

# BEHIND THE BITS

A CLOSE-UP VIEW OF UAT STUDENT INNOVATIONS



# DAVID SHUREY

FX-ARTIST EXTRAORDINAIRE

TRADE SECRET & TELLUS  
ROCK GDC!

FLIGHT OF THE MELVIN  
SOARS!

ISSUE FOUR





EDUCATING STUDENTS IN ADVANCING TECHNOLOGY WHO INNOVATE FOR OUR FUTURE.

**Learn. Experience. Innovate.**

## Letter from the *President*



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

In this publication you'll find a unique behind-the-scenes perspective that dives right into the creation and development processes, revealing the potential each student has to make a leading contribution in the constantly evolving world of advancing technology. These projects also demonstrate the power of UAT's signature Synchronic Learning model. Synchronic Learning forms the framework for a vibrant, multifaceted academic experience, which encourages students to explore new and traditional concepts, and to independently and collaboratively practice what they learn in real-world applications. These completed works embody the challenge posed to them from the day they first step foot on campus: to learn, experience and innovate with advancing technology.

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

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

As the first computer university in the country, UAT has earned a reputation for excellence in advancing technology education. So much so that nearly one in six of our Network Security graduates went to work for a government agency in 2010. Our students are known as forward-thinking innovators and capable problem solvers.

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

Sincerely,

**Jason Pistillo**  
UAT President

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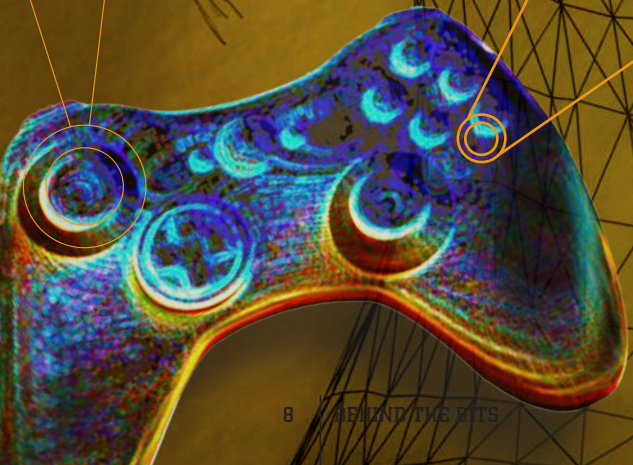


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CDC

# SARA WAKEMAN IS A VISIONARY

Game Design student Sara Wakeman is far sighted, but it has nothing to do with her eyes. She's combined her passion for games with what she's learned in school to transform an idea to innovation. Her Student Innovation Project (SIP) is an interactive-audio-role-playing game-and-Braille-controller combo that helps the visually impaired. This might very well be the first full-fledged design of its kind in the country. It's more than a puzzle platform, it's a fully-interactive experience for visually-impaired gamers.



## HISTORY

Because of UAT's highly specialized and well-respected game design program, Sara journeyed from her home in South Salem, N.Y., about an hour from Times Square, to UAT in Tempe, Ariz. She found just what she needed in the game design program at UAT, where students don't just plan for their futures, they start working on projects using ideas that will affect our future. For Sara and other students, a big draw to UAT was the individualized attention in classes with fewer students.

When talking to students about selecting their SIP projects, UAT Professor Craig Belanger provides the advice, "Make something you're passionate about that has a real-world application."

For awhile, Sara had been contemplating her idea, but it was Professor Belanger and the SIP opportunity that made her realize the time is now.

**"People joke about video games, casually saying 'What, are you blind?' if you haven't played this game or that game. It made me start to think, what about those who ARE blind or who otherwise have a visual limitation or other physical challenge?"**

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

## DETAILS

What's even more unique about this story is how it's experienced. Rather than having a video screen, the screen in Sara's visually impaired adaptation is completely blank.

The game becomes an interactive story book, where your pathway choices impact what occurs and ultimately decide the game's conclusion. The "Text to Speech" modality was incorporated into the game's programming to bring Sara's script to life, allowing it to jump off the screen and guide

participants verbally through the game. When the story describes a scene and then provides verbal options, the gamer can choose the pathway by hitting the Braille labeled buttons on the controller to achieve the desired result.

**Her project's three-part creation included:**

- Concept and Design
- Game Development
- Controller Modification

The concept controller was first created with UAT's specialized 3D printer, which literally creates a 3D model of the concept, based on the digitally constructed model. It was printed all at once with a honeycomb interior (to save materials) and was the largest single-printed structure ever created at UAT. Following its print, Sara did not have to reassemble anything.

In Sara's fictional story, the player's character Jeina (pronounced "Jayna") is "marked" by the gods and believed to be a chosen sacrifice. Jeina is perceived as the villain to everyone (most of the world) who thinks she's just trying to avoid being sacrificed for the greater good, when she truly believes there is another way that doesn't

# SARA WAKEMAN IS A VISIONARY

involve death and could save future lives. Throughout the story, mercenaries and even entire kingdoms are against her cause and try to stop her.

Everyone wants her slain to appease them and ensure that peace continues within the land. She escapes her public execution and eventually learns of a lost altar of peace which had since fallen apart but could be restored by finding its missing artifacts. She goes on a journey to rebuild the altar of peace as a way to communicate to the gods, trying to save Jeina's life and restore peace among the god-fearing land, all while fighting off those who want her dead.

The playable demo's first scenario involves Jeina trying to escape her locked room on the night before her public sacrifice. The player is given a list of options on how to proceed, verbally through instructions, and the corresponding buttons to press in order to act on their decision.

**"Check the door? Check the window? Call out for help."  
"To check the door, press X."  
"To check the window, press Y."  
"To call for help, press B."**

Most decisions in the game are designed to branch out like this where the paths are already set and the player decides how they'll go about it in the story. Some paths are more impacting than others. In the previous example with the ending, this is one of the major paths as it determines what actual ending you'll receive, where other decisions will have no impact on the game and are there to give the player some freedom in how they want their story to be told.

The game has two major endings the player can choose to take.



## CHALLENGES

One of the endings allows Jeina to use the completed/reconstructed altar of peace to bring the fight against the gods. She discovers that the altar of peace actually was broken apart by the more hateful gods because it served as a "portal" to both worlds which made them feel threatened. The other path is more peaceful. Jeina can use the altar to communicate with them, ultimately learning that her symbol ("sacrifice") on her palms did not mean that she was supposed to be sacrificed, but rather that she was chosen to help reconnect the two worlds. She was a chosen vessel for the more peaceful gods

Transforming this game to something that doesn't rely on visual memory was a challenge because Sara and her team had to flip to a physically descriptive platform. Compared to visual storytelling where, for example, a room can be described by color and general appearance, she designed the game to verbally describe temperature or textures like "The room is cold" or by what could be felt and recognized within the area.

Even more than the challenge of flipping the game concept on its head and modifying it from a different point of view, was the challenge of finishing it within the limited timeline Sara and her team had for this project—a single four-month semester. SIPs usually are multi-semester projects.

**"When I realized I wanted to move forward, I wondered if there would be enough time, but I decided to proceed anyway," says Sara. "Now's the time to see how much I've learned, how much I know and apply it. At that point, it became much more than a grade to me."**

## THE FUTURE

Sara wants to continue to refine the game, eliminating some repetitious instruction, using voice actors rather than text-to-speech technology and creating different sound effects. She also envisions adapting it for other audiences who have a physical challenge, including those who are deaf. "Even if it's a challenge, why not try it anyway?"

"I have a passion to share the game, not necessarily to market it," Sara says. "I'd like to publically release the video game portion of this project for free, for everyone to enjoy. Maybe I'll consider marketing the game controller."

## WHERE IS SHE NOW

Sara practices what she preaches. She wants to find a job to continue designing games that meet special needs and demonstrate her leadership capabilities as a lead designer or producer on a challenging large scale project.

"Plus, I'd like to continue to design more games that respond to the special needs of people," she says. "No one ultimately should be deprived of playing a game because of a disability."



**The audio game can be played without the audio controller, as long as the person understands the layout of the controller or has temporary assistance.**

**There are other excellent products available to assist with visual impairments such as Braille language stickers for the keyboards.**

**As the controller is now at its prototype stage it will continue to remain a prototype for live demos only.**

Sara also wants to someday help inspire and motivate talent in others through teaching and sharing her knowledge with prospective developers, just like her favorite professors Craig Belanger and Ken Adams did. Professor Adams served as Sara's game design mentor.

Sara just finished an internship with Kinetic Muscles in Tempe, a leader in Stroke Rehabilitation and Recovery. There, she created artwork for games, brainstormed game ideas, and had the opportunity to design a therapeutic game for stroke victims. She appreciates how UAT supports internships and focuses on encouraging students to experience the world outside the classroom.

Sara completed her degree in December, and after much hard work and dedication, she was able to maintain and establish a 4.0 (A) average, graduating with honors.

**"Everything we learn applies to what we're going to do in the outside world," says Sara. "UAT has provided a huge, well-rounded education that is really fulfilling and prepares me with more than one skill set. It will help to fulfill the needs of multiple jobs rather than just one. I'm leaving school fully prepared."**

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



# 3D LED Cube Will Be Ablaze In The COMMONS

## Overview:

When Robotics & Embedded Systems majors Ryan Carmain and Raul Garcia, Jr., were taking Professor Ryan Meuth's Robotics Project class, they came up with a fantastic but really difficult project—a 3" x 3" x 3" LED cube. Their proposal was the kind of cube that requires so much programming and so many man hours to finish that only huge corporations with teams of engineers tackle anything like it.

Ryan and Raul proposed the LED cube for UAT's Artistic Innovator Scholarship, which was worth \$1,000 for each of them if they won (eventually, they did).

But, even though a modest-sized LED cube would be a massive undertaking for the students, they weren't content with its size or scope. They wanted to go bigger—much bigger. Plus, they wanted to take the LED cube from being a spectacular light display to being a gigantic interactive 3D LED cube. You know, adding in gigantic, interactive and 3D to take their proposal from amazing to extraordinary.

"They prototyped a little one that could spell things like 'UAT,'" says Professor Meuth. "What they wanted to do was, instead of making it one color and 3" x 3" x 3," they wanted to make a large full-color cube. Large companies will make these for fancy displays, but with a team of engineers."

# 3D LED CUBE

Sculpting science: where art & technology merge.

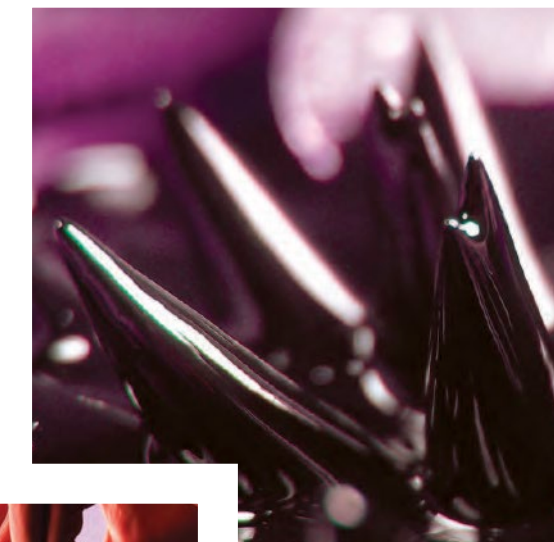
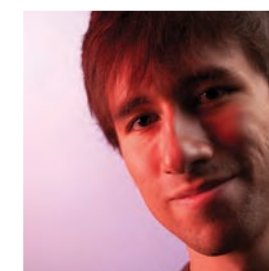
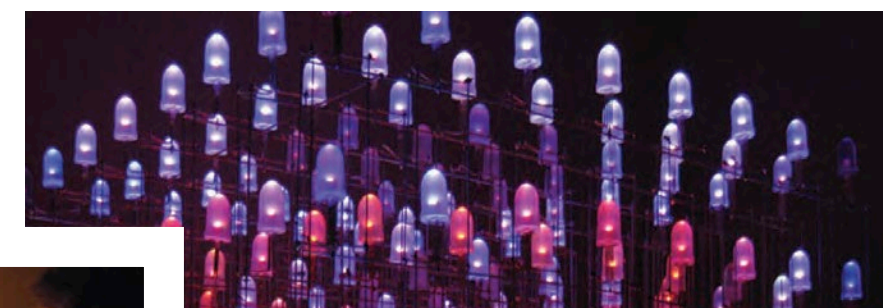
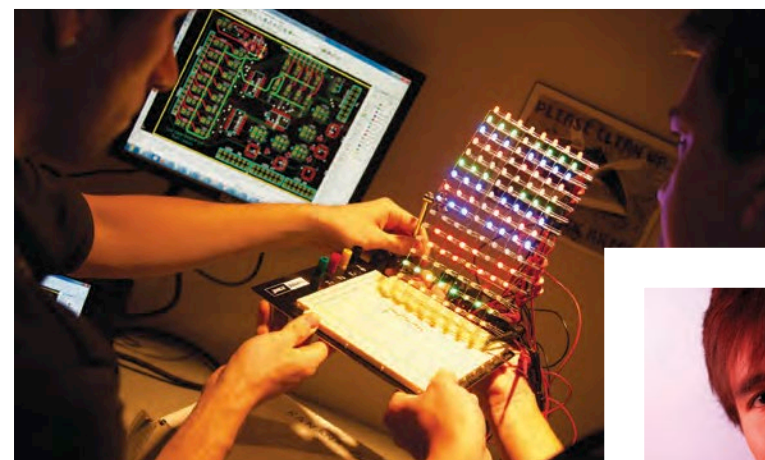
## Challenges

Ryan and Raul's 3D LED cube is a huge, complex and an incredibly time-consuming project.

They've crushed their original vision of a 3" x 3" x 3" cube and ratcheted it up into a 24" x 24" x 24".

"Normally, you'd have a flat sheet of LEDs," says Professor Meuth. "They're taking a flat sheet and stacking it on top of other sheets to create a cube. They've gone larger than most people have."

Ryan and Raul's cube will ultimately have 13,824 LED lights, each displaying three colors and with 41,472 control signals.



Plus, to increase the complexity of the project, Raul, who is responsible for the cube's interface, is incorporating Microsoft's Xbox Kinect into the system so that it can be interactive.

If Raul can incorporate the Kinect software, the cube will be able to detect UAT students standing in front of it. Then, it will project a 3D image of that person inside the cube—displayed in thousands of LED lights.

"If you dedicate the time to something you want to do, you can do it," says Raul. "Nothing is certain. But one thing that is certain is that I know what software to use and that anything is possible. And the lab at UAT is open 24/7, so I'm here day and night working on this project."

While Raul is working on the cube's interface, Ryan is handling most of the hardware.

"My role on this project is to help with the hardware design—how the panels look and how they fit together," says Ryan. "I get the LED soldered together. I'm also working on the hardware driver. I learned a lot of this in UAT classes, but I also work on my own. Plus, Raul and I get together a couple of times a week to see how it's going."

# 3D LED Cube Will Be Ablaze In The COMMONS

## Successes

In the first semester working on their 3D LED cube, Ryan and Raul were able to build and a flat 8" x 8" LED sheet. They had success building the prototype and starting to incorporate the Kinect software into it. They spent a lot of time working on the cube with professor Meuth, plus a lot of time on their own.

## The Future

Ryan and Raul have a vision for their interactive 3D LED cube. They expect to have it finished by the end of 2012, when they're hoping it'll go on display in the UAT Commons.

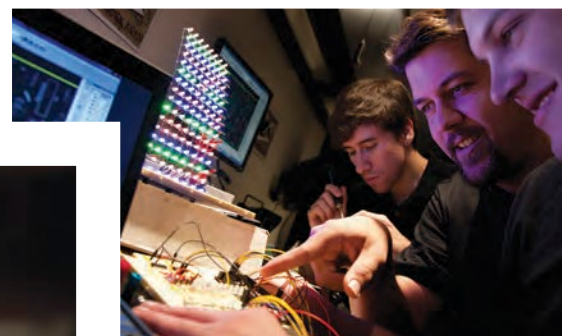
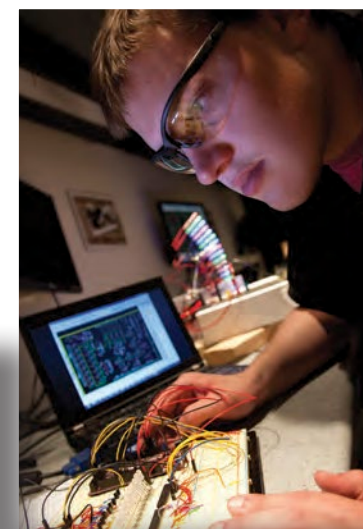
If so, UAT students will be able to interact with it, just for fun. UAT can use it as a marketing tool—you know, to impress parents who visit the school. And, on a serious note, students majoring in everything from Game Design to Human-Computer Interaction can use it to program 3D projects that can change the world.

"We also plan on making this open source," says Ryan. "So, if someone else wants to build this they can see what building materials you need, how much you can expect to pay and the electrical pieces you need."

Of course, there's a more practical benefit for tackling such a complex project, according to Ryan, who plans to work for NASA after he graduates.

"This is a pretty impressive project," Ryan says. "There is a lot of design work, electrical design, hardware design and all the software behind it. It takes up a massive chunk of work. So, I can say to NASA, 'Hey, I have done this.'"

**"THIS IS A PRETTY IMPRESSIVE PROJECT," RYAN SAYS. "THERE IS A LOT OF DESIGN WORK, ELECTRICAL DESIGN, HARDWARE DESIGN AND ALL THE SOFTWARE BEHIND IT. IT TAKES UP A MASSIVE CHUNK OF WORK. SO, I CAN SAY TO NASA, 'HEY, I HAVE DONE THIS.'"**



### The Interactive 3D LED Cube Team

Ryan Carmain—hardware  
Major: Robotics & Embedded Systems

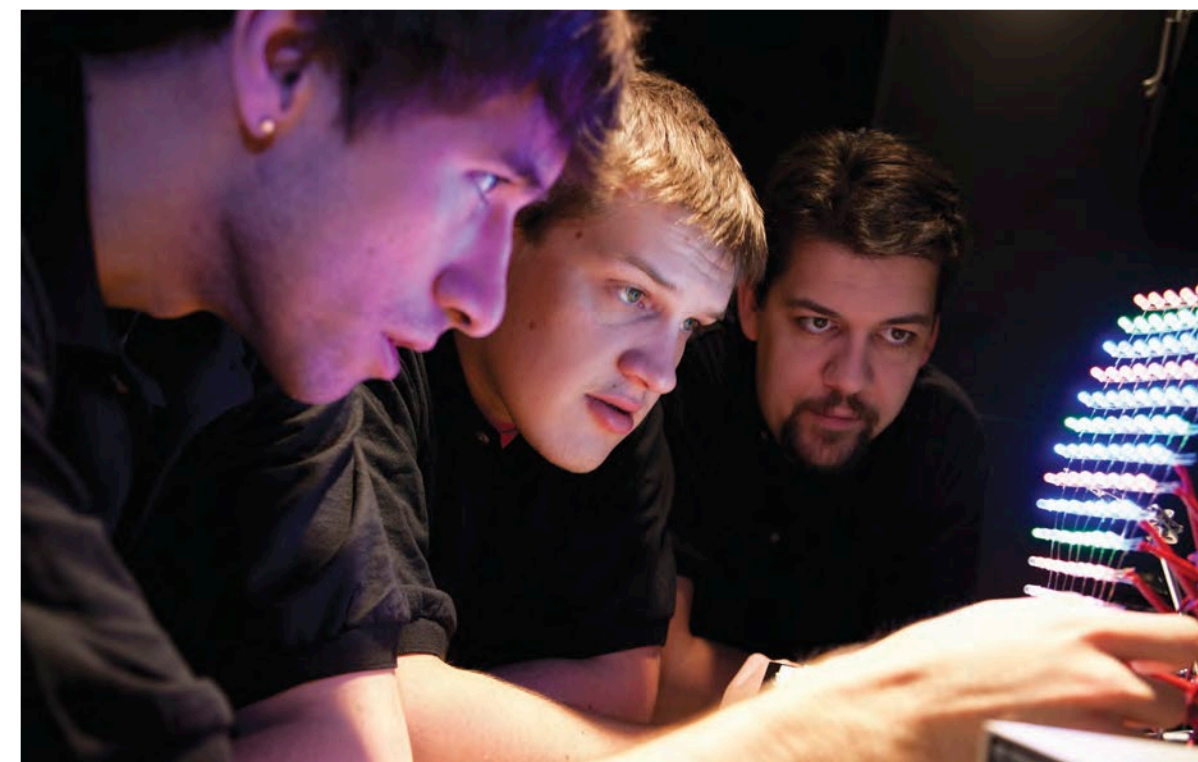
Raul Garcia Jr—interface  
Majors: Virtual Modeling & Design;  
Robotics & Embedded Systems



## Where Are They Now

Raul Garcia Jr. is still working with Ryan to create the Interactive 3D LED Cube, but he has graduated with two BAs—Virtual Modeling & Design and Robotics & Embedded Systems. Today, he's working for Yves Amu Klein at Cummings Engineering in Chandler, Ariz.

Raul has a couple of claims to fame at UAT. He was a Student Ambassador. Plus, he was UAT's first-ever foreign exchange student. In 2011, the El Paso, Texas, native spent one semester at De Montfort University in Leicester in the UK, about an hour north of London.







# CCDC

CCDC IS THE FIRST COMPETITION THAT FOCUSES SPECIFICALLY ON OPERATIONAL MANAGEMENT AND PROTECTION OF AN EXISTING "COMMERCIAL" NETWORK INFRASTRUCTURE.



# A LIFETIME OF NET SEC EXPERIENCE IN ONE WEEKEND

## NETSEC: SECURING THE OPPORTUNITY TO LEARN & IMPRESS

### OVERVIEW:

One of the highest profile events for anyone interested in network security is the Collegiate Cyber Defense Competition (CCDC). It's a national competition for college students that's sponsored by the Dept. of Homeland Security, Boeing, McAfee and many other high-tech companies—some of whom are at the competition and hiring students on the spot.

UAT takes part in the Western Regional CCDC in early spring each year. Professor Al Kelly leads the team and helps them prepare, which, let's just say, isn't a cram session the weekend before CCDC. Preparing takes months of hard work. Professor Kelly says UAT's team prepares for CCDC for months, mostly outside the classroom.

"The students are really passionate about CCDC," says Professor Kelly. "They put in a lot of their own time. They do a lot of planning and they look back at past competitions to see what has worked and what hasn't worked. We have a whole semester of planning, which we use to get ready for the competition."

CCDC is tough. So is preparing for it, according to Kevin Kadium, a Network Security graduate who now works as a security specialist at a marketing firm in Scottsdale.

"You have an idea of what the competition will be," he says. "CCDC gives you some ecologies. So, you have an idea of what's coming. But it's very, very vague."

### CHALLENGES

At the 2011 CCDC, nine UAT students and Professor Kelly took part in the Western Regional CCDC at Cal Poly Pomona (California State Polytechnic University, Pomona). Professor Kelly doesn't take part in the competition itself—he helps everyone prior to it. At CCDC, he gives them some advice and tips, but only during breaks.

It's a three-day event where the action starts right away. Six teams show up at Cal Poly and, as soon as they sit down, they are in a situation where a company's network is under attack.

The students are blue teams to the CCDC cyber attackers, who are the red team.

"The challenge was that the U.S. Securities and Exchange Commission (SEC) was being attacked," explains Jason Carter, a Network Security graduate who's working as a network security analyst for Alert Logic. "We were the disaster recovery site, so we had to bring up the site and defend against continued attacks. It was quite the challenge!"

Alexander Boden, a Network Security major, agrees that the CCDC was really crazy.

"We're constantly being attacked," he says. "We were building the infrastructure and storing it. Plus, we were doing a lot of live analysis of systems. We have to know what's coming at us and how it's coming at us."

"You have to kick the challengers out completely," says Jason. "And you have to document everything—that's the real pain. You get attacked. Then, you have to document it all. Looking back, it was a lot of fun. But, at the time, it was extremely challenging."



Professor Al Kelly

**"THE CHALLENGE WAS THAT THE U.S. SECURITIES AND EXCHANGE COMMISSION (SEC) WAS BEING ATTACKED," EXPLAINS JASON CARTER, A NETWORK SECURITY GRADUATE WHO'S WORKING AS A NETWORK SECURITY ANALYST FOR ALERT LOGIC.**

# A LIFETIME OF NET SEC EXPERIENCE IN ONE WEEKEND

## SUCCESSSES:

UAT had a lot of success at the 2011 CCDC. The team came in third place, after three days of grueling competition and, before that, months of practicing defending against mock attacks.

"We took third place," says Professor Kelly. "The competition was extremely tough. You have to remember, these teams are the best of the best. And, we came in one place ahead of the 2010 CCDC."

"We did really well," says David Kazlas, a Network Security major. "In previous years, it had been a much, much easier environment. The red team was much more coordinated than in previous years."

There's a lot more to CCDC than where UAT places, though. Students build up lifelong friendships and business connections. They meet with high-tech companies like Boeing that are looking for Net Sec students. Plus, students gain skills in a few months that, in the real world, could take years or a lifetime to learn.

"I always say that I learned more at CCDC applying the theory, than I have in any classroom, learning the theory" says Kevin. Jason agrees. "By the end, you learn a lot."

"The idea that UAT NetSec and Digital Forensics student teams place at the top of the pack when competing in these national challenges against bigger schools such as Cal Poly, Westwood, Cal State and UCLA is probably why government and professional teams hire so many UAT students," says graduate Kevin Kadium. He adds, "It worked for me."



David Kazlas



Kevin Kadium



Alex Boden



Jason Carter

**"1 IN 6 UAT GRADUATES ARE EMPLOYED BY THE UNITED STATES FEDERAL GOVERNMENT."**

**"I ALWAYS SAY THAT I LEARNED MORE AT CCDC APPLYING THE THEORY, THAN I HAVE IN ANY CLASSROOM, LEARNING THE THEORY" SAYS KEVIN. JASON AGREES. "BY THE END, YOU LEARN A LOT."**

## THE FUTURE:

The UAT team at CCDC 2011 laid the foundation for the 2012 team. Each year, Professor Kelly has team members document their practice sessions and their time at CCDC in a log—the Blue Book.

"There's a historical record," he says. "That way, we can look back at practices that worked and those that didn't. This way, we don't lose the core ideas and effective thinking that students worked so hard to develop."

The 2012 team started signing up for the competition, and practicing, all the way back in September 2010.

"If you think about the United States military during peacetime, they practice, practice, practice but they don't put their skills to use if there isn't a war," says Professor Kelly. "That's what we're doing. We're practicing by putting the students' learning into situations with real-world elements to it."

## CCDC TEAM:

- Alex Boden v
- Windows Administrator v
- Steven Durham v
- Lead Linux Administrator v
- Justin Engley
- Alternate
- Bryan Fisher
- Captian / Linux Admin
- Scott Fraser
- Linux Administrator
- David Kazlas
- Windows Admin
- Andrew Sullivan
- Alternate

## WHERE ARE THEY NOW:

Jason Carter graduated from UAT in 2012 with a degree in Network Security. Today, he's a network security analyst at Alert Logic, a Houston-based company that protects data that its 1,500 clients save to the Cloud.

Kevin Kadium, who graduated in 2011 with a BA in Network Security, works for FabCom—an interactive marketing firm in Scottsdale. Kevin is in charge of securing client data. Plus, he's responsible for FabCom's disaster recovery system.

### CURRENT STUDENTS

- Alex Boden
- Steven Durham
- Justin Engley
- Bryan Fisher
- Scott Fraser
- David Kazlas
- Andrew Sullivan



# FALLOUT

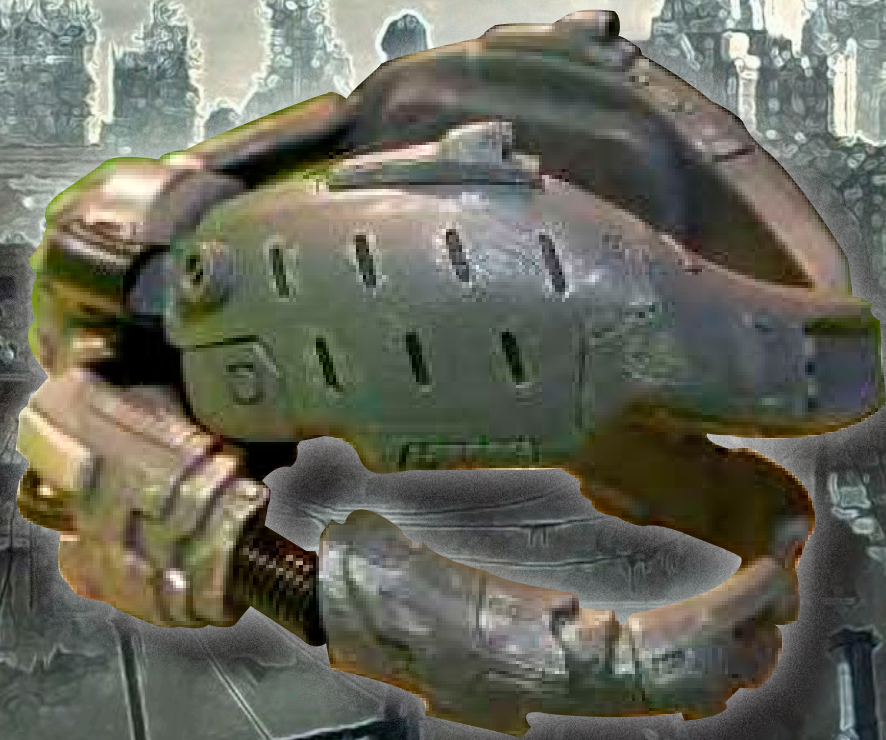
DV FILM EARNS A TOTAL OF 10 HONORS IN 2011

## Overview

When UAT Associate Professor Paul DeNigris joined the faculty in 2002, he noticed the readily available jobs in film-making tended to be in post-production editing, visual effects, music scoring, etc. Gradually, he has shifted the focus of programs to post-production and visual effects.

The *Fallout* project grew out of that shift toward more virtual production. *Fallout* is UAT's first film to consist entirely of green screen, computer-generated images and virtual backgrounds (except for one shot of marching boots which was filmed in UAT's parking lot). More than 300 digital video effects are packed into the 17-minute film.

The project brought together student animators, modelers, texture artists, composers and editors with other students learning camera work, lighting, writing, acting and make-up to create all the elements by leveraging everyone's skill sets to their maximum capacity in the areas they are most passionate about.



## History

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

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

## Details

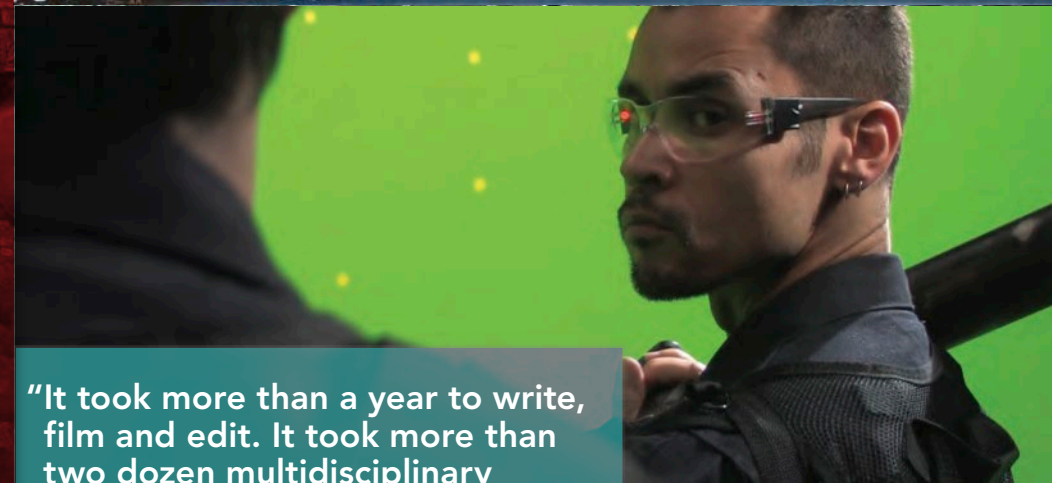
*Fallout* is a highly polished, sharply crafted action-adventure movie that takes place in Phoenix 50 years in the future.

The story unfolds in a nonstop series of action sequences. Set in a future where a cataclysmic war is waged daily on American soil, Phoenix still exists but it's obviously been through tremendous trauma and is barely populated. Smoldering ruins of skyscrapers and shopping malls are visible around every corner. It's a scene of devastation. *Fallout* focuses on the investigation into a failed mission by a Department of Homeland Security counterterrorism team, The Wild Cards, to stop a group of terrorists with a suitcase nuke. Through questioning and a brutal holographic memory extraction process, a military investigator examines for evidence of betrayal, though he may have his own agenda.

Full of twists, turns and double-crosses, the film ends leaving viewers with the mystery of who is really responsible for the damage. The epic science fiction action thriller was inspired by *24*, *Stargate SG-1*, *The Wire* and *Minority Report*.

The film is fast, furious and fantastic. That's due in large part to Professor DeNigris and his UAT students using the same film production equipment and software that Hollywood filmmakers use. It shows. Among the topnotch gear were HD camcorders, Avid Studio software, HP workstations, Avid Media Composer, Adobe Creative Suite, Autodesk 3ds Max and Autodesk Maya.

The topnotch equipment, combined with the UAT talent, has catapulted *Fallout* into a megahit on the film festival circuit.



**"It took more than a year to write, film and edit. It took more than two dozen multidisciplinary UAT students to create its visual effects, music, costumes & props."**



# FALLOUT

DV FILM EARNS A TOTAL OF 10 HONORS IN 2011

## Successes

After having made its film festival premiere at the 2010 International Horror and Sci-Fi Film Festival, *Fallout* spent nearly all of 2011 on the festival circuit with appearances at:

Phoenix Film Festival, Los Angeles Film and Script Festival, Los Angeles Movie Awards, New Filmmakers LA, Action on Film, HollyShorts, Renovation Independent Fan Film Festival, Los Angeles Reel Film Festival, Atlanta Horror Film Festival and Terror Film Festival.

*Fallout* picked up 10 awards throughout the year, including:

- Semifinalist, Innovation in Motion and Video in Education (2011 Adobe Design Achievement Awards)
- Best Arizona Short (2011 Phoenix Film Festival); The Copper Wing Award. The film fest brought out stars like Cuba Gooding Jr. and featured films starring Keanu Reeves, John C. Reilly, Rachel Weisz and many others.
- 3rd Place, Best Editing, Best Digital Effects (2011 Los Angeles Reel Film Festival, Student Film Category)
- Award of Excellence, Best Editing, Best Special Effects (2011 Los Angeles Movie Awards)
- Honorable Mention, Narrative Shorts Category (2011 Los Angeles Film & Script Festival)
- Runner Up, Best Visual Effects—Short (2011 Action on Film International Film Festival)

*Fallout* has been selected to be part of the AZ 100 INDIE FILM collection to celebrate the Arizona Centennial in February 2012. (Arizona Media Arts Center)

"With *Fallout* now becoming a signature piece to represent the UAT DV program, I made an effort to infuse the script with the spirit and culture of the University." —Professor DeNigris



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

One of Professor DeNigris' newer student films, *Flight of the Melvin*, also shows signs of success in 2012, as it already has been invited to two film festivals, the Santa Clarita Film Festival and Sedona International Film Festival.



## The Instructor

Professor DeNigris is a longtime, highly respected filmmaker with a slew of credits, including *Cowboy Dreams* with comedian Bill Engvall. He describes the evolution of *Fallout* in an excerpt of the June 2011 MovieMaker Magazine article from which he was interviewed:

"With *Fallout* now becoming a signature piece to represent the UAT DV program, I made an effort to infuse the script with the spirit and culture of the University. UAT is a very niche school—an environment designed to cultivate geek culture and prepare students to become innovators of the future in areas of technology. Our students and faculty love science fiction, videogames, theoretical physics, robotics, computers, role playing games, movies, and much more. Our computers and servers are named after the planets and races of Frank Herbert's *Dune* series. We play John Williams' 'Imperial March' at commencement. And we've had science luminaries such as Dr. Michio Kaku speak on campus."

"And so *Fallout* became filled with references to all these things which make up our unique and diverse culture at UAT. *Videogamestyle* imagery is used to create the military tech of this embattled future. Table-top gaming inspires the holographic recreations of the battle later in the movie. Dialogue that references *Dune* and *Star Wars* is sprinkled throughout. And character names borrowed from the *Stargate* TV series reveal some of our inspiration for the team dynamic among the Wild Cards. *Fallout* stands as a cinematic snapshot of the University at a particular time in its history. But more importantly it was designed to stand alone as a piece of entertainment which shows the possibilities of filming on green screen and also the professional potential of the students who spent more than a year creating it. As a result, I am supremely proud of *Fallout* both as a film and as a representation of the new direction for the Digital Video major I have helped build."



Check out Professor DeNigris' behind-the-scenes commentary at [UAT.edu/FalloutAward](http://UAT.edu/FalloutAward).

YEAR OF THE

# FALLOUT

DV FILM EARNS A TOTAL OF 10 HONORS IN 2011

## Team Fallout

**Ryan Andrews**—Supervisor of Particles & Dynamics  
Major: Digital Media  
2010 Graduate

**John Chafuen**—Sound Mixer  
Major: Game Design

**Jason Dye**—Assistant Composer  
Major: Game Design  
2011 Graduate

**Christopher Erickson**—Dir. of Photography/Editor  
Major: Digital Animation

**Mitchell Faherty**—Costumes & Props  
Major: Digital Video  
2010 Graduate

**Stephen Failla**—2D Designer  
Major: Digital Animation  
2009 Graduate

**Shawn Geary**—Composer  
Major: Digital Video  
2010 Graduate

**Chad Hryhorysak**—Producer  
Major: Game Programming

**Thitiwut "TJ" Jaroensuthiyotin**—Composer  
Major: Virtual Modeling & Design  
2011 Graduate

**Kyle Jenkins**—3D Modeling & Texturing  
Major: Virtual Modeling & Design  
2010 Graduate

**Austin Jensen**—3D Modeling  
Major: Game Art & Animation  
2011 Graduate

**Jessica Jones**—3D Modeling  
Major: Virtual Modeling & Design  
2010 Graduate

**Mark Lee**—3D Modeling  
Major: Virtual Modeling & Design  
2010 Graduate

**Alexander Stephens**—3D Modeling  
Major: Game Design

**Monica Thies**—Composer  
Major: Network Security  
2011 Graduate

**James Toth**—Digital Matte Painter  
Major: Digital Animation  
2010 Graduate

**Nick Wassenberg**—2D Design  
Major: Game Art & Animation  
2010 Graduate

**Alexander Stephens**—3D Modeling  
Major: Game Design

**James Toth**—Digital Matte Painter  
Major: Digital Animation  
2010 Graduate

**Nick Wassenberg**—2D Design  
Major: Game Art & Animation  
2010 Graduate

**Stephen Failla**  
2009 Graduate

**Matt McElroy**  
2009 Graduate

**Joel Terry**  
2009 Graduate

**Valeriy Benidze**  
2010 Graduate

**Matthew Buresh**  
2010 Graduate

**Justin Gagen**  
2010 Graduate

**Kalki Khaira**  
2010 Graduate

**Monica Thies**  
2011 Graduate

**See Ooi Lim**  
2010 Graduate

**Andrew Pfeiffer**  
2010 Graduate

**Luke Walsh**  
2010 Graduate

**J.D. Cerince**  
2010 Graduate

**Matthew DeJesus**  
2010 Graduate

**Mitchell Faherty**  
2010 Graduate

**Shon Major**—Composer

### FACULTY

**Professor Paul DeNigris**

## Where Are They Now

**Matt McElroy**—Producer  
VFX Artist with MK Production in Los Angeles

**Joel Terry**—Assistant Editor  
Working on MFA in Film Production at Chapman University in Orange, CA

**Valeriy Benidze**—3D Modeling & Texture  
2Wire

**Matthew Buresh**—Editing & Sound  
Studio One Media

**J.D. Cerince**—3D Modeling Supervisor  
3dBob Productions

**Matthew DeJesus**—Digital Matte Painter  
Kohana Japanese Restaurant – Web Design

**Kalki Kahira**—Visual Effects Supervisor  
IntraEdge

**John Chafuen**—Sound Mixer  
Working as a freelance sound engineer and sound designer for film and video projects, including Professor Paul DeNigris' thesis film "Parallax"

**Stephen Failla**—2D Designer  
Freelancing as an artist and illustrator in Arizona, and recently collaborating with Professor DeNigris on an iPad app

**Justin Gagen**—Art Dept. Supervisor  
Working at Candee Production in North Phoenix as an editor and FX artist, and also freelancing. Also worked with Professor DeNigris on his thesis film "Parallax".

**Kyle Jenkins**—3D Modeling & Texturing  
Freelancing as a 3D artist for film projects here in Arizona, including Professor DeNigris' thesis film "Parallax"

**Monica Thies**—Composer  
Now lives and works in L.A. as a production assistant on the new NBC television series *Awake*

**See Ooi Lim**—Lead Concept Artist  
Factory 38

**Andrew Pfeiffer**—3D Modeling  
Factory 38

**Luke Walsh**—3D Modeling  
United States Military



a global  
resource  
management  
world



# THE ANNUAL GAME DEVELOPERS CONFERENCE

# SENSORY OVERLOAD

In UAT's vibrant, multifaceted academic environment where students are challenged to explore new and traditional concepts and apply them to the real world, they're taking what they learn one step further. They're hoping to inspire a new generation to protect planet Earth.

UAT students play an active role in raising awareness of environmental issues on a global scale—and engaging us all to work together to solve them—with creation of the game *Tellus*.

## HISTORY

The origins of *Tellus*, a global resource management game, began about two years prior to the national Game Developers Conference (GDC) 2011.

Professor David Wessman discovered that the IEEE (Institute of Electrical & Electronics Engineers) on Earth Observation had a two-phase SaveEarthGame competition.

The world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity, the IEEE challenged aspiring gamers to create a game for a younger generation audience, ages 9-16, to demonstrate how real-world events and big issues affect the Earth and impact its people. The game should raise awareness of our planet and encourage learning about Earth's resources in nine areas—from disaster relief and response to ecosystems and agriculture—to solve environmental issues.

The first phase was to write a concept.



"In the Introduction to Game Design class, that's basically what you're learning to do," says Professor Wessman. "So, I made it an assignment."

Nearly one year later, in 2010, Game Design major Ian DiCarlo got a phone call from a liaison from IEEE, saying that he won. Ian serves as the concept/design lead.

"At that moment, I didn't know we'd go to GDC, but I did know we'd go to Phase II," says Ian.

"I WON'T LIE," SAYS IAN. "I WAS MOVED. I GOT MY NAME ON A PACKAGE. MAYBE IT'S NOT SHIPPING GLOBALLY OR ANYTHING, BUT THAT'S THE FIRST STEP."



Phase II called for the creation of a playable prototype. Professor Wessman scrambled to assemble Team *Tellus*. He added a class to his already full schedule—GAM405, Applied Game Development—to make sure his students had every resource they needed to create a functioning game they could be proud of at GDC.

A total of 16 UAT students and alumni comprise the team, including on-campus and online students; in-state and out-of-state students; undergraduate and graduate students.

Following completion of a playable prototype, Professor Wessman oversaw the design of *Tellus*' packaging and marketing materials—in addition to his role as creative director and producer for the game.

"I won't lie," says Ian. "I was moved—I got my name on a package. Maybe it's not shipping globally or anything, but that's the first step."

When the prototype was created, even before the team knew the results of the second phase, *Tellus* was ready to apply to UAT for sponsorship to attend GDC 2011. Conducted annually in San Francisco, GDC welcomes nearly 20,000 gamers, designers, programmers and publishers.

Again *Tellus* was announced a winner and awarded co-sponsorship for GDC, along with another UAT game *Trade Secret*.

News just in that *Tellus* also has won the second phase of the SaveEarthGame competition. This means the UAT team has been awarded first place among all entries worldwide.



# THE ANNUAL GAME DEVELOPERS CONFERENCE

# SENSORY OVERLOAD



## OVERVIEW

Created using the actual research that scientists are using today to predict changes to the environment, *Tellus* is a global resource management game that lets players guide, research and development in five key areas (energy, production, health, ecological, awareness and earth observation technology.) The challenge is to save the earth and improve the quality of life on our planet. *Tellus* is the Latin word for "Earth" and is another name for the Roman Earth Mother goddess Terra Mater, counterpart to the Greek goddess Gaia.

The game models a lot of complex relationships in a simple and accessible way, and the data underlying the simulation is all based on real-world Earth Observation data that tells players how well (or not) their use of technology and their implementation of policies are working. Players must invest wisely in research, education and infrastructure across the five key areas.

## DETAILS

*Tellus* is played on a simulated real-time basis, with each minute representing one year during a period of more than 30 "years" from 2010 through 2039, so players can complete the game in less than an hour (assuming the pause button isn't used too often).

Presenting the world in breathtaking 3D, *Tellus* goes through day/night cycles with 19 distinct regions of earth that players manage, with a satellite-level camera view. The graphical user interface (GUI) makes it easy for players to scroll around the earth and to zoom in and out. Plus, music plays dynamically, reacting to the action on the screen rather than just being a prepackaged loop, which ramps up the excitement level and emotional impact of the game.

The period covered by the game avoids the uncertainties of predicting too far into the future, and the duration of the game encourages replay, allowing players to experiment because they can quickly see the results of different strategies.

*Tellus* was developed with Unity3, the award winning game authoring tool of choice for independent developers. The game is playable on Windows PCs, Macintosh and in a web browser.

The objective is to improve your quality of life by 60 percent or better.

The GUI features a Planet View that allows players to easily scroll around the globe. Using the Region View, the camera zooms in and brings up the chosen region's tech tree where players can monitor the status of each region and choose what to research and build.

Rather than rely on real-world political boundaries, *Tellus* divides the earth into 10 regions along major geographical and demographic divisions. However, each region reflects its real-world level of development and population density. This demonstrates the advantages and disadvantages of each region and requires that players think carefully about their strategy to advance development around the world.

## SUCCESSSES

*Tellus* is rocking our world, literally, attracting the attention of UAT, the GDC and IEEE.

At the 2011 GDC, the team received a warm reception.

"We couldn't have had a better result," says Professor Wessman. "It was primo real estate. Unity3 was happy to have us there. The students did a great job representing themselves and UAT. Plus, we had some publishers interested, and even arranged a meeting with Valve."

A major factor in *Tellus'* warm reception at GDC was the role that Game Design major Tyler Coleman played on the convention floor to make the game more visible. He worked on the game's design, quality assurance and public relations, and managed to get Team *Tellus* invited to the Unity booth for two days.

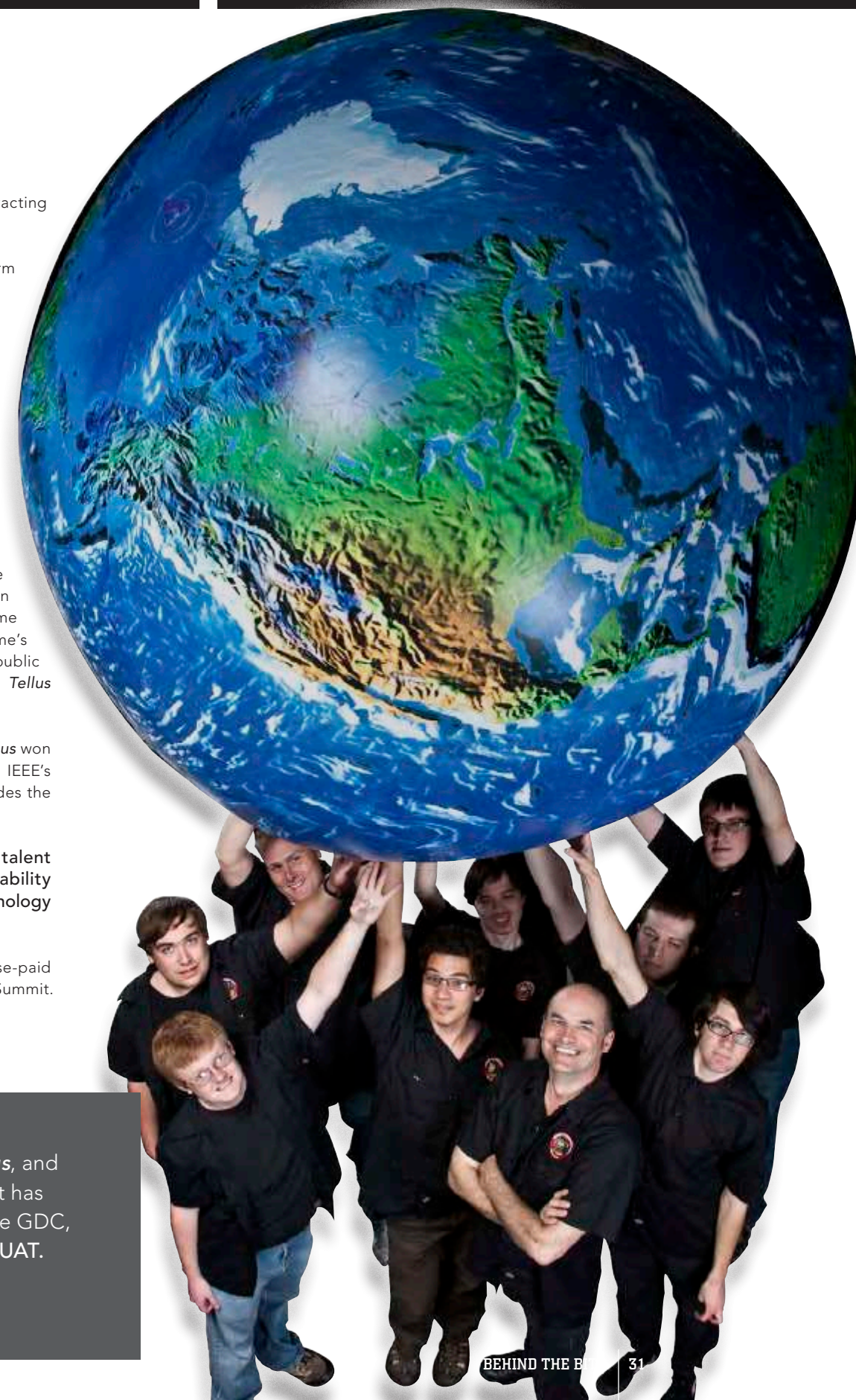
Upon receipt of the recent news that *Tellus* won both phases of the IEEE competition, IEEE's congratulatory letter notes *Tellus* "provides the framework for a fully functional game."

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

The grand prize is \$20,000 plus an expense-paid trip to the Group on Earth Observations Summit.



To play *Tellus*, and to see how it has evolved since GDC, go to: [www.UAT.edu/Tellus](http://www.UAT.edu/Tellus)





# THE ANNUAL GAME DEVELOPERS CONFERENCE

# SENSORY OVERLOAD

## CHALLENGES

Team *Tellus* was faced with a short deadline to ready the second phase's entry of a playable prototype for the SaveEarthGame competition, so Professor Wessman assembled a team of people who could work quickly.

"It was an interesting opportunity for them to get thrown into something with actually a lot of pressure," he reflected. "The semester started Sept. 7 and Oct. 31 was the deadline for the first playable prototype."

On the heels of preparing for the SaveEarthGame competition, Team *Tellus* also was looking ahead at the GDC. Establishing connections, getting feedback and enhancing your game's visibility at GDC can increase the chances of getting published.

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

He adds: "One thing that was really cool was that the team consisted of undergrads, grads, alumni—some residents and some out-of-state," he adds. "That presents a lot of challenges, in terms of communicating, people being held accountable. That's something they all learned. You can't just tell people what to do. You need to work with them and persuade them, and sometimes you need to let people have their way, especially creative people."

## WHERE ARE THEY NOW

**Sean Welland**—Audio Lead  
Major: Game Production & Management  
2010 Graduate-Masters Program

**Michael Viscio**—Art Lead  
Major: Game Art & Animation  
2011 Graduate

**David Payne**—Project Director/Design  
Major: Game Design  
Year: Senior

**Ian DiCarlo**—Concept/Design Lead  
Major: Game Design; Game Art & Animation  
2011 Graduate

While Ian is looking for a job, he's doing portfolio work, including *Tellus*. He'd like to live and work in Canada or Italy. Both countries have fairly healthy game industries. He speaks Japanese and currently is learning Chinese.

**Bryan Clark**—Programming Lead  
Major: Software Engineering  
2010 Graduate

**Megan Stevens**—Art  
Major: Game Art & Animation  
Year: Senior

**Evan Prichard**—Design  
Major: Game Design  
2011 Graduate

**Brian McBride**—Design  
Major: Game Design  
Year: Senior

**Daniel Loo**—Art  
Major: Game Art & Animation  
2011 Graduate

**Todd Lasswell**—Music  
Major: Game Programming  
Graduate

**Scott Gladstein**—Design  
Major: Game Design  
2011 Graduate

**Brandon Gilmore**—Environment Art  
Major: Game Art & Animation  
Year: Senior

**Matt DeJesus**—Art  
Major: Game Art & Animation  
2010 Graduate

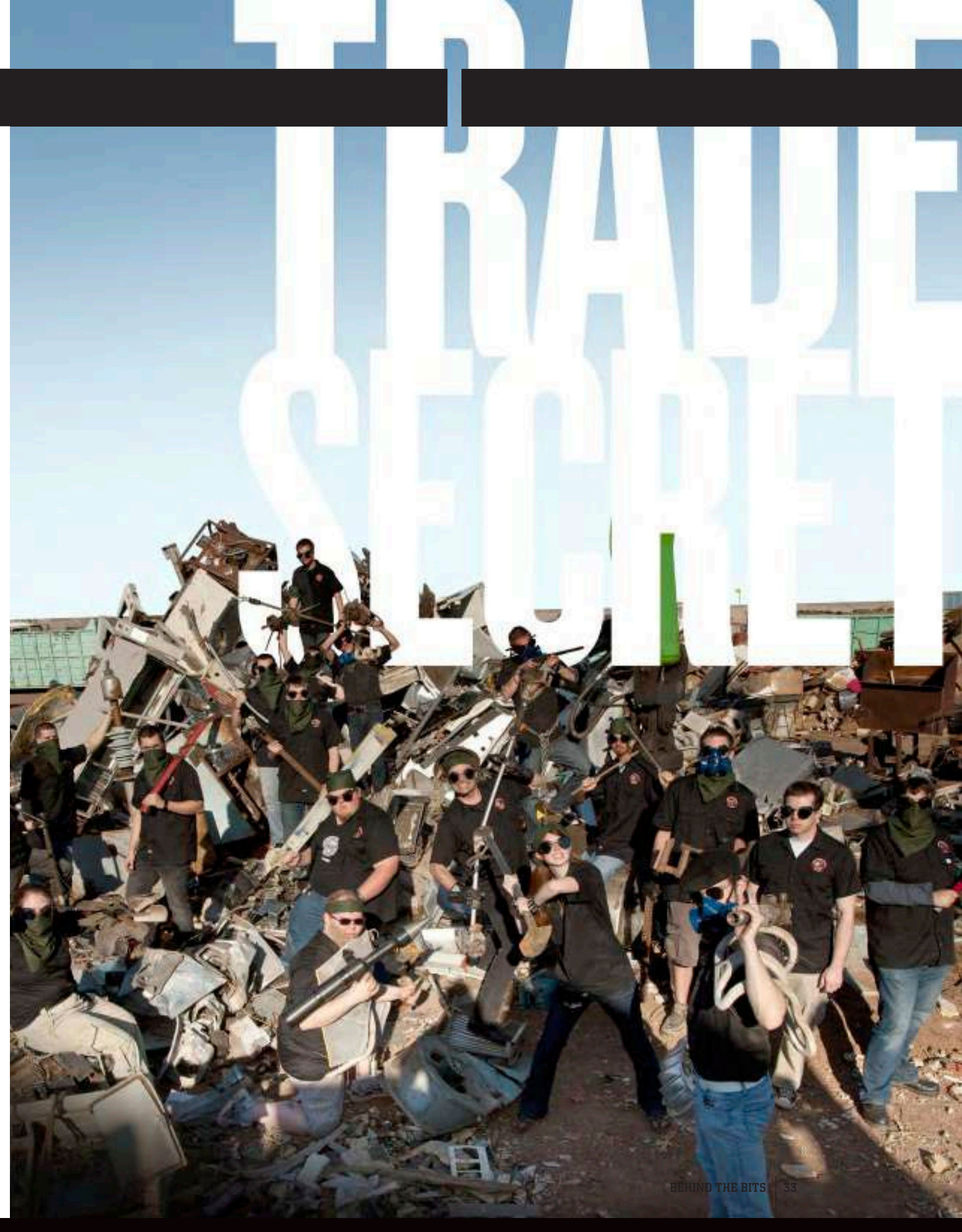
Matthew is an Intervention Specialist at Ireda Solutions and a Web Developer at Kohana Japanese restaurant.

**Robert Coburn**—Art  
Major: Game Production & Management  
Year: Graduate Student

**Tyler Coleman**—Design/PR/QA  
Major: Game Design  
Year: Senior

**Fatir Ahmad**—Programming  
Major: Game Design  
2010 Graduate

**Professor David Wessman**  
Creative Director/Producer



# UAT STUDENTS' GAME ROCKS GDC AGAIN WITH TRADE SECRET

The secret to *Trade Secret's* success can be found in the ambition and innovation of 31 students led by Professor David Wessman. That's the essence of Synchronic Learning—UAT's method of teaching, where a student (or multidisciplinary teams of students) works side-by-side with professors, mentors and industry leaders on short-term and long-term projects.

Originally pitched by UAT alumni Will Courtney and Brendan Erquiaga, *Trade Secret* is a polished, 2.5D, multilevel Web game that evolved from Professor Wessman's GAM405 class. Most students onboard already had worked with each other, so the concept took off with great success.



## OVERVIEW

*Trade Secret* is an ambitious game project because of its innovative, multi-level design.

### Ambitious, indeed.

In the game, a team of up to four players work cooperatively as the Sons of Salvage. They're dedicated to improving the lives of their citizens, trying to climb up five levels of the subterranean world to reclaim the surface of the Earth.

Their journey will force them into confrontations with a varied assortment of enemies—human, creature, mechanical, and hybrid, as well as diabolical traps and puzzles. The Sons of Salvage are several generations removed from Armageddon, when the planet's surface was destroyed. The Sons' ancestors had technology to predict that Armageddon was coming, but not enough time to do anything about it. So, they built a habitat underneath the Earth's surface called Under Haven. The problem is, after all these generations, Under Haven is a chaotic, dangerous place as people fight over dwindling resources.

As the Sons try to climb out of the subterranean, they collect "old technology" to create weapons. They face off against sinister people, animals and other creatures. Plus, just to add to the complexity of the game, an incredibly powerful group called the Guild steals the Sons' mega-drill. The Sons' journey centers on trying to reclaim this mega-drill.



## DETAILS

What sets *Trade Secret* apart from similar games is the unique transition that occurs in its levels. Because the art assets are designed in Unity3 and are therefore 3D, there are times when the two-dimensional view will "rotate," changing the perspective of the level to allow for more depth and creativity. Players can explore levels rendered in 3D while keeping the game play in 2D. The result is thrilling game play, stunning graphics and amazing sound.

### Innovative Aspects Include:

- A z-axis mechanism allows players to traverse a 3D environment while keeping the game in a 2D plane.
- A tinkering system allows players to craft custom armor and weapons.
- *Trade Secret* texture artist Kim Mann (2011 Game Art and Animation alumnus) incorporates a cool art style using a model with a "skin" over it that gives skin color, the shirt color and the texture of the skin and the fabric. It helps to bring the game to life.
- Puzzle designer Giovanni Gonzales (2011 Game Design alumnus) made a giant gear maze and a light puzzle in a generator room.



## CHALLENGES

Just about everyone knows the chicken-and-the-egg question about which came first. In gaming, publishers will hire you only if you have experience. But how do you get experience if no one will hire you?

It's frustrating. But there is a way around this dilemma. You get experience at school, but not just any school. Just ask Dennis Pishik, a UAT double major (Game Design & Game Programming alumnus).

"The point is really to have a finished product to show a potential employer and say 'I can start something and finish it to completion,'" says Dennis. He was the quality assurance lead and level designer for *Trade Secret*. He adds about being at GDC: "People were coming over and playing our game. We got mostly positive feedback. People were saying things like, 'Make this more responsive.' 'Move this over there.'"

Marketing at the GDC is important. Doing it well will help; doing it half way will hinder your efforts to get the attention of industry leaders.

# UAT STUDENTS' GAME ROCKS GDC AGAIN WITH TRADE SECRETS

## SUCCESSSES

*Trade Secret* was awarded co-sponsorship by UAT to attend the 2011 Game Developers Conference (GDC), along with another innovative UAT game, *Tellus*.

GDC is the must-go event for gamers, game designers, developers and publishers. Almost 20,000 people attend, including the industry's biggest names.

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

"During GDC, *Trade Secret* actually had some offers for publishing, so we're going to be working hard to get it done; it's still in the Alpha stage right now."

Quality marketing is key, which is why Professor Wessman served as much more than the game's director and producer; he also handled marketing. This included overseeing the development of the team's business cards and all the packaging and publicity materials for *Trade Secret*.

Networking is also essential. Game Design major Tyler Coleman played a major role in getting *Trade Secret* visibility. Among other exhibits, he visited the Unity booth and introduced himself.

"I loaded them up – *Trade Secret* and *Tellus*," says Tyler. "It just started out as a casual conversation. But once the one guy saw them, he grabbed two other guys from Unity. Next thing I knew, we had a constant flow of people coming to look at the games."

Unity was among companies that expressed interest. Browser game company Electrotank also showed interest in *Trade Secret* and the team scored a private meeting with Valve.

"Best GDC I've been to. It was a lot better being with a team, kind of having that backbone of support," says Tyler. "I definitely think that going as a group was much more beneficial than just one or two of us supporting the project."

"I DEFINITELY THINK THAT GOING AS A GROUP WAS MUCH MORE BENEFICIAL THAN JUST ONE OR TWO OF US SUPPORTING THE PROJECT."



## WHERE ARE THEY NOW

**Kyle Brannon**—Producer  
Major: Game Design  
2011 Graduate  
Kyle is working on his master's degree.

**Bryan Clark**—Lead Programmer  
Major: Software Engineering, Game Art & Animation  
2010 Graduate  
Bryan is a Software Engineer for Ethos Solutions.

**James Clark**—Lead Writer/Combat Designer  
Major: Game Design  
2010 Graduate

**Austin Langston**—Lead Level Designer  
Major: Game Design  
2011 Graduate  
Austin is a game designer/developer currently making mobile games for Real Dedicated Games, a company he formed with a core group of students from *Trade Secret*.

**Andrew Maul**—Project Manager/Level Designer  
Major: Game Design  
2011 Graduate  
Andrew is working at UAT as an eCollege Web Specialist.

**Dennis Pishik**—Quality Assurance Lead/Level Designer  
Major: Game Design/Game Programming  
2010 Graduate  
Dennis is continuing his education with UAT in Game Programming.

**Zachary Robinson**—Lead Artist  
Major: Virtual Modeling & Design  
2010 Graduate  
Zachary is a Content Developer and Online Tutor at UAT.

**Sean Weiland**—Lead Audio Designer  
Major: Game Production & Management  
2011 Graduate: Master's Program  
Sean is co-founder of the Double Veh audio studio in East Pennsylvania and recently started up The Philadelphia Game Lab.

**Blake Bjerke**—3D Modeler/Textures  
Major: Game Art & Animation  
2011 Graduate  
Blake is a Senior Environmental Artist at Autonomous Games/8 Red Pixels.

**Elissa Clare**—Concept Artist  
Major: Digital Video/Virtual Modeling & Design/TK  
2011 Graduate  
Elissa currently is a Jr. Database Load/Builder at iTRACS Corporation.

**Tyler Coleman**—Designer  
Major: Game Design  
Year: Senior

**William Courtney**—System Designer/Programmer  
Major: Game Design  
2010 Graduate

**Cody Furr**—Level Designer  
Major: Game Design  
Year: Junior

**Shawn Geary**—2D Artist/Textures  
Major: Digital Video  
2010 Graduate  
Shawn is a 3D Modeling Instructor, Clover Park Technical College.

**Giovanni Gonzales**—Scripter  
Major: Game Design  
2011 Graduate  
Giovanni works at MrChewy, an online pet food retailer, in the Search Engine Optimization Department. He is also pursuing a master's degree.

**Dmytro Goryainov**—Concept Artist  
Major: Digital Media  
Year: Senior

**Ariel Navarette**—3D Modeler  
Major: Game Art & Animation  
Year: Senior

**Dennis Porter**—3D Modeler  
Major: Game Art & Animation  
Year: Junior

**Winston Powell**—3D Modeler  
Major: Game Art & Animation  
Year: Senior

**William Tate**—2D Artist/Textures  
Major: Digital Media  
Year: Senior

**Kim Mann**—Texture Artist  
Major: Game Art & Animation  
2011 Graduate  
Kim is a member of the Audio/Visual team at Fry's Electronic.

## ADDITIONAL CONTRIBUTORS

Spencer Blount—Scripter  
Sean Clark—Concept Artist  
Steve Faila—Concept Artist  
Tim Feid—Web Designer  
Chris Felch—3D Modeler/Textures  
Storm Kiernan—Artificial Intelligence Programmer  
Rystian McDermott—Music Composer



# MELVIN TAKES FLIGHT WITH DV FILMS FIRST SPECIAL FEATURE

## OVERVIEW

It's a close encounter with the alien kind. The newest student short film *Flight of the Melvin* is out of this world, but with real world benefits for 15 students who created the film under the direction of Digital Video Professor Paul DeNigris.

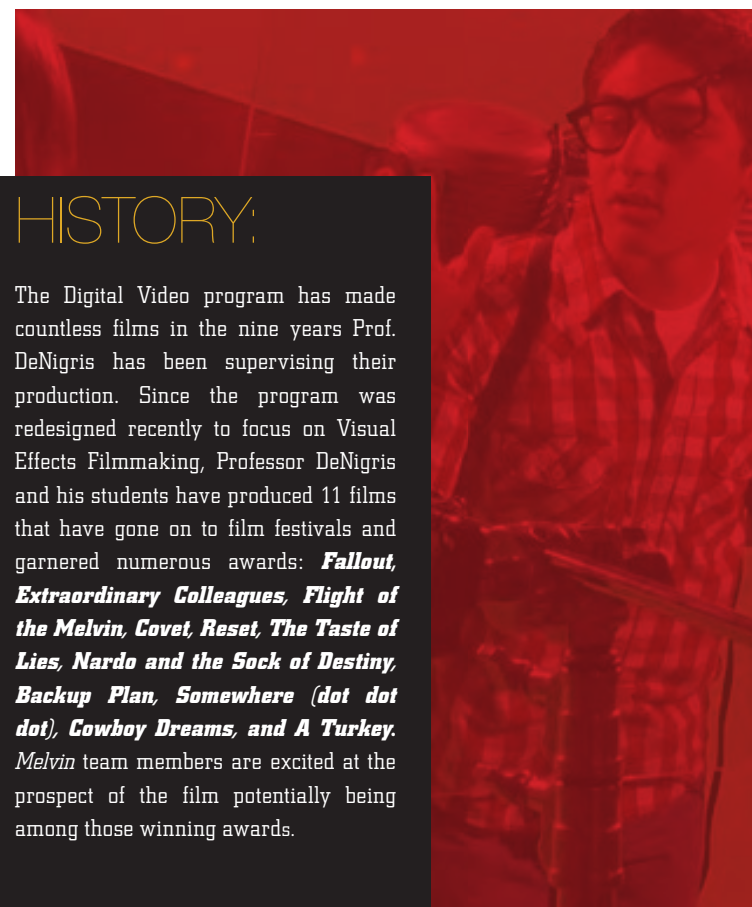
The story, set in the early 1970s, is about a 14-year-old space geek named *Melvin* who is constantly nagged by his mom to "clean the danged birdcage." Already intrigued with space travel and fed up with the nagging, *Melvin* gathers some spare parts, builds himself a jetpack, fires it up and blasts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

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

From producing to compositing, design work and visual effects, Team *Melvin* designed and built all props and created each visual and sound effect. Props included the spaceship, launcher, ray gun and jetpack. With the help of a green screen and other special effects technology, *Melvin* becomes an action packed, 3D, "sci fi" fantasy.

## HISTORY:

The Digital Video program has made countless films in the nine years Prof. DeNigris has been supervising their production. Since the program was redesigned recently to focus on Visual Effects Filmmaking, Professor DeNigris and his students have produced 11 films that have gone on to film festivals and garnered numerous awards: *Fallout*, *Extraordinary Colleagues*, *Flight of the Melvin*, *Covet*, *Reset*, *The Taste of Lies*, *Nardo and the Sock of Destiny*, *Backup Plan*, *Somewhere (dot dot dot)*, *Cowboy Dreams*, and *A Turkey*. *Melvin* team members are excited at the prospect of the film potentially being among those winning awards.



**"We'd do things like set up fans to blow *Melvin's* hair and clothes, and have lights on swinging arms to create a sense of *Melvin's* movement through the clouds even though he was standing still on the green screen," says Professor DeNigris. "Or we'd fly the camera past *Melvin* to give the impression that he had flown past us. The idea of having to reverse some of your thinking to achieve the effect you want is essential to the green screen process."**

BOLDY GOING WHERE NO GEEK HAS GONE BEFORE



UNIVERSITY OF ADVANCING TECHNOLOGY PRESENTS A PRODUCTION OF THE DIGITAL VIDEO PROGRAM "FLIGHT OF THE MELVIN"  
 ISAAC DENIGRIS LAURA DURANT AND SHANE DEAN CONCEPT MATTHEW DEJESUS EDITED BY PAUL DENIGRIS SUPERVISOR MONICA THIES  
 WRITTEN BY BLAKE BJERKE RAUL GARCIA ZAC ROBINSON DIRECTOR OF PHOTOGRAPHY ERICA FACONE CINEMATOGRAPHY BY WES PETERSON SEAN WALTER  
 EXECUTIVE PRODUCERS DAVE BOLMAN REBECCA WHITEHEAD PRODUCED BY MONICA THIES WRITTEN AND DIRECTED BY PAUL DENIGRIS

# MELVIN TAKES FLIGHT WITH DV FILMS FIRST SPECIAL FEATURE

## Special Features:

*Flight of the Melvin's* array of visual and sound effects, plus creative story writing is what makes it an intergalactic success.

The film was UAT's first production to be filmed on the new generation of Digital SLR cameras. DSLRs have traditionally been used for shooting still images, but in the last couple of years they have been enhanced with HD video capabilities and have become quite popular among budget-conscious filmmakers. Team Melvin used the Canon 5D Mark II, a "full frame" camera that provides incredibly cinematic depth of field and creates beautiful images.

The production crew also utilized all industry-standard lighting gear such as Arri Fresnel lights—the same lighting you'd find on a Hollywood set. In Post Production, the crew used Avid Media Composer to edit the video, Digidesign ProTools to edit and mix the audio, Photoshop for 2D elements, both Max and Maya for our 3D environments, and Adobe After Effects to composite everything together.

*Melvin* was shot partially on location and partially on green screen. The scenes in Melvin's home and garage were shot in the actual environment. Once he blasts off into the sky with his jetpack, everything was shot green screen.

"We'd do things like set up fans to blow Melvin's hair and clothes, and have lights on swinging arms to create a sense of Melvin's movement through the clouds even though he was standing still on the green screen," says Professor DeNigris. "Or we'd fly the camera past Melvin to give the impression that he had flown past us. The idea of having to reverse some of your thinking to achieve the effect you want is essential to the green screen process."

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

The ray gun was created by Blake, Nic Breidinger, a Robotics and Embedded Systems major, and Matthew DeJesus, a Game Art and Animation major, with the help of UAT's first Dimension uPrint 3D Printer.

"One of the best parts of the experience was making the jet pack," says the film's producer Monica Thies, "It was Paul's idea to make it out of Igloo thermos containers."

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



[HTTP://MIMEO.COM/  
UATDV/BEHINDTHEBITS](http://mimeo.com/uatdv/behindthebits)  
PASSWORD: **MELVIN**

# MELVIN TAKES FLIGHT WITH DV FILMS FIRST SPECIAL FEATURE



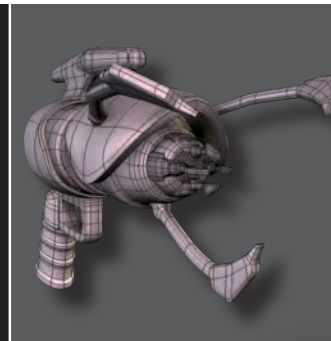
## Challenges

One of the bigger challenges was the "Little Green Men," according to Professor DeNigris. Actor Shane Dean was digitally cloned to play 25 different aliens in the film, sometimes appearing in a shot six or seven times.

"Dealing with all the different copies of him, altering their skin tones to differentiate them, and also resizing Shane to appear smaller than Melvin, was a big challenge," he says.

Melvin wore a reflective silver space suit, which presented the film's biggest challenge. The suit reflected tons of green, sometimes making chromakeys very difficult. Chromakeying is the process where you remove the green screen behind the actors in order to put in a different background.

"The process works great when actors are wearing colors that contrast with the green screen, but not so great when they're wearing green or white or silver," says Professor DeNigris. "So 'pulling keys' on Shane turned into a time-consuming process requiring lots of 'rotoscoping,' or hand-tracing. The 'Aha' moment was...never ever again will we rent that silver spacesuit for anything!"



## Where Are They Now

**Blake Bjerke**—visual effects  
Major: Game Art & Animation  
2011 Graduate

**Nic Breidinger**—electronics  
Major: Robotics & Embedded Systems;  
Artificial Life Programming  
2011 Graduate

Nic, who was in charge of electronics, graduated in April 2011 with a double major in Robotics and Embedded Systems and Artificial Life Programming.

**Matthew DeJesus**—design work, concept artist  
Major: Game Art & Animation  
2011 Graduate

Matthew is freelancing for several companies as a Graphic Designer and Web Developer.

**Austin Jensen**—2D Design  
Major: Game Art & Animation  
2011 Graduate

**Jared Oppie**—grip & electric  
Major: Digital Video  
Year: Sophomore

**Wes Peterson**—filming on green screen  
Major: Digital Video  
Year: Senior

**Zac Robinson**—visual effects  
Major: Virtual Modeling & Design  
2010 Graduate

Zac, who handled the visual effects including 3D modeling and texturing, graduated in 2010 with a Virtual Modeling and Design major. He's working on a few projects for his portfolio.

**Evan Sprague**—green screen keying  
Major: Digital Video  
2009 Graduate

**Monica Theis**—producer  
Major: Network Security, Virtual Modeling & Design  
Alumnus

Monica, who was Melvin's producer, now lives and works in L.A. as a production assistant on the new NBC television series Awake.

**Sean Walter**—filming on green screen  
Major: Digital Video  
Year: Senior

**Ryan Whitten**—filming on green screen  
Major: Digital Video  
2007 Graduate



## Film Festival Entries & Awards

In January, *Flight of the Melvin* made its public debut at the 2012 Santa Clarita Valley Film Festival in Newhall, Calif. and was honored with two awards in the Student Film category: **Award of Excellence and Best Editing.**

Melvin also has been selected to participate in two more film festivals: the 18th annual Sedona Film Festival Feb. 18-26, in Sedona, Ariz., and the 17th Annual International Family Film Festival March 21-25 at Raleigh Studios in Hollywood, Calif.

After the festival run is over, *Melvin* will be posted to YouTube, Vimeo, Facebook and more. Film festivals prefer that filmmakers refrain from uploading films to the web while they are actively on the festival circuit.

JAMES GRANT'S

# INFLUENTIAL FRIENDS

UAT ALUMNI PROFILE



UNITED COLORS  
OF JAMES GRANT

## OVERVIEW

You've heard people say: "Getting a job is all about connections." Well, getting a job may not be only about the people you know. But, for alumnus James Grant, his UAT professors, former coworkers and colleagues have been instrumental in getting him more than a job. They've helped him launch his graphic design career.

Instead of landing a 9 to 5 job, James is a freelance graphic designer. So, he's his own boss. Plus, he's not stopping there. James is speaking with investors about a company that he wants to start. The company will be based on STOC (Stock Ticker Orbital Comparison) – a project he developed at UAT.

STOC graphically displays companies' stocks. It shows, in one glance, how well each company is doing. Dots of various colors and sizes distinguish one stock's performance from another stock's performance.

**"I'm looking into starting a data visualization company," says James. He returned to UAT last November as a guest speaker at Tech Forum. "It's coming together, slowly but surely."**

James also spent three months developing a revolutionary design for Benetton—the global clothing store. That project, Unravel, was an interactive window display. It lured potential customers up to Benetton. Customers looked at the store's products displayed in the window and, then, interacted with the display.



## CHALLENGES

That Benetton project began with UAT Professor Vesna Dragojlov. She has a friend who works at Fabrica—a division of Benetton in Italy, where young designers from around the world work together on cutting edge designs and technology.

"I have a friend who was a director at Fabrica," she says. "He contacted me and invited two of our students to join a workshop. It was really wonderful."

James was one of two UAT students selected to visit Europe. At the workshop, he worked with the design software openFrameworks with Zach Lieberman—the man who created openFrameworks.

**"He helped me learn openFrameworks," says James. "We worked on a bunch of projects. At the end of the workshop, he gave me a few projects to work on for a yearlong residency. It took me a while to get the visa worked out. That was in December and I left in March."**



James Grant &  
Professor Vesna Dragojlov

# JAMES GRANT'S INFLUENTIAL FRIENDS

## UAT ALUMNI PROFILE

### SUCCESSSES

James worked in Italy at Fabrica for that year. He worked side-by-side with many influential designers like Oriol Ferrer Mesia. James is now back in the States but he's still in touch with Oriol.

At Fabrica, Unravel was enormously successful in attracting customers to Benetton stores. The interactive display showed a Benetton product and, when a customer walked up to it, the image would explode into thousands of dots that would mimic the movements of the customer.

"They asked us to produce projects for the windows," explains James. "It was a matter of trial and error. They wanted to showcase the brand and the stores in a way that was fun and interactive but that also represented the brand."

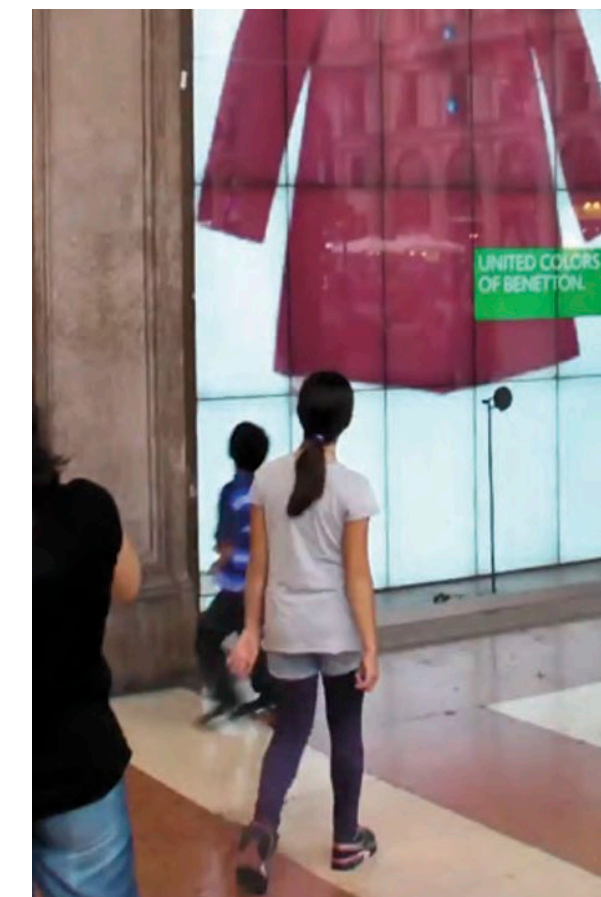
See the Unravel window display in action. Go to [www.uat.edu/Unravel](http://www.uat.edu/Unravel)



### SUCCESSSES

Since returning from Italy, James has built up a business as a freelance graphic designer. Of course, he taps into the skills he developed at Fabrica and UAT. He's now in the early stages of launching his own company.

**"I'M LOOKING INTO STARTING A DATA VISUALIZATION COMPANY," SAYS JAMES. HE RETURNED TO UAT LAST NOVEMBER AS A GUEST SPEAKER AT TECH FORUM. "IT'S COMING TOGETHER, SLOWLY BUT SURELY."**



### THE FUTURE

James, a world traveler and entrepreneur, is speaking with venture capitalists about funding his data visualization company.

UNITED COLORS OF JAMES GRANT





# PRALIE DUTZEL DELIRIUM

## Overview

**"You are your own worst enemy in *Delirium*, a psychological horror game and 2D platform puzzler! A divided mind has turned on itself, in a twisted, bitter attempt to quell the darkness of a sinister past. You are the last sane piece of a broken man, and must avoid and outwit your inner demons through a wicked series of puzzles, challenges and hidden nightmares. The confrontation approaches...can you pry yourself from dementia or will the vestiges of fear and regret cripple you forever?"**

Soon, you will have the chance to enter this world of horrific, eye-opening twists and turns if you dare. *Delirium* is a new XNA, action-adventure platformer game being developed by Game Design major Pralie Dutzel and her Katastrophe team, which, by next summer, will be available for download on the Xbox Live Indie (independent) Games Channel.

The horror-themed action-adventure platformer provides thrills while also taking you on a frightening journey of self discovery. Imagine yourself in 50 years, embarking in reverse through time. You're an old man. Through a series of events, you're forced to relive your life—reverting back to childhood, teen and adult years—and confront your worst fears. During these events, you reflect on your life, ponder how things could have been different and what would have happened had other choices been made.

Working with Professor David Wessman and the team's producer, artists, programmers and engineers, Pralie serves as *Delirium*'s project manager and lead designer.

Pralie, who hails from Galveston, Texas, always had a passion for everything horror, and with a history of writing horror fiction as a hobby, she thought it was time to put her skills to the test. She began with a concept, assembled a team and from there they brainstormed ideas together. "We're truly a collaborative team where anybody can submit ideas," she says. "It's awesome!"

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

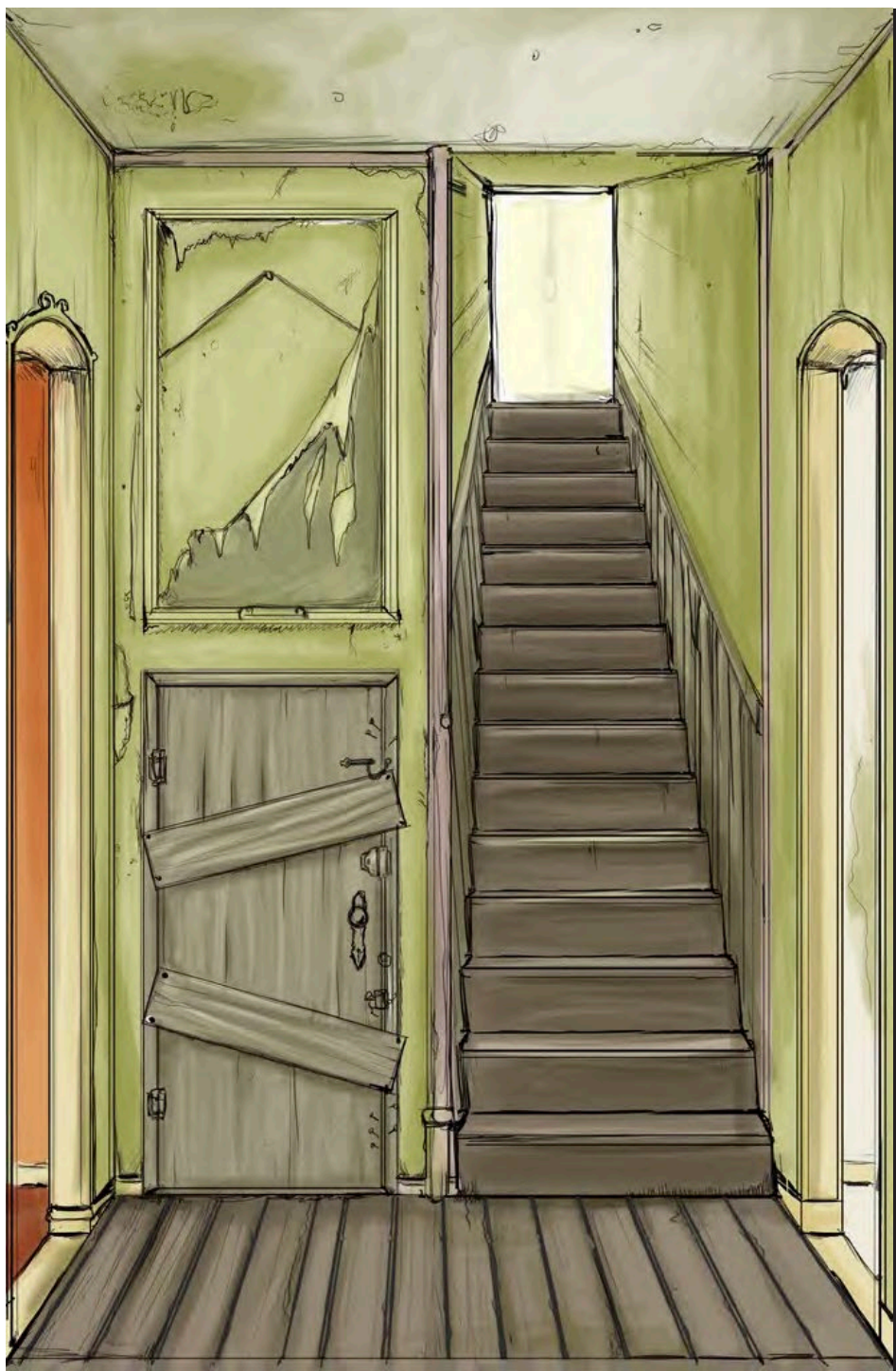


"*Delirium* is a special game," says Mike Broadbent, a graduate student in Game Production and Management who serves as *Delirium*'s producer. "It contains the same kind of magic that some of the first PC games had, games that I could come home after school and play for hours, wondering what kind of mystery and mayhem might be involved."

"My experience working with the *Delirium* team has been fantastic," says Professor David Wessman. "They've been one of the most self-sufficient and productive teams I've seen at UAT. The core team quickly developed a healthy collaborative environment for themselves, and members were soon moving in the same direction. Much to my delight they embraced the tools and methods that I encouraged them to use, cleverly avoiding the more painful 'learning the hard way' that many students seem to prefer. I've mostly just given them encouragement and advice on how they might do even better. I'm very proud of them."

**"TO BE SUCCESSFUL ON A GAME TEAM, IT'S IMPORTANT TO LEARN THE ROLES OF YOUR TEAMMATES, UNDERSTAND WHAT THEY'RE DOING SO YOU CAN CONNECT BETTER WITH EACH OF THEM," BRIAN HARTONG SAYS. THE GAME PROGRAMMING MAJOR FROM BRIDGEWATER, NEW JERSEY ADDS, "THE BEST PART OF DELIRIUM IS BEING PART OF A TEAM THAT WORKS WELL TOGETHER."**

# PRALIE DUTZEL DELIRIUM



## Details

Using emotional horror rather than traditional horror shock tactics, *Delirium* creates environments of claustrophobia and plays on other fears. A twisted dream version of the house, a lonely forest and a prison camp are examples of some of the scenes.

On each level of the game, players are faced with questions that will cause them to think about the consequences of their actions. Utilizing a puzzle-solving platform, players climb and/or jump to platforms to surpass obstacles, and find assorted pieces that help them solve scenarios at each level. A decision must be made and an action taken that might alter the course of their lives. In the end, players will have either defeated their inner demons or been consumed by them.

*Delirium* currently is in the second part of the "alpha" phase of development. Work includes mapping out item locations, creating monster types and refining facial expressions of the main character.

"This next phase is so exciting to me because the game really begins to take shape," says Mike. "Seeing our team put the game together from a production standpoint is like watching a composer put together a symphony. I look at the big picture and just marvel at the individual parts, and hope that all of you who desire to make games will get the experience someday."

"Design is working hard on puzzles—criminally challenging puzzles! Muahaha...ha...haha!" exclaims Mike. The team is working on making it harder, more evil and demented. "Trust me, there will be some challenge involved when this game hits your consoles."

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

"To be successful on a game team, it's important to learn the roles of your teammates, understand what they're doing so you can connect better with each of them," says Brian. The Game Programming major from Bridgewater, N.J., adds, "The best part of *Delirium* is being part of a team that works well together."

## Challenges

Digital Media major William Tate from Laken Heath, United Kingdom, serves as lead artist for the project.

His work is inspired by the art of Alex Pardee, known for his use of full color and bold lines in his surrealistic and horrific scenes. "It is no secret that horror games over the past decade or so have really only had a few color palettes, so aiming for a more colorful and vibrant set of shades would vastly benefit the originality of the project," says William. "Seeing it come together is magical."

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

Each game project is a journey of discovery, and *Delirium* is no exception.

"Part of the process of working on a game is learning your boundaries, and though these rich and exciting rooms were fun to look at, they were extremely time-consuming to create and with what little manpower we had, I knew it was time we had to scale back some," says William Tate.

"Our initial style was one which was gritty and over saturated. Making every room a new and disturbing place to look. I looked at our assets and resources and tried to find a new style that fit what we had hoped for in the original plan for the game. (colorful yet jarring and creepy). This style of environment displays the colors in a creative and unique way, yet still showcases form and mood appropriately. It is scaled back in that the line work is a lot more stylized and the same goes for the shapes."



"Our progress with this style so far has been phenomenal," says William.



# TAKING TECHNOLOGY TO THE NEXT LEVEL

## OVERVIEW

Testing the limits. Pushing the boundaries. Taking technology to the next level to rock our world. UAT students do all this and more with what they learn and the high-tech equipment they use to become the innovators of tomorrow.

When you combine the imagination that UAT fosters with the most current technology, the sky's the limit. That's the case with the university's ultra-cool Dimension uPrint Personal 3D printer. With the encouragement of UAT professors, more students are thinking outside the box and realizing the potential for printing unique projects and movie props in 3D.

**"While small scale items often get made with the printer, I encourage students to think bigger and stretch the outer limits of the 3D printer's capabilities,"** says English Literature Professor Micah Chabner.

Students are listening.

Now, prototypes for ray guns, full-length swords and even game controllers are being made. This wave of technological innovation prepares students for real-world application including what's on the horizon in the world of 3D printing.



## HISTORY

After the printer made its much anticipated arrival in 2009, even the first student film prop—a 3D memory-extraction helmet for the student film *Fallout* created under the direction of Professor Paul DeNigris—did not disappoint on the cool-o-meter. Since then, projects just keep innovating, providing real-world experience and some are getting bigger.

## DETAILS

**Josh Follis:** The Knight Sword (King Arthur-themed blade). When you're an avid fan of the medieval time period and must complete a midterm and final project in ENG415 King Arthur Literature, what do you do? Hint. Choosing a written test or theme paper is not an option. Josh Follis (preferring to use Follis as his first name) from Fredericktown, Mo., decided to build a life-size sword, thanks to the university's Dimension uPrint Personal 3D printer. Follis has a passion for medieval weaponry and designing swords/sabers.

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

UAT students saw the final product at the previous CONNECT orientation as Follis, a CLP leader, used the sword to break the ice. He relished the shocked faces when they learned he made it for his English class.

He copyrights any sword he creates from his own design, including this one. Only a few elements were influenced by such things as the holy knights (hence the cross shaped guard) and Monty Python and the Holy Grail (the holy hand grenade is a simple model for the ball on the end of the handle). If there is any likeness to other swords, it is merely coincidence that they are similar.

The sword itself, along with copies of the concept art and images of the modeling process, will be on display on the second floor of the UAT building right next to the 3D printer for at least one or two semesters. Follis has plans to try and model a good number of other sword and medieval weapons, hopefully 3D printing a few more of them before he graduates.



# TAKING TECHNOLOGY TO THE NEXT LEVEL

## CHALLENGES

Lessons learned from the 3D printer include:

- Schedule your project as far in advance as possible because more and more students are using it as well.
- Realize there are multiple parts in the process—design, printing, acid bath, and final assembly and painting, if needed. The entire process sometimes can take longer than expected, so planning your time is helpful.

Sara Wakeman



**Sara Wakeman:** Braille-Modified Xbox 360 Controller and Interactive Audio Role-Playing Game (both for visually impaired users)

Inspired by the innovation and encouragement from her professors to address a real-world need in her classes, Sara wants to share her love for playing and modifying games with those who are visually impaired. Her Student Innovation Project (SIP) was a Braille-modified Xbox 360 controller and interactive audio role-playing game, *Fragments of Ara Pacis* (Alter of Peace). The Braille-modified controller, together with the game's audio guidance, help visually impaired players enjoy the game on a blank screen using physical rather than visual memory. To date, the Braille-adapted controller is the largest single-printed structure to be produced.

"It took me 18 hours to make it and had to be dipped in a lengthy chemical acid bath to remove excess printer support materials," Sara says, who hails from South Salem, N.Y.

"I have a passion to share the game, not necessarily to market it. I'd like to publicly release the video game portion of this project for free, for everyone to enjoy. I'm considering marketing the game controller." The audio game can be played without the Braille controller, as long as the person understands the layout of the controller or has temporary assistance. However, there are other excellent products available to assist with visual impairments such as Braille language stickers for keyboards, which can be cut to fit upon controller surfaces.

Sara adds, "If I am able to develop an entirely different controller without modeling it off of the Xbox 360 controller, I will definitely consider patenting it and marketing it to at least counter production costs. As the controller is now, at its prototype stage, it will continue to remain a prototype for live demonstrations only."

"It took me 18 hours to make it and had to be dipped in a lengthy chemical acid bath to remove excess printer support materials."

**Blake Bjerke, Nic Breidinger & Matthew DeJesus:** Ray Gun

When you work on a project that is intent on saving the world, how far do you go to accomplish your mission! Above the clouds and back! Game Art and Animation alumni Blake Bjerke, Nic Breidinger and Matthew DeJesus developed the ray gun as a prop for the short student movie *Flight of the Melvin*. The movie is about a 14-year-old kid in the early 1970s who's flying in his homemade jetpack when he collides with an alien spaceship. That's where the adventure begins.

Overall, the ray gun took about a week to complete.

"It was done in high detail, so the layers are really thin, says Blake, originally from Phoenix, who worked on *Melvin* before he graduated in spring 2011. He used 3Ds software to create the ray gun.

Blake worked off a design created by Matthew DeJesus. "I took Matt's concept and modeled individual pieces for each part," he adds. "I had to design each individual piece and then assemble it. Then, I'd print it and dip it in acid wash for a few hours at a time."

When Matthew was developing the concept, he watched movies like *The Day the Earth Stood Still*. "I incorporated those elements into the ray gun and alien spaceship," says Matthew. "I tried to capture that style using old technology from the 1960s."

The final step in making the 3D ray gun was Nic Breidinger's. "I took the ray gun and basically hollowed it out," says Nic. "I wired it up, put batteries in it and stuck a trigger on it."

ke Bjerke



# TAKING TECHNOLOGY TO THE NEXT LEVEL

## FUTURE

The 3D printer represents how far technology has come—and where it's going—in producing prototypes that not only help UAT students create cool 3D projects and movie props but also help a growing number of companies produce products in a whole new way that will impact our everyday lives.

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, one can now throw a design into a 3D printer. They can test the prototype, fix it and try doing it again, inexpensively. These printers are already being used in design studios and by movie directors.

Beyond real-world use of 3D printing and other technology today, the future beckons, and UAT students will play an integral part. Taking the printer's use one step further, someday we'll be able to use 3D printers to replace parts and invent new products we use every day.

When we need replacement parts for something that is no use to us otherwise, something we consider tossing in the garbage, many industry leaders predict we will be able to print the part we need. Maybe there's even a new product to produce and try out. Materials could be anything from plastic, powder, metal, to even chocolate, which are then bound together to form solid objects.

According to Robert Cyran, a Reuters Breaking views columnist who wrote the Dec. 28, 2011, article "Next digital tidal wave target: 3D objects": (The views expressed are his own.)

"As printers become cheaper, new materials become available and machines can handle more complex tasks, the impact will increase. Local manufacturing will cut down on time and shipping costs. Companies will need to hold less inventory. Customization—of orthopedic parts tailored from digital scans of patients for example—will become far simpler. Manufacturers will be able to switch or modify parts more easily, and pioneers will find new products that only printers can make."

## WHERE ARE THEY NOW

### Sara Wakeman:

Major: Game Design  
2011 Graduate

Ultimately, Sara would love to have a full-time position continuing what she loves to do: designing and developing video games. Quite possibly, that job could be to continue designing games that meet special needs and demonstrate her leadership capabilities as a lead designer or producer on a challenging large scale project.

Sara also wants to someday help inspire and motivate talent in others through teaching and sharing her knowledge with prospective developers, just like her favorite professors Craig Belanger and Ken Adams did. Professor Adams served as Sara's game design mentor.

She recently finished an internship with Kinetic Muscles in Tempe, a leader in Stroke Rehabilitation & Recovery, and hopes to be hired on to work there.

### Josh Follis:

Major: Human-Computer Interaction  
Year: Sophomore

### Blake Bjerke:

Major: Game Art & Animation  
2011 Graduate

Blake's is a Senior Environmental Artist at Autonomous Games/8 Red Pixels.

### Nic Breidinger:

Major: Robotics & Embedded Systems;  
Artificial Life Programming

### 2011 Graduate

Nic is considering pursuing his master's degree. Until he decides, Nic is working on projects in his portfolio.

### Matthew DeJesus:

Major: Game Art & Animation  
2011 Graduate

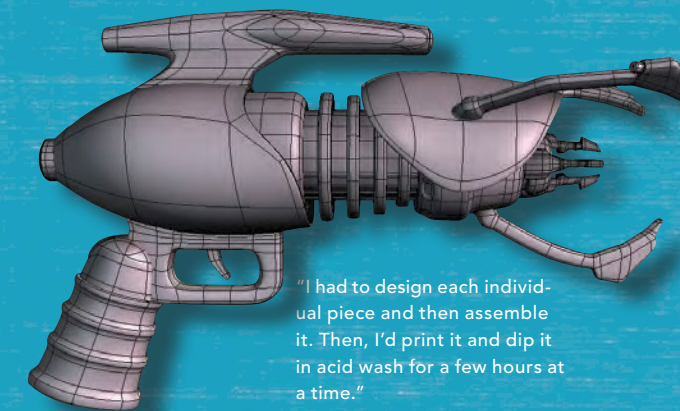
Matthew is an Intervention Specialist at Ireda Solutions and a Web Developer at Kohana Japanese restaurant.

## CONCEPT ART



"I have a passion to share the game, not necessarily to market it. I'd like to publicly release the video game portion of this project for free, for everyone to enjoy. I'm considering marketing the game controller."

"I drew up the concept art for 'The Knight's Sword' after thinking about what would be a good final project for my ENG415 King Author class. After around 120 hours of printing and soaking in the acid bath, I was able to assemble and paint the sword, which took another 36 hours."



"I had to design each individual piece and then assemble it. Then, I'd print it and dip it in acid wash for a few hours at a time."

REAL LIFE SCENARIOS MEET

# SCIENCE FICTION



## OVERVIEW

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

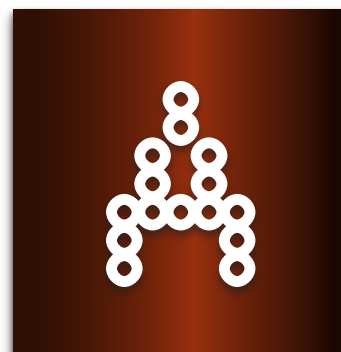
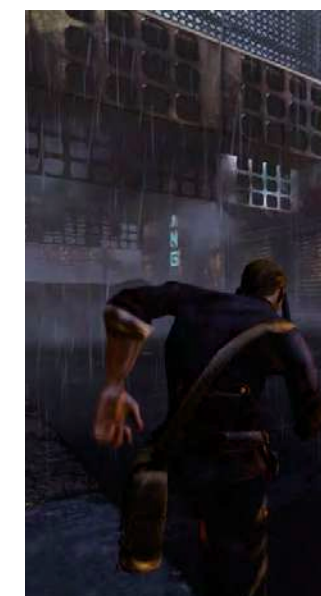
*The Afflicted* is a game of choice. Players use a third-person shooter setting to discover the outcomes of their choices. These choices will prove vital to shaping the game's world and are defined by the amount of struggle and heart found in the inhabitants of Helios, a planet in dire need of life-saving choices.

Tristan Parrish Moore, Game Art and Animation major who served as project lead and game designer, describes the game's theme like this:

**"In the near future, humankind has united under the banner of twin corporations: Globopharma, a hub of scientific research and development, and Hipparchus, comprised of private militaries and fighting forces that keep peace in the newly-united Earth."**

With Earth nearing a point of un-sustainability, the companies seek out the neighboring planet, Helios. After working for years to terraform and colonize it, a microbe is discovered that will doom the planet's inhabitants due to its lethality. Globopharma and Hipparchus abandon Helios, choose to save themselves and cover up the disaster that will surely define the final days of humankind's involvement with the planet. Many are left behind, watching sullenly as the last drop-ships take off and disappear into the stars. Gradually, the remaining population of the planet splits into three groups: the Pigs, who seek to restore the former order of government on the planet; the Choir, who seek to eliminate man's control over Helios's own life force; and the Nameless, who are so disillusioned by the actions of the twin corporations that they only seek the destruction of all remnants of life on the planet.

*The Afflicted* is being developed by Autonomous Games, a small team of independent game developers who have chosen to focus on Triple A-quality development outside of the traditional Triple-A game development scene. After meeting and fostering friendships at UAT, the team has now progressed to the development of 3D games using top-flight development tools and technology.



# REAL LIFE SCENARIOS MEET SCIENCE FICTION

## DETAILS

*The Afflicted* is being developed with Unreal Development Kit to utilize the advantages of the Unreal Engine and DirectX11.

The game is structured in a similar fashion to other competitive third-person shooters. However, one of the game's primary differences is found in the concept of team-building that defines the core game mechanic. Players are not scored based on a simple kill/death ratio; winners and losers are decided by which team can control the majority of the playing field and progressively update their team's equipment by dropping off resource collections at their home base.

Two other key elements are the free-running system and the barricade system. During game play, players are able to create free-running lines through the map. Walls can be vaulted, tables can be jumped, fences can be scaled, and gaps can be crossed. So, how does an opposing team combat a group of excellent runners? They barricade various passages and streets to provide cover and hinder any movement through the area. Both of these features work intuitively and "on-the-fly," keeping players immersed in the action of a world's descent into chaos.

*The Afflicted* features a number of mechanics that define its experience:

- Three-team multiplayer—Players pick one of three teams and battle in matches with up to 24 players. The pitting of three teams against each other keeps the pace frantic and the adrenaline high, as an enemy may be around any corner.
- Objective-based game play—Players capture control points to win the match. Control points can be defended using a variety of weapons and fortifications.
- Expanding levels—Each level has three phases, creating a constantly changing experience as the battles shift from location to location.
- Resource management—In the style of a traditional RTS, the path to victory lies in the ability to collect and utilize resource items "looted" from the environment.
- Team upgrades—Players work together to upgrade their arsenals and improve their defenses. Each player has the ability to earn upgrades that benefit the entire team, encouraging coordination and strategy-building.
- Barricade building—Teams can alter the flow of combat by putting up their own fortifications that both alter the available cover and the options for progression.
- Free-running—Transition easily across multiple surfaces by running, climbing, vaulting and scaling a variety of surfaces. Finding hidden routes and quicker paths can be the difference between success and failure.





# REAL LIFE SCENARIOS MEET SCIENCE FICTION

## CHALLENGES

**Scope.** One of the biggest challenges for Autonomous Games was defining the scope of the project. Before the team even began production, members spent two months planning their strategy related to design and build. Tristan wrote the design documentation that ended up becoming the framework for the game, and the team began concept designs and planning for art development, but not before a lot of research was done.

**Time frame.** After the project began, the team realized that not all goals could be accomplished within the timeframe. An SPT course run by Professor Ken Adams greatly benefited the team, helping them recruit for the project as part of a class. However, many of their plans had to be changed to accommodate the timeframe, the talent available and even the game's "fun factor."

The team originally planned to produce five levels. As they began working, it became apparent that the amount of modeling, testing and level scripting needed to produce so many levels would be impossible within the scope of a student project. They created fewer levels within the class period and placed more emphasis on one level, with the plan to produce more in the future.

**Playability and "fun."** Autonomous Games developed a plan to simplify certain mechanics that would make the game more fun to play. For example, the team originally planned on allowing players to collect resources of multiple types, each of them having a different behavior. What everyone realized during play testing was that this produced confusion and unnecessary complexity for players. They decided to reduce the number of resource types to one so players could simply choose how to spend their points.



## SUCCESSES

**Parkour Movement System.** Among the awesome moments the team experienced during creation of *The Afflicted* was development of this free-running movement system that allows players to sprint, vault and scale different objects. Daniel Strayer, the programmer who developed the system, tackled the problem by creating volumes that the level designers could place. These volumes allowed the characters to interact with the objects in the scene, climbing or scaling them as needed.

"When this feature was implemented, we had a moment where the game really took shape for us," says Tristan. "It was the first time that we felt like it was going to be the game that we really wanted it to be. It was also a feature that we hadn't expected to implement. We had assumed that the steps involved in making the system work would be too challenging, and seeing Daniel accomplish it was a major boost to our morale."

**Concept Art Pipeline.** One of the team's primary focuses in developing the game was creating content following the traditional Triple-A pipeline, meaning that we want to build assets and levels using the same methods that the professionals use. One of the best project successes was securing two excellent concept artists who helped develop *The Afflicted's* visual style. In professional game development, the decisions of aesthetics are usually made through the collaboration of designers, writers and concept artists. The writers and designers give their impressions of the story and the game play they are hoping to develop, and the concept artists create visualizations of those ideas. In some cases, concept artists can even develop concepts that impact the story or affect the progression of the game. Tristan feels fortunate to have excellent concept artists working on his team.

"Odom Keo, who graduated in December, did an amazing job of creating character concepts that allowed us to visualize the character designs and really push the player models and factions to the next level of quality," says Tristan. "His designs even influenced the development of our story, as he really worked closely with the art team to produce excellent concept drawings that represented the intended tone."

### DirectX11 Functionality Implemented.

Tristan and his team try very hard to work with technology and content that is on par with that of professional developers. They all firmly believe that working with current and cutting-edge technology is essential to their education. The decision to work on DirectX11 content was a big step, and a cautious one. When they first introduced DirectX11 features, like image-based reflections, they really saw the game take shape and its graphical quality improve.

**Play Testing.** When Autonomous Games began the project, the team knew it would be important to frequently play test the content created to ensure the quality level remained high. Multiplayer games, in particular, need to have a lot of involvement of other players to appropriately test. They considered the process quite a challenge.

"We received two major boosts for our ability to test the game, thanks to UAT," says Tristan. The IT department provided us with a section of the school's server, allowing us to host games and play together. This was extremely beneficial and allowed us to really experience the game properly, making it much easier for us to improve the quality of the content. Since then, we have used the server to host our own webpage, set up a file transfer system, and generally improve our workflow."



"The second success was in our ability to have public play tests in the UAT commons. UAT gave us the opportunity to utilize 24 computers to play full games on the school's network, and we had over 70 people play and respond to the game. This feedback was invaluable to improving the quality of the game. It also gave us the opportunity to see the fruits of our labor. Watching that many people experience the game we had worked so hard on really was a powerful incentive to keep working."

**Web Popularity.** *The Afflicted* has experienced major success on the website: [www.indiedb.com/games/the-afflicted](http://www.indiedb.com/games/the-afflicted).

In December 2011, after a heavy marketing push, the game's popularity soared to over 10,000 viewers.

“ODOM KEO, WHO GRADUATED IN DECEMBER, DID AN AMAZING JOB OF CREATING CHARACTER CONCEPTS THAT ALLOWED US TO VISUALIZE THE CHARACTER DESIGNS AND REALLY PUSH THE PLAYER MODELS & FACTIONS TO THE NEXT LEVEL OF QUALITY.”

REAL LIFE SCENARIOS MEET

# SCIENCE FICTION

## THE FUTURE

The Autonomous Games team is planning to attend the spring 2012 Game Developer's Conference in San Francisco, where members will pitch *The Afflicted* to publishers and interested parties in hopes of receiving endorsements or financial support.

Once *The Afflicted* becomes a fully playable game, two opportunities exist for the game to possibly be published:

- Valve, owner of the "Steam" distribution service: Steam is a free-to-download distribution service, where users can find free and purchasable games to add to their Steam library. Steam is the single largest online distribution platform available, and having the game available through this service would be an excellent boost for *The Afflicted*.

- 8 Red Pixels: The owner of 8 Red Pixels, Michael Brown, is a UAT alumnus. He offered his studio to endorse the game and wants to help them release the game once it becomes playable.

The team's ability to succeed with Valve is dependent on *The Afflicted's* completion. "We still have a long way to go, but we will be working hard to deserve the chance," says Tristan.

## WHERE ARE THEY NOW

Tristan and many of his other teammates will include *The Afflicted* in their portfolios to help them in their search for professional game development positions. If possible, the team also wants to begin working together professionally on this and/or other projects as the Autonomous Games studio.



## TEAM MEMBERS

### Tristan Parrish Moore

Project Lead/Game Designer

Major: Game Art & Animation

Year: Senior

### Chris Jennewein

Project Manager

Major: Game Production & Management

Year: Graduate Student

### Daniel Strayer

Lead Programmer

Major: Game Programming

Year: Senior

### Estevan Lopez

Lead Level Designer

Major: Game Design

Year: Junior

### Patrick Gantt

Lead Artist

Major: Game Art & Animation

Year: Senior

### Zack Sparks

Writer

Major: Game Design

Year: Senior

### Alexander Bascom

Programmer

Major: Game Programming

Year: Sophomore

### Alex Dinh

Level Designer

Major: Game Design; Game Programming

Year: Sophomore

### Blake Bjerke

Senior Environmental Artist

Major: Game Art & Animation

2011 Graduate

Blake is a Senior Environmental Artist at Autonomous Games/8 Red Pixels.

### Chu Cheung

Level Designer/Systems Designer

Major: Game Design

Year: Senior

### Terry (Joe) Gohn

Texture Artist

Major: Game Programming

Year: Sophomore

### Dima Goryainov

Concept Artist

Major: Digital Media

Year: Senior

### Odom Keo

Character Concept Artist

Major: Game Art & Animation

Year: Senior

### Daniel Loo

Environment Artist

Major: Game Design

Year: Junior

### Joshua Morrison

Concept Artist

Major: Game Art & Animation

Year: Sophomore

### Winston Powell

Character Artist

Major: Game Art & Animation

Year: Senior

### Devin Sherry

Senior Level Designer

Major: Game Design

Year: Sophomore

### James Scott

Lead Character Artist

Major: Game Art & Animation

Year: Senior

### William Tate

3D Environmental Artist

Major: Digital Media

Year: Senior

### Michael Nathan Benson

Weapon/Systems Designer

Major: Game Art & Animation

Year: Senior

### Faculty

Professor David Wessman

Professor Ken Adams

alumnus  
David Shorey  
vfx artist

# David Shorey

vfx artist

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

## OVERVIEW

As a freelance VFX (visual effects) artist and a 2003 graduate of UAT with a B.A. in Multi Media, David Shorey helps to create movie and television magic through special visual effects and art design, art restoration and animation.

“David introduced us to new shortcuts and strategies,” says Daniel Barone, VFX producer and composer at The Institution, where David created magic for the Nickelodeon television series *Supah Ninjas*. “He loves to learn and loves to teach, in the same environment. It’s cool to have someone interested in doing both. His education background definitely has contributed to him being so well rounded and adapting in a real-world environment. Usually we see people who only want to be told or only want to learn, not both. He introduced us to new shortcuts and strategies, and was eager to learn ours as well. David is an expert in Mocha software, and taught us many things. He’s a fantastic guy.”

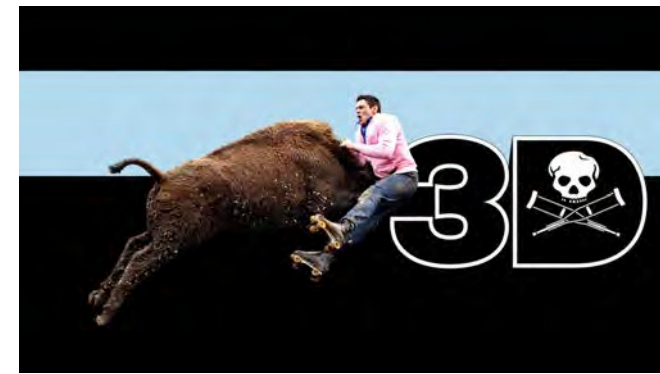
## FILM CREDITS:

In 2008, David created the Special Effects for the James Bond film *Quantum of Solace*.

## CHALLENGES

Breaking into the entertainment industry as a freelance VFX artist required David to move to California, immerse himself in the environment and establish connections.

“When you’re out in L.A. you’re thrown into the big pond, which is very much a sink or swim environment,” David explains. “There’s a high level of expectation, especially if you’re fortunate enough to land a job with any of the ‘Big 6’ film studios, such as Walt Disney Pictures/Touchstone Pictures, Paramount, Warner Brothers, 20<sup>th</sup> Century Fox, Columbia and Universal.”



# DETAILS

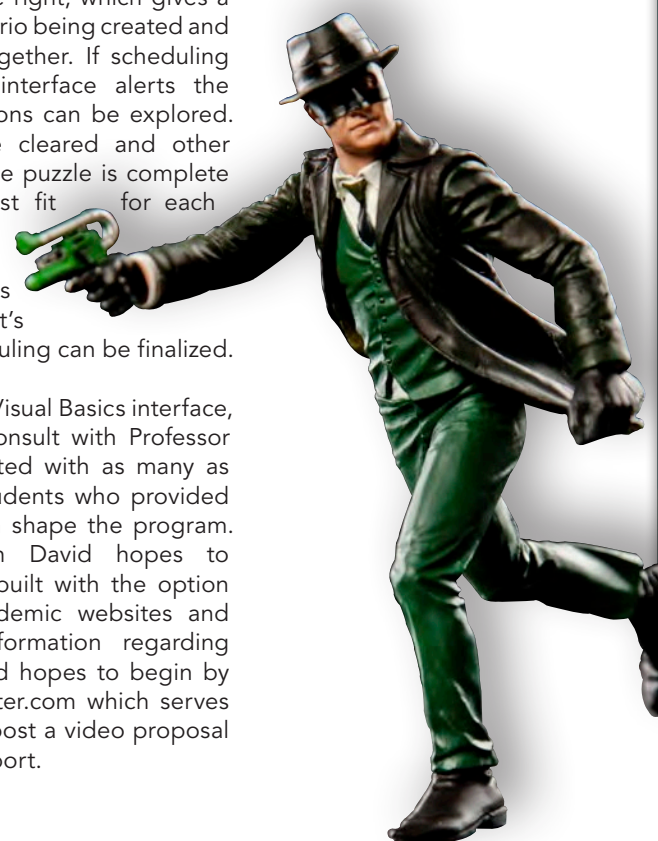
David remembers the support he received from Professor Phill Miller and UAT's environment of innovation is what inspired him to explore and invent. When he was registering for classes, he saw an opportunity to develop an alternate interface for the student class registration program and consulted with Professor Miller on his project. The creative process David went through made him realize how important it is to support future inventors. He since has been inspired to give back and help others by opening a school for inventors in the future. That same registration interface is one he plans to use to help kids register for classes in his new school.

Because class schedules are comprised of pieces, like a puzzle, David's scheduling interface is designed to provide a clear picture of scheduling options that help students visualize and create different scheduling scenarios in a simple, easy viewing format that helps them select the best one for them.

In the left column, all course categories are listed. Clicking on a category brings up all courses

within that category, which appear in the center two columns. When the student clicks on the desired courses, they populate to the calendar on the right, which gives a visual look at the scenario being created and all days and times together. If scheduling overlaps occur, the interface alerts the student so other options can be explored. The calendar can be cleared and other scenarios built until the puzzle is complete and provides the best fit for each student. Any course prerequisites also are built in to let students know in advance what's required before scheduling can be finalized.

When developing his Visual Basics interface, not only did David consult with Professor Miller, he also consulted with as many as 20 different fellow students who provided input that helped him shape the program. The interface, which David hopes to market some day, is built with the option to connect with academic websites and provide real-time information regarding class availability. David hopes to begin by posting it on kickstarter.com which serves as an opportunity to post a video proposal and seek funding support.



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

## FILM TRAILERS:

- King Arthur
- Chicken Little
- A Lot like Love
- Annapolis
- The Incredibles
- The Village
- National Treasure
- Casanova
- Dan in Real Life
- Life Aquatic
- Ice Princess
- Pacifier
- Nightmare Before Christmas: 3D
- Pirates of the Caribbean 3: At World's End

## TV COMMERCIALS:

- Target
- Dayton Hudson
- Bissell



## WHERE IS HE NOW

While David enjoys freelancing, he aspires one day to be a permanent part of a major movie studio's team as a compositor. He's always thinking upward, and looking ahead at his next step. He likes to refer to a famous quote by hockey great Wayne Gretzke: "A good hockey player plays where the puck is. A great hockey player plays where the puck is going to be."

Teaching continues to be something David enjoys doing. He's just been hired as an instructor with Exceptional Minds, in Sherman Oaks, Calif. Exceptional Minds is a non-profit vocational center and working animation studio featuring artists on the autism spectrum who are given the opportunity to become successful and integrated members of the digital arts/multi-media work force. In this program, they harness and cultivate their intelligence and creativity.

David will be talking with students and faculty about how to use the Mocha Pro software for visual effects including rotoscoping. He will teach them about the software, how it is used in the industry and help them focus on what they want to do. "It's a great feeling to know how I can give of myself to help others thanks largely to what UAT has taught me," David says. "I'm excited to help them in this way. It's quite fulfilling."



To learn more about mocha pro magic, follow the free tutorial link below.  
[mochapromagic.com/](http://mochapromagic.com/)

- 2006 Restoration Artist: Bobby
- 2008 Visual Effects: Quantum of Solace
- 2008 Visual Effects: The Middle Man
- 2009 Visual Effects: The Devil's Tomb
- 2010 Digital Effects: moving day
- 2010 Stereoscopic Artist: The Last Airbender
- 2010 Stereoscopic Artist: Nickelodeon Super Ninjas
- 2011 Visual Effects: The Green Hornet
- 2011 Stereoscopic Artist Stereo D: The Green Hornet
- 2011 Visual Effects: Fred 2

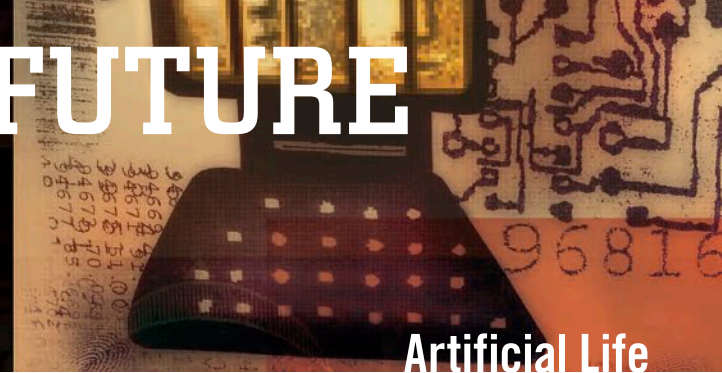
# TOMORROW'S TECH TODAY

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

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

# INNOVATING THE FUTURE

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



Artificial Life

# INNOVATING THE FUTURE

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



Game Design

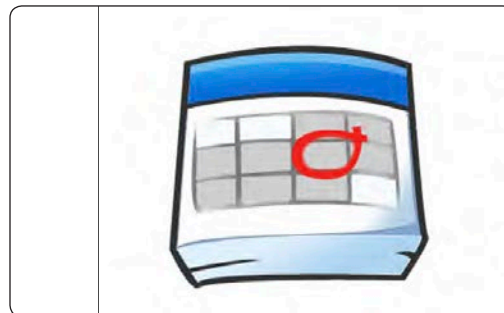


## ANDROID Phone Silencer

How often do you miss calls because you put your cell phone into “silent” mode and forget to take it off after a movie or a meeting? Or you forget to initiate the “silent” mode all together and your phone rings at the most inappropriate times?

Artificial Life Programming major Kevin Martin can personally relate to these frustrations. That’s why he took the existing functionality of an alarm clock and re-purposed the concept of notification with a more intuitive functionality for his Student Innovation Project, an Android Phone Silencer.

Artificial Life Programming prepares students to design and build software systems that solve complex real-world problems. This specialty can be applied to many areas, including architecture, autonomous systems, computer games, distributed systems, economics and market dynamics, machine intelligence, self-assembly and self-organization, and sociology.



### The Project

Kevin was interested in the exploration and process of taking an existing concept and transforming it to solve an entirely different and all too common problem: missed calls or ill-timed incoming calls.

Starting off, Kevin looked at both the Apple and Android markets to see if any apps already existed. When he found two, he discovered the apps performed similar functionalities but in different ways, so he created new ideas and add-ons to develop a far more “robust” application.

Kevin’s new app is designed to silence your cell phone for a set time period, much like an alarm. The difference is that instead of making a loud noise at the end of the time, the app would simply un-silence your phone for you making sure that you never miss a call again.

### The Next Phase of Student Innovation

His biggest take-away was learning not to be afraid of the word “innovation.” According to Kevin, it can easily scare you away if you’re told that you need to “innovate.” What’s truly important is the process of working on something creative that you enjoy, taking the time to research, ask questions, experiment and draw conclusions. It’s the road blocks or “gotchas” that drive you to finding out ways around them that lead to those innovations.



## DYNAMIC LEVEL GENERATION Automatic Difficulty

The ability to create intelligent machines has intrigued humans for thousands of years. Today, in the age of computers and with 50 years of research into Artificial Intelligence (AI) programming techniques, the dream of smart machines—and even dynamic video games—is becoming a reality.

How often are you playing a video game and one level of play is going well but other levels are either more challenging or not challenging enough? You soon become frustrated or bored, and consider stopping the play.

With his Student Innovation Project, Game Design major Patrick Morrison wants to create a balanced playing field for each player. He plans to integrate dynamic level generation into a video game

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

### The Project

Patrick’s project will apply to games not requiring set levels of difficulty. What happens all too often is that a player begins a game at one level to discover later that it’s either too challenging or not challenging enough. To get rid of that frustration, Patrick’s project will integrate AI to:

1. Dynamically generate and balance levels ahead of a player to create a smooth transition between levels, and
2. Adjust the level of difficulty throughout the game by changing the objects in each level, weapons and ammo, and number and difficulty of enemies.

The game will track a player’s play style and experience as they play. Objects will be dynamically generated in a particular level to help or hinder a player, and “decide” on what types of weapons and ammunition to give in addition to the number and difficulty of enemies ahead of the player.

### The Next Phase of Student Innovation

Patrick hopes to remain at UAT for his master’s program, during which time he wants to continue to hardwire the concept for his SIP and move into the development stages.

Patrick has learned that all innovations come from seeing what other people want or are looking for, compared to what they currently have.

# INNOVATING THE FUTURE

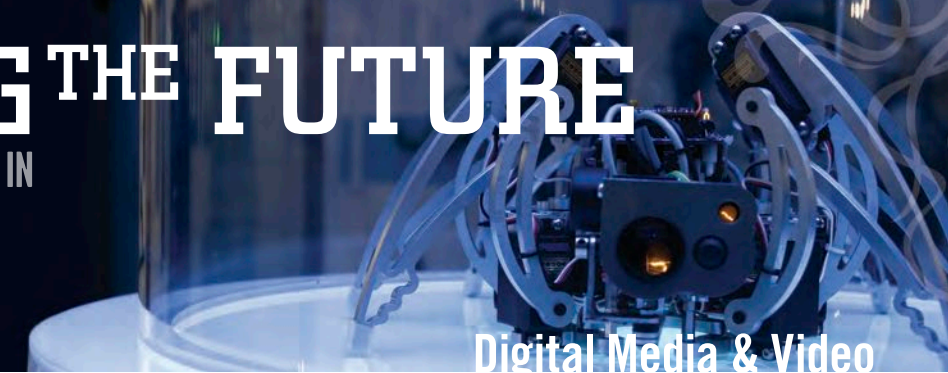
BREAKING NEWS ON UAT STUDENT PROJECTS IN VIRTUAL MODELING AND DESIGN THAT ARE INNOVATING TECHNOLOGY.



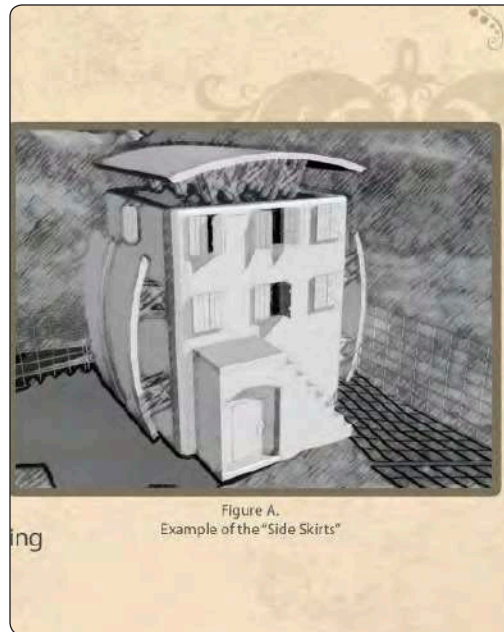
Virtual Modeling & Design

# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN DIGITAL MEDIA/VIDEO THAT ARE INNOVATING TECHNOLOGY.



Digital Media & Video



## 3D Cityscape

Digital modeling and animation technologies are fast becoming a bigger part of many businesses and industries, including the entertainment industry.

These technologies involve the union of art and technology to create a growing number of innovations, including unique, new art styles such as those reflected in Josh Hemmy's Student Innovation Project (SIP): 3D Cityscape.

As a Virtual Modeling and Design major, he's learned a variety of applications that can vary in focus from using technology to develop 3D models, using electronic assets to visualize data outputs or linking the electronic assets and real-world assets together to enhance the understanding of the context of a situation.

In his SIP, Josh is taking traditional ideas and mediums from past artists, tweaking them and remaking them into modern representations.



## The Project

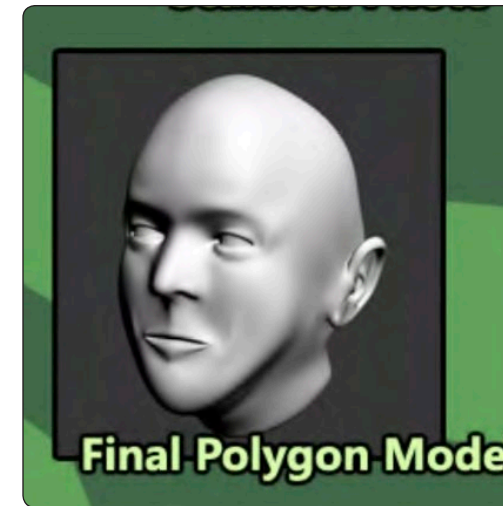
The architectural style was inspired by two elements:

1. The art of M.C. Escher, who has also created Middle Eastern style building in a black and white style. The architecture in this fictional world was built with protection in mind. Side skirts made to protect war tanks in real life are an integral part of the building's design.
2. Images from recent Middle Eastern wars.

This project was created using Autodesk 3ds Max for the modeling and Adobe Photoshop for the textures and post production.

## The Next Phase of Student Innovation

Josh's next steps for the project include creating additional art assets and unique building styles to give the city a more diverse look.



Final Polygon Model



## THE 3D-PRINTED Latex Mask

Many actors must endure the process of customizing a mask to conform to their face, and it's even less desirable if they suffer from even the slightest case of claustrophobia.

Digital Media/Video intern Elissa Clare decided to create a solution. With her Student Innovation Project (SIP), she wants to provide a claustrophobic-free way to create a latex mask for actors. Enter Stage Left: The 3D-Printed Latex Mask.

During her internship, Elissa photographed students and staff members for various events and articles as well as created icons for the Student Intranet website.

Her training included mastering and applying new technological solutions to the age old challenge of storytelling in order to produce material with true contemporary relevance.

## The Project

The process of creating a 3D-printed latex mask removes the need for physical materials like plaster, alginate and clay. Without these materials, actors can be scanned instead of covered in alginate. Multiple masks also can be made from the 3D-printed material as it does not deteriorate with use. This method requires a laser scanner, 3D-modeling software and a 3D printer.

1. The actor will be digitally scanned and an electronic file with a cloud of points that represents a 3D copy of their head is created.
2. The point cloud is modified into a 3D model made up of polygons.
3. Using the 3D model in the computer, the artists can change the facial designs to match their idea of the mask.
4. Once the new 3D model is made, it will be modified so that it essentially will be a negative cast.
5. After printing, the model of the negative can be used to create the latex mask.

## The Next Phase of Student Innovation

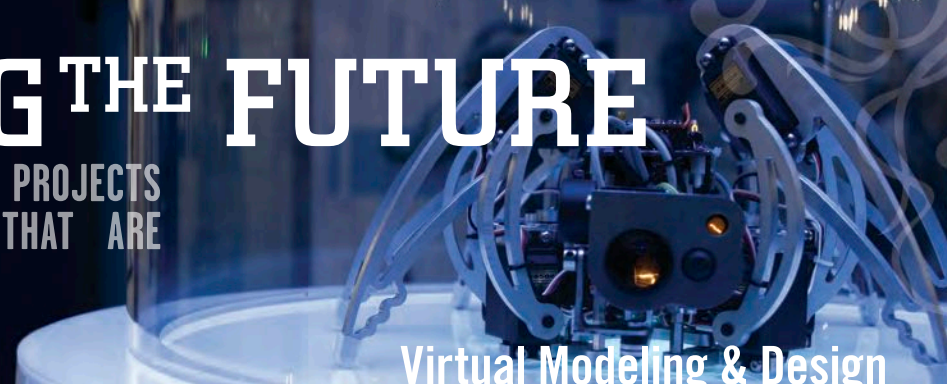
Elissa wants to continue the process of developing the prototype and refining the software applications.





# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN ADVANCING COMPUTER SCIENCE THAT ARE INNOVATING TECHNOLOGY.



Virtual Modeling & Design

# INNOVATING THE FUTURE

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



Network Security



## FERROFLUID Sculpt

That's what Raul Garcia plans to do with his Student Innovation Project, titled Ferrofluid Sculpt. Raul's majors in Virtual Modeling & Design and Robotics & Embedded Systems are helping him to think outside the box and create an interactive, moving sculpture for public display.

First you need a human brain, a strange liquid called ferrofluid, lots of metal and a power source, among other things. Ferrofluid is composed of nanoscale magnetic particles that respond to a magnetic field.

Neurosky or Emotive mind-reading headsets will be worn by each observer so that brain waves can actually move the ferrofluid, creating unique shapes. Using your brain to move objects, psychokinesis, has intrigued many for hundreds of years.

### The Project

BASIC Stamp 2 modules will be the main driving components of the art piece. The sculpture will stand approximately 6 feet high, 2 feet long, and 2 feet wide. Sections include:

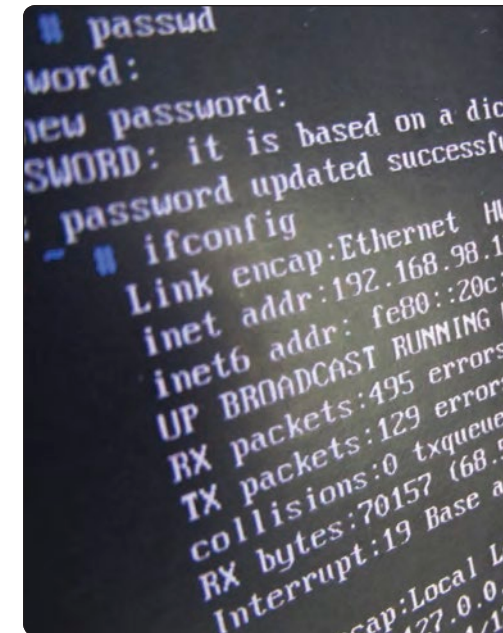
- 1st : Main display made out of glass. Containing water, ferrofluid and a metal sculpture of the human head placed in the center of the display.
- 2nd: Electromagnets, connected to metal rods touching portions of the cranium of the metal head.
- 3rd: Computer, which collects data from the mind-reading headsets—from the blink of an eye to the movement of an arm—and sends correct signals to the electromagnets, and a power supply for the entire sculpture.

The headset converts those signals into digital data, which is sent wirelessly to the receiver inside the ferrofluid sculpture. The computer inside will analyze the data received and contact the BASIC Stamp microchip. Once the electromagnet produces a magnetic field, the ferrofluid climbs up the metal head sculpture inside the display and "spikes" in the area of interaction.

### The Next Phase of Student Innovation

Raul plans to move into team building and development phases in 2012. Because of the project's complexity, Raul will be recruiting team members who will collaborate with him in his sculpture's creation.

He hopes to pursue a career in cinematography making 3D models, sketches, storyboards, and if possible, sculptures, miniature models, and animatronics



## DYNAMIC Network Setup

Walk into almost any building these days and often you'll notice black domes mounted above your head. Behind these domes are security cameras continuously monitoring activity.

Network Security and Network Engineering double major John Faulkner wants to take that concept one step further. John envisions his Visual Network Analyzer (VNA) will emit lights in organized patterns and colors—perhaps through a dome or other environmentally artistic avenue—to help organizations and individuals monitor network traffic, detect security issues in real time and improve incident response time.

If you can detect network security issues generating "bad" traffic, while it is occurring, solutions can be implemented faster and more effectively

### The Project

Through Arduino Language that is based on a set of C/C++ functions and open source libraries from arduino.cc, the VNA will be designed to detect unique network packets and protocols, with exclusive colors assigned to the latter to give a dynamic face to and break the monotony of lists of text.

The protocol color spectrum includes:

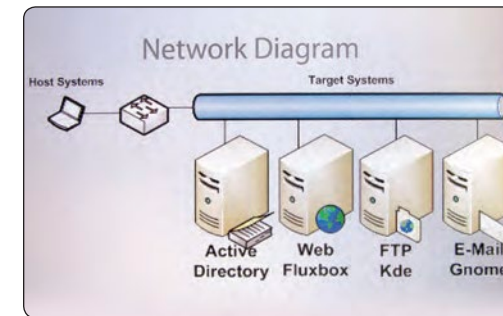
1. TCP – Green
2. UDP – Blue
3. SYN/ACK – Yellow

The current VNA prototype is an 8x8 LED matrix that includes: Arduino Uno, Ethernet Shield and Color Shield. This initial design will serve as a springboard to others being considered.

### The Next Phase of Student Innovation

John's VNA is an active work in progress with a working prototype that continues to evolve with visuals and physical designs, and creation of more network protocols represented by various colors. John also will implement a vulnerability analysis that includes signature detection, anomaly detection and detection of malicious behavior. What better place for John to begin implementing his project than at UAT, where network activity is abundant? He plans to start with the Cyber Security Classroom for Net Sec students, a real-world environment where students learn, experience, innovate and test tomorrow's information assurance technology. Next, he envisions mounting his VNA in the university's Commons Building.

He also will be exploring Digital Media Professor Vesna Dragojlov's input on considering a VNA that incorporates algorithmic art. One idea is to install sensors that change an entire room's color and slowly transition colors based on moods. Ultimately, his vision is to see the VNA implemented as a focal point to the physical design of any Security or Network Operations Center.



# INNOVATING THE FUTURE

BREAKING NEWS ON UAT STUDENT PROJECTS IN ADVANCING COMPUTER SCIENCE THAT ARE INNOVATING TECHNOLOGY.



GSM Network

# INNOVATING THE FUTURE

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



Data Transfer



## OPEN SOURCE GSM NETWORK

When you want to establish a more secure and cost efficient environment for cell phone use, what do you do? Create your own cellular network.

For his Student Innovation Project (SIP), Network Security major Drew Porter has created the prototype for an open source back-end GSM network that can be installed and operated at about 1/10 the cost of current technologies. This new network is compatible with most of the handsets that are already in the market.

### The Project

The prototype runs off a laptop and uses a portable USRP “cell tower” and an existing handset at a cost of approximately 1,000th of a cent per minute.

Reasons:

- 1) Other cellular networks have some insecurities. Rather than addressing each one, just create own network more secure
- 2) Small developing countries without current access can benefit.
- 3) Allow for better cellular communication, seamless integration with other cellular companies
- 4) More cost efficient

Individuals must have some form of USRP device to use the network, or know someone who has one. For example, a USRP N210 Universal Software Radio Project (acting as the “cell tower”) is available for purchase online for approximately \$3,000, although other models in varying price ranges also are available. Compare that to a larger network’s cell tower that costs \$1 million or more (BTS). Cell phone range is within a 1.8 mile radius.

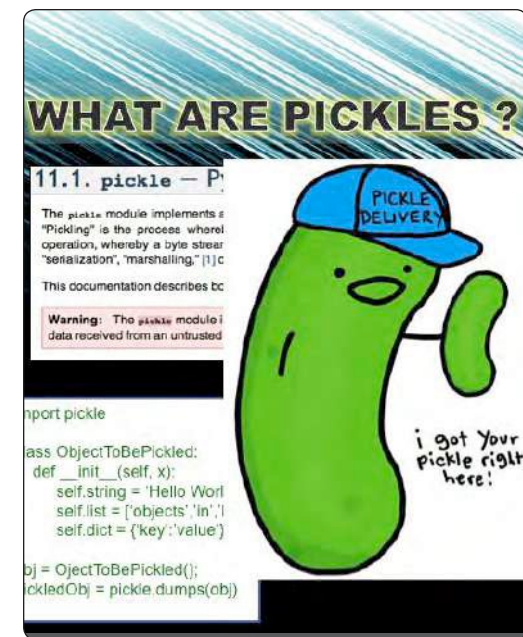
### The Next Phase of Student Innovation

Drew has three innovation phases to his SIP:

- Phase 1 will make his network database and network expandable with the usable prototype available. This phase establishes two Cell Sites that communicate with a central MySQL database.
- Phase 2 establishes an actual GSM backend and involves Spec Compliance to integrate current practices by cellular communication companies into the open source project to create a more open community within cellular networks that connects everyone together.
- Phase 3 of the project is to get SIGTRAN working as “control mechanization” for the transferring of calls from multiple ‘carriers’.

His work to refine will be an ongoing project, most likely throughout his lifetime.

Drew’s network is available on GitHub.com for people to review, test, provide feedback and make changes. The point of open source is that many eyes make a better project.



## SWEET PICKLES Secures Data Transfer

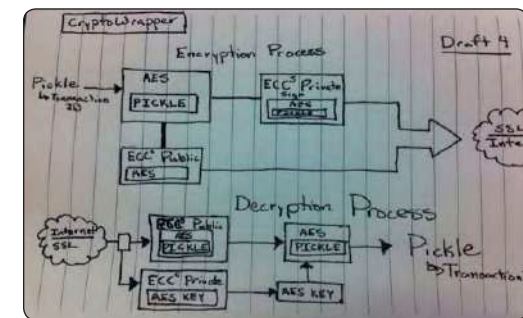
With an increasing volume of sensitive information being transmitted via the internet these days, more opportunities exist than at any other time in history for data to fall into dangerous hands.

It’s a pickle of an issue entering the critical stage. Network Security major Chase Schultz’s Student Innovation Project (SIP) solves this real-world issue with the development of Sweet Pickles.

In the world of security, pickles are codes that serialize and de-serialize (translate) programming language Python objects. Think of this as a specialized form of ZIP compression files. These pickles can be hacked at rest or in transit to deliver arbitrary, possibly malicious code when opened (referred to as “Sour Pickles”). Sweet Pickles are key in the secure encryption and transfer of data to the intended recipient. And they’re free for any individual or business with internet access to utilize. Prior to Chase’s SIP, there was no good way to make pickling safe.

### The Project

Chase went to work to write an encryption scheme that encrypts pickles in transit and ensures that they are opened by the intended recipients by providing them with “keys” with which they open the information. Part of the solution lies in the Brine, a methodology that uses DoD standardized, top secret strength encryption (AES-256). Because he combines Python wrappers (software that is a bridge between an operating system and a driver) for cryptography software libraries with PyCrypto and Elliptic Curve Cryptography-521, Chase is confident that only the person in the pickle’s receiving end can open this file.



### The Next Phase of Student Innovation

Chase’s prototype is complete and functional. Next steps include refining and documenting some aspects, including providing a “how to” user’s guide.

The prototype is available for free at [github.com/f47h3r/](https://github.com/f47h3r/). Password is “Brine.” “In my youth, I took so much from the internet it’s time to give back.”



## info

2625 W. Baseline Rd. > Tempe, AZ 85283

Phone 877.UAT.GEEK > Fax 602.383.8222

877.828.4335

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