BEHIND THE BITS

A CLOSE-UP VIEW OF UAT STUDENT INNOVATIONS

ISSUE TWO
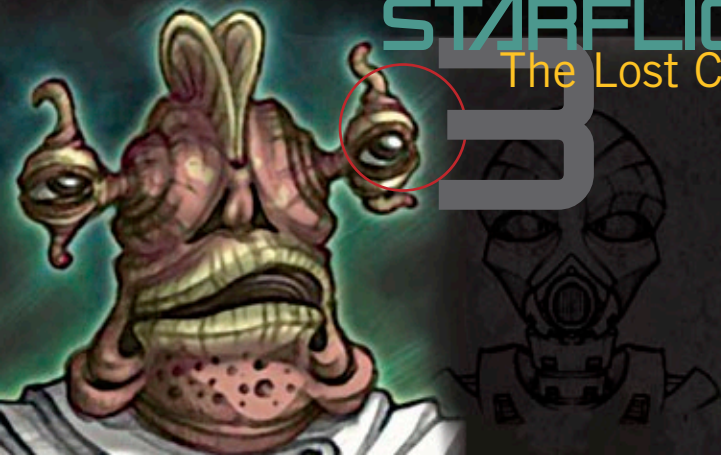
The University of Advancing Technology offers students a well-rounded education in a dynamic setting. Because of UAT's dedication to both scholastic excellence and technological innovation, it stands apart in academia as an ideal destination for those proud to be called "techno-geeks." A key part of that education is the graduation requirement to complete a formal, sophisticated portfolio of work that demonstrates each student's mastery of the knowledge and skills in their chosen field.

At UAT, students are encouraged to work together in teams to complete complex works that may be used to enhance their portfolios and learn the arts of teamwork, organization and project management. Whether part of a course, or an internship in industry, or completely extra-curricular, these projects are always interesting and many have the potential for future application and commercial development in the real world.

The "advancing" part of "advancing technology" is at the core of what our university, student body and faculty are all about. That spirit and concept of constantly innovative thinking are a key part of who we are as a university. More often than you would imagine, a late night random thought by one student or a group of UAT students launches a "maybe crazy/maybe make a million dollars" technology project that will devour hundreds of student-hours and attract more participants along the way. With entrepreneur budgets, student groups throw time as well as mental and emotional energy at the challenges they face in completing their projects. In addition to coming up with their basic concept, students demonstrate further innovation with novel, efficient solutions and work-arounds in order to bring their project to life on a shoestring.

In addition to enhancing the portfolio they need to graduate, student projects can also serve as impressive interview support to help them win the job of their dreams after graduation. It all comes full circle with UAT's vision to enrich societal advancement by cultivating thinking innovators for our technology-driven world.

Whether it's a game, a robot, a movie, or a new way to secure information networks, UAT student projects never fail to fascinate and sometimes make a new contribution to the progress of advancing technology. Here, for your enlightenment, are feature stories on some of the most recent projects to rock the tech world.

STAR★FLIGHT®
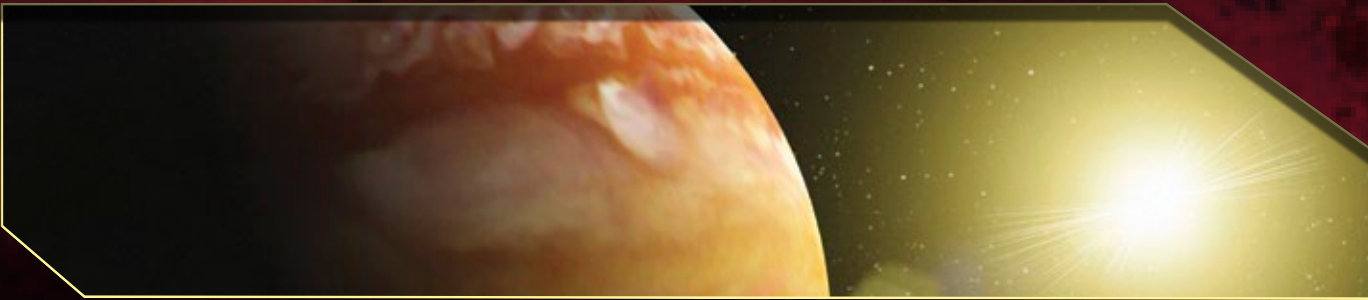*The Lost Colony*

An old classic with the latest in combat systems

OVERVIEW:

Associate UAT Professor and Lead Designer Jonathan Harbour and his student team have created a new sci-fi intergalactic thriller based on the 1980's cult classic, *Starflight*. They have created a 2D game that incorporates an established story line from an old classic with the latest in combat systems, interface displays, and game-play features.

Starflight: The Lost Colony plays out a scenario of a rogue earth colony vessel sucked into a wormhole and thrust into a vast, unexplored region of the universe. The wayward colonists hail from the British Isles and add their unique Britannic heritage to an intriguing story line.

THE STORY:

THE EARTH COLONY SPACE SHIP, NOAH 3, WAS LAUNCHED INTO SPACE IN 3456 A.D. THE VESSEL WAS LATER ATTACHED AND FORCED TO FLEE INTO A WORMHOLE. BADLY DAMAGED AND LOSING LIFE SUPPORT, THE COLONISTS OF NOAH 3 DESPERATELY SEARCHED FOR A HABITABLE PLANET TO MAKE THEIR CRASH LANDING. CAPTAIN MERIWETHER DISCOVERED A SUITABLE PLANET HIDDEN BY A LARGE STAR AND GAVE THE ORDER TO ABANDON SHIP AS THE SHIP'S REACTORS WERE ON THE VERGE OF COMPLETE DESTRUCTION. SOON AFTER ABANDONMENT, THE MOTHER SHIP DISINTEGRATED.

ONCE ON THE NEW PLANET, THE NEW COLONISTS DISCOVERED A NEW UNINHABITED WORLD TEEMING WITH WILDLIFE. IT WAS HERE THAT THE NEW INHABITANTS GAVE RISE TO A NEW SOCIETY AND STARTED OVER IN A COMPLETELY FRESH AND UNTOUCHED WORLD CALLED MYRRDAN.
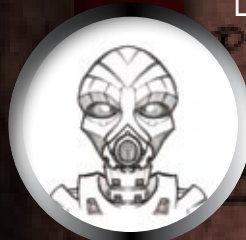
OVER 1000 YEARS LATER, THE INHABITANTS OF MYRRDAN ONCE AGAIN ACHIEVED SPACE FLIGHT. HOWEVER, RUMORS OF WAR AND DEATH PERMEATED THE GALAXY. A GREAT EVIL HAS RETURNED AND ONLY THE HUMANS OF MYRRDAN STAND IN THE WAY OF ABSOLUTE TYRANNY.

STARFLIGHT RETURNS AND IS BETTER THAN EVER!!!

PLAYER INTERFACE

Players can choose from three different professions and explore over 400 planets in 100 star systems. They can also trade items, mine minerals and capture life forms, all for the sake of profit and science. Players can upgrade their ship and interact with numerous alien races – crush them with strength or kill them with kindness – all with the press of a button.

The creators of *Starflight: The Lost Colony* took a retro approach, incorporating modern elements in just the right proportion. UAT students have tastefully acknowledged the original while boldly forging a galactic path years beyond the previous version. The result: A modern video game that pays homage to the original 1986 *Starflight* and the 1988 *Starflight II: Trade Routes of the Cloud Nebula*.

"A fan of the original game will look at the game and say, 'wait a second,' but as soon as they play it for two minutes, they will be instantly familiar with it," says UAT Associate Professor Jonathan Harbour.

"I guess part of what I've learned during this time is how to give what needs to be done, but not go overkill," said student Programmer Keith Patch.

CONCEPT:

The concept behind *Starflight: The Lost Colony* was to tactfully incorporate characteristic elements of the original with the very latest in graphics, game design, and programming. The result is a video game that ignites the excitement of a cult classic while simultaneously creating a gaming experience on par with the most relevant video games today.

"It's definitely been a programming improvement. It's not really recognizable from what it was as far as graphics and such go," said Patch.

Keith devoted many extra hours working with a custom-built game engine (derived from C ++) which allowed drastic improvements to the interface displays, combat systems and game-play features.

The team was able to build upon the original game's planetary interaction capabilities by modernizing and expanding the players' interactive environment. This created a more interesting planetary surface. Now players can interact directly with aliens and planetary environments.

We had the opportunity to sit down with the *Starflight* team and get some insight regarding the game's creation and the process that went into its development.
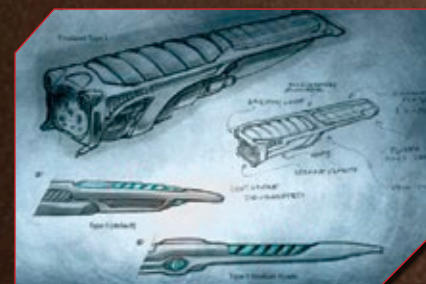
WHAT WERE SOME OF THE CHALLENGES YOU FACED IN CREATING STARFLIGHT: THE LOST COLONY?

Creating the engine from scratch was probably the largest challenge we faced and given we created it from scratch, we had to make small changes to it as we went. We also had a hard time finding an artist we felt was capable of the level of work we wanted. In addition, the original *Starflight* has such an incredible cult following, we knew this release would be much anticipated – we really had a lot of pressure to make this game great.

WHAT SOFTWARE PRODUCTS WERE USED FOR THE CREATION OF STARFLIGHT?

We use a number of programs. We used Visual Studio (written in C++), Allegro (graphics library), FMOD Library (sound), Open GL (3D in game) and LUA (scripting).

WHAT ADVICE WOULD YOU GIVE TO STUDENTS CONSIDERING A PROJECT SIMILAR TO STARFLIGHT?

It really starts with a good design document. It helps control the scope of the project and gives you a sense of what tools you will need to use. Content management software is also really helpful in addition to version control tools, which will merge any changes to code once a change has been made. That way everyone is working from the same version and you won't run into problems down the line because of coding changes made elsewhere in the game.

WHAT DOES THE TEAM LIKE MOST ABOUT STARFLIGHT?

We really liked the expanded planetary surface modules, which give the player an opportunity to gather items after landing on a planetary surface – it allows for more player interaction. Given we expanded some areas of the game it really challenged us on a number of fronts. I think though most of all, we really enjoyed working on something with such a nostalgic history.

PROJECT TEAM:

DESIGN/STORYLINE
Steve Wirsz
Steve Heyer
Jacob Medlin
Jonathan Harbour

MUSIC
Chris Hurn
Todd Spencer
John Howarth IV

CONCEPT ARTWORK
Nick Busby
Ronald Conley

3D ARTWORK
Nick Busby
Andrew Chason

2D ARTWORK
Andrew Chason
Ronald Conley

C++ PROGRAMMING
Dave Calkins
Justin Sargent
Jonathan Ray
Matthew Klausmeier
Jonathan Harbour
Keith Patch
Scott Idler

EDITOR/TOOL DEVELOPMENT
Don Marges
Justin Sargent
Jonathan Harbour
Greg Stewart

SCRIPT WRITING
Steve Wirsz
Jakob Medlin

QUEST WRITING
Jakob Medlin
Justin Sargent

INSPIRATION
Rod McConnell
Alec Kercso
Greg Johnson
T.C. Lee
Bob Gonsalves
Evan Robinson

SPECIAL THANKS
Jonathan Verrier
David Guardalabene
Michael Drotar
Steven Kottke

WHAT SIMILARITIES DOES THE NEW VERSION SHARE WITH THE OLD? HOW ARE THEY DIFFERENT?

We kept the overall *Starflight* feel and look to some extent. Players can still land on planets and interact with aliens but in a more modern way than the original. We made planetary surfaces more interesting and created highly interactive environments. We also added a quest mode that tells the Starflight story through specific missions. In addition, we gave the game a more arcade feel compared to a computer game feel.

Success

What was supposed to be a two-credit class, meaning four hours of work during the week, turned into a cutting edge project that consumed most of the team's time. However, as they found out, their extra effort was not in vain.

The creators of *Starflight* were selected to attend the Game Developer's Conference in San Francisco in February. In preparation for this, the UAT team doubled the size of the existing universe already populated with 400 named planets and five alien species.

Their extra effort certainly paid off. UAT sent the student team lead by professor Jonathan Harbour to GDC, giving the team a chance to showcase their work in front of the industry's heavy hitters. Companies like Big Huge Games, Bungee, Blizzard, 2K, Sony, Lucas Arts, Realtime Worlds and Ubisoft all showed interest in *Starflight* and more importantly, they showed interest in its creators.

The Aftermath

As a result of GDC and the attention *Starflight* garnered, team member, Matthew Klausmeier received an interview with 2K and is currently negotiating the specifics of a job offer. In addition, programmer Justin Sargent was hired by Big Huge Games and the company asked Keith Patch to take a programming test, which is the beginning step in landing an interview.

"Creating *Starflight* and bringing it to GDC really gave our team the opportunity to showcase our abilities and, from what I can see, we have had an incredible response," said Klausmeier.

With the close of GDC comes real excitement for the *Starflight* team as they prepare to take their game to the retail market. Lead Designer Jonathan Harbour is currently negotiating details with the owner of Binary Systems on a publishing agreement to bring *Starflight: The Lost Colony* to the retail market via Xbox Live Arcade. They will be rebuilding the game to target the Xbox 360. The new game will maintain most of the gameplay and design elements of the current freeware PC game. Rod McConnell, the owner of Binary Systems and the *Starflight* IP, is extremely pleased with what Harbour's team has accomplished with the PC game and is eager to work with them on a new version that will see retail distribution.

Harbour plans to assemble a new development team for this project under the banner of Primeval Games, LLC, an independent studio. It is Harbour's intention to offer design, art, and programming students a chance to work on this game on an internship basis starting in the spring of 2009, possibly with a royalty share. Given the nearly finished PC version, Harbour expects that the Xbox version will progress quickly with a development schedule of approximately six to eight months.

conley

INK!

Another 2D platform brawler from the minds at UAT!

What's it All About?

Ink! is a 2D platform / brawler that takes a unique approach to gaming by seamlessly integrating the latest in fluid control schemes, video game layout and art. Starting out as a student project at UAT, *Ink!*'s creators developed a real non-MOD, full length game that doesn't require special software downloads.

Story

Assuming the role of gifted artist, Vernice Dainumeri (Vern), players must counter an evil force arisen from the depths of a monochromatic realm that has stolen all color from the world of Anchiano. Under the dark banner of the failed artist, Vincent van Jeff, a series of colorless creations consume all vibrancy from the world, leaving it bleak and pale. Without color and art, Anchiano will die. Players must travel through sixteen levels across four different worlds to repaint color back into the world and defeat Vincent van Jeff. As players kill monsters, score points and collect paint cans (essential for level progression), the vibrant color of Anchiano begins to reemerge. The students behind *Ink!* have created a fun and imaginative platform / brawler that pays homage to old school games.

The Ink! team created a cross-genre 2D game that blends platforming and brawling like never before.

Ink's Conception

The concept of *Ink!* is the result of a meeting between Lead Artist Nicholas Gilliland and Lead Designer Zane Milakovic. They wanted to create a very artistic game with a storyline that revolved around art. Milakovic wanted to showcase Gilliland's artistic ability in conjunction with his own design prowess. Gilliland's original ink drawings became the catalyst for inspiration and remained the focal point throughout development of the game.

Realizing *Ink!*'s potential, a group of UAT students assembled to combine their affinity for platformers with a unique artistic approach to game design. They brought back an old feeling to video games that has not been seen in a long time and did so in a very modern way.

Creation

The design phase of *Ink!* began with a team of three leads and one artist in February of 2007. Now, four programmers, five artists, two level designers, a sound engineer and a music composer make up the team. The extra help was certainly needed as the *Ink!* team constantly evolved their creation and overcame various hurdles throughout the project. The team went from original theme compositions hand-colored on light boards to a tossed out 3D concept, to switching gears in mid-stream as they went from one version of Torque Game Builder to another.

Throughout the project, the *Ink!* team continually improved and revised the game program, incorporating creative tweaks to background animation, control schemes and improved save functions. As a result, the *Ink!* team created a cross-genre 2D game that blends platforming and brawling like never before.
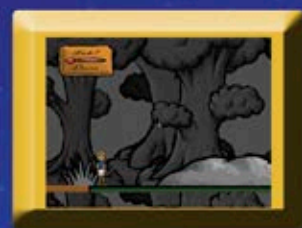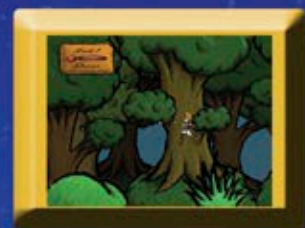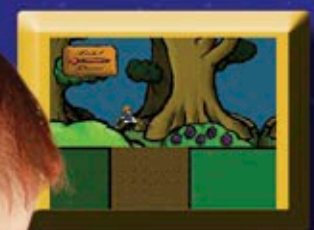
We asked the team about their experience.
Here's what they had to say:

How did your team combine platforming and brawling in such a seamless way?

This was actually one of the more interesting components of the game's creation from a programming standpoint. We needed to develop and program a new type of camera that would allow platforming and brawling. Typically, platform cameras are fixed and go where the player needs to go. Brawlers typically use a frame-by-frame type of camera. When a player enters a room, they shoot or complete an objective and then move to another room. It's section by section. What we did was develop a camera that blended both. We created a camera that could follow the player during platforming and then stop so the player can brawl. We also created an invisible player that we could loosely nail the camera to. This gave the camera some give and allowed it to remain smooth while tracking the player character. We then told the invisible player to move in relation to the actual player. So, when the actual player character looks right, the camera scoots to the right and shows the player where they can go.

What techniques did you use to handle the color transitions?

We have script for every parallax object, foreground object, foreground tile object and background object. The objects are duplicated in black and white and then put on top of the original copy. As the player completes a level, the duplicate starts to fade and reveals the color underneath. We also used a pic graph slightly larger than the camera. As the player moves, so does the pic graph and every time it hits a parallax object, the object is put on an active list and begins the transformation back to color. As the player progresses through the game, the objects closest to him become active and start to fade back into color.

What were some of the challenges you faced in designing the levels?

The level design of this game revolved heavily around powers and abilities that assist the player throughout the game and essentially determine how they progress through the levels. So, a lot of our programming centered on determining what powers or abilities the player could possibly have at a given point, what powers they definitely have, and how they can go back and get the powers they need if they don't have them. This was crucial because, later in the game, abilities must be used in unison to carry out objectives. So it became very tedious drawing and designing levels with that in mind.

We needed to develop and program a new type of camera that would allow platforming and brawling.

What Software Products were used in the Creation of *Ink!*?

Several products were key to the development of *Ink!*. For the artists, all images were hand drawn using a Wacom Tablet inside Adobe Photoshop. The sound team found both Apple GarageBand and Sony Acid helpful when creating the music and sound effects that play throughout the game. The programming team used Garage Game Torsion IDE and Visualstudio.NET when writing the pages of code needed to create the fluid integration of platforming and brawling. We used Basecamp for project management, which was also very helpful.

What advice would you give students who are considering a project similar to Ink!

Three things come to mind. Start small, even a simple game can grow in complexity; death is in the details. It's not the size but the quality. Get a team of like-minded, dedicated students that are excited to see the vision reach fruition. Lastly, put in the effort and work – it will be rewarding in the end.

What does the team like most about Ink!?

We really like the general concept of *Ink!*. It is very original. The game has a much different look and feel than anything else being created. It has an almost retro feel and a lot of people are nostalgic about that kind of stuff.

Our team also created our own IP writes – players don't need to download special software to play our game. We have found most of the gamers today are casual gamers, so not having to download special software to play is a definite plus.

We are also very excited to be the first UAT game design team to submit the first full length non-MOD video game to IGF.

The Future

The future looks bright for the *Ink!* team. They were chosen to attend the Game Developers Conference in San Francisco in February. *Ink!* is the first "from scratch" game developed by UAT students to be showcased anywhere and companies at GDC took notice. Companies such as Vendai, CCP, Full Moon, Eiodos, GLU, Game Loft and First Play were all interested in the unique design of the platform / brawler.

Team lead, Zane Milakovic said, "Mobile phone companies like GLU and Game Loft really liked *Ink!* and expressed an affinity for it."

As a result, many of the team members were asked by numerous companies to take online programming tests – the first step in being offered an interview for employment or an internship. "Unfortunately," said Zane, "Many of the students had to respectfully decline the offer because their internships wouldn't happen for another year. However, it was very encouraging to younger team members to receive that kind of attention."

Zane landed a remote internship with DW Creations, located in St. Louis. While this was not the direct result of GDC, the conference gave Zane the opportunity to network, show off his portfolio and receive constructive feedback from industry leaders.

"The portfolio I took to GDC and the advice I received during that conference really helped me land my internship," said Zane.

The *Ink!* team has created a very original and very unique game. *Ink!*'s innovative design concept effectively combines platforming and brawling with refreshing originality. Enough originality in fact, that the team is anxiously awaiting a possible Xbox Live inclusion.

The innovation and creativity evident in *Ink!* is indicative of the learning environment at UAT. Students in the game development program are using a revolutionary approach to platforming and brawling design, placing emphasis on fluid control schematics. The creative approach to game design illustrated in *Ink!* will certainly set a new standard for future game development.

Ink! Project Team

Lead Designer	Programmer	Artist	
Zane C. Milakovic	Robert Schiewe	Jeff Gordon	
Programming Lead	**Programmer**	**Level Designer**	**Sound Designer / Foley Artist**
Neal Alpert	Ben Zweber	Craig Ballard	Guy Harriss
Programmer	**Artist Lead**	**Level Designer**	**Sound Designer / Foley Artist**
Corey Meade	Nick Gilliland	Robert Campbell	Tony Reese
Programmer	**Artist**	**Music Composer**	**Web Designer**
Tim Mills	Sara Root	Abigail Perez	Nick Johnson

POISON WIND

UAT ALUMNA USES THE POWER OF FILM
IN HER FIGHT FOR JUSTICE

CAUTION RADIATION AREA

POISON WIND

UAT ALUMNA USES THE POWER OF FILM
IN HER FIGHT FOR JUSTICE

JENNY POND, A UAT ALUMNA, HAS CHOSEN THE **DRAMATIC** LANDSCAPE OF THE GRAND CANYON AND DESERT SOUTHWEST AS THE SET FOR HER MUCH ANTICIPATED FULL-LENGTH PRODUCTION, *POISON WIND*. THIS DOCUMENTARY EXPOSES THE APPALLING NATURE OF **URANIUM MINING**. THROUGH INTERVIEWS AND REMARKABLE CINEMATOGRAPHY, JENNY, HER CO-PRODUCER, NORMAN PATRICK BROWN, AND A TEAM OF UAT ALUMNI ACCURATELY ILLUSTRATE THE CONSEQUENCES TO **HUMANITY** AS A RESULT OF URANIUM MINING.

THE STORY

Poison Wind brings to light a story of "a corrupt government, unconscionable greed and a policy of destruction aimed at the Aboriginal Homelands of Indigenous People from the 1940's until today," said Jenny Pond. "This film focuses on lives being destroyed by the horror of uranium mining and the effects of radiation."

Jenny felt it was important to produce a documentary that humanized and illustrated the devastating effects uranium mining has had on the people, livestock, water and agriculture in the Four Corners region. As the possibility of reopening the uranium mines became a haunting reality, Pond and her team set out to expose the devastation caused by the practice of uranium mining as the monster it is.

Throughout the film, Pond and her team interviewed the indigenous people of the Four Corners region, allowing their voices to be heard by sharing their stories of mining uranium and the devastation it has caused their families and themselves.

"It wasn't just the miners themselves who were affected," said Pond. "It was their mothers, wives and children." Miners would come home from working all day and unknowingly track contaminated matter into their cars and homes, exposing friends and family to uranium.

People who had no association with the mines or miners are being affected as well. Toxic spills and negligent practices by uranium mining companies have resulted in contamination on a widespread level. One man in the film tells of a spill that was not properly cleaned and resulted in the contamination of vast areas of land near a populated region. That soil, once dry, was kicked up by wind and traveled enormous distances, contaminating families miles away from the mining site.

The film addresses the lack of government policing. For example, after a large toxic spill, the EPA looked to the company responsible for the spill to independently and effectively clean the contaminated area. The government then allowed the company to submit their own report and study, claiming the spill had been cleaned. The government did not follow up or conduct their own independent study to test the validity of the mining company's report – there was no accountability.

It is stories like these and others that make the indigenous people of the Four Corners region so vehemently opposed to the reopening of old mines and the addition of new uranium mines. Their people are getting killed and poisoned by uranium, and corporate mining companies are trying to bully their way back into production.

"The upsetting part is that mining companies want to mine uranium out of the Grand Canyon. One of the seven natural wonders of the world and they want to rape the canyon for uranium," said Pond. "Not to mention, what would happen if the Colorado River gets contaminated? What will we do for water out here in the middle of the desert? Over 1,000 leases have already been signed between mining companies and the government, giving permission to mine the ore," said Pond. She went on to say, "The only way to stop these practices is by raising the level of awareness concerning the tactics used by mining companies and the peripheral devastation that results from mining uranium."

TOXIC SPILLS AND NEGLIGENT PRACTICES BY URANIUM MINING COMPANIES HAVE RESULTED IN CONTAMINATION ON A **WIDESPREAD LEVEL**

It is this mission of awareness that has empowered Pond and her team to share her film with as many people as possible, even if it means risking her own safety. Jenny has received threats and has been strongly encouraged to stop showing her film by proponents of uranium mining. However, Pond believes this film is too important on multiple levels and has no intention of stopping.

"I didn't make this film to run away. I'm going to continue showing it," said Pond.

We asked Pond about her experience filming *Poison Wind* both from a creative and production standpoint. Here is what she had to say:

CREATIVE

HOW DID YOU INITIALLY COME UP WITH THE IDEA TO FILM A DOCUMENTARY ABOUT URANIUM MINING?

Well this is kind of weird. I was down at Havasupai Falls with my husband for his birthday. We were just getting ready to leave and a member of the Havasupai Tribe approached me and said he felt like he needed to talk to me. I was a little taken back but I was interested in what he had to say. He asked me what I did for a living and I told him I make films. He asked me if I had some time to talk to him and I, of course, said yes. He told me about mining companies wanting to mine uranium out of the Grand Canyon and the fallout that resulted from previous uranium mining. I knew this was just way too important to ignore and since then it has become my mission to educate as many people as possible about uranium mining.

WHY DID YOU CHOOSE TO FILM A DOCUMENTARY?

I really wanted to create a visual oral history. The best way, I felt, to do that was by filming a documentary as opposed to producing a movie based on real events. The documentary gave our team the opportunity to show the real faces and lives of people affected by uranium mining. Pundits are often so cavalier in their discussions and support of uranium mining as it applies to peripheral fallout. I wanted to illustrate that the people affected by uranium mining are real people with real consequences to their lives and health.

I WANTED THE VIEWER TO UNDERSTAND THAT THE PEOPLE BEING KILLED AND INFECTED BY RADIATION WERE PEOPLE OF HISTORY, TRADITION AND VALUES

HOW WERE YOU ABLE TO GET SUCH AN INSIDER'S PERSPECTIVE REGARDING THE IMPACT OF URANIUM MINING ON THE INDIGENOUS PEOPLE?

Fortunately, I have created a strong friendship with Manuel Pinot and Norman Patrick Brown. They are well respected and trusted within the Indian community. Because of that, we were granted permission by the tribal elders to film and document the plight of their people. In addition, once Michael Blake (author of *Dances with Wolves*) found out what we were doing, he gave us his full support and was honored to be part of the documentary – that really gave us credibility among the Indian community.

HOW DID YOU PROJECT WHAT YOU HAD IN YOUR MIND'S EYE ONTO THE SCREEN?

Well, to be honest, I really didn't have a clear vision of what the documentary would look like. I did, however, know what it should

be. So, the creation of the documentary was very organic; it took us in the direction it wanted to go.

Regarding the actual editing and creating a finished product, we had over 100 hours of footage that needed to be reviewed and edited. This became a very taxing and emotional journey. How do you decide what or who should or should not be included in the film? We found ourselves having a hard time staying objective. It really helped having UAT professor of Digital Video Paul DeNigris come in with fresh eyes and a fresh perspective to help us refocus and put this documentary together. The end result was this woven oral history that accurately depicted the destruction and struggle of the indigenous people in the Four Corners region.

WHAT ADVICE DO YOU HAVE FOR SOMEONE WANTING TO FILM A DOCUMENTARY LIKE THIS? NOT FROM A TECHNICAL STANDPOINT BUT FROM A PHILOSOPHICAL STANDPOINT AS THE DIRECTOR/PRODUCER?

Be passionate about what you are filming. Be aware – look at what is happening around you and capture that. Younger people today have such incredible access to technology – cell phones, camcorders, etc. Use the tools available to you and then share what you have found with the rest of the world, and it doesn't have to be a full-length documentary. Post what you find on YouTube or social networks, create awareness – that is so important!

TECHNICAL

WHAT CHALLENGES DID YOU AND YOUR TEAM FACE FILMING THIS DOCUMENTARY?

Oh, wow. We faced challenges around every corner, mostly because of the subject matter we were addressing. While filming at the mining sites, we were approached by armed federal marshals and mining authorities demanding to know what we were doing. So after our first encounter, we had to be ready to shoot, pack up our gear and get out of the area before we were confronted by the authorities again. As a result, we couldn't set up elaborate productions, which ended up working in our favor because we were left with this raw cinematography.

We also had some tribal elders deny us filming on their land at the last minute in fear of retaliation by those who support uranium mining. You have to understand, mining uranium is big business. These fears were legitimate as many of the people who were supposed to be in the film backed out because of death threats received by them and their families. It was very serious.

HOW DID YOU ADDRESS LIGHTING AND AUDIO ELEMENTS?

Most of our filming occurred outdoors, so much of what you see in the documentary is natural light. I did this to illustrate the connection these people had with the earth – it was to be a very natural environment. I also didn't want the film to seem doctored or otherwise. It needed to be true and real.

Now, the audio posed a few problems. Filming outside, we were constantly picking up wind in the audio. In one part of the documentary, we are in a gymnasium at a miner's forum and we were at the mercy of the audio system in the gym. However, things like wind in the microphone and poor audio can be addressed in post production.

WHAT TECHNIQUES WERE USED THROUGHOUT PRODUCTION? IN OTHER WORDS, IF I WERE A FILM STUDENT, WHAT FUNDAMENTALS WERE USED FOR PRODUCTION?

If we are talking about techniques, the first thing I would recommend is going to UAT, and if you are already there, you need to take Digital Video with Paul DeNigris. It is very important when producing any kind of film to be familiar with core programs used for film production and editing. For *Poison Wind*, we used Adobe After Effects, Combustion, Avid, Final Cut – all programs I learned how to use in Paul's class.

Because the subject matter was so serious, I knew final editing would be crucial. I'm just so thankful I knew how to use various production tools to communicate what has become so important to me.

EDITING

Editing is the final rewrite, the last explosion of creativity that shapes what the viewer ultimately sees, hears and feels when watching a movie.

Knowing this, Jenny asked fellow UAT alumni Keegan Ead to help with the film's editing. Through editing and exceptional cinematography, Jenny and Keegan we able to relate the situations and stories of contamination told to them by those actually affected by uranium mining.

"We needed to accurately portray the plight of these people without sensationalizing it. We felt it was important that we respected the lives and emotions of these people but at the same time, we needed to maintain the integrity of the film, so it became a delicate balancing act," said Pond.

Using various editing and production techniques, the team was able to authentically depict the truth while being cognizant of the emotional trauma endured by those involved.

THAT'S A WRAP

Poison Wind has inspired cognitive awareness of uranium mining and the destruction it causes. As a result, the film has gained global notoriety as it was shown at the fourth annual Globians World Documentary Film Festival in Potsdam and Berlin, Germany.

The dramatic use of imagery and light in conjunction with the powerful subject matter has made this film a potent tool, illustrating the destruction of a native population in the Four Corners region.

Pond said, "I wanted to create a parallel between the viewer and the people depicted in *Poison Wind*. I wanted the viewer to understand that the people being killed and infected by radiation were people of history, tradition and values, not unlike the viewer himself. It was important to personalize this film and have the viewer put faces to victims."

POISON WIND TEAM

PRODUCED BY:
Executive Producer: Larry Muckerman
Producer: Jenny Pond
Co-Producer: Norman Patrick Brown

DIRECTED BY: Jenny Pond

CINEMATOGRAPHY BY: Carlos Chaves

FILM EDITING BY: Keegan Ead

PRODUCTION MANAGEMENT: Paul DeNigris

OTHER CREW: Manuel Pino

Five UAT Students
Rock the Gaming World

FIGHT
THE
POWER

Vela 7

You spent a few pleasant and challenging hours strapped into the cockpit of a highly modified vintage fighter plane, blasting your way through a horde of unfriendly combatants while desperately clawing your way to a remote military supply island. You have momentarily been transported to another realm, a world and time controlled by greedy corporations and corrupt governments. Along with your valiant crew, disgusted by the constant oppression on all sides, you fought diligently, but soon came to learn things aren't always as they appear...

WELCOME TO VELA 7,

a classic arcade-style first-person shooter with a heavy dose of modern, artistic and technological innovations. *Vela 7* isn't the latest from EA, Sony or Activision, although you may soon find its developers collaborating or competing with the best of these companies' design teams. *Vela 7* instead represents the joint efforts of two programmers, two digital artists and one concept artist, all students of UAT.

"We started the project from nothing but ideas in May 2006," said Justin Walsh, *Vela 7's* project leader, UAT graduate and currently a private consultant doing contract work for mega.net. "I did the usual project lead stuff like organizing project meetings, focusing brainstorming sessions, coordinating with IT and various other UAT staff in addition to engineering a game engine, coordinating the art and programming efforts, designing custom tools and programming like a mad scientist to get it done.

"The features that are the bread and butter to *Vela 7* are the camera system and the gravity shield. The camera system allows for 2-D game-play from more than just one view. Traditionally, a shoot-em up is going to be in a side scrolling or top down view the entire game. We decided to build our game in 3-D and mimic a 2-D arcade style of play, allowing our camera to have multiple game-play views. The entire camera system is tied to the game, so the levels are designed with the camera switches in place, allowing for more cinematic elements to be introduced into a genre typically void of such things.

"The gravity shield is by far the most powerful tool in the game. The idea was to develop a weapon that could be used for defense as well as offense. You are able to use the gravity shield to absorb enemy fire or return that same enemy's fire just as easily. We first prototyped the gravity shield in a simple stand-alone project and decided we liked it so much we beefed it up and ported it into the game. From that point, numerous tweaks and testing rounds gave us exactly what we wanted: a weapon that a novice can easily use for defense, and a pro can easily use for offense."

Doug Kavanagh, *Vela 7* 3-D artist, largely tasked with environmental modeling and texturing as well as some of the vehicles for the game, summed up the pace: "It was non-stop, just going flat-out like crazy! We all had to wear different hats during the process, and I had been told by a few people that a group effort is definitely something that will give you experience you will need in the real world."

Josh Stribling, lead programmer, UAT grad and now working at Rainbow Studios as a game engineer for an unannounced Wii action/adventure title, added, "Due to the small size of the team, everyone had to get their hands dirty on so many different levels and the words 'that's not my job' were entirely unacceptable, although we had a great team, so that was never an issue anyway."

"You learn more from independent projects, working hands-on without instruction, than you do from any classroom, although I would not have had the opportunity to work with such a talented group like ours had I not attended UAT."
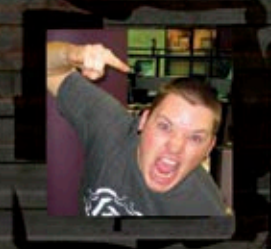
MEET THE TEAM

Doug Kavanagh

When not lost in the endless worlds of *Hello Kitty Island Adventure*, Doug produces exceptional game assets for *Vela 7* and works on his portfolio.

Ron Conley

Ron Conley is a freelance illustrator hailing from Columbus, Ohio, where he received his B.F.A. in Illustration from the Columbus College of Art & Design.

Justin Walsh

When not otherwise occupied with jousting on razor scooters at Toys-R-Us, Justin is studying the latest computer graphics techniques or coding up a blazing inferno of amazing C++ code.

Josh Stribling

In between battling nasty Unix scripts with vi, and writing intense queries to scrape data from Oracle, Josh likes to escape to the peaceful realm of C++ where all of the real magic happens.
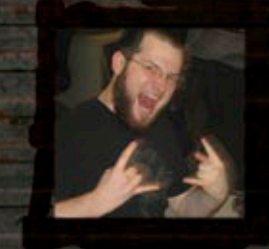
Andrew Morris

A passionate, traditional and 3-D artist with several years of experience producing game art, he started producing art for game modifications at the age of 15.

TEAM MEMBERS WERE FULL OF SOUND ADVICE FOR THOSE ASPIRING TO BREAK INTO THE GAMING WORLD.

From Kavanagh, the recipe is decidedly simple: "Be relentless! UAT will provide you with the tools and hardware, but it's entirely up to you to seek out the information and train yourself. Find others who are dedicated to their craft and learn from each other. It may be tempting to jump into a mod project without having any skills, but be prepared to focus on learning applicable skills rather than managing people. Everyone is an idea guy—few of those people get in the industry and even fewer actually start in those roles."

Stribling added that "aside from projects, anyone interested in getting into gaming should 'know' 3-D mathematics (Vectors, matrices and quaternions), C++, C# and be familiar with at least one scripting language (such as Lua) to the extent of implementing it into an engine, understanding how it works at a lower level, as well as where and when to use it. Mods typically won't cut it."

From Walsh: "My advice to fellow students is that school is only the bare minimum. If you truly love games and game development, you need to step out of the teachings and do large amounts of research on your own. My experience at UAT allowed me to meet fellow students who had a passion for making quality games and my professors encouraged me to do additional research on the things that interested me."

Kavanagh further noted that anyone getting into this industry needs some pretty thick skin. "If you can't take constructive criticism, you'd better learn how really quickly or you'll find yourself sitting in the wrong field."

STUDENT HIGHLIGHT: Sean Hillmeyer

Students At UAT Are Developing The Hardware Being Used In The Classroom

"...So I decided to design my own circuit board"

STUDENT HIGHLIGHT: Sean Hillmeyer

UAT student Sean Hillmeyer created a new microcontroller development board in his robotics class that has attracted the attention of the university's robotics professor, Ryan Clarke. Hillmeyer first created the SX28 Development Board in Clarke's 200-level robotics class "as a way for students and hobbyists to really be able to experiment with the Parallax SX28 Microcontroller," said Sean.

As Sean found out, he had dramatically improved the function and design of a microcontroller development board used widely in academia. As a result, his design is being considered for integration with UAT's curriculum.

A Brief Tutorial On Microcontrollers

A microcontroller (also MCU or μC) is a computer-on-a-chip, containing a processor, memory and input/output functions. It is a microprocessor emphasizing high integration in contrast to a general-purpose microprocessor (the kind used in a PC). In addition to the usual arithmetic and logic elements of a general purpose microprocessor, the microcontroller integrates additional elements such as read-write memory for data storage, read-only memory for program storage, EEPROM for permanent data storage, peripheral devices and input/output interfaces.

At clock speeds of as little as a few MHz or even lower, microcontrollers often operate at very low speed compared to modern day microprocessors, but this is adequate for typical applications. They consume relatively little power (milliwatts) and will generally have the ability to sleep while waiting for an interesting peripheral event such as a button press to wake them up

again. Power consumption while sleeping may be just nanowatts, making them ideal for low power and long-lasting battery applications.

Microcontrollers are frequently used in automatically controlled products and devices such as automobile engine control systems, remote controls, office machines, appliances, power tools and toys. For example, Disneyland uses SX controllers to animate most of its props and figures.

By reducing the size, cost and power consumption compared to a design using a separate microprocessor, memory and input/output devices, microcontrollers make it economical to electronically control many more processes.

The Development

To develop his own microcontroller development board, Sean ended up designing his own printed circuit board (PCB), which anyone knows is not easy. The result was a board with features and abilities Parallax (one of the largest board

developers) doesn't even include on their boards.

Currently, most development boards for the SX28 microcontroller only offer an on-board power supply and either a miniature breadboard or solder pad prototyping area. These existing boards are limited in their usefulness because of their minimal feature set.

In an effort to more efficiently use the space available on a Parallax size standard 3.1-inch-by-4-inch PCB, Sean's SX28 Development Board features an onboard power supply (+5 Volt, 5 Amp regulated), standard servo headers, integrated FTDI USB-to-Serial adaptor, 8-pin socket for an I2C EEPROM and a bank of 8 discreet LEDs. In addition, board power can be supplied from either the regulator or the USB interface. However, servo power is only available from the regulated or unregulated power input.

The addition of these components allows the SX28 Development Board to serve as a single multi-purpose board to eliminate the necessity for multiple boards.

"I'll never really be done learning. I suppose, like most graduates, I'm blindly jumping into the real world."

The Answers

Why create this development board?

I wasn't really happy with what was available at the time, so I decided to design my own circuit board and hoped it got printed, which it did. The SX28 microcontroller can operate so many functions and is completely re-programmable. You can use it for simple video overlay and graphics, then re-program it to function as repetitive task processor. I wanted to develop a printed board that could accommodate accessories that would give people the ability to really play with the capabilities of the microprocessor and just experiment.

What were some of the challenges you encountered while developing the board?

I would say the biggest challenge I faced involved the circuit board design. It was hard orientating the layout and wiring the parts. It took a long time to make sure wires went to the correct spots and didn't cross.

As I said, this was the first printed circuit board I had ever designed or created, so part selection was something new for me. I had to pick resistors, surface mount components and other linking parts from a 400-page catalog, the web and UAT's library and to make it worse, I wasn't familiar with sizes so I had to take extra care to make sure the footprint of each component I found would match the footprint of the board. I also ran into trouble with parts being discontinued once I found them, so I was constantly having to improvise.

What tools or programs did you use to develop the board?

The only program I used was Eagle CAD by CadSoft to design the printed circuit board. It's a little difficult to use, there was a learning curve, but it was free. The cost factor, or lack thereof, made my decision to use Eagle CAD very easy.

What advice do you have for any students considering a project similar to yours?

It is very time consuming, so you must be devoted. In the end, however, it is really impressive. It was fun getting the board I designed in the mail with my name and e-mail stamped on it. As students, we experiment with pre-made tools all the time. I realized, though, it is not that hard to build something unique that will allow you to experiment in different ways.

How do you think attending UAT has helped you in developing the SX28 Development Board?

We certainly had a lot of projects we had to work on so the experience gained there was big. I would say, though, most of all it was the staff at UAT that helped me the most. I don't think I would have ever finished this project if I didn't have Ryan Clarke and other teachers asking me about the project and expecting a finished product. Professors here are really looking for innovative works and are extremely eager to support them.

The Future

It is no wonder why Clarke was so interested in one of his student's projects. Right now, Sean and Clarke are discussing using the board in one of Clarke's robotics classes. This is an unbelievable accomplishment for Sean and certainly validates his design. However, before the board makes it into the classroom, Sean has to finish writing the manual that accompanies his SX28 Development Board.

"I'll never really be done learning. I've been doing a bit of research into attending a master's program. Before I jump into further education however, I'd like to finish up my pilot's license and tie up a few loose ends in life. I suppose, like most graduates, I'm blindly jumping into the real world".
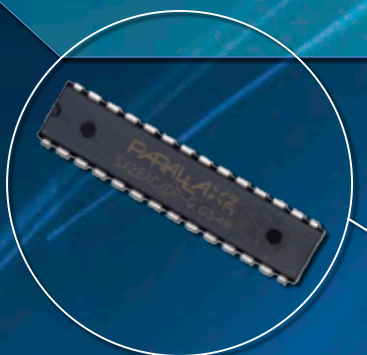
WHERE ARE THEY NOW?

UAT STUDENTS LEARN TO TURN THEIR
DREAMS INTO DREAM CAREERS!

STARFLIGHT

Matt Klausmeier	Superstition Studios / Cheyenne Mountain Entertainment Programmer
Scott Idler	Intel DirectX Validation Engineer
Andrew Chason	Truth for Today: World Mission School in Searcy, AR Head of Multimedia Design
Justin Sargent	Big Huge Games Programmer

INK!

Tim Mills	Big Huge Games Programmer

The rest of the Ink! team are attending UAT

POISON WIND

Jenny Pond	220 Productions Producer/ Director
Keegan Ead	Freelance Producer/ Director

VELA 7

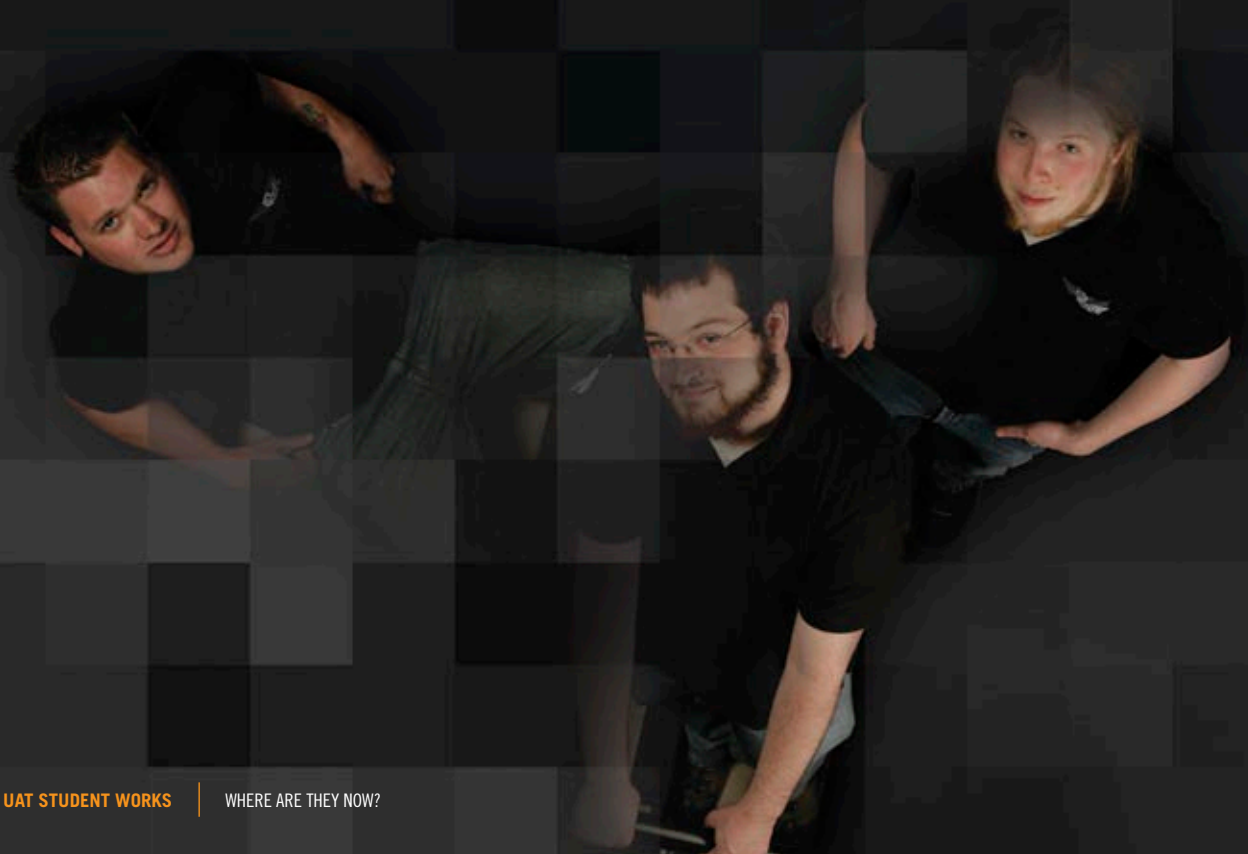|	
Josh Stribling	Rainbow Studios / THQ Software Engineer
Justin Walsh	Mega.net Private consultant /Software Engineering
Andrew Morris	Red Fly Studio Environment Artist
Doug Kavanagh	Red Fly Studio Environment Artist

SX8 DEVELOPMENT BOARD

Sean Hillmeyer	UAT Student

"I get to call myself a professional hacker; the girls really dig that one. I get to play with firewalls, invent security projects and solutions, travel to security conferences such as Blackhat, ShmooCon, Defcon, Scale5x, Lauer One and Techno Security. I'm the Linux guy in IT and an open source community supporter." **Daniel Scarberry**

"My main job is primarily to help monitor and administer hundreds of servers running all flavors of Linux, Windows and Unix platforms." **Jeremy Leung**

"I am the office manager for Show-N-Tell, a video production company. We do all kinds of work here, from filming commercials in the studio to going out in the field and recording a live performance, to editing the video…we do it all." **Tracey Shrier**

info