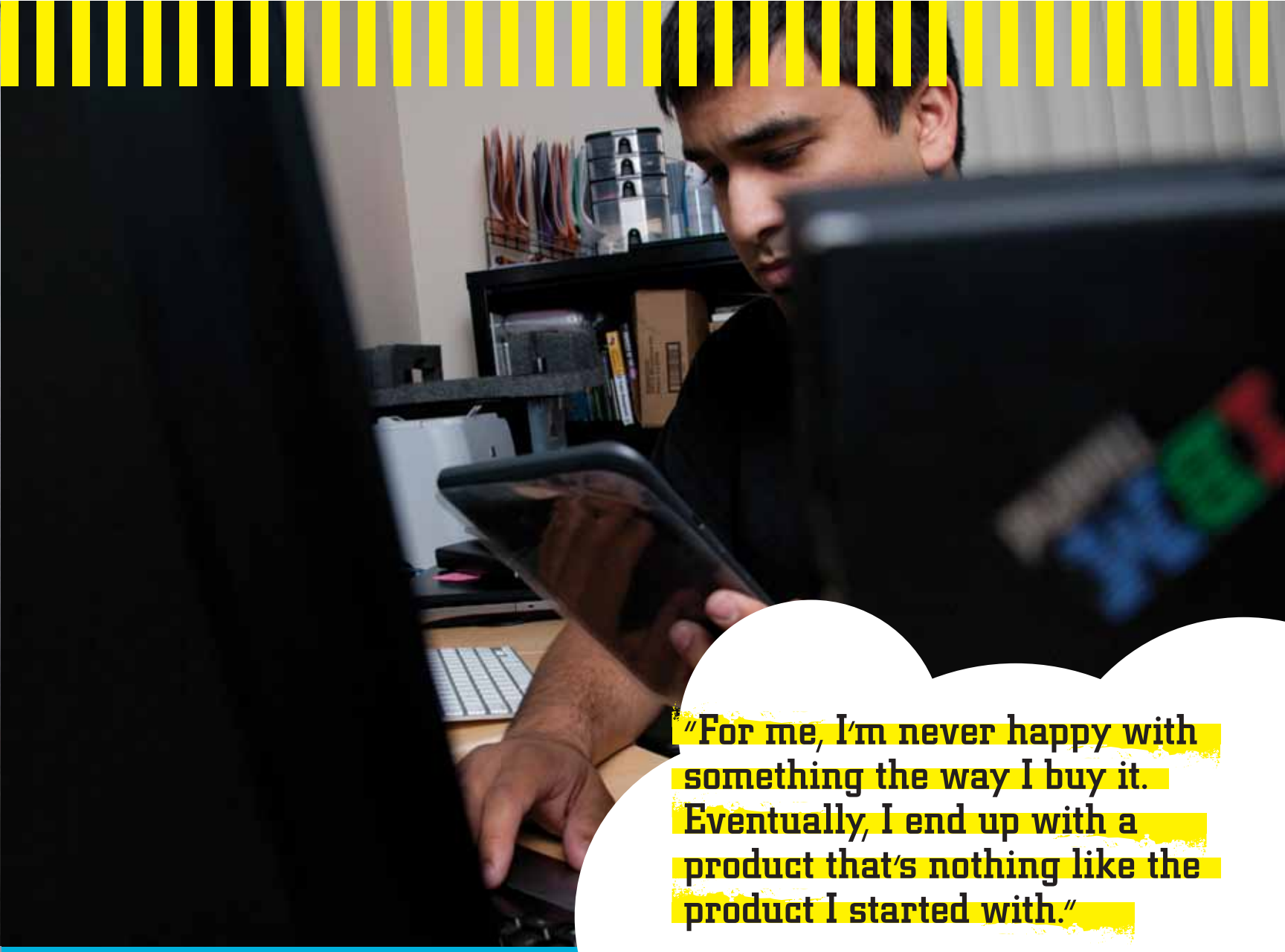
As cool as the Kindle is, Amazon was filling so many orders that it had trouble getting 30 out in one shot. So, Kevin's boss had another idea—give his clients his book on the Nook.

The Nook hack was a little different than the Kindle hack.

Kevin went online and found a tutorial on gaining a super user access, which essentially meant he could change the Nook however he wanted.

Within a few days, the 30 Nooks had the book cover on them. And, they were hacked into pretty incredible tablet PCs with Facebook, Google Earth, Skype, email, games and a bunch of other programs.

Kevin's boss was able to distribute the Nooks and his clients loved them.



"For me, I'm never happy with something the way I buy it. Eventually, I end up with a product that's nothing like the product I started with."

TAKING BABY STEPS

Kevin has been playing around with computers and electronics since he was a kid. When he was just 9 years old, for example, his dad bought him a computer. It wasn't a shiny new computer. It was in a thousand pieces that took Kevin, with his dad's help, weeks to put together.

More recently, he's been hacking his iPhone, a few times over. He's added custom apps, SMS tones and ringtones. He's done a lot more, too, like jailbreaking the operating system to enable FaceTime to run over 3G, instead of Wi-Fi, to make video calls. And, he's installed Metasploit to exploit vulnerabilities in OSs.

"For me, I'm never happy with something the way I buy it," says Kevin. "If I buy a car and I'm not happy with the way it is, I get a supercharger or I get it turbo charged or I get a new exhaust system. Eventually, I end up with a product that's nothing like the product I started with."

THE UAT APPROACH

UAT provides one of the best approaches to learning for someone like Kevin who's determined to get a national security job.

Not only are the majors and classes at UAT designed to prepare students for top-level jobs, most of the professors are teaching from the perspective of their experiences in high-level tech jobs.

The approach to learning at UAT is different from what you find at other universities, too. Rather than working on your own, reading books and writing papers, UAT students from a wide range of disciplines—for example, animation, programming and technology forensics—work together on projects.

The idea is that people with a lot of skills can approach a problem from many more angles than one person can ever think of on their own.

READ MORE ABOUT THESE HACKS AT UAT.EDU/EREADERHACK

NSA INVESTS IN UAT CYBER SECURITY ELECTRONIC CLASSROOM

read more about the cyber classroom at www.uat.edu/cyber

It has taken a few months of blown-out walls and construction crews banging things and ripping holes into other things. But it's all paying off in a new Cyber Security Electronic Classroom that is pushing UAT up another notch as a Center of Academic Excellence – a designation from the National Security Agency that UAT has had since 2007.

Beginning in 2009 and ramping up in 2010, a team from UAT spent months applying for a $103,000 grant from the Department of Defense (DoD) for technology improvements – a grant restricted to CAEs.

UAT got the grant and has been reconstructing classrooms the past few months. It has also been buying new equipment with the DoD grant money to create the Cyber Security Electronic Classroom for UAT students on campus and online.

"This is a pretty exciting time for us," says Professor Shelley Keating, who specializes in information security and assurance technologies. "This is meant to be a UAT destination for students who care about information assurance."

The DoD doesn't just hand over grant money. Getting it took a lot of work on UAT's part.

"You have to come up with an idea and write a five-page proposal explaining your idea," says Professor Keating. "UAT's proposal was to build a state-of-the-art cyber security electronic classroom."

Construction on turning rooms 252 and 253 into that classroom began last fall and is scheduled to continue into the spring semester.

In addition to the wall separating the two rooms being knocked down, the hallway wall is being reconstructed with a glass divider so people can see the equipment inside.

There will be an HD webcam to stream online lectures. There will be flexible new computers brought in and wireless access for up to 30 students. The lab will have a static-free carpet and the walls will be coated with Wi-Fi paint to block wireless signals from entering the classroom.

The Cyber Security Electronic Classroom will be the most visible result of the DoD grant. But the transformation will affect virtually every UAT student for years to come, including online students and students taking classes in other rooms.

A mobile cart with its own server and intrusion detection system can be used to transform a regular classroom into a cyber security electronic classroom.

All this wouldn't be possible if UAT hadn't become a Center of Academic Excellence.

"That is the NSA's and DoD's stamp of approval that says we are educating students to become the future cyber warriors of America," notes Professor Keating.

Each university that becomes a CAE goes through a rigorous review process to prove its commitment to academic excellence in Information Assurance. There are perks to becoming a CAE.

"Beyond having the designation from the NSA and DoD, you have certain benefits, such as scholarships that students who attend universities with a Center of Academic Excellence can apply for," says Professor Keating.

Another benefit is that CAEs can apply for capacity grants covering four areas: research, curriculum development, faculty development and laboratory improvements.

UAT Alum now "Innovare" in Italy.

James Grant, recent UAT alum and Student Government president as an undergraduate, not only found a great job right out of school, he also works in an area where he can get his fill of delicious, authentic Italian food. He lives and works in Treviso, Italy.

James designs and develops projects in the Interactive Department for Fabrica, which is a division of the well-known global fashion brand and retailer, Benetton. Fabrica is the communications center for Benetton and functions as a talent incubator, in essence, an applied creativity laboratory. Young designers and technologists come from around the world to develop innovative projects and explore the frontiers of innovation in areas such as communications, design, music, film photography, publishing and the Internet. It's truly an exciting, inspiring environment for a creative mind.

A student project that James developed while at UAT was one of the reasons Fabrica felt that he would be a good fit in their endeavors. Mentored by UAT Professor Todd Spencer, James developed an interactive data visualization application which can assist in stock market analysis. The application is called STOC, for Stock Ticker Orbital Comparison. Using the metaphor of a planetary system, this application maps the parameters of stocks to animated visual outputs. STOC had its world premiere at the SIGGRAPH 2009 Information Aesthetics Showcase in New Orleans, Louisiana.

Fabrica's headquarters in northern Italy are based in a restored 17th century villa. And that's where James is now developing a new data visualization application to enter into the World Bank Apps for development competition and as an installation for the Benetton retail stores' windows.

In addition to his work with World Bank and Benetton, James is working on a poster and installation project that will be installed in the Rochester Institute of Technology's Vignelli center and starting a web community to connect young politically active artists with young political thinkers and advocates to produce stronger messages from the youth of the world.

So let's just review here for a moment. Young UAT grad gets his first job out of college in a beautiful foreign country where he gets to immerse himself in fascinating advancing technology and can develop projects that will allow him to see his work in action in retail locations around the world. And, let's not forget the great Italian food. While he was in college, James had no idea he would be able to have such outstanding experiences and opportunities to explore his passion for technology. He can only say, "it's really, really awesome!"

NAME: James Grant
PROFESSION: Developer > Treviso, Italy
ALUMNUS: Class of 2009
MAJOR: Programming

For more UAT Italy news go to www.uat.edu/Italy

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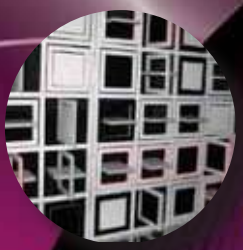
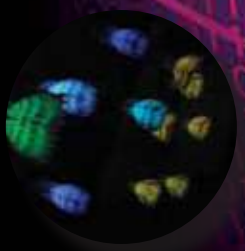
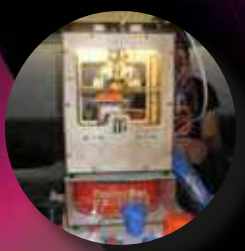
[GEEKED SINCE BIRTH]

In Austria, the Halls are Alive with Music – and Digital Art

Mauro Palatucci, Vesna Dragojlov, Tylene Graham







UAT student Tylene Graham (you may remember meeting her in the previous issue of Geek 411) and UAT Digital Media professor, Vesna Dragojlov (also profiled last issue) recently visited Austria to attend the world's leading media arts festival, Ars Electronica.

Ars Electronica is an organization based in Linz, Austria, which was founded in 1979 as a festival for art, technology and society. The festival features symposia, exhibitions, performances and events designed to interpose the social and cultural phenomena that are the consequences of technological change with art and science. The organization also hosts the Prix Ars Electronica, to award prizes and generate publicity for outstanding cyberarts innovations. Other elements of the Ars Electronica organization are the Ars Electronica Center, a museum of the future, and Futurelab, a laboratory for digital media Innovation.

In addition to the works of the international cyberart community, this year's program featured more than 200 exhibitions, speakers and projects—everything from interactive art pieces to robotics. "There's just a little bit of everything going on," said Graham.

Rather than being held in the Ars Electronica headquarters, this year's event was held in a former tobacco processing factory built in the mid-1800s, ideal for the conference's theme this year of repurposing. Its expansive space that occupies four six-story buildings and preserved in their original settings, served as an appropriate venue. Multimedia installations, videos, sculptures and performances found their temporary habitat in this surreal, eerie, bleak, socialist realist environment. It was a great challenge for the organizers to marry the latest technologies with the venue that belongs to the past, and for that matter, seamlessly, in order not to disrupt the original atmosphere. With the addition of the recycled cardboard furniture, the setting was very original.

The industrial building's stark architecture and vacant floors created a dark, foreboding atmosphere—which Graham likened to a piece of art itself. She also said, "I felt like my horizons have totally expanded. I got to be surrounded by like-minded people that were part of this really cool event. I felt like I was really a part of it."

The highlights of Ars Electronica are always the latest trends in arts technology projects coming primarily from Japan with their projects pushing the boundaries in the realm of robotics and art, then from Australia and Europe, with hybrid art and interactive art projects respectively. From the U.S., Zach Lieberman, a famous interactive artist and educator, with his team of engineers, created the NICA award-winning interactive art project, Eye Writer. The software that he customized to enable a bed-ridden, famous graffiti artist to create his artwork using the movements of his eyes only, is not only original in its approach but very human in its future applications.

Graham's favorite exhibit was "rheo: 5 horizons," a projected collection of nature and computer-designed images set to moody, rhythmic digital music. "It's one of those pieces for which you really have to be there to fully capture the eeriness, the feeling of it," Ty said.

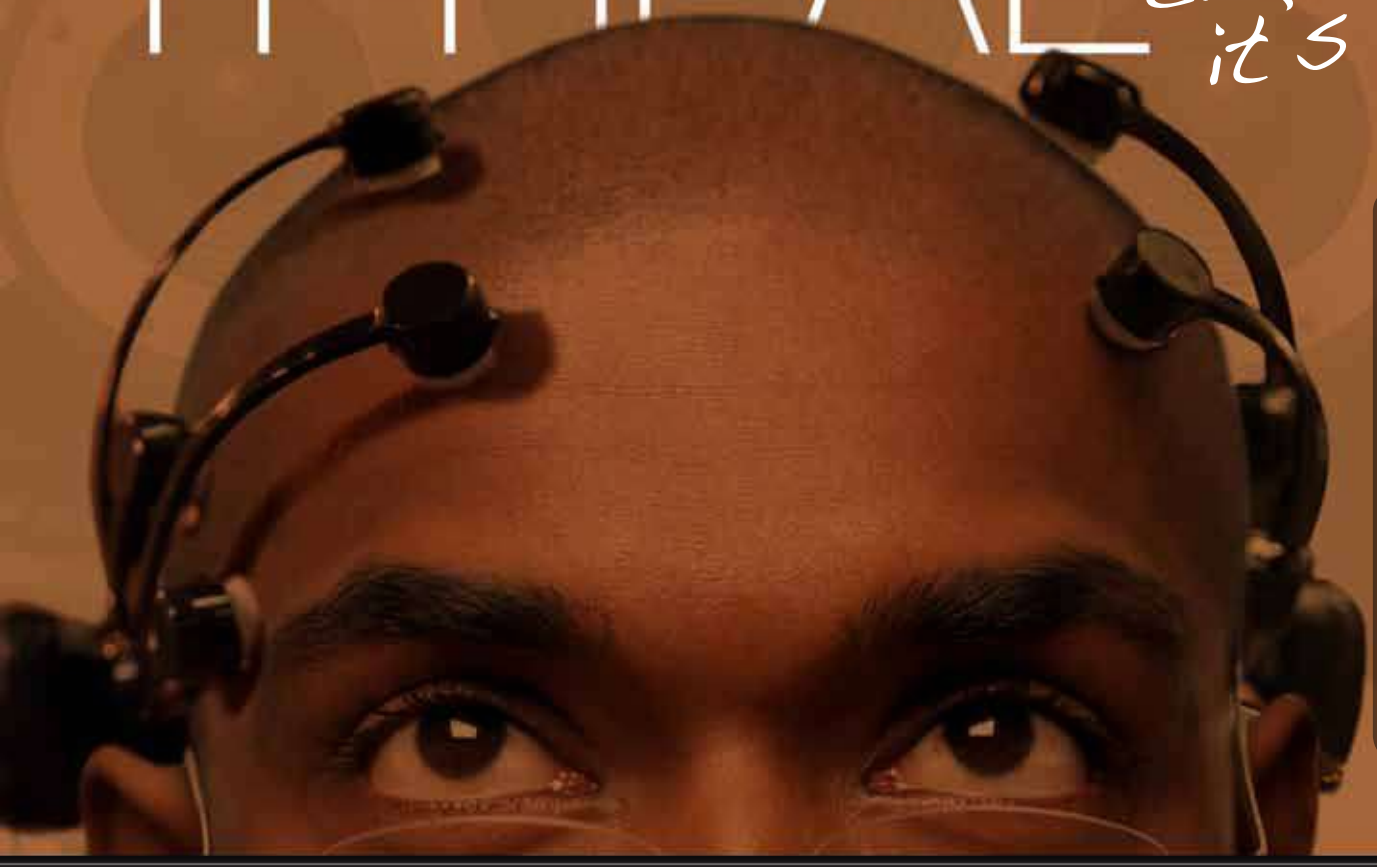
Learn more about this article:

www.uat.edu/tasteofinternational

Robotics and Embedded Systems:

KEEPING IT REAL

Even when it's not.



MORE ROBOTIC MARVELS

UAT Robotics and Embedded Systems students Brittany Wilkerson and Manuel (Manny) Barberena are currently hard at work on the "Fun Theory" project. The origin of the Fun Theory was a project at Volkswagen to explore using fun as an incentive to inspire behavior modification of bad habits. Brittany tells the story: "A subway escalator in Germany was always crowded because no one used the adjacent stairs. So, they installed piano keys on the stairs – like in the Tom Hanks movie, *Big*. Suddenly, people were swarming to the stairs because they made music. Another idea was a trashcan at a park that made a 'w-e-e-e-o-u-u-plop' sound when you threw a bottle into it. One last idea was a store's absorbent doormat that made a DJ record scratch sound effect. People went out of their way to use the mat, and the store's floors now stayed dry on rainy days."

The Tactics Behind Haptics

Haptics is the emerging technology of computer-generated or controlled tactile feedback related to robotic or remote control devices and operations. By utilizing mechanical force or vibration and other movement to signal a user's sense of touch, the performance of a remote control or operation is enhanced. When a user can actually feel the subtle changes in force or position during a remotely controlled operation, the feedback results in better control by the user and, therefore, better performance of the operation. In many ways, the effect of tactile feedback or haptics on the sense of touch is similar to the effect of computer graphics on sight – a realistic virtual world.

Perhaps the most common examples of haptic devices we come across in day-to-day life are game controllers. If you're playing a "driving" game with a steering wheel accessory, you get "the feel" of the road because the controller is programmed to provide feedback. When you make a turn, the steering wheel allows you to feel how your virtual vehicle is maneuvering… or skidding.

Robotics is a blend of three traditional disciplines: mechanical engineering, electrical engineering and computer science. Mechanical engineering is all about how things move and the stresses they undergo. Electrical engineering is focused on how power is distributed and electronic signals are processed. Computer science provides the "intelligence" for normally inanimate things to respond to their environment. But, the real magic happens when you blend all three together to get robotics. And, haptics is playing an ever increasing role in robotics applications.

Consider the importance of haptic feedback to a surgeon operating with the da Vinci computer controlled surgical system. In a minimally invasive surgical procedure, when the surgical instruments are passed through a small opening that does not allow the surgeon to see where or how she is cutting, the computer-generated feedback guides her accurately as she cuts through various type of tissue. Haptics allows the surgeon to better control the surgical procedure for better results and faster recovery time.

UAT Robotics and Embedded Systems professor, Ryan Meuth, PhD, is leading the haptics fanatics on the UAT campus. As you might imagine, it's a hot topic in the Robotics lab. Dr. Meuth says, "We look at how whole systems that are composed of mechanical and electrical and computing subcomponents work together into larger architectures to interact in the world. We had some resources around here…like these emotive headsets. Robotics student Mike Peters saw the emotive headsets and wanted to build a thought-controlled robotic hand. It turned out that I had already purchased a couple of robot arms. Mike started assembling them, looking at the interfaces and started plugging those pieces together. There's a challenge going between the pure thought-controlled and the physical world. It's very much one way at this point and part of the challenge will be getting information back to the operator that's vivid and valid to them. Just imagine the potential in the field of prosthetics."

We asked Mike Peters if he was about to become UAT's version of Doctor Octopus and to describe the idea behind the "Hand." Mike said, "I dig research on artificial limbs and human machine interface. On YouTube, I was watching a lot of videos of monkeys using the power of their minds to control these robot arms. I thought 'We had these emotive headsets that take an EEG input from your brain and interpret the emotion on a computer screen. The primary application for this is video games. I thought how hard would it be to take the emotive hardware from the headset which is already translating emotion into a kind of signal…up/down, left/right, forward/backward, rotate, that kind of stuff, and map it to some servos connected to an arm?'"

See Mike's prediction for robotics in the future, go to www.uat.edu/roboticsmarvels

Manny adds, "We thought about what could we fix on campus using positive reinforcement effects. We decided on a light display on the ceilings of Commons that would come on when noise levels were reduced, basically a reward for being quiet and letting your fellow students work in peace. For example, our system may project more of a green light pattern when it's nice and quiet and more red when it's loud. And, once the noise drops below a certain threshold, it has this nice peaceful algorithm of art, rolling fractals or something like that." Brittany added, "We also thought about triggering a projector to play images. Exactly what we put up depends on the school. It could be anything from movies, games or it could turn it into an interactive thing… like a Breakout game up on the ceiling that the whole room could play."

So, what's the story behind those two R2D2 wannabes by the wall in Robotics Lab? Manny replies, "Those are Rovers. We're fixing them up right now so that they have navigation and GPS. They'll have radar to scan objects… we have stereo cameras on there… and lidar sensors, too. We're just trying to get all of that working so they can run autonomously. So we can just let it go outside and have it figure out 'oh, I can't go here,' but go in the corner or somewhere else and while it's doing that it's recording everything it's doing and is mapping out what it's seeing. So that when it goes there again, it knows exactly where it's going."

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The Sky's the Limit!

a roundtable discussion about cloud computing

OUR ROUNDTABLE PANEL:

Phil Hartley, UAT associate professor
Ryan Meuth, UAT associate professor
Leah Sweet, VP of the global flagship organization at CA Technologies, which manages and secures IT environments
Dave Bolman, UAT provost

Everyone seems to be talking about Cloud computing these days. We gathered four great minds to discuss what Cloud computing is, where it's going and how UAT is emerging as a leading university in teaching all aspects of the Cloud.

G411: What is Cloud computing?

Sweet: Cloud computing is really about taking IT capabilities, whether it be across the layers of applications, platform infrastructure, it's vertical layers or all three of those, and providing those elements from a third-party independent source. Cloud computing is not something you own, manage or develop. It is something that is provided to you in the same way you would pay for a utility or water bill.

G411: How does Cloud computing differ from ASP.net (Microsoft's free Web framework)? For instance, in the business world Salesforce.com has become one of the most widely accepted ASP models.

Sweet: Salesforce.com is actually considered Cloud software. Part of the thing with Cloud, as with any new IT initiatives, is that it's usurping some of the past and incorporating it into the new definitions. Prior to Cloud computing, there was ASP utility computing. Cloud computing enables multiple companies or users to use a single application within a multi-hosted environment. And there is now the ability to partition off, in some respects, the infrastructure and application capabilities for the use of a particular user. So, Cloud computing is really an evolution of what ASP has previously done.

Bolman: Sometimes, it swings back and forth, where you go back to the PDP (Peer-to-Peer Database Protocol) days, where you are trying to get stability and access locally and that's the approach you took. An evolution of peer-to-peer networking are games like "Call of Duty" that are now using the capability of Cloud computing.

G411: Where did the Cloud come from?

Sweet: You can look at the evolution of technology from the early days of mainframe. You could make an argument that mainframe was your initial private Cloud.

What's happened over time is you see this push-and-pull of businesses between wanting to have security and control, to having innovation and speed of time to market. So, you've seen the evolution and push from the completely centralized environment of mainframe to more of a distributed PC-based, server-based environment. Then you start to see the Internet pop up and a lot of capabilities coming available that are putting the control back into the hands of the users for new innovations and new capabilities.

Over this time, you've seen the non-mainframe world really mature, in terms of its robustness, in terms of its security, in terms of your ability to manage it from a utilities standpoint.

When you see someone looking at Cloud today, it's not as if they weren't able to do something like that in the past. But they didn't trust those vendors because security technology wasn't robust enough. They didn't have the network bandwidth because network costs were too expensive to be able to reach out and actually have an external application come on board, where you didn't have it hardwired to the ASP that was providing it. And, a lot of those capabilities flat out weren't available to provide them in a utility-type fashion, where you could pay-for-play service because they just weren't mature in those models. That's what has been really maturing in these last several years to make Cloud viable.

Bolman: If you go from what we had in the 1960s and '70s, which was the mainframe Cloud, to the '80s and '90s, where mainframes fell back because of the power and innovation of personal machines, it fell away. People traded off the stability of a mainframe system for the localized power, while the innovation of computer science was going on for both kinds of systems.

Now, a lot of software development has flattened out, where it can be distributed over the Internet. And users are more comfortable with subscription-based software, rather than owning software. From a consumer position, you can get Netflix on my iPhone, my iPad, my computer, whatever. It's the same program. The Cloud is pushing it out to all those applications.

G411: Is the Cloud similar to the way that NASA links up computers?

Meuth: All of the big supercomputers at national labs, such as the Roadrunner that IBM built for Los Alamos National Lab, are a series of computers that are glued together. They can talk with

each other. It's like having a large committee of people who take a job and break it up into little pieces. Each person works on it and then brings everything back together.

So, if you can distribute the work and get many more things done in a short amount of time with a single program, that's where we start to see efficiency.

I see it as a centralized version of the Cloud. The Cloud is when you have lots of computers taking different jobs, running from different places, all over the world.

G411: So, it seems there's a real benefit to the Cloud, in terms of efficiency. Is there a cost benefit?

Hartley: When you write an application for Google App Engine, it goes into the Cloud and is load balanced automatically. It's highly reliable because it goes into their infrastructure. To get that kind of reliability on your own would be extremely expensive.

G411: How quickly are companies adopting the Cloud?

Sweet: What's interesting is that you hear about how technology is evolving and that places like UAT are making it possible to really put this in play.

But then you have the other side of it. The business world is not as mature, in terms of being comfortable with going into the Cloud. They want to know: How secure am I? How do I know you're not putting my customers' data in China? How do I know that your environments are secure? So, one of the biggest challenges companies are running into is the transparency of how applications and environments work. What are the legal requirements and what security engines are in place? How do they set up the contracts and licensing programs appropriately?

The biggest barrier now in Cloud adoption is the trust, the legal, the transparency components for it, more than the actual technology.

G411: What is the benefit of the Cloud to the average person?

Bolman: On the consumer side, this is interesting, too. You go back five or 10 years when people wanted to own movies, own their videos and own their own copy of Microsoft Office. Now, you're seeing that being chipped away with, "Well, I'm getting my music from iTunes." The cost and convenience of others managing and providing access to those songs creates value.

Sweet: And Kindle for your books.

Bolman: And users have been beaten up enough with software patches and versions of next year's "big thing." I can see consumers saying, "I'm not even sure if owning something means much to me anymore."

G411: So, most people are already benefitting from the Cloud and probably don't even know it?

Meuth: That's where Netflix is coming in. You don't own a movie. You rent it. Netflix is coming from the Cloud. Google Chrome OS is a Cloud-based operating system.

Sweet: Microsoft is rolling out Azure. You see pretty much every high-tech vendor who has consumer-based products or has on-premise products putting it into the Cloud. A big one that is coming up right now is a result of healthcare reform. One of the big things that came out of the stimulus funding is that there is a requirement that hospitals and doctors have integrated healthcare records. You're seeing a lot of companies jumping in providing Cloud-based solutions. Hospitals can't afford to put these large environments in place to integrate all the records and then integrate with other hospital systems and pharmacies and clinics.

Bolman: There are a lot of levels of opportunity to this advancing technology.

G411: It sounds like the Cloud is really changing the IT environment, or will for most companies. How is the business world adapting to this change?

Sweet: Now that these systems are all talking together, that the initial programming is done, how do you manage this environment?

IBM, HP, Oracle, CA and other companies have built all these underlying utilities and infrastructure to manage on-premise applications.

Now, you're talking about having all these pieces of big business IT environment coming from all over the globe. So, these companies are saying, "How can I manage this? I can't ramp up my operations and staff by fivefold." So, you see huge amounts of money being put in place by technology companies to build capabilities. And there's a lot of money being spent by companies to invest in this environment.

Read more from our roundtable at UAT www.uat.edu/cloudroundtable

Professor Raymond Todd Blackwood: Embracing the Cloud.

Cloud computing is revolutionizing IT, and fast. Oh, and it's saving companies boatloads of money, too.

Which is why it's been catching the attention of Professor Raymond Todd Blackwood, who's also the Director of Technology at UAT.

"I really like this technology," says Professor Blackwood. "I'm interested in it for UAT."

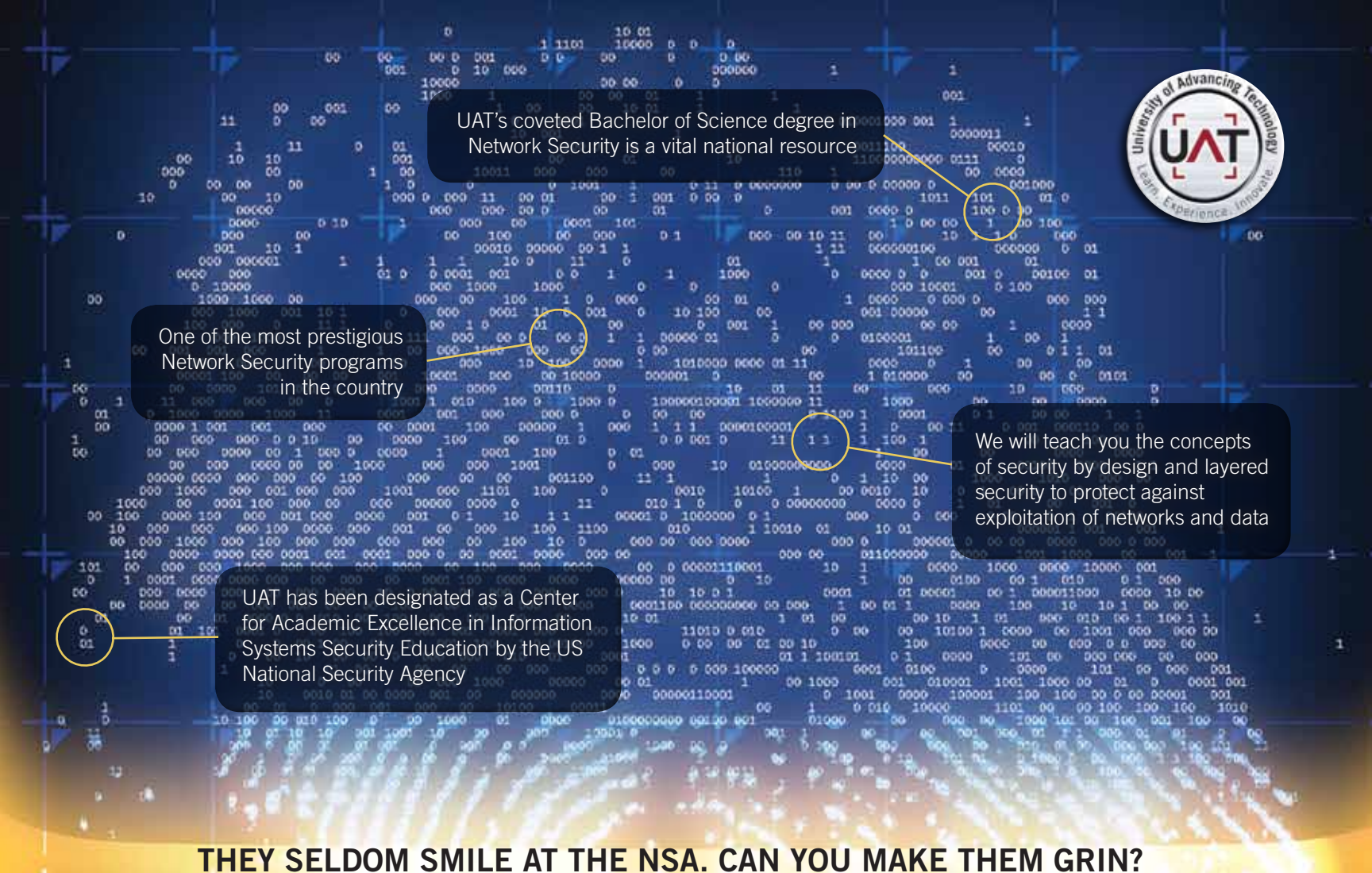
The concept of Cloud computing is simple enough. Instead of storing countless terabytes of data on massive mainframes, which can cost millions of dollars to operate, the vast amount of data that computer networks churn out every day is stored virtually. It's housed offsite – on the Internet. Or it's stored on a company's intranet – that's a private cloud.

"With a private cloud, I'm not hosting data on the Internet, but it's not on an internal network either," explains Professor Blackwood.

But, while the idea is simple, implementing Cloud computing can be incredibly complex. It takes a pro like Professor Blackwood to fully understand it and effectively get it up and running.

Last October he attended the Journey to the Private Cloud conference in Scottsdale. He wants to make an informed decision about UAT's Cloud future. As it turns out, UAT's Cloud solution will likely be: Some of this (Cloud computing) and some of that (private Cloud).

"It's an interesting question for us," says Professor Blackwood. "The answer is we'll probably do a little bit of both."



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Kennedy Gray

Major: Advancing Computer Science
Home State: Nevada

Kennedy found the ideal home to study programming while attending a summer college fair at Centennial High School in Las Vegas. UAT's "proud to be a geek" attitude really made it stand out in the crowd.

"I really like all my classes and professors. Plus, one of the nice things about UAT is that I'm just a four and a half hour drive to my family's home in Las Vegas."

Molly Satterfield

Major: Robotics and Embedded Systems
Home State: North Carolina

Molly hails from Jacksonville, North Carolina, and is the epitome of southern hospitality. She made the transition from the beaches of the Atlantic to the deserts of Tempe, Arizona, to study at UAT. In the process, she's made plenty of friends in the dorm and throughout campus. One day, her dream job is to work for "Big Blue," IBM.

"I learned about UAT after receiving an issue of Geek411. I really love it here. I make it a point to meet someone new every day."

Santino Fox

Major: Advancing Computer Science
Hometown: Somerset, Bermuda

Originally from Bermuda, Santino was attending Central High School in Louisville, Kentucky, when he first learned about UAT. After he earns his degree in Advancing Computer Science, he would one day like to work for Oracle America [formerly Sun Microsystems].

"My dream job would be to work in Silicon Valley. UAT is giving me the kind of education to hopefully get me there."

STUDENT BLOGS

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Melissa Reese

I'm getting a lot of assignments to start working on my final projects, and this semester, I'm actually keeping up fairly well. I've almost completely finished my final in Web Design, so go me! I'm killing two birds with one stone by making it my portfolio site. Next semester will be my last one, I plan on doing a multitude of portfolio work with my mounds of free time this spring, so hopefully I'll be ready for the looming job search.

This Thursday will be my final day as a student ambassador, along with my final journal entry, so look for a farewell then!

Keep reading! Find out how Melissa is doing at www.uat.edu/meetmelissa

Nick Pittak

So I started my classes this week and I absolutely love them! I have character drawing, digital painting, concept art and foresight development. My art classes are so much fun, I love doing the concept and digital painting. My drawing class isn't really my cup of tea but it's still a fun class. I think I'll do very well this semester

I got an internship and am going to withdraw from one of my classes so I have time to do that internship. Vegas last weekend took a lot out of me but I can't wait to go back. It was so much fun and I ended up coming out on top surprisingly. But all in all just another week here at the good ol' UAT.

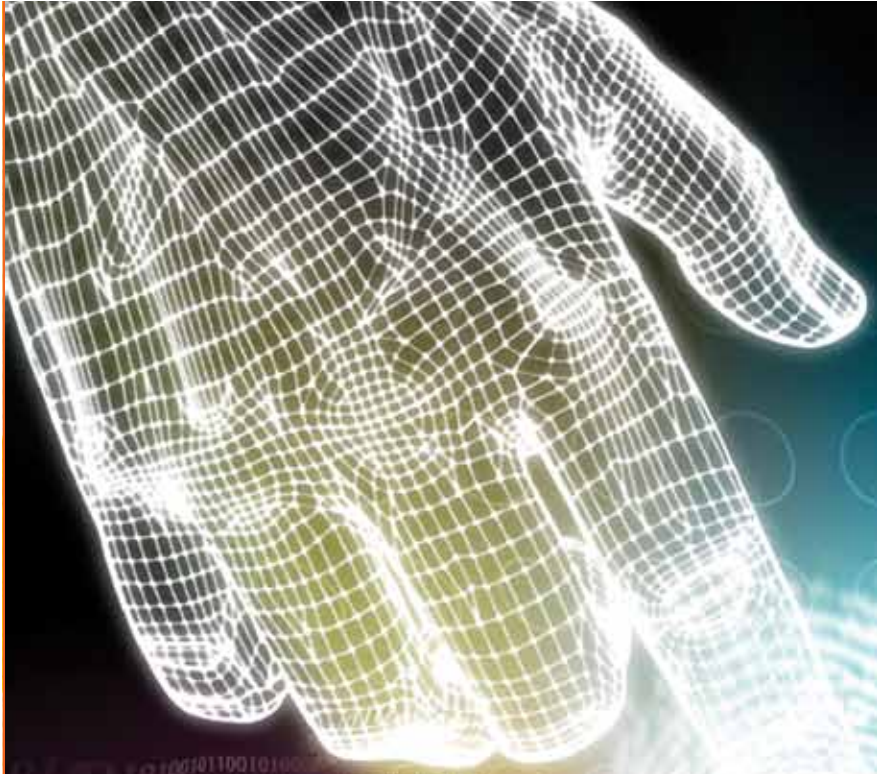
Get an update on Nick at www.uat.edu/meetnick

Kimberly Mann

We have a Fly-in Geek this weekend, but more importantly, we have our GDC presentation on Monday!

We're pretty much using this whole week to polish our current version of the game to show off at the meeting and we're even ordering some shirts with our logo on them so we can look all professional and junk. If we get the sponsorship that means the whole team (or most of the team at least) will get to go to GDC San Francisco. We also get our own booth to show off our game, so it's a really sweet networking opportunity.

See what else Kimberly is up to at www.uat.edu/meetkimberly



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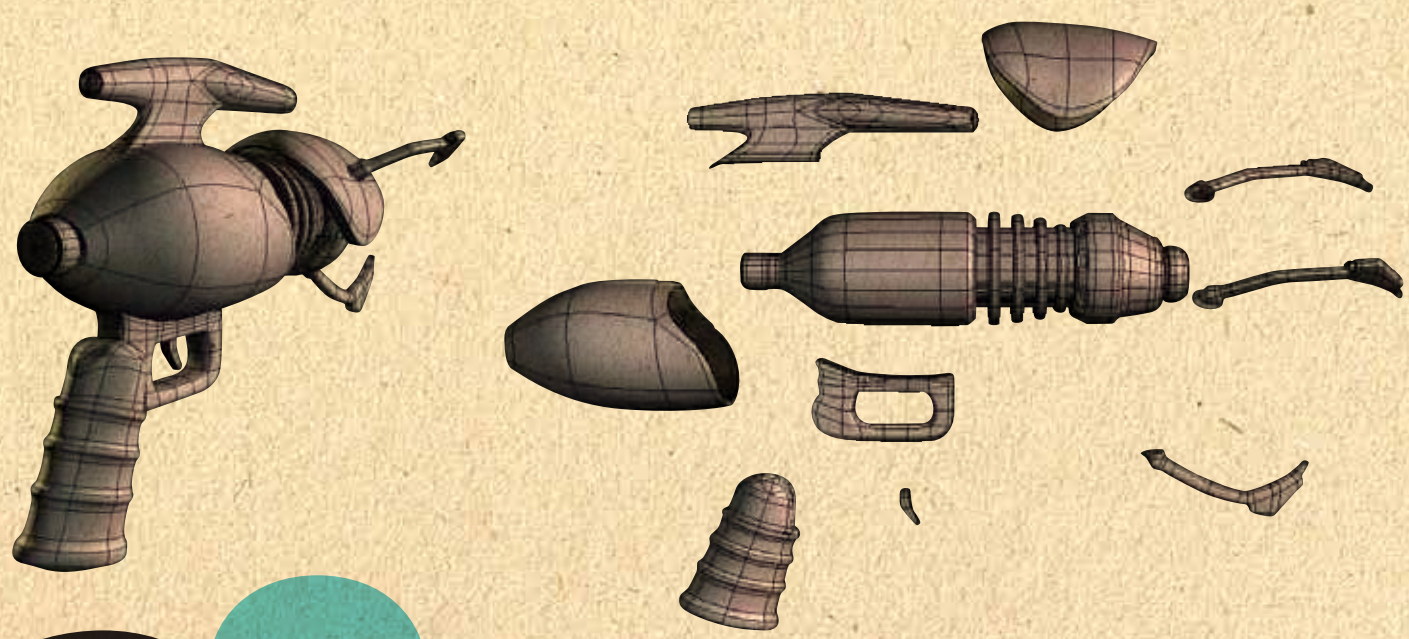

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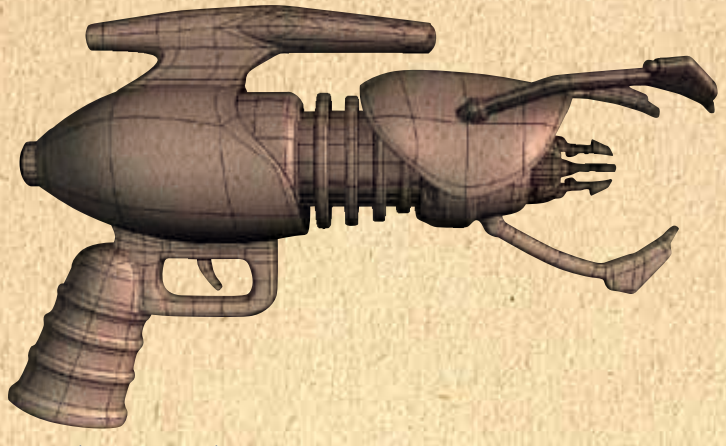
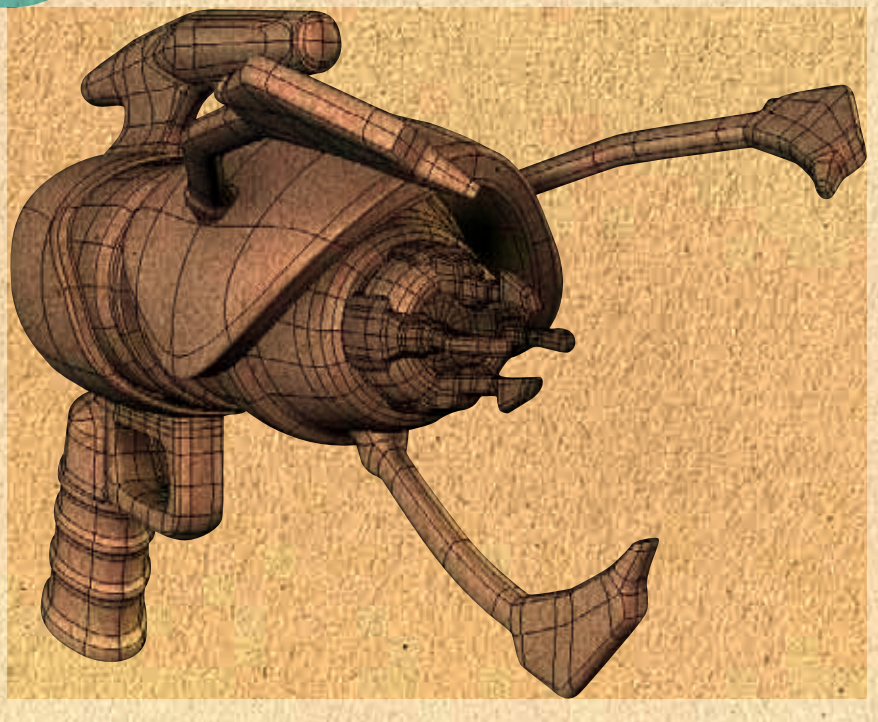




FLIGHT OF THE MELVIN 3-D TEAM

Blake Bjerke – 3-D Modeling

Nic Breidinger – Electronics

Matthew DeJesus – Design

Monica Thies – Project Manager, VFX

did you know...

A team from UAT recently participated in a 48 hour film challenge? Watch the finished product at uat.edu/48hours

When UAT got its first Dimension uPrint Personal 3-D Printer in 2009, no one envisioned using it to make 3-D ray guns.

Except for Professor Paul DeNigris, whose short films have been shown at film festivals around the world for quite a few years. He recruited UAT students right away to start making 3-D props for student films, the first of which was *Fallout*, where students made a 3-D memory-extraction helmet.

"Our IT department is really good at just giving us toys—surprising us and saying, 'Hey, here's something cool, figure out how to use it,'" says Professor DeNigris. "So, as soon as it arrived, I said, 'Oh yeah, we're making props. We're doing something cool.'"

After his students' initial plunge into 3-D prop making on *Fallout*, professor DeNigris challenged other students to make a 3-D ray gun for a short film titled *Flight of the Melvin*. That movie is about a 14-year-old kid in the 1960s who's flying in his homemade jetpack when he crashes into an alien spaceship.

DIY: 3-D RAY GUN

Although there was plenty of work involved in creating 3-D props for *Flight of the Melvin*, and lots of hours put into it, the 3-D printer makes doing that incredibly easier than if students had to make handmade props.

With 3-D software like Autodesk 3ds Max and Autodesk Maya, pretty much anyone at UAT can print out 3-D images. Printers like the Dimension uPrint make it easy. They essentially spit out material—usually paper, but 3-D printers can print in other materials like glass, too. The printers squirt out liquid layer by layer until it creates a solid 3-D image.

The first major step in creating the 3-D ray gun took about 5 hours.

"It was done in high detail, so the layers are really thin" says Blake Bjerke, a Game Art and Animation major who worked on *Flight of the Melvin*. He used 3ds software. "I had to design each individual piece and then assemble it. Then, I'd print it and then dip it in acid wash for a few hours at a time."

Blake worked off of a design created by Matthew DeJesus.

"I looked at movies like *The Day the Earth Stood Still*," says Matthew.

"I WANTED TO GO FOR A VERY ARTIFICIAL, SLEEK AND ELEGANT LOOK, BUT AT THE SAME TIME 1960s RETRO."

The final step in making the 3-D ray gun was Nic Breidinger's. He was first approached about getting involved in "Melvin" by project manager Monica Thies.

"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-guy shoots a blue light.

REAL-WORLD APPS

While UAT students created a 3-D ray gun for a fictional kid in a jetpack, Professor DeNigris' project has real-world implications. Simply, 3-D printers are revolutionizing many businesses.

One of the major benefits of using these printers, which range in size from a really big CPU to an average sized refrigerator, is that they can dramatically cut down on the cost for companies to make prototypes. In fact, 3-D printers are also known as rapid prototypers.

Where some companies in the past had to make prototypes out of wood or plastic or paper by hand, sometimes with a team of employees working for days or weeks, now one person can toss a simple design into a 3-D printer. Test out the prototype, tweak it and try it again.

These printers are also being used in design studios and by movie producers.

"One of the greatest things for my students and me is that we get to exercise our imaginations and create these really wild things," says Professor DeNigris. "Something like a 3-D printer is part of our arsenal like a camera or one of our lights. It's part of what we have here that makes the Digital Video degree something really unique."

10 Have your portfolio reviewed by an industry insider.

9 Join a roundtable discussion on technology breakthroughs with industry executives who could hire you some day.

8 If you locked your keys in your car, lock pickers are on the premises.

7 Hear about leading-edge topics in Information Assurance and Network Security from experts who can't even tell you where they work because it's Top Secret.

6 "Jello Power-ups" at Cuban Pete's Café (think Jello Shot with Red Bull reduction, not alcohol).

5 Meet UAT Alums who are now succeeding with a career in the field in which they majored.

4 Hear about new technological breakthroughs even before those guys on G4TV.

3 Sale on UAT T-shirts in the bookstore.

2 No number 2 – writer distracted by seeing Greg Kipper in person.

1 For 3 days, twice a year, it's Geek Nirvana.

Top **10** Reasons to Attend UAT's **Tech Forum**

Tech Forum speaker Kristofer Layon wrote the book on iOS Apps.

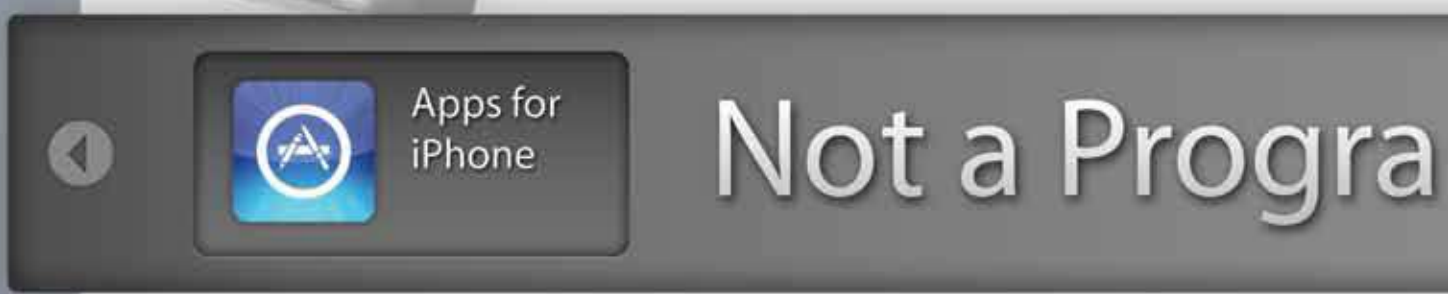
UAT hosted its tenth Technology Forum conference on campus recently. The event featured presentations and workshops with professionals in diverse technology industries. The event gave students, staff, faculty, alumni and UAT friends numerous opportunities to discover insights from the leading edge of technology in all its forms and to make valuable knowledge networking connections with industry pros.

One highlight of this Tech Forum was Kristofer Layon's hands-on workshop, 2 Apps Per Day, devoted to the development of simple apps for iOS devices for graphic artists who may not be specifically familiar with programming. iOS (known as iPhone OS prior to June 2010) is Apple's mobile operating system. Developed originally for the iPhone, it has since been used on the iPod Touch, iPad and Apple TV as well. Apple's App Store contains more than 300,000 iOS applications. iOS has a 15%+ share of the smartphone operating system market.

The user interface of iOS is based on the concept of direct manipulation, using multi-touch gestures. Interface control elements consist of sliders, switches and buttons. The response to user input is immediate and provides a fluid interface. Interaction with the OS includes gestures such as swiping, tapping, pinching and reverse pinching. The operating system uses roughly 500 megabytes of the device's storage, which varies by device and model.

Kristofer Layon is a designer, design educator and conference director who lives in Minneapolis, Minnesota. His first iPhone app, ArtAlphabet, is an early childhood flashcard game that went on sale in the iTunes App Store in 2009. His company, Aesthete Software, LLC, now designs iPhone applications for clients in a diverse range of fields including medicine, photography and education. He has also written a book, *The Web Designer's Guide to iOS Apps,* to be published by New Riders (Berkeley, CA), this year.

He's been a graphic designer since 1993, and in 1996 he designed his first website. Since then he has designed websites for engineers, urban planners, city governments, artists, musicians, retailers, the National Park Service, and over thirty higher education clients. In addition to designing websites, Kris taught graphic design and typography in the University of Minnesota's College of Design, where he was also an academic advisor for two years. Kris also helped establish MinneWebCon in 2008, a one-day



regional conference for web professionals. He is currently the Director of Web Design and Online Collaboration at the University of Minnesota.

Kris has a Master of Fine Arts degree in interactive design from Saint Olaf College. He is a member of AIGA – the Professional Association for Design, the Design Research Society, and the Minnesota Interactive Marketing Association. His work has won design awards from the AIGA and the Society of Marketing Professional Services (SMPS), and his early adoption of web video was featured on Apple's website in 1999.

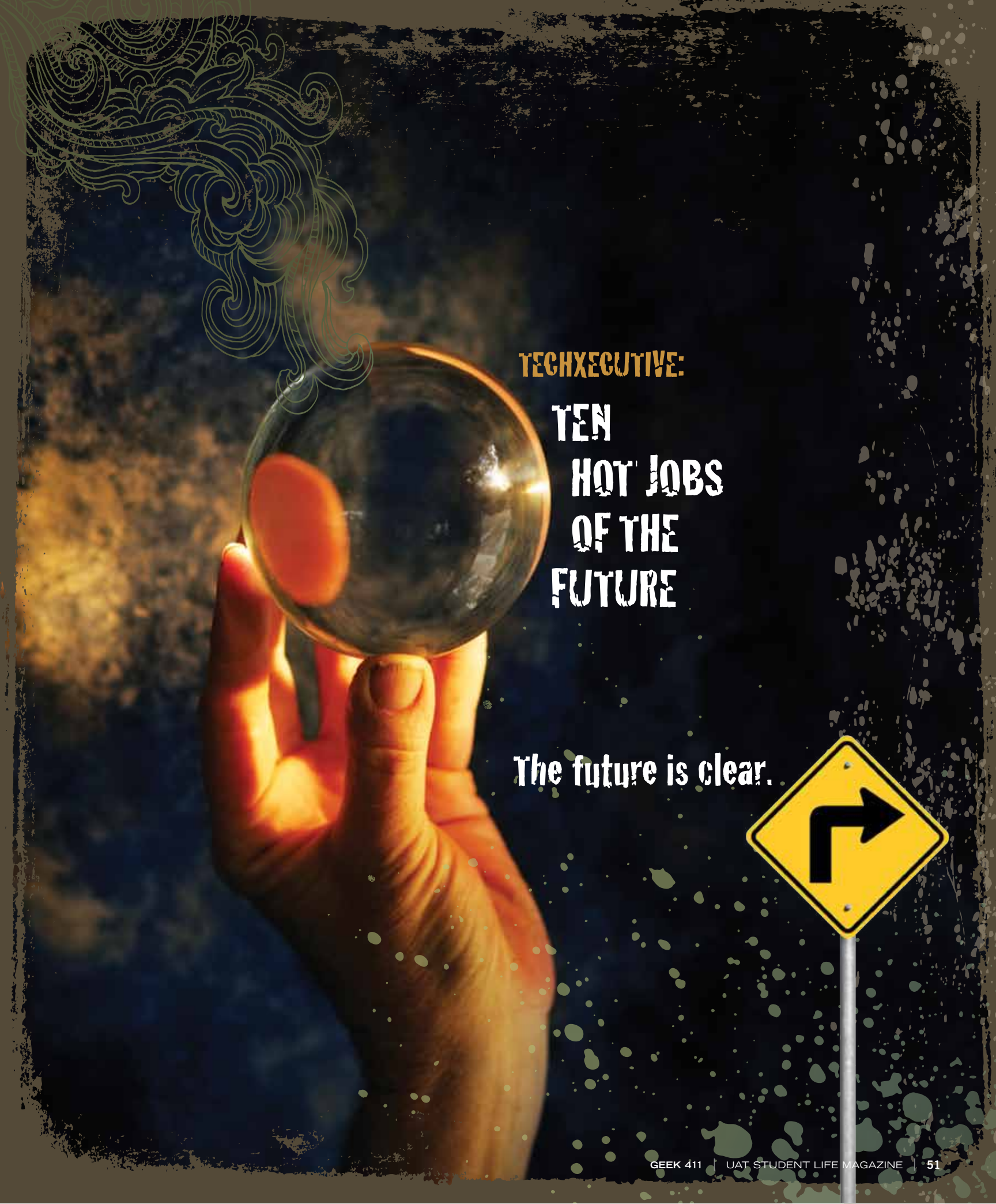
Kris opened his Tech Forum workshop by saying, "If you're a web designer, you already know a lot about what it takes to design a broad range of content-based iOS applications. HTML. CSS. JavaScript. Plus…you're a designer. You know how to design! You enjoy making content, interfaces, and user experiences satisfying and beautiful. Even without much programming experience, you could be using your web standards skills to design iOS apps for the iPhone, iPod Touch and iPad. For yourself. Or your boss. Or your own clients. And then getting them into the App Store. Without needing to write the Objective-C. I guarantee it because I am a web designer, and this is what I am doing."

Did you know...

You can watch recorded sessions of previous Tech Forum speakers by logging on to uat.edu/techforum

mmer? No Problemo!


www.g33ktest.com
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.



TECHXECUTIVE:

TEN HOT JOBS OF THE FUTURE

The future is clear.

Tech geeks are moving into the boss' office.

One of the most spectacular scenes in *Avatar* comes early in the movie. A team of scientists is scrambling to transport fellow scientists to an alien world, where they'll ultimately save a species and their planet. It's one of many breathtaking scenes. But it also gets you to wonder: What will jobs of the future look like?

Will computer programmers transport beings from one world to the next? Will human-computer hybrids wage war on other planets? Will super-smart computers and humans become inextricably linked? Will we see life on other planets on 3-D monitors that bring the vast reaches of the universe to our desks?

It's fun to imagine a future where we can live out sci-fi movies. But it's already clear that many jobs of the future will be a lot different than the jobs people have now.

Fortunately, students at UAT are gaining the skills they'll need to become techxecutives (technology executives).

So, what will those hot jobs of the future be?

Well, not all jobs of the future are as exotic as those in *Avatar*. But many of them require a background in technology that's light-years ahead of where your average university is today. And, more than that, most experts agree that the big gap that separates top business executives and IT geeks will disappear, with techxecutives emerging as tomorrow's leaders, provided they have both the technology and business know-how they'll need.

"No matter what jobs people hold in their lifetimes, having some business knowledge can be helpful in dealing with goal setting and proactive planning," says Professor Diane Hamilton.

At Geek 411, we came up with a list of hot next-gen jobs by speaking with experts in technology and business. Plus, we compiled stats from places like the Bureau of Labor Statistics.

The vast majority of the fastest growing jobs of the near future are in technology and the medical field, including tech-intensive jobs like Medical Scientists. Techxecutives will be in high demand, even more than they are today.

Among the hottest jobs in the future (and today) is Data Analyst.

It's the second-fastest-growing job in the country, and it will be for at least the next decade. That's according to the Bureau of Labor Statistics, which is projecting that the number of these jobs will increase 53% over the next 10 years, trailing only biomedical engineers.

So, what do data analysts do? They sift through the 35 zettabytes of data that computers will be generating each year by 2020. Many UAT classes like Database Theory and Data Mining are a good fit for this career path.

Computer Software Engineers are in high demand.

UAT grads are well versed in software engineering with classes like Software Engineering Principals. They'll need it. Companies are expected to add hundreds of thousands of these jobs to payrolls over the next few years.

Robotics sounds exotic and futuristic. It is, but it will be a far more commonplace job in a few years than it is today.

Robots aren't only humanlike machines. Just think about all the automated functions and embedded systems that are being used every day at factories around the world, such as robotic arms completing much of the assembly of most cars and trucks.

In the near future, robotics and embedded systems will do far more than mechanical work, such as performing surgeries and assisting handicapped kids to walk. All that will require an ahead-of-the-curve education like the future techxecutives at UAT are getting, including in the Robotics and Embedded Systems major.

Network Security is another hot job (and it's a hot UAT major). With the billions of computers and smartphones and iPads in the world, and their increasingly complex operating systems, there needs to be multilayered, preemptive security systems in place to eliminate vulnerabilities and reduce exploits.

Check out the Hot

And, as computer systems and networks grow more complex and data rich, the need for Database Administrators grows exponentially.

This job, in which technology experts oversee every aspect of a company's database, including security and performance, is truly hot. The number of these jobs is soaring each year by double-digit percentages.

Network Administrators oversee the design, installation and maintenance of a company's computer systems.

The Bureau of Labor Statistics expects this job to grow 23% over the next decade. UAT majors like Network Engineering and classes like Management in a Technology Environment are a good fit for this career path.

Risk Management is related to network security, but it's broader in scope. Risk managers are often key strategic thinkers within an organization.

As computer systems become more complex, and as they become more open to the outside world, companies are becoming increasingly vulnerable to dangers that can derail a company.

These invasions aren't merely tech annoyances. They can be money-draining disasters that risk managers work to avoid. These business executives have a deep understanding of technology. But they're not geeks lurking in the shadows far removed from top executives—they are top executives.

Business Executive sounds like a broad job description, and it is. But it's also a job that is going to become vastly more important as corporations, both large and small, become more intertwined with technology.

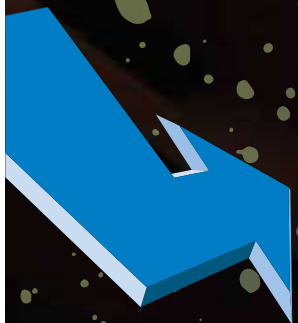
Business executives are the big-picture guys. Their view of a company and its computer systems (and its people and its finances) is from above. They see all the pieces of the operation working together. Their role is to think strategically about the needs of the company so that it operates smoothly and grows.

Speaking of the future, Cloud Architect sounds like a job from a time far in the future. But cloud architect is already an important job. They oversee a company's technology infrastructure and storage, specifically as it relates to storing it virtually—meaning offsite via the Internet or on a company's intranet.

Network Architect is another fast-growing job and it will continue to be as technology increasingly becomes a critical function in most companies.

Also known as Network Engineers, network architects design a company's hardware and software systems, including LANs, intranet sites and communication systems.

So, while *Avatar* may be a movie set in the distant future, the jobs we see on screen don't seem all that crazy. In fact, many people already have some of these highly coveted positions. Or they're in school now getting ready for a new economy based on technological integration.

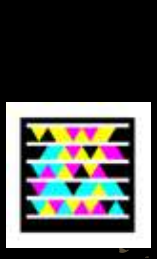


TEN HOT JOBS OF THE FUTURE

- Business Executive
- Cloud Architect
- Computer Software Engineer
- Data Analyst
- Database Administrator
- Network Administrator
- Network Architect
- Network Security Consultant
- Risk Manager
- Robotics and Embedded Software Specialist

Source: Bureau of Labor Statistics, Computerworld, Career Explorer

Job Skills of the Future at www.uat.edu/skills



UAT career launchpads. Get ready for blastoff!

UAT grads are always in high demand, and for good reason. UAT works hard to build and maintain strong relationships with all the top tech companies. Here are a few positions and the lofty companies where UAT students have landed.

Computer Engineering
Support Representative—2Wire
Tier 2 Support—Go Daddy
PC Support Specialist II—ADP

Digital Art & Animation
Digital Animator—Hotseat Media
Concept Artist and Digital Background Artist—Factory38
3-D Modeler—3dBob Productions
3-D Animator—Arizona Virtual Studios

Digital Video
Freelance Visual FX—BLADE
Digital Video Editor—Dynamic Worldwide Training Consultants

Game Design
Game Designer—Higher Edge Software
Quality Assurance Tester—THQ
Game Designer—Blizzard Entertainment
Game Designer—Sony Online Entertainment
Associate Producer—Aeria Games
Game Designer—Red Storm Entertainment

Multimedia
Senior Multimedia Consultant—Legal Technology Consulting
Multimedia Tester—Sony Computer Entertainment America
Coordinator of Digital Production—Nickelodeon Animation Studios

Network Security
Network Security—National Security Agency
Security Support Specialist—Alert Logic
Systems Administrator—Expedia
Network Security Engineer—Avnet
Network Engineer—General Dynamics
Network Security Desktop Support—Nations Technical Services
Engineering Manager—Boeing
Network Engineer—Boeing
Systems Administrator—Boeing

Programming
Web Application Programmer—Education2020
Game Programmer—Sortasoft
Junior Programmer—Reactor Zero

Software Engineering
Software Engineer—Sony Online Entertainment
Software Engineer—Kinetic Muscles
Software Engineer—Garmin
Software Engineer—Virtual Learning Technologies

Web & Social Media
Web Developer—meltmedia
Web Technology Developer—Men's Wearhouse

HOT

GAME DESIGN AND PRODUCTION

MICHAEL EILERS
Associate Professor, Systems Development
BA, Arizona State University
MBA, North Central University

3D appears to be hot, especially after E3 this year, but they may be jump-starting the party a bit too soon. The installed base of customers with an actual 3D HDTV is going to be in the low thousands, and probably below 100k for 2011—many people just bought their first HDTV, they will not dump it for another one so soon. Nevertheless, Sony in particular is pushing 3D as a big feature in the future, albeit at a very premium price. 3D requires a rethink of the modern game engine, as almost all game engines right now use 2D components (lighting, sprites, particle effects, smoke, fog) that will have to be re-engineered for 3D.

NOT

Music games with plastic guitars and drums (such as Rock Band and Guitar Hero) delivered their third iterations this year with a thud, and band-themed versions (Guitar Hero Van Halen) have absolutely bombed. This genre has reached saturation or just player burnout, and sales are spiraling down. Both companies are trying to juice the market by adding "keytars" and real six-string guitars next year, but that will most likely be too little, too late.

HOT

ROBOTICS AND EMBEDDED SYSTEMS

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

"Hella" has been proposed as the prefix denoting the number 10^{27}. This is similar to "Mega" for a million (10^6), and "Giga" for a billion (10^9). A "Hella" would be the name for a billion-trillion. Personally, I can't wait for my "Hella-byte" hard drive to arrive in my future-mail.

NOT

Recently a federal appeals court ruled against the Federal Communications Commission on net neutrality. In the case, Comcast was challenging the power of the FCC to tell Comcast how to manage its network, specifically pertaining to Comcast's ability to throttle bit-torrent network traffic. This ruling has the potential to drastically limit the ability for information to be freely and fairly distributed on the internet.*

** SEE THE P2P ARTICLE IN THIS ISSUE OF GEEK 411*

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

HOT

ONLINE EDUCATION

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

For the third year in a row, Apple has been named the World's Most Admired Company by Fortune Magazine. What makes Apple so admired is that the company has changed the way we access music and design products to keep everything about us in a handheld device. Apple also ranked #1 in Innovation among all companies. Ironically, the SANS vulnerability report for this week put Mac OS X right behind Microsoft for the greatest number of vulnerabilities.

NOT

Identity theft and credit card theft remain in the top concerns of citizens. Protection against data exposure has not improved despite high visibility. For example, the GAO found that while the IRS had made some progress during the last fiscal year to improve security, it found that 69% of control weaknesses and program deficiencies in security remained unresolved or unmitigated.

HOT

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 in New Media Studies, University of Denver

E-Learning at Belgrade University, Serbia: I had the opportunity to be part of the discussion forum organized by the IT people at that university with the topic of pros and cons of distance education. As opposed to U.S. universities where e-learning has been widely implemented for years, at their university they are still experimenting. Because of the budget cuts, the university resorts to using an open source platform, Moodle, which works well for their needs, for now. This is a good example of powerful open source technologies which allow developing countries to catch up with new educational directions in the developed world. Without it, they would be left behind.

NOT

The flip side to the above mentioned good example of the use of open source environments is the example of the control that Microsoft Company exercises in Serbia. The Serbian Government has signed the contract with Bill Gates that creates a proprietary situation and forces the population to only use PC platform. There is no technical support whatsoever for MAC platforms. How is this situation going to be sustainable in light of the development of open source technologies?

Brand you:
Social Networking and the Internet.

There's nothing like social networking sites such as Facebook, Twitter and YouTube when it comes to staying connected with friends and acting a bit crazy online, especially when you think about past generations and how they were stuck holding phones that were nailed to the kitchen wall.

But with the awesome freedom that Facebook and other social networking sites gives us, there also comes a sense of responsibility to act right and behave, especially as we progress and start thinking about earning a lifetime of income. Everyone knows that what we say and do online sticks around for a long time—maybe even forever, with sites like www.archive.org and its Wayback Machine permanently saving all we say and do.

"Many people don't realize that there is such a thing as a Wayback Machine, but there is," says Professor Raymond Todd Blackwood at UAT.

So, it's with this in mind that we can start thinking about some guidelines for how we behave on social networking sites.

Everyone knows not to post embarrassing pics online that will come back to haunt us when we're older. Just think about Olympic swimmer Michael Phelps and the sponsorship money he lost because of embarrassing photos that his friends took of him. And don't think it won't matter in the future. It will—45% of companies today check job applicants' social networking pages, according to a study by Harris Interactive in 2009.

But what else? What are the guidelines for how we act on social networking sites, especially as we start thinking about college? One great way to think about social networking guidelines is to think of yourself as a brand, just like Google is a brand and so is *Avatar* and Red Bull. All these brands have burned an image in our brains from spending millions of dollars on advertising and marketing and from the posts we've read about them.

So, think about what kind of brand you'd like to be when colleges and companies search for you on Facebook and, in the future, on business-oriented social networking sites like LinkedIn.

Starting there, your posts can be funny or they can be serious, it doesn't matter. But they should be positive or at least give off a

did you know...

UAT's student body comes from more than 40 states (Hey, North Dakotans, you waiting for an invitation?) and more than a dozen foreign countries.

good vibe. There's no point in ranting on sites like Facebook—it leaves a bad impression, especially for college recruiters or potential employers who will eventually do an online search of you.

You can also become an expert in whatever area of advancing technology that interests you, maybe game design, technology forensics, robotics or animation. Post links of articles or YouTube videos that your tech-head friends probably haven't seen. You'll create a pretty good reputation fast.

Be sincere and honest when posting about yourself. All of us have friends who can stretch the truth a little bit beyond belief. That's harmless, but when you're talking about yourself on Facebook and other sites, keep it real. Remember that Wayback Machine? Someday, people will be looking back on what you've said and done. You don't want to explain anything you said about yourself that wasn't true.

And always be respectful of your online friends. That doesn't mean everything you say about someone online has to be sticky sweet. But, if you are attacking other people online, it'll be you who will soon have a really bad reputation. Remember, think about yourself as a brand. The impression you leave online now will stick around for years to come.

So, what about social networking guidelines for what you shouldn't do and shouldn't say online?

See the guidelines at uat.edu/socialnetworking

Texting Acronymns

Text	Translation
*$	Starbucks
:)	happy / "smile"
:(	sad
?^	hook up
?4U	I have a question for you
^^	"read line/message above"
<3	"heart" / love
143	I love you
24/7	twenty-four hours a day, seven days a week
2morrow	tomorrow
2nite	tonight
AKA	also known as
B/C	because
BF	boyfriend / best friend
BRB	be right back
BTW	by the way
BYOB	bring your own booze/bottle/beer
BYOW	build your own website
DITTO	same here
EZ	easy
FML	f*** my life
G2G	got to go
GF	girlfriend
I <3 U	I love you
IDK	I don't know
JK	just kidding
JW	just wondering
L8R	later
LMFAO	laughing my f****** a** off
LMK	let me know
LOL	laugh out loud
MMMM	yummy
NM	not much
OMG	oh my god
PIMP	peeing in my pants
STAT	status (what's your status)
THX	thanks
TMI	too much information
TOT	totally
TTYL	talk to you later
U	you
U2	you too
W/E	whatever
WTF	what the f***
XOXO	hugs and kisses

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.

Summer 2011 Semester

Semester	May 9 – August 19
Orientation	May 5
Summer Break	July 1 – September 6

Fall 2011 Semester

Semester	September 6 – December 21
Orientation	August 31 – September 2
Fall Break	October 28

Academic Scholarships

Due August 15 for September 2011

Due December 15 for January 2012

Application Scholarships

Post marked by last day of February if starting Summer or Fall or by last day of September for Spring

did you know...

UAT offers on-campus Bachelor's degrees in 20 different majors, online Bachelor's degrees in seven majors and Master's degrees in seven disciplines.

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.

Sharon Bolman

Professor: General Studies, Digital Video, Scriptwriting, Environment & Lighting Design, Special Effects, Yoga

MA, Theater, Arizona State University
BS, Management, Arizona State University

Hailing from Flagstaff, Arizona, Sharon Bolman teaches general studies in the Digital Video Program. She spent several years managing visual and performing arts organizations, but discovered her true love was teaching. As flexible as she is in her classes, Professor Bolman is also a registered yoga teacher, having completed a 200-hour program at the Southwest School of Healing Arts.

"I love that every incoming class, students expect more. That's the greatest part of teaching; the students are new and challenging. I have a mentoring attitude. I feel like the UAT 'Mom'."

Victoria Schaufuss

Associate Professor: Programming, Databases, Management, Research Methods, Graduate Thesis

BS, International Trade and Finance, Louisiana State University
MS, Management Information Systems, University of Houston

Professor Schaufuss has been an Associate Professor at UAT for 11 years. A true citizen of the world, she has lived in Sweden, Italy, Germany, France and Chile. UAT is fortunate that she now calls Arizona her home.

"There is a tremendous amount of academic freedom and support from the administration. UAT is the perfect place to teach."

She says of her students, "They are incredible. They already know so much and want to know even more. UAT is like one big happy family. Classes are small and everyone is on a first-name basis."

Craig Belanger

Professor: Technology & Society, Ethics in Technology, Student Innovation Projects

BA, Creative Writing, University of Arizona
MS, Technology, University of Advancing Technology

Craig considers Phoenix to be his hometown, but he grew up as an Air Force brat in Germany and Virginia. After graduating from the University of Arizona, he spent several years writing plays and screenplays, several of which were produced by independent directors and producers.

"My academic interests are focused in philosophical and historical considerations of technology, a perspective that finds me pursuing such topics as ethics in emerging technologies, the development of a theory of technology of the absurd, and any topic that allows me to read big fat science fiction novels."

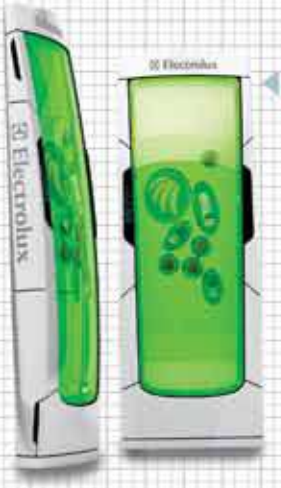
He says, "I find the students to be very creative and fluent in a lot of digital literacies. They know how to find information. They're like hunter/gatherers."

gadgets + GIZMOS

Dell Inspiron DUO

Dell has probably been feeling under loved the past few years as Apple has been getting nonstop attention for innovations like iPad. Not to be outdone, Dell came out with its own innovation last November. And, while some critics say its Inspiron Duo is slow and clunky, it looks great. The Duo is quite literally two computers in one. It's a notebook with a 10.1-inch screen, 2GB RAM, with Windows 7 and an Intel Atom processor. But swivel its screen around, up and over, and it turns into a tablet PC.

Projected list price: $549.99



Bio Robot Refrigerator

How would you like to hang your refrigerator on a wall? Or how about sticking your food in a green gel that'll keep it cool without using energy? It may be possible if kitchens of the future are like those Yuriy Dmitriev envisions. He was a finalist in the Electrolux Design Lab 2010 competition. His entry: a zero-energy fridge made mostly of a biopolymer gel. It uses luminescence to keep food cool and would replace refrigerators four times its size.

Projected list price: Not Determined

Power-Aware Cord

Talk about innovation. Sweden's Interactive Institute is making the invisible visible with an electrical cord that Time magazine says is one of 2010's best inventions. The idea behind Power-Aware Cord is to make it easier for people to figure out how much energy they're draining from the grid. Until now, doing that meant walking outside and trying to read the meter with its inexplicable flashing numbers. Forget that.

Projected list price: Not Determined

The Transition

Everyone has daydreamed about flying cars. You're cruising along the freeway when you start thinking: "Wouldn't it be cool if my car could fly?" A Massachusetts-based company called Terrafugia knows the feeling. They created The Transition, a street-legal flying car approved by the Federal Aviation Administration. For about $200,000, you can have one by Christmas 2011. The Transition drives like a car and, in fact, it's small enough to park in a garage. At 1,430 pounds, it's light enough that you'll need only 20 hours of training for a pilot's license.

Projected list price: $200,000+

did you know...

UAT provides all students with access to new and exciting technologies ...including the Microsoft Surface which can be found in the student commons.

Blackberry Playbook

Ever since iPad exploded onto the scene, virtually all of Apple's competitors have been scrambling to one-up it. The first tablet PC to get that job done (in the opinion of some critics) is BlackBerry's PlayBook, which is coming out in early 2011. The standard version will have a dual-core processor, the BlackBerry Tablet OS, a 7-inch touch-screen and it will weigh less than 1 pound. It'll be Wi-Fi enabled with 3G and 4G versions to follow.

Projected list price: Rumored to go for $499+.

HI. ARE YOU BUSY?
HOW CAN I HELP YOU?
I NEED SOME ASSISTANCE

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.

MEET THE ENTIRE UAT STAFF AT
www.uat.edu/staff

Leon Ferguson
Communications Coordinator / BS from Furman University

Leon comes from Protland, Oregon. As a Communications Coordinator, he takes calls and emails answering questions about UAT and meets with students after their campus tours. Leon found out about UAT himself about two years ago when he was looking into grad schools and seeking a dry climate. Always interested in the science of learning, Leon's goal is to become a professor of Cognitive Science one day.

"I like the open mindedness and deep culture at UAT. Everyone is so open to ideas. There is always something fun going on, whether it's a 48-Hour Game Jam, a Tribble competition in Computer Science or the occasional ninja stars flying around campus."

Jennifer Ballistrea
Career Services Advisor / BA from Arizona State University

Jennifer comes from the sunny shores of Lake Havasu, Arizona. At UAT, her talents help build relationships with employers to find internships and jobs for students. Thanks to Jennifer getting the word out, when she travels for recruitment, prospective employers now say "We know you; you're from the University of Advancing Technology."

"Our students all have great personalities. We work on their resumes and cover letters, conduct mock interviews and host workshops for them. It's a great way to interact with their peers and go through the process to find a good job. UAT is a really cool culture. There are no barriers here."

John Boyd
Campus Safety Manager / Phoenix Police Academy

Practically a native of the Valley of the Sun, John has come a long way since his days in a one-room schoolhouse in Frisco, Colorado. After twenty years as a City of Phoenix Police Officer, John taught criminal justice at the East Valley Institute of Technology before joining UAT to be in control of safety on campus. He writes campus policies and makes sure the campus is in compliance with city, county and state regulations. He especially enjoys working with the students because they tend to be good citizens who are too smart to get into much trouble.

"UAT is a great school to work for. I like the idea that it's a small school that's open and friendly. You really get to know all the kids. I interact with the students all the time and they know they can always come to me with any security issues. It's like a family."

UAT UNIVERSE OF DEGREE PROGRAMS


graduate
Advancing Computer Science
The ability to diagnose a programming need and apply a matching methodology using new computer science technologies to create solutions
undergraduate
Advancing Computer Science
online
Programming
undergraduate
Enterprise Software Development
Developers whose specialty is in developing software data and web solutions needed and used by organizations
undergraduate
Open Source Technologies
Programmers who are skilled in the tools of the open source community and can apply them to create innovative and evolving solutions
Implementers of the hardware and software used to create mobile and embedded robotic systems
undergraduate
Robotics & Embedded Systems
Designer of complex, but intuitive computer interfaces that ensure a positive, productive experience for the user
undergraduate
Human-Computer Interaction
Applied Digital Science
undergraduate
Network Engineering
The architects of network systems that link business process both physically and digitally
graduate
Emerging Technologies
Forecasters who can examine technology trends and apply this analysis to future planning
Digital Arts & Technology
undergraduate
Virtual Modeling & Design
online
Technology artists who apply digital tools, with an eye for design, to create media and interfaces
undergraduate
Digital Video
Innovatively applying the skills of directing, production, composition and writing with digital tools and techniques to create films and effects
undergraduate
Digital Media
Modeling of data in virtual 3D spaces to create simulations, animations and entertainment media
graduate
Information Assurance
Digital Security
Protects organizations and individuals by designing and deploying systems and processes that ensure data and networks are safe from intrusion and failure
undergraduate
Network Security
online
DECIDE WHICH ONE IS RIGHT FOR YOU

UAT DEGREE PROGRAMS

ON-CAMPUS PROGRAMS

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

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

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

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

Master of Science degrees are offered in the following disciplines:

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

UAT-ONLINE PROGRAMS

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

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

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

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

A Master of Science degree is offered in the following discipline:

- Technology Innovation

More online at www.uat.edu/majors

FIND what's OUT next

Call your fellow Geeks out

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

GO TO **WWW.10.ALPHAGEEKNATION.COM**

Free Subscription!

The Journal of Advancing Technology (JAT) is really intended for academics and industry veterans in various technology disciplines. But, if you think you're geeked enough to handle the material, we'll be happy to provide you with a free subscription. Are ***you*** geeked enough?

Just fill out the tear-out subscription card in this magazine or email journal@uat.edu to get it delivered to your door, free.

Find Out More at www.uat.edu/jat

www.uat.edu

UAT is a unique, technology-infused NCA-accredited private university that was founded by a techno-geek for techno-geeks. Our mission is to educate students in the fields of advancing technology to become innovators of the future.

www.gamedegree.com

You love games. Live for games. Want to make your career about games. But, to break into the gaming industry, you'll need a degree.

www.networksecuritydegree.com

Start your education in Net Security, Technology Forensics or Information Security at an NSA-recognized institution.

www.alifedegree.com

Artificial Life Programming involves breaking accepted paradigms in the software engineering field and moving forward with paradigms that mirror life systems. It's a degree for innovative thinkers seeking a wide range of programming possibilities in a changing world.

www.g33ktest.com

What kind of geek are you? Take UAT's Geek Test and find out where you fit in the wide world of geeks!

www.geekedatbirth.com

Learn more about where you fit in at the University. What programs are you interested in? Start your future here!

BACKGROUND on UAT

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)

2011 TUITION

Undergraduate tuition: $9700.00 per semester
Graduate tuition: $6100.00 per semester
UAT-Online tuition: $5600.00 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
40 of the seven continents that average a
3.1 incoming GPA with a
12:1 student-to-faculty ratio, an average class size of
13 students who score an average of
1561 on SAT, and
24 on ACT, and are supported by
79 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 GET INTO TECHNOLOGY AND GAMES?

"I had been searching for schools that offered Game Design and a friend told me about UAT. I picked UAT because it is one of the biggest gaming schools I have ever seen. When I took a tour of the campus I learned all about what the school has to offer. The teachers here are extremely skilled and actually know what they're talking about. Plus, all the computers here already have any kind of software you could ever need. UAT really helps you get your foot in the door so you can get a job right after you graduate. Eventually I would like to work for Square Enix, they created the Kingdom Hearts-that's the game that really inspired me."

"I would recommend UAT to anyone who would like a degree in games, movies, or television. We have amazing teachers and students that are really involved. UAT provides the tools you need to succeed and a lot of the students take advantage of that."

Annie Winn
Class: Junior
Major: Virtual Modeling and Design, Digital Video
Home Town: Mesa, AZ

A P33K INSIDE THE G33KOSYSTEM

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.

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.

M

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.

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.

Green Screen Room

Updated Software

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

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


TECHNOLOGYFORUM2011
WELCOME TO TOMORROW
November 1-3, 2011
Join technology industry experts on the campus of UAT for **presentations & conversations November 1-3, 2011.** It's a great event to get insiders' views on opportunities and breakthroughs in network security, game development, digital animation, robotic systems, advancing computer science and many other fields.
Plus, many more industry pros and surprises!
Unable to attend?
Check out the recorded session online!
www.uat.edu/techforum
University of Advancing Technology
UAT
Learn. Experience. Innovate.

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

ntball 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 over 20 student clubs and organizations, such as TAPS, the Paintball Team, Net Security Club and the Photography Club. See more at uat.edu/clubs

www.uat.edu

[GEEKED AT BIRTH.]

[IT'S IN YOUR GENETICS.]

LEARN:

- Advancing Computer Science
- Artificial Life Programming
- Digital Media
- Digital Video
- Enterprise Software Development
- Game Art and Animation
- Game Design
- Game Programming
- Human-Computer Interaction
- Network Engineering
- Network Security
- Open Source Technologies
- Robotics and Embedded Systems
- Serious Game and Simulation
- Strategic Technology Development
- Technology Forensics
- Technology Product Design
- Technology Studies
- Virtual Modeling and Design
- Web and Social Media Technologies

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