EXPO *t* **TEES**

2011

Showcasing the next generation of digital expertise

School of Computing

Inspiring success

Teesside University

WELCOME
TO EXPOTEES 2011

EXPOTEES 2011 is our sixth annual showcase of students' work from the School of Computing, it includes a diverse and wide range of projects from our final year students focusing on advanced software engineering and programming to computer games, music, media and animations.

EXPOTEES is an illustration of the best that students from the School of Computing have to offer. This brochure is evidence of the outstanding world-leading work, which is an exemplar to universities worldwide.

It is a great credit to our students and to the staff who have taught, enthused and supported them during their studies, that our graduates enter employment with many of the world's leading organisations.

I hope that you enjoy your time at our exhibition and use it as an opportunity to meet our students, and find out more about their wonderful achievements.

**SIMON STOBART
DEAN**

Celebrating digital expertise

EXPOTEES is a celebration of our students' innovation, research and development in a wide range of computing subjects – from advanced computer technology to those centred on entertainment.

Our students undertake an in-depth exploration of a chosen subject area and demonstrate the ability to research, analyse, synthesise, and creatively apply what they have studied. The project is often in an area they have gained an interest in either via a work placement or through their studies.

Some students undertake projects which have external clients and require project managing to industry standard.

Exhibition content represents a cross section of final year work and demonstrates the full spectrum of subjects taught at the School of Computing.

Find out more about our digital expertise and the range of programmes offered by the School of Computing, call **01642 342639**, email **scm-enquiries@tees.ac.uk** or visit **www.tees.ac.uk**

CONTENTS

ANIMATION &VISUAL EFFECTS

These projects focus on a variety of roles within an animation/post production studio environment, including concept design, motion graphics, 3D modelling texturing and lighting, character animation, compositing and visual effects, as well as sound, film theory, the production process and studio practice. They use a wide range of tools such as Softimage, Maya, 3ds Max, Combustion, After Effects, Mudbox, ZBrush and Toon Boom. Our BA (Hons) Computer Animation degree has Skillset accreditation. The Skillset accreditation scheme has been created with the games and animation industry to signpost courses which fulfil professional criteria and prepare students for the real world of work.
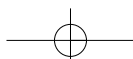
THOMAS DIDYMUS, PAUL FELTWELL

LISA STONEHOUSE

ANDREW TONTA

THOMAS DIDYMUS
BA (HONS) COMPUTER ANIMATION
PAUL FELTWELL
BA (HONS) DIGITAL CHARACTER ANIMATION

We have created a 3D animated short about an encounter between two solitary robots in a junkyard. Bucky is a clumsy and inquisitive little robot. His curiosity causes him to happen upon a humble junkyard where he meets Robo-rilla, a playful gorilla and the junkyard's sole inhabitant. Our goal was to develop believable and likeable characters within an animation by studying real movement. The animation was created and animated using Softimage and edited using Photoshop and After Effects.

LISA STONEHOUSE
BA (HONS) CREATIVE DIGITAL MEDIA

I animated a short film called Beware of the dog! using Softimage, Photoshop and After Effects. The animation revolves around Peter the postman as he does his daily rounds. We see him deliver post to two houses; the first is a nice normal house and the second is dark and gloomy. Walking to the second he is blinded by 'beware of the dog' signs. He reaches the letterbox after tip toeing past a large doghouse and as he retrieves the letters a weird sound comes from within the house. The postman reaches in to pull out a small robot dog put there to impersonate a vicious dog, much to the postman's relief.

ANDREW TONTA
BA (HONS) DIGITAL CHARACTER ANIMATION

Introducing Larry Saunders, a quiet subordinate individual, who is just trying to make it to the end of yet another dull day at the office. What ensues is a series of humourous scenarios as he is pushed well beyond his mental limit. I used Toon Boom Studio as the method of animation for my 2D short, it is inspired by Ren and Stimpy and the good old classics from Warner Bros Studios, and demonstrates my current abilities of character animation within a 2D environment.

ANISA NADHIRAH SANUSI
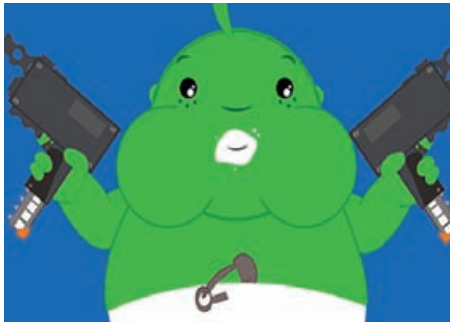
JOSH ATKINSON

ANDREW DIXON

ANISA NADHIRAH SANUSI
BA (HONS) COMPUTER ANIMATION

My project is a visual expression of music through 2D animation. The story centres on a girl who is submerged into a dream like state where she uses the music as a form of self-expression. To get the feel of my animation right, I had help from performance art students from the School of Arts & Media as well as a recent music production graduate. The interdisciplinary collaboration was key to producing a universal themed art piece. To animate I used Toon Boom Studio. I also used other programmes for editing and postproduction such as Photoshop, After Effects, and Final Cut Pro.

JOSH ATKINSON
BA (HONS) CREATIVE DIGITAL MEDIA

I created a children's book in the style of a pop up story that can be viewed on the Apple ipad. I aimed to create a deep and meaningful tale that teaches children about friendship, loss, and independence. The story, That Girl and Her Fish, revolves around a young girl who befriends her emotionless fish. The story, while very deep and somewhat sad, is for ages five and upwards, but it is a form of media that also allows adults to enjoy illustrated literature. The project is hand drawn and enhanced in Photoshop.

ANDREW DIXON
BA (HONS) COMPUTER GAMES DESIGN

I have created a series of character models of highly detailed digital sculpts, as well as game ready models that meet current industry standards. I used Zbrush as my primary tool for creating the characters as it offered the ideal set of features. I used the experience of creating these models to identify weaknesses in, and improve upon, both my artistic and technical abilities to better prepare myself for a career as character artist.
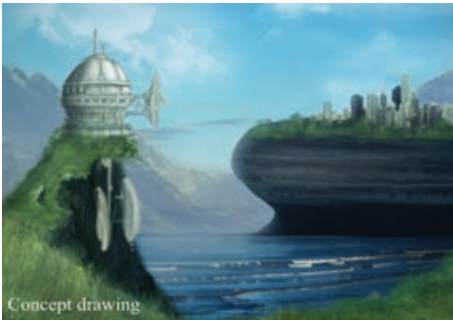
Concept drawing
JEANETTE HELEN EITERNES

JONATHAN DOUGLAS GRIEVE

KENN HEDIN KALVIK

JEANETTE HELEN EITERNES
BA (HONS) CREATIVE DIGITAL MEDIA

I examined general visual effects production techniques, and produced three visual effects shots for a fictional company. Using three different live-action footage clips I created the visual effects which included set extensions, removing unwanted elements and incorporating 3D elements into the footage. I used techniques such as rotoscoping, matte painting, 3D modelling and colour grading for these effects. I also produced breakdowns of the shots for use in the 'making of' part of a DVD. I composited the various elements together, building up the final shot one element at a time, and compared the footage before and after. To create the shots I used 3ds Max for modelling, Photoshop for texturing, Boujou for matchmoving and After Effects for compositing as well as colour correction/grading.

JONATHAN DOUGLAS GRIEVE
BA (HONS) WEB AND MULTIMEDIA DESIGN

My project is a music video produced as a 2D Flash animation; I also created a website to accompany the animation. The animation is based on the music track An Awful Lot of Running by independent rock group Chameleon Circuit and works in tandem with the music to represent the lyrics. A visual representation of the lyrics is seen on screen as well as a definitive storyline tucked into the visuals. The website is primarily a medium for viewing the animation however, users have the opportunity to find out more about the band and the making of the animation – including some downloadable examples of the conceptual design work that influenced the final animation – it also gives Chameleon Circuit some free publicity.

KENN HEDIN KALVIK
BA (HONS) CREATIVE DIGITAL MEDIA

I created three visual effects shots for a story about a coastguard air-sea rescue mission in which a coastguard helicopter rescues a survivor from a shipwreck stranded on a reef. To create the visual effects shots I combined live-action footage of an actor captured using green screen with a completely computer generated environment using compositing techniques such as keying, motion tracking and rotoscoping. I used 3ds Max for creating the helicopter and the DreamScape plug-in for simulating the sea and the sky. The textures for the 3D models were created using Photoshop. The live-action footage was motion tracked in Boujou and composited together with the 3D renders using After Effects.
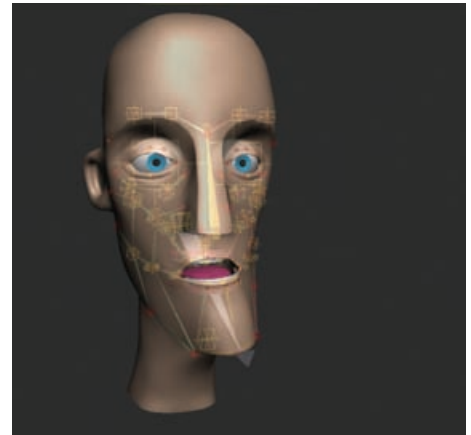
CRAIG MARTIN MILN

MARIANNE OHME, ANDERS LORENTZEN, RENATE JOHANSEN, NAVINE SAMUEL

SEBASTIAN ANTONSEN

CRAIG MARTIN MILN
BA (HONS) CREATIVE DIGITAL MEDIA

I have created an animation about three people's opinions on relationships. The objective of my piece was to display my knowledge of advanced facial animation. My main inspiration for the piece was Creature Comforts by Aardman Animations Ltd. I was especially fond of how captivating conversation could be when accompanied with an entertaining animation. By recording three voice actors, and editing the sound file in Audacity, I had a naturally flowing piece of conversation which I then used as inspiration for my character designs. The characters I chose were drawn by hand then modelled and animated in 3ds Max. To finish, I added additional sound files to the video using Premiere. When animating the characters, I paid close attention to facial detail and secondary animation as they really make an animated feature feel realistic.

MARIANNE OHME
BA (HONS) CREATIVE DIGITAL MEDIA
ANDERS LORENTZEN
BA (HONS) CREATIVE DIGITAL MEDIA
RENATE JOHANSEN
BA (HONS) CREATIVE DIGITAL MEDIA
NAVINE SAMUEL
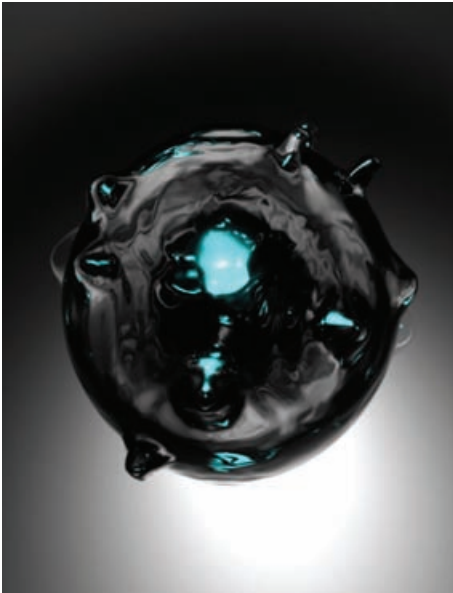### BA (HONS) COMPUTER ANIMATION

We made a short film based on an idea by one of the team members. The story is about Matthew and his desperate attempt to reach the Jar. He knows he's not allowed in there. He knows he's not allowed to touch his sister's stuff. But sometimes temptations become too strong. And what do you do then? You do your best to get it. To make the short film we used 3ds Max to create the models and the animation, Photoshop for textures and Premiere to edit the film.

SEBASTIAN ANTONSEN
BA (HONS) CREATIVE DIGITAL MEDIA

I have produced a production ready bipedal character rig in Maya. Coming from a 3ds Max background this proved an interesting opportunity to see the differences between the two packages, in terms of character set-up, and to develop new ideas and workarounds in a new software environment. During the course of the project I developed several tools to help the rigging process along. These included options for storing poses for the different body parts – and methods for copying them over to the other side of the body, and blending the face between a morph target setup and a pure bone setup. Working in an unknown software environment forced me to stop and think carefully about everything I put together instead of forcing solutions through.

EAMONN BLAKE

KEITH PAUL BROWN

TAT CHIANG CHEAM

EAMONN BLAKE
BA (HONS) COMPUTER ANIMATION

I created an experimental particle simulation driven using audio wave data. The aim was to learn more about Softimage's interactive creative environment and general particle simulation techniques, while creating a piece of animation that was both visually and technically exciting. Coming from a less technical background, I had to split up the audio wave data by replicating each musical element manually using a MIDI keyboard and recording each layer by ear. This method gave me far more control over each of the animation layers and simulated elements in the scene using multiple objects that correspond to, and are driven solely by, the individual sound patterns in the music.

KEITH PAUL BROWN
BA (HONS) COMPUTER GAMES ART

I wanted to accurately model an interesting and anatomically correct female game character before animating and implementing the model within the Unreal Development Kit game engine. This involved learning the complete character to game pipeline as well as working with various tutorials and references so ensure my work was high quality, while also considerably increasing my anatomical knowledge and technical skills. After having constructed and textured the character within ZBrush the character was then taken into 3ds Max to be animated manually using the biped skeletal system. This was chosen over motion capture to showcase my animation skills. The animations have been created to be as realistic and fluid as possible, while each action is organised into an individual looped cycle so that the character's movement is seamless within the game environment.

TAT CHIANG CHEAM
BA (HONS) COMPUTER ANIMATION

My short animation is about a rogue assassin returning to retrieve a serum that contains his DNA so he can ensure the scientist who made him does not create anymore engineered humans like him. My concept for the character is inspired by the character Hei from the anime Darker than Black. His personality and combat composure is loosely based on Hei too. Betrayed and used by the man who took what was his and monopolised it for his own greed, the mysterious figure named Tiburon returns to his previous headquarters to retrieve what belonged to him. But someone was watching him…waiting for him... I used Maya for the 3D models, environment, props and lighting, Photoshop for textures and Zbrush for additional textures and character modelling. During compositing I used After Effects and Combustion to composite and edit the video.

CHRISTIAN FLOYD ERTVAAG

GREGORY KELUBIA IDEHEN

JIA YUNG HUE

CHRISTIAN FLOYD ERTVAAG
BA (HONS) CREATIVE DIGITAL MEDIA

I have created a short 3D animation featuring a female action hero. Inspired by classic video games and the visual styles of renowned 3D animation companies such as Pixar and Square Enix I designed a cool, stylish character people would want to be in a game and showed off the character in an intense teaser animation – styled as the introduction movie for the hypothetical game. The primary focus has been on the character's design; my goal was to create something a bit different from the usual action hero. I used 3ds Max for most aspects of the 3D production. Other applications used include Photoshop and Premiere.

GREGORY KELUBIA IDEHEN
BA (HONS) COMPUTER ANIMATION

I have created a short animation integrating 2D traditional characters with 3D environments and props. The story revolves around a young man exploring the vast recesses of his mind and memories. A mysterious and cunning raven stole his voice when he was a child and in order to regain what was taken from him, he has devoted his life to chasing and capturing the raven. Every time he gets a little closer to his feathered foe it escapes his grasp. To create my film I used Softimage for the 3D environment and assets, Toon Boom Studio for the 2D elements, Photoshop for the colouring/effects, After Effects for the final composting, and Pro Tools and Audacity for the audio.

JIA YUNG HUE
BA (HONS) COMPUTER ANIMATION

I have created a short animation film based on the concept of wanting to be free and different. It demonstrates how we have to fight for our freedom of action, speech, thought and being. The story is about a gynoid who wants to be free of the humdrum similarities she has to other androids. She is locked away to be re-integrated into the unified system and begins to fight her way out of the cell before the date of her re-integration. I used Maya for 3D modelling and animating and After Effects and Combustion for compositing and editing the film.

EMILY JOHNSON

RACHEL KEHOE

RICHARD STUART KEMP

EMILY JOHNSON
BA (HONS) DIGITAL CHARACTER ANIMATION

An old man and his two faithful, yet competitive, canines take a walk in the country; it ends in a friendly game of fetch. Will the young, sprightly, yet inexperienced pup Misha steal the show, and their master's affection? Or will the old, shuffling, yet wise Shan prove you don't need to teach an old dog new tricks? A 2D, digitally animated short film.

RACHEL KEHOE
BA (HONS) COMPUTER ANIMATION

I animated a short film about the meeting between a little girl named Lily and a sleepy star named Wish. The star falls asleep and falls out of the sky, he is caught by, and cared for, by Lily. I hope it is the start of many adventures together for them. I have a huge passion for animation, which is why I chose to create this sequence for my final year project. To create my short film I used Toon Boom Studio for all 2D animation and Photoshop for backgrounds and effects.

RICHARD STUART KEMP
BA (HONS) DIGITAL VISUAL EFFECTS

I created a short movie trailer. The story is based 33 days after an alien invasion of earth, and is filmed in a documentary style. Each shot was created to demonstrate different aspects of visual effects such as, motion tracking, character animation, set extensions, particle and fluid simulations and compositing. The project required specific softwares for each task. For animation, modelling and effects, Maya was used. To sculpt I used ZBrush. Boujou was used for the motion tracking and Nuke and After Effects were used for compositing and post production postproduction.

MIKE LAWRENCE

CHRISTOPHER MATTHEW LINGARD

JONATHAN MACDONALD

MIKE LAWRENCE
BA (HONS) COMPUTER ANIMATION

For my project I created a piece of 2D concept animation for a music video based on the song Re: Your Brains, performed by internet musician Jonathon Colton. The animation is about a struggling office worker who is approached by his boss, now turned zombie, who wants to eat him. The animation contains three main characters, as well as a handful of interchangeable zombie designs. The tone follows the movie Office Space meets Dawn of the Dead, with a mix of the Evil Dead movie. It's a humourous story about the bitter pencil pusher, surviving the zombie hordes of his dead co-workers, as his boss taunts him through song. I have used animation and art software, Flash and Photoshop. All rough work was drawn out using pencil, paper and light box before being cleaned up with digital programs.

CHRISTOPHER MATTHEW LINGARD
BA (HONS) COMPUTER ANIMATION

I have created a short 3D animation that looks into the use and effectiveness of different techniques, styles and emotions used in acting. My animation revolves around the relationship between a very nervous, but keen young new actor and an incredibly picky director. Set in a TV studio, we watch as the actor is coached by the director on how to perform his lines. As time goes on the director coaches the actor to deliver more and more bizarre performances until it's too much and the actor gives up! To concentrate on the emotion the actor portrays as he performs his lines my focus has really been on animating a convincing range of acting styles and emotion. To create this animation I used Softimage and edited it in After Effects.

JONATHAN MACDONALD
BA (HONS) COMPUTER ANIMATION

I created a character for a hypothetical game cinematic trailer. Using self taught skills I created a character and the design needed to model the character, along with a final colour concept piece to see what the finished character should look like. The character was created in Maya by making a low poly base mesh then exporting over to ZBrush to add high amounts of detail as well as texture, and normal and displacement maps. Textures were taken straight from reference images and painted on using ZBrush's polypaint feature. Some textures were edited in Photoshop.

JORGEN MAELAND
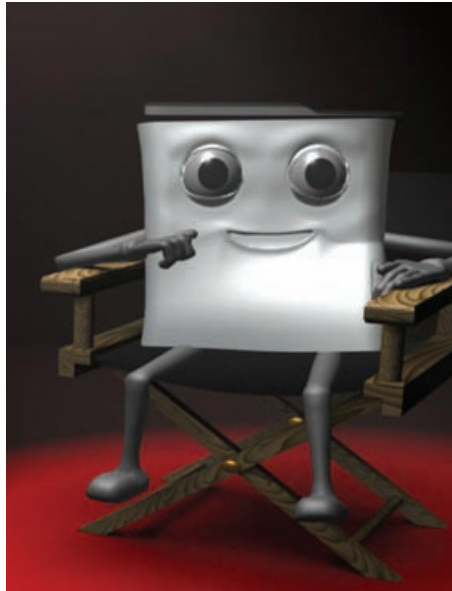
ADAM PILKINGTON

BENG EU TEH

JORGEN MAELAND
BA (HONS) CREATIVE DIGITAL MEDIA

I have created a short movie set in a dystopic future where memories are looked down upon. Big companies pay good money to remove memories and sell them to the rich and powerful as pleasure trips or simulations. We follow an old man who still possesses his original memories, and because of this is considered an outcast by his family, friends and government. With no hope for a job, he lives on the street. And with no job, he cannot afford medical care. He's dying. We follow him in his last moments, after he has made a life changing decision. But what can he change if he's dying?

ADAM PILKINGTON
BA (HONS) COMPUTER ANIMATION

I have created an animation using Softimage 2011 and edited in Final Cut Pro, to show my abilities as a character animator and my modelling and rigging skills. In an interview room, taking inspiration from the introduction to the Pixar film The Incredibles, game consoles are being asked in turn 'Why do you think you are the greatest console ever?' Each console is alone in the room but is aware the others are being asked the question too. This leads each one to answer the question in their own way, with different personalities, trying to disprove the others. The animation ultimately ends with one console stating that none of them are the greatest, and that they are all good in their own way. The lighting and camera actions really helped give the interview a realistic feel.

BENG EU TEH
BA (HONS) DIGITAL CHARACTER ANIMATION

The year is 2040, man has achieved new milestones in technology and lifestyle. People rely on robots for many regular activities and man continues to develop robotic weapons for military purposes. A series of robots called Gigantic-EX5 are created, equipped with powerful nuke cannons. They get out of control and ignore human commands, turning their weapons to kill all humans. Within a week, almost half of the human population have been wiped out. The story begins with two survivors – Fatty, a caring and kind robot and its beloved master Jenny, who has lost her parents in the incident. Despite her nightmare Fatty, with an almost human heart convinces her to live on bravely. Their peaceful moment is destroyed when one of the loveless and cruel dark red eyes of a Gigantic-EX5 spots and gets ready to attack. Fatty tries to protect Jenny but due to the size is no match against a Gigantic. Fatty decides to sacrifice himself by using all his strength to defeat the Gigantic. Jenny cries as she loses her very last friend.

LAURA SAINT

REBECCA OXFORD

WEI XING YONG

LAURA SAINT
BA (HONS) COMPUTER ANIMATION

For my project I animated a short film based on the comedic relationship between men and women. The story is centred on a caveman whose simple aim is to impress his lady friend; unfortunately this proves more difficult than first anticipated. My aim for the project was to use a real life situation and over exaggerate it to create a comical piece of animation. My vision for the animation was to create a narrative that would capture the audience and to design an environment that was not necessarily realistic but had a sense of real beauty about it. To make my film I used mainly Softimage for the character and the environments, and After Effects.

REBECCA OXFORD
BA (HONS) COMPUTER ANIMATION

I have created a short animation to showcase my skills at animating a character and their personality through movement and expression alone. My dragon character, Taika, has been designed to look more like a large cat while still being obviously a dragon in appearance. His personality reflects his cat-like qualities; the animation focuses on him being curious and getting into trouble. My project has helped me develop a range of skills, including effective texturing, animating particles and animating animal movements both on the ground and in flight. I used Softimage to model, simulate and animate everything seen in the final product.

WEI XING YONG
BA (HONS) DIGITAL CHARACTER ANIMATION

Self-Conflict is a 3D animated short film about a man's conflict with himself. We all experience conflict in one form or another. My aim was to create a believable character animation with an emphasis on acting and performance that complements the story. The primary software used was Maya. I also used After Effects for postproduction and editing. Audacity and Soundbooth were used for audio editing.
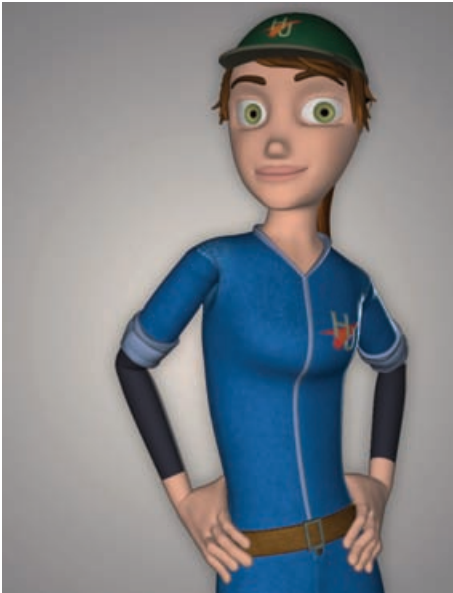
EDWARD LEE TREVINO YOUNG

SCOTT ROBINSON

EDWARD LEE TREVINO YOUNG
BA (HONS) DIGITAL CHARACTER ANIMATION

I created a 3D character-driven animated short, set on a cargo ship, in space with a pilot attempting to make breakfast and a faulty gravity machine getting in the way. It was created using Softimage and Photoshop. My goal was to achieve a greater understanding of character animation, making sure that the story allowed the protagonist to show actions, reactions, changes in emotion, weight and fatigue. Not limiting myself however, I studied more advanced modelling, rigging, texturing and lighting to create everything that ended up on screen.

SCOTT ROBINSON
BA (HONS) CREATIVE VISUALISATION

I have animated a demonstration of a 3D character I developed in response to a live Disney brief. The story was created with the influence of popular American cartoons including the art style of Stephen Silvers and Pixar's The Incredibles. Jack is a 16 year old happy-go-lucky, super popular school boy living in Carnival City with his single, busy, company executive mother. Over the summer holidays while she works abroad, he stays with his uncle, a weird ringmaster for a group of really creepy but talented circus performers who work in the Twilight stadium. One night after the show Jack discovers a secret; a mirror connected to a parallel universe. He re-activates the mirror, opening the gate and allowing mischievous creatures to escape. Jack must find a way of capturing these odd creatures, with the help of his uncle, to stop the mirror world taking over but without ruining his reputation in school. My work was sketched out on paper with story boards and brought to life using Photoshop, Softimage and Maya. I have edited the final product in Premiere and After Effects.
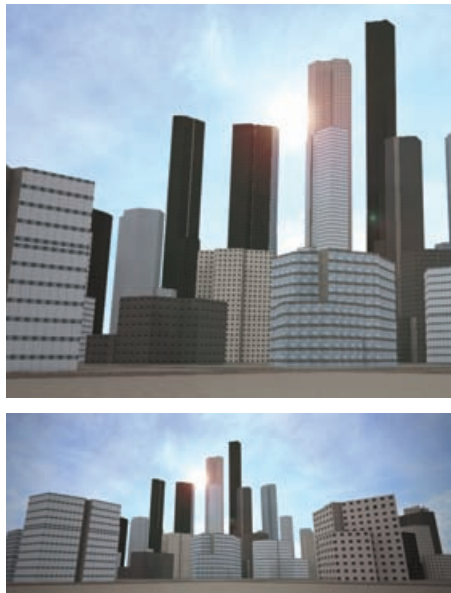
GAMES
PROGRAMMING

The imagination of game designers must be turned into a reality by the game programmers. These projects require skill, both technical and creative, to enable all manner of ideas to be implemented efficiently and effectively on contemporary hardware. Often these projects will focus on prototyping new gameplay features, developing flexible but efficient software architectures, or constructing software technologies to better realise a virtual world to the user

MICHAEL JAMES MACKIE

ROBIN JAMES BRITTON

MATTHEW COLLINS

MICHAEL JAMES MACKIE
BSC (HONS) COMPUTER GAMES PROGRAMMING

With game environments becoming ever more complex, calculating viable paths for Artificial Intelligent agents in an efficient manner is a growing issue. One of the most well know algorithms for grid based games is A*. This algorithm is used a lot as it is guaranteed to find the shortest/quickest path, if one exists. Because of this the speed of the algorithm dramatically decreases as the size of the grids increases. For my project I decided to research and implement a method known as Hierarchical A* Path Finding. This involves splitting the grid into clusters to create a higher level view of it. Possible paths are first looked for in the top level, if one is found the lower levels are then searched to return a more detailed path. I wrote the program in C++ using Visual Studio 2010. So the implementation can be seen in action I also created a 2D interface using the Simple DirectMedia Layer and OpenGL.

ROBIN JAMES BRITTON
BSC (HONS) COMPUTER GAMES PROGRAMMING

I have developed a piece of software to randomly generate a city full of unique buildings using user input. The aim was to find a balance between random numbers and user input when generating a realistic looking collection of buildings. If perfected it would save developers a lot of time as they wouldn't need to model every part of every building manually. The program works by generating the geometry used for the buildings based on parameters chosen by the user, and adding a random element and outputting this information to a T3D file. The file can then be imported into the Unreal Development Kit (UDK), used to visualise the level from a first person perspective. The program was written using Visual Studio 2010 using C++. Areas of research included how to randomly generate the geometry and building architecture and how to use the UDK and its T3D file type.

MATTHEW COLLINS
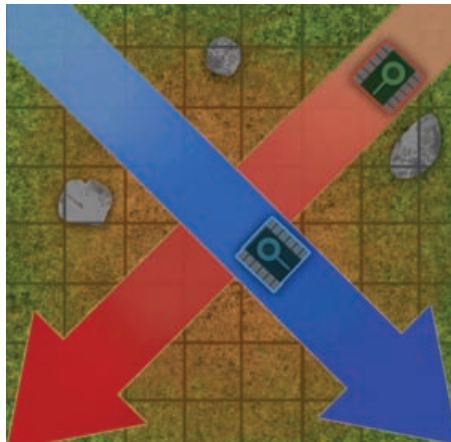### BSC (HONS) COMPUTER GAMES PROGRAMMING

For my project I created a 2D game engine that takes advantage of multiprocessor systems by operating using multiple threads, which improve the speed and performance of the engine. The engine has its main components separated into their own thread, so that they all run concurrently. This was done in order to utilise the multiple processor computer systems, which are common place today. Creating the game engine in this manner allowed me to improve my programming knowledge and showcase my programming skills. The game engine was created in Visual Studio 2010 using DirectX 9 as well as using Boost Library to create games for the PC.

DANIEL FISHER

JOSH HEYDE

ROBERT EDMONDS

DANIEL FISHER
BSC (HONS) COMPUTER GAMES PROGRAMMING

iPad Defense is a tower defense type of game created for the Apple iPad. The game was designed with the iPad's size and touch screen in mind. The game also takes into account the limited resources available while developing for a mobile device. My demonstration was created using iOS and Xcode and was written in Objective-C. I learnt a lot about programming for the iOS platform and the different ways to create games that use iOS device capabilities.

JOSH HEYDE
BSC (HONS) COMPUTER GAMES PROGRAMMING

I analysed and recreated a series of pathfinding and unit navigation techniques used in modern real-time strategy games. I then considered where they could be extended to for better applications within set scenarios. I looked at a variety of techniques for generating the most optimal results. These techniques were applied to the same groups of units to compare performance in different situations. The specific aim of the pathfinding revolves around groups travelling together efficiently, with a variety of obstacles such as tight corridors or groups moving in the opposite direction. The methods were profiled thoroughly to ensure maximum efficiency so they could be used within a game engine with only minor changes. The simulations were developed in Visual Studio 2010 using C++. The visual representation was rendered using OpenGL.

## ROBERT EDMONDS
BSC (HONS) COMPUTER GAMES PROGRAMMING

I created a program that generates procedural planets for use in real time graphics. The software renders a complete planet that can be viewed from space, on the ground or anything in-between without a loss in detail. The terrain detail is maintained by increasing or decreasing the number of polygons, with detail level depending on the camera's position and view direction. The surface terrain is generated with a fractal algorithm that has many parameters which can be altered to generate different planet variations. To organise my progress I have used the scrum method of project management and recorded everything on my blog. I wrote the program using Visual Studio 2010 using C++ and used Direct3D graphics API.

DOUGLAS JAMES HIND
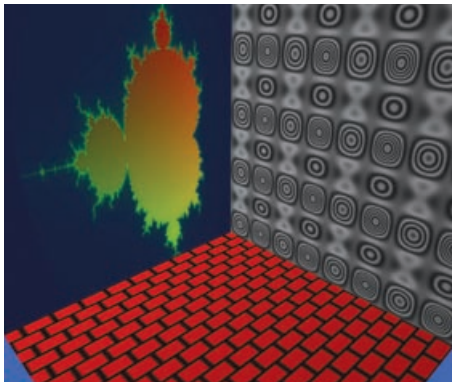
MICHAEL JOHN HODDS

ALEXANDRE LAURENT

DOUGLAS JAMES HIND
BSC (HONS) COMPUTER GAMES PROGRAMMING

For my final year project I wrote a server and an Android application that maintains a shared set of data in a consistent manor, using consistency protocols. The Android application allows users to share their location using GPS and displays this data using Google Maps. Clients connect to the server over the internet, to ensure all clients are seeing the same locations as other clients, network consistency protocols are used. Both the server and the Android application are programmed in Java using the Eclipse Integrated Development Environment. The Android application makes use of the Android Software Development Kit (SDK) and the emulator included with the SDK.

MICHAEL JOHN HODDS
BSC (HONS) COMPUTER GAMES SCIENCE

I researched methods for procedurally generating textures and models. Many of the algorithms are highly parallel, so I explored methods to optimise asset generation by offloading processing onto the graphics programming unit. I have always had an interest in procedural algorithms since I explored fractal art and B-spline (NURBS) surfaces in 3D modelling packages. The software created provides the user with a 3D sandbox, and an interface for tools to procedurally generate textures and geometry. The program allows users to quickly create complex models, and varied textures. When the user is finished with their creation, they can export the geometry as a standard model file. I followed the rapid application development approach and split the software into individual components that are black-boxed, so that future versions of the components can share the same (or an expanded) interface

ALEXANDRE LAURENT
BSC (HONS) COMPUTER GAMES PROGRAMMING

I simulated the evolution of a civilisation entirely managed by the computer with the aim of creating more entertaining background environments in games. In my program, the civilisation lives and evolves without any user interactions. The project is separated in two different sections – world representation and Artificial Intelligence. To create the world representation I looked at strategic games like Sid Meier's Civilization (Microprose, 1991), I also looked at new directions of thinking about living resources management using Conway's Game of Life. The goal was to create an Artificial Intelligence able to create a new solution by itself. A genetic algorithm was one of the solutions used to do this. The project was completed in C++ using the Simple and Fast Multimedia Library and is available for Windows and GNU/Linux.

ARON SPRINGFIELD

RYAN SULLIVAN

ADAM TURNBULL

ARON SPRINGFIELD
BSC (HONS) COMPUTER GAMES PROGRAMMING

I programmed a self-learning Artificial Intelligence poker opponent to play against a user and beat them; I used C++ and Visual Studio 2010. I created a basic poker user interface purposely similar to that of online poker sites so that users feel immediately familiar with the program. Poker by nature is a very unpredictable game where decisions are rarely explicitly correct or incorrect at any time, this makes it difficult to give fixed parameters for an AI opponent to follow. To overcome this I created the AI using a combination of genetic algorithms, weighted probabilities and a slight random element to try to find the optimal decision at any given time to beat the human opponent. When a decision results in a positive result, it is more likely the AI will make a similar decision in future situations.

RYAN SULLIVAN
BSC (HONS) COMPUTER GAMES PROGRAMMING

My project assesses the suitability of the Android Platform for games. To achieve this I produced a 2D tower defence game using the platforms API's. The Implementation makes use of both the Android Software Development Kit (SDK) and Native Development Kit (NDK). Using NDK allowed me to write C++ libraries for the critical systems and profile these against their Java (SDK) counterparts. The project allowed me to develop skills in Java, Java Native Interface5, C++, Android, profiling, optimisation, Agile-development and unit-testing. I have also improved my ability to critically assess and improve various software implementations.

ADAM TURNBULL
### BA (HONS) WEB AND MULTIMEDIA DESIGN

I have created a web game based on the children's book Cheeky Monkey by Curtis Jobling. At the start of the project I contacted various schools and asked if they would be interested in testing the game. I kept the schools updated throughout the project and once the game was near completion I sent them a demo version. The feedback I received helped me to finish the game. Keeping in contact with Curtis during the project meant I could send him designs and ideas and receive feedback regularly. The game was created in Flash and programmed using ActionScript, I also used Illustrator and Photoshop to create high quality images for certain characters and backgrounds.

CHRIS WALTER
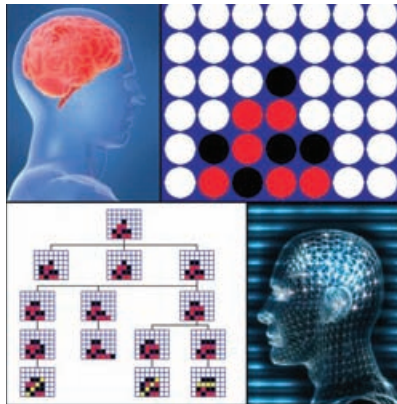
WILLIAM WALTON

MENG HOCK YAP

CHRIS WALTER
BA (HONS) CREATIVE DIGITAL MEDIA

I have created a short game aimed at teaching children basic typing skills. Using a combination of bright colours, a simplistic art style and an easy to grasp objective I tried to make the game accessible to young children. The game is based around a young wizard trying to cast spells using words. It has several levels with increasing difficulty, with a relatively short vocabulary that focuses mainly on correct hand placement and typing technique, while remaining relevant to the theme of the game. The game was created using Game Maker 8 and all art assets were created using Photoshop.

WILLIAM WALTON
BSC (HONS) COMPUTER GAMES PROGRAMMING

I have created an adaptive Artificial Intelligence agent for the game Connect 4. My inspiration came from playing Microsoft's Chess Titans. I became bored of beating the CPU on an easy setting. After increasing the difficulty however, I did not enjoy being consistently trounced by brilliant AI. People can quickly become tired of an otherwise fun game because of the difficulty. An agent which adapts its tactics to match the player's skill level may be the answer, and could hold the key to making a game fun, which so many have failed to achieve. The game was tested on players of varying skill levels to assess this theory. My agent implements a partial minimax algorithm, and the game was developed in C++ using Simple and Fast Multimedia Library for 2D graphics. My project also explores adaptive AI in past commercial games, their relative success, and how adaptive AI may change games in the future.

MENG HOCK YAP
BSC (HONS) COMPUTER GAMES SCIENCE

I have created a program that dynamically generates 3D levels using some assets and a layout. Environment objects are placed appropriately according to the layout. Layout also determines the paths around the level. I used the Unreal Development Kit (UDK) for my 3D engine, developed a program to use UDK assets converted to text format. The program generates a level in text format to be imported back to the UDK.

Robert Curtis

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COMPUTER GRAPHICS

Constructing software technologies to visualise virtual worlds and mimic the beauty and complexity of reality efficiently on contemporary hardware requires detailed understanding of the software, hardware, and associated mathematics. These projects are often highly technical in nature and can focus on a range of applications from computer games through to scientific research and development. Our BSc (Hons) Computer Games Programming degree has Skillset accreditation – the first BSc in England to be awarded the accolade.

JORGEN DRONNEN

CARL BUTTON

ROBERT CARL KAVANAGH

JORGEN DRONNEN
BA (HONS) CREATIVE DIGITAL MEDIA

I have created an architectural visualisation of a modern house exterior. To build the models of the house and environment I used various modelling tools and techniques in 3ds Max. Photoshop was used to apply painted textures with the help of accurate UV mapping, so I could later experiment with different materials and achieve a realistic result. The aim of my project was to create a photorealistic, fully textured and lighted exterior architectural visualisation. The piece was created using 3ds Max. To render my piece I used V-Ray rendering system. Textures were made using Photoshop, or from CGTextures. I also looked at how to generate realistic looking plants and organic environments using different Ivy generators and Vue.

CARL BUTTON
BA (HONS) COMPUTER GAMES ART

My objective was to showcase my modelling, sculpting and texturing abilities when creating characters for next generation console games and rendered scenes. I created four realistic looking models including a self portrait bust. My decisions were inspired after seeing how characters were created during my placement year at Ubisoft. I was able to see first-hand a full professional production pipeline for next generation characters. The knowledge from my experience influenced each character's production process. I researched human anatomy, both male and female, as well as researching traditional and modern day sculpting techniques. I also researched new methods of reference gathering such as 3D scanning.

ROBERT CARL KAVANAGH
BA (HONS) COMPUTER GAMES ART

I have created a realistic self portrait of myself for use in the VR cave as part of Project X. Project X is a PR tool that will be used to promote the University. The basic premise is a zombie apocalypse based around Teesside University. The main character is a typical university student, so I created the main character as a self portrait with a purpose. The model was created using 3ds Max and Mudbox, this allowed me to create a believable model which I then textured using Photoshop. For the animations I used motion capture to create fluid animations.

ALEXANDER EDVARD FUSDAHL

MATTHEW JOHN OAKLEY

SVEIN CHRISTOPHER RAKKESTAD

ALEXANDER EDVARD FUSDAHL
BA (HONS) CREATIVE DIGITAL MEDIA

I created a fantasy-photorealistic character in a detailed environment with highly detailed textures, shaders and lighting. A large part of the project involved documenting the production in a close to tutorial-like fashion to show my expertise with near industry quality rendering, lighting and compositing. The final product consists of several high resolution still images of the character in several poses within the environment, and without. It also contains a complete animated breakdown of the render elements and compositing with 360 degree turntables in full texture, clay-render and wireframe render to show the construction. This challenging project demonstrates my technical and artistic skills.

MATTHEW JOHN OAKLEY
BA (HONS) COMPUTER GAMES ART

I have recreated the environment, two vehicles, and assets for a driving game based on the 1971 film Duel by Steven Spielberg. A fluid and consistent series of in-game assets and detail has been created. The visuals capture the style and era of the film and convincingly create Duel's cat and mouse elements transposed into a video game concept. The project required the recreation of the protagonist's 1971 Plymouth Valiant saloon car and the antagonist's 1960 Peterbilt truck. The canyon road environment and garage location, and corresponding props have been recreated faithfully. Following a successful placement year at UK games developer Bizarre Creations, creating environment art for the AAA game James Bond 007: Blood Stone, I adhered, and built upon, current game requirements to achieve the desired outcome for my project.

SVEIN CHRISTOPHER RAKKESTAD
BA (HONS) DIGITAL CHARACTER ANIMATION

I have always believed that a good character is the basis of any story, as a good character is the story itself. For my project I created a character inspired by Norse myth and Viking sagas. It is suitable for industry standard AAA game titles. I wanted to showcase my character in a way that shows off the model and his personality. With this in mind, I have created a short cut-scene, in the style of epic role playing game cinematics.

ELLEN RYE JOHNSEN

EMILY KNOX

ELLEN RYE JOHNSEN
BA (HONS) DIGITAL CHARACTER ANIMATION

I created an architectural visualisation of a showroom. This project was made in cooperation with the Norwegian furniture company Signatur – Møbler & Interiør. To build the models of the showroom, furniture and environment, I used various modelling tools and techniques in 3ds Max. For texturing and materials I used Photoshop. I designed the room myself in a very modern style. The aim of my project was to create a photorealistic, fully textured and lighted interior scene to help costumers and the company. The showroom is able to give customers a clear visualisation of how the furniture they want to buy will look together. The showroom can be used as it is, or a new showroom can be made to the costumer's own preferences, with any selected furniture.

EMILY KNOX
BA (HONS) CREATIVE DIGITAL MEDIA

Penrith Castle in the Lake District sits primarily in ruins. I have conducted extensive research into the historic purpose of the building, which began life as a pele tower built by a local cleric William Strickland. The site was later owned by the Neville family, one of the most powerful land owners in the North of England. Penrith suffered frequently from Scottish raids, fortifications added by later owners began the transformation from merely a tower in 1379, to an imposing motte and bailey castle with two towers and a great hall almost 100 years later. Using Photoshop and 3ds Max, I have built and textured a 3D reconstruction of Penrith Castle as it stood before Richard III's reign began.

Digital creativity is now embedded in the creative disciplines. It pervades and influences all aspects of the creative process from drawing to film-making, from story-telling to creating music, sound and beyond. The digital tools available provide a 21st century canvas onto which any modern day Picasso, Hitchcock or Beethoven can ply their trade. These R&D projects demonstrate the wide ranging talent in the art of digital creativity

DIGITAL MUSIC& CREATIVITY
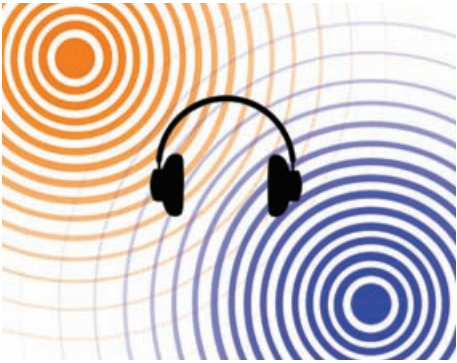
THOMAS BUCKMASTER
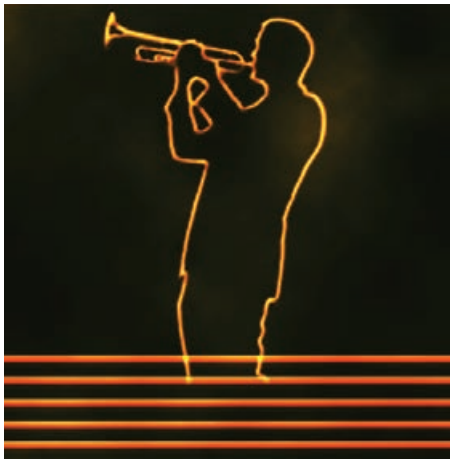
GREGOIRE LLORCA

MARK MURRAY

THOMAS BUCKMASTER
BA (HONS) DIGITAL MUSIC CREATION

I have created a piece of 3D audio demonstrating what surround sound can sound like on a portable device through stereo headphones. Portable devices are being used more than ever, and while you can get surround sound for your television at home, you cannot on your portable device. The enjoyment of a video game or film can be enhanced by the audio, so 3D audio allows the user to feel even more involved when using their portable device. After exploring different ways of creating 3D audio, I settled on the one which I thought worked best and used the special microphone techniques to make the audio three dimensional. All of the audio has been recorded using Pro Tools.

GREGOIRE LLORCA
BSC (HONS) MUSIC SOFTWARE DEVELOPMENT

My project is a piece of software that generates backtracks (guitar, bass and drums parts) for 12 bar blues grids. Using this software, a musician can improvise (or jam, as we usually say) and be accompanied by three virtual instruments. If nobody plays a real instrument the software will sound just like a karaoke version of a 12 bar blues. This application is not a composing tool for advanced song writers, it is meant to be easy to use. The musician will select their chords, a tempo and a number of repetitions of the grid. As soon as the music starts the user can play their part and start jamming. Features will be developed to improve the application. A user can save or load a grid, play or stop the backtrack and mute or un-mute a click track. The software is called Blues Kitchen as it generates a 12 bar blues grid. Imagine the program as a pan – one a user can add their own ingredients to (tempo, chords) and what comes out of the program is ready to be consumed.

MARK MURRAY
BA (HONS) DIGITAL MUSIC CREATION

My project is a five track concept album inspired by the various landscapes of the earth. The aim was to recreate the characteristics of these environments and portray them as an emerging musical experience. Every track on the album was composed in a different style and each one depicts the characteristics of one of five landscapes that make up our environment: jungle, ocean, urban, arctic tundra and space. Each track was composed using Avid music software Sibelius and instrument sounds were created using Xpand2 (plug-in for Pro Tools). The album was fully mixed and mastered using Pro Tools. This project allowed me to put all my skills learnt at University into practice, as well as incorporate my own musical ability.

TIMOTHY MATTHEW PEACOCK, DANIEL OAKLEY

KATHERINE SMITH

ALAN STEWART

TIMOTHY MATTHEW PEACOCK
BA (HONS) DIGITAL MUSIC AND DIGITAL MEDIA

DANIEL OAKLEY
BA (HONS) CREATIVE DIGITAL MEDIA

We have created a prototype for a proposed service for live musicians, local venues and music fans which supports the grass roots music scene within a local area. The idea behind the service is to tailor-make an application based on an individual artist(s) within a local area, and includes background information, songs, video of live performances, a blog, digital artwork and a place for fans to contact the artists directly. The application can then be sold by the artist(s) at their gig as a direct replacement to a demo CD and can either be housed on a USB card or downloaded directly from the website. The user then has access to the application database to keep up to date with rate gigs, post comments and discover new performers within their local area. You can also buy new music, get information on upcoming gigs and keep their application up to date. The service consists of an application built by Timothy in Flash using ActionScript which is linked to an e-commerce website built by Daniel using Dreamweaver and PHP programming language.

KATHERINE SMITH
BSC (HONS) MUSIC SOFTWARE DEVELOPMENT

I created a piece of software aimed at primary school children which teaches music theory and practice using the aims and objectives in the National Curriculum for Key Stage 1. The software works by encouraging children to learn through music-related games, and by learning how to play the piano using an interactive keyboard. The software was written to be so easy to understand that a child could interact with it, and also fun to use. The software was written using Visual Studio 2010 using C#.net.

ALAN STEWART
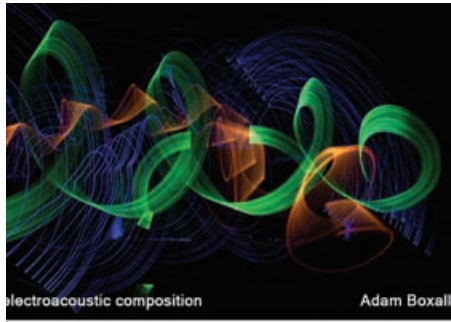### BSC (HONS) MUSIC SOFTWARE DEVELOPMENT

Computers are employed in many aspects of music but can they extract or analyse an underlying musical structure? Three areas to consider are tonal, serial and aleatoric. Serial – if we introduce a tone row into a computer, can it return the inversions, retrogrades, retrograde and inversions? Tonal – the most straightforward for a human analyst, but not for a computer. Rather than a full harmonic rhythmic and stylistic breakdown, I concentrated on smaller elements such as interval classes, cadence recognition, parsing data for voice leading elements and bass progressions. Aleatoric – this entails extracting the pitch class series, computing the set numbers and setting out their relationships in a way that makes sense of the data. The music data comprises of midi information (musical instrument digital interface) and MusicXML. The programming is mainly C#.net (and some C++). The development environment used was Visual Studio 2010 using the built in Winmm and XmlReader. Additional libraries such as graphics and audio were used. Control was via a graphical user interface with additional control involving musical keyboard, computer keyboard and mouse.

CRAIG JESSUP

electroacoustic composition   Adam Boxall

ADAM BOXALL

electroacoustic composition   by carl pinder
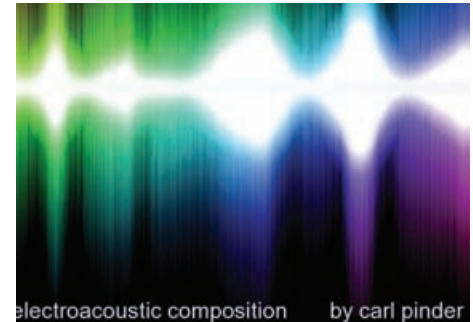
CARL RAYMOND PINDER

CRAIG JESSUP
BSC (HONS) COMPUTING

My project focused on The Decisive Moment, a photographic phenomenon made famous in the late 1940s by the photojournalist Henri Cartier-Bresson which details the perfect moment to take a photograph, as well as the photographer's ability to recognise it. With the constantly evolving nature of technology and my unashamed love of classic photographic techniques, I wanted to see if this decisive moment was still relevant with contemporary equipment. My ultimate aim was to see if this still applied to photography in the digital age. After sizable research and analysis of the subject, a series of experiments were carried out, both with classic and modern photographic techniques, to determine just how useful this phenomenon is to a modern photographer. A short film was produced with Premiere, detailing the objective of each experiment, and showcasing the resulting photographs.

ADAM BOXALL
BA (HONS) DIGITAL MUSIC CREATION

I have created a series of experimental, electroacoustic music pieces composed for quadraphonic sound and based on the theme of nature. The pieces were created using recorded sounds and recorded found objects; which were processed using different methods and techniques to explore the settings and themes of the piece. The aim was to explore and create an interpretation of the different atmospheres, sights and sounds that are found both in nature and the modern world in a different and unique way. Creating music and sound in this way also allows me to showcase my design, composition and recording skills. The piece was created using mainly Pro Tools, however several other tools were used for processing the sounds including Spear and Paul Stretch, an extreme time stretching program, as well as many digital signal processor plug-ins in Pro Tools.

CARL RAYMOND PINDER
BA (HONS) DIGITAL MUSIC AND DIGITAL MEDIA

Electroacoustic music is a highly abstract musical art form that is arguably still very much open to further innovation. In this project I take the ideas that were pioneered by the likes of Pierre Schaeffer and bring them into the 21st century. The results are a significant departure from the methods employed in the early days of the genre; for example using a digital audio workstation as opposed to tape and the seemingly endless supply of effects and sonic manipulation available on today's market only broaden the artistic palettes available. This project is a highly atmospheric piece with sections in the form of movements. These movements take on influences from different genres whilst keeping the electroacoustic ethic and are all created in the space of one continuous track. The research involved extensive listening of seminal electroacoustic works from pioneers such as Pierre Schaeffer, Xenakis, Ligeti and Stockhausen. These fuelled much of the inspiration for the piece.

WEB DESIGN&
DEVELOPMENT

Web design and development are at the forefront of innovation in many areas including commerce, business-to-business web services, education, social networking and the growing entertainment delivery services. The R&D projects in this section present work that reflects the creative and interactive aspects of website and multimedia development.
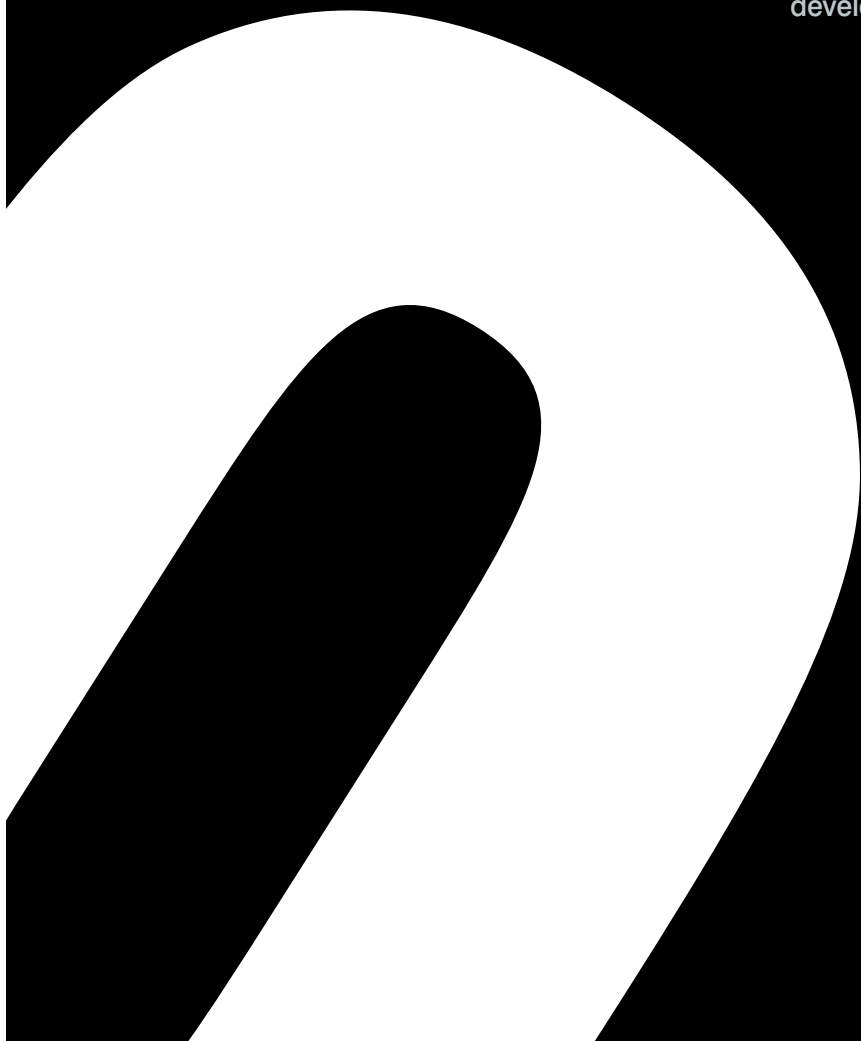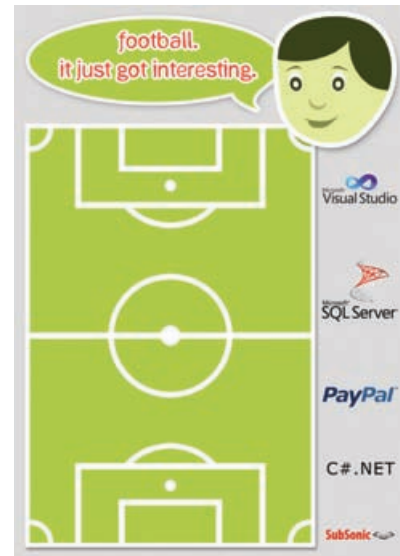
SEAN MARTIN CURRY

MARK HART

JON LEVETT

SEAN MARTIN CURRY
BSC (HONS) COMPUTING

I have created a fully functioning online e-commerce site for a fictitious furniture store. The website allows users to browse through a range of different furniture products, adding them to their basket and then making purchases using a dummy payment system. To help find the right products you can search using the online assistant, which also makes suggestions based on the type of products you recently viewed. The website also has facilities an administrator login and edit facility through the content management system. The e-commerce site was built using Visual Studio 2010 using C#.net with an SQL Server database. I expanded my knowledge of AJAX technology by using it for the online assistant.

MARK HART
BSC (HONS) INFORMATION TECHNOLOGY AND NETWORKS

I have created a collaboration facility which provides one of many features to the up and coming Flow platform from Argent & Waugh Ltd. The Flow platform is a central business tool incorporating common business functions into one software application. My project has allowed the platform to contain collaboration functions such as real-time chat and a wiki knowledge base, helping the platform to appeal to a larger corporate audience. My inspiration was taken from popular social media tools such as Facebook and LinkedIn who provide their users with simple and easy ways to communicate with each other, for example Facebook chat. After completing my industrial placement Argent & Waugh offered me this project in recognition of my hard work and dedication. To develop the collaboration facility I produced a website application in Visual Studio 2010 using ASP.NET and C#.net to provide the server side functionality. For my data source I used an SQL database which I configured through SQL Server. To provide the real-time chat capabilities I used JavaScript with the popular JQuery library to provide support for the user interface and AJAX implementation.

JON LEVETT
BSC (HONS) WEB DEVELOPMENT

I have created a fantasy football game based on the Barclays Premiere League. I am a competent web programmer and an avid football fan, so the ability to combine these two made this project very appealing to me. Using industry standard practices in MSSQL and ASP.NET I was able to create an engaging user experience. I used Subsonic to create the Data Access Layer, this is appropriate as it keeps design and logic separate. I have used Paypal technologies to charge users to compete in the game so they can win prizes at various times throughout the football season. There are similar games but charging users to enter increases the prize fund dramatically and this will entice more entrants.

SIMON LEMOINE

ADAM HOGG

CHRISTOPHER MASON

SIMON LEMOINE
BSC (HONS) INTERNATIONAL BUSINESS INFORMATION TECHNOLOGY

My project is a website application for companies who want to be closer to their workers, allowing them to share information, sell products and inform via newsletters. The project includes another website which presents the application, contains tutorials and also manages customers who want to buy the application. It is designed to be hosted as a cloud system. The website has been coded in PHP and XHTML. It has also been coded within the Symfony framework; a French framework, growing in popularity. The database will be developed in MySQL.

ADAM HOGG
BA (HONS) WEB AND MULTIMEDIA DESIGN

The Clifton Road Centre is a small community centre with a church attached in Darlington. The centre is a charity-run organisation offering a variety of rooms and facilities for events ranging from indoor bowling to birthday parties. I designed an application that gives the centre an online presence for potential visitors/clients to view. The application achieved this by demonstrating the space, facilities and events from a 360 degree view point. Using Flash allows the user to interact with the application and encourages them to investigate further with the aim of increasing event bookings, attendance at events and awareness of the centre in the surrounding community.

CHRISTOPHER MASON
BSC (HONS) SOFTWARE ENGINEERING

Within any company whose employees do shift work, hours of managerial time is spent each week ringing employees to see if they are available to work a shift. Shift Manager reduces these hours by providing employees with the capabilities of viewing their timetable, picking up extra shifts and swapping shifts with other employees. I developed Shift Manager in the Eclipse Helios IDE. Shift Managers back-end database is created using PostgreSQL and the front end is created using Java which corresponds to Java Server Pages using the Stripes Framework. Styling is created by using CSS; but it has purposely been kept simple to ensure it is user friendly.

ANNITTA NOEL NALUBWAMA

MATTHEW ROBERT PETERS

SCOTT GEORGE SMALLMAN

ANNITTA NOEL NALUBWAMA
BA (HONS) CREATIVE DIGITAL MEDIA

I have created an educational interactive piece based on African hygiene awareness for children between the ages of four and ten. This interactive piece works by watching three different short animated films, each featuring a different character with different challenges. The user interacts with a character of their choice by going through the same challenges step by step to show the level of their understanding of the animation. At the end of each challenge, the user answers some questions to test how well he or she understood the whole challenge. To create the piece I used, Flash for 2D animation and scripting, Photoshop to add colour and effects and Pro Tools for different sounds and music.

MATTHEW ROBERT PETERS
BA (HONS) WEB DESIGN

I've created a mobile teaching aid to support part-time mature students studying the NCFE Level 1 Music Technology qualification. From previously studying on this course I found many fellow students would have liked some kind of interactive aid to help them get to grips with some of the information being taught. There were many students on my course coming back to education for the first time in years and I could see that an interactive teaching aid, to help ease them back into the educational learning process, would help them greatly. The mobile teaching aid was created using Flash, ActionScript and Air and will be used on the Android Platform via the Air for Android extension for Flash. It will include interactive mini-games and tasks to help the student understand the topics being taught.

SCOTT GEORGE SMALLMAN
BA (HONS) WEB AND MULTIMEDIA DESIGN

I have prototyped a wedding website which allows users to plan their wedding and create a personal webpage for their special day. Nearlywed.co.uk is a social networking site which combines the planning of a wedding with the excitement and social aspects of the build up to the wedding. The website works using a content management system concept with users registering. It gives users access to a selection of wedding planning tools and a range of templates for their personal profile. It also allows invited guests to register with restricted access. It allows friends and family members to receive the latest information that the couple decide to post and share with them. The concept art was created using Photoshop and Fireworks, the website was prototyped in Dreamweaver using HTML, CSS and PHP. MySQL was used for the content management system.

COMPUTER SCIENCE& NETWORKING

These diverse R&D projects encompass topics ranging from service management to devices and systems and from computer programming and networks to cloud computing, but all have one thing in common – innovation.

EDDY JENKINSON

SEBASTIEN BERTHIER

DAVID ROBERT ELLIOTT

EDDY JENKINSON
BSC (HONS) COMPUTER NETWORKS

Working for Heridian Ltd, I have designed the network addressing scheme for their Hopscotch community networks. The project also involved determining the specifications and dimensions of ruggedised PCs to be used as routers deployed in microwave communications towers. Visual Basic (VB.Net) was used to write the control and accounting packages and the Vyatta, community edition, routing software was installed to perform the actual packet routing. To reduce costs and increase freedom of use for the communities that need it, all software used is either free, or written by Heridian. Remote communities that have little or no access to the internet can now install one or more of Heridian's communications towers and bathe the local area in a Wi-Fi network, connecting them, through the chain of towers, to the Internet. Towers can be spaced up to 50 miles apart and have a footprint radius of up to 30 miles. As proof of concept, I built a small scale version of the Hopscotch network model at home using 4 PCs, two wireless routers and two switches. End-to-end connectivity was established and a laptop was able to join the wireless network and access web pages on a web server.

## SEBASTIEN BERTHIER
BSC (HONS) COMPUTING

I have created a versioning system for MINIX 3 operating system. It is a free project, under BSD licence, which consists to the development of a complete system like GNU/Linux or FreeBSD, and POSIX compliant. It is based on a micro-kernel architecture which means each component of the system is a separate program – process management, file system, and so on. I have modified the system in order to have a concordance among all components when the system is updated. This makes it is possible to have several MINIX systems in one computer. Integration in the MINIX's package manager, pkgsrc from OpenBSD, facilitates the upgrade of the system. I have worked with QEMU/KVM on a Debian GNU/Linux, and with GNU Emacs, and in C and sh languages. Synchronising of files between the two machines has been done with OpenSSH.

DAVID ROBERT ELLIOTT
BSC (HONS) COMPUTER SCIENCE

I have designed and implemented a cross-platform client-server based instant messenger program with accounts. The project has covered many areas including software architecture, databases, networking and Human Computer Interaction. The program was created using the Java programming language and MySQL. Interesting characteristics include predictive text, private messages using encryption, ability to run on different operating systems, historical chat messages search function and customisable notifications. I have used a variety of software to produce it including Eclipse, NetBeans IDE 6.9.1, Ubuntu 10.4 and MySQL Server.
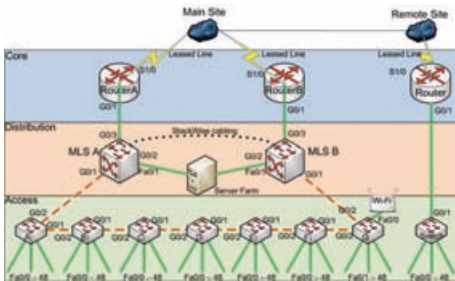
MICHAEL PEMBERTON

JAMES WILLIAM FLETCHER

Cloud Computing for GP Practices
NHS
ANDREW SIMPSON

MICHAEL PEMBERTON
BSC (HONS) COMPUTING AND NETWORKS

This cutting edge project investigated the technologies and methodologies used in the design and implementation of networks, ultimately leading to the production of a service design package for a company and aligned with their business requirements. I have a natural familiarity with networks as a CISCO certified network associate and studying for a degree in networking, this project satisfies my curiosity. Also, having worked in the IT department of a large public sector employer I believed I could bring real-world experience to this project. The project draws on areas of CISCO's design principles using best practices such as the Enterprise Campus Network Design for a resilient infrastructure and IT Service Management in the form of ITIL for documenting the design. The design also integrates network concepts such as VLANs, remote access and voice over Internet Protocol.

JAMES WILLIAM FLETCHER
BSC (HONS) COMPUTER GAMES SCIENCE

Turn any surface into a graphics tablet without the need for a special pen! For example, a projector can be used as a touch screen. You can touch the screen with anything, your finger, a pencil and it will detect the pressure you apply – a cost effective solution with off-the-shelf components which eliminates the need for cameras and infrared and functions purely on sound.

ANDREW SIMPSON
BSC (HONS) COMPUTING AND NETWORKS

My project researches cloud computing and how it can be used in healthcare practically. I produced a technical cloud computing solution specifically for GP practices so they can share data with each other from a centrally managed location. It allows patients to attend any GP practice and for practices to share data with hospitals. It also deals with policies and procedures needed. I have a passion for computer networks and service management and wanted to investigate cloud computing as this is an interesting and rapidly growing area of IT. During my placement at a local school I explored virtualisation using VMware. I used the Information Technology Infrastructure Library for policies as well as the service management aspect of my project.

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GAMES
CONCEPT&
DESIGN

The birth of a computer game occurs within the imagination. The concept, creating the world, the characters that inhabit and interact through game play, the game play structure and level design are all represented at EXPOTEES. These projects reflect work in games such as storyboarding, interface design and level design.

JAMES RUSSELL RENNIE

MATTHEW GRAEME HUNTER

MOBASHIR IQBAL

JAMES RUSSELL RENNIE
BA (HONS) COMPUTER GAMES DESIGN

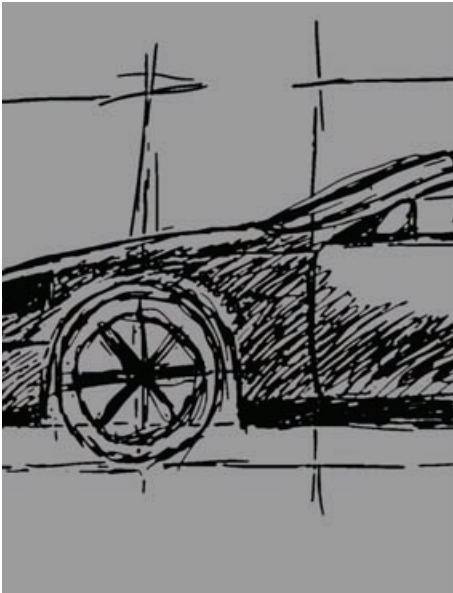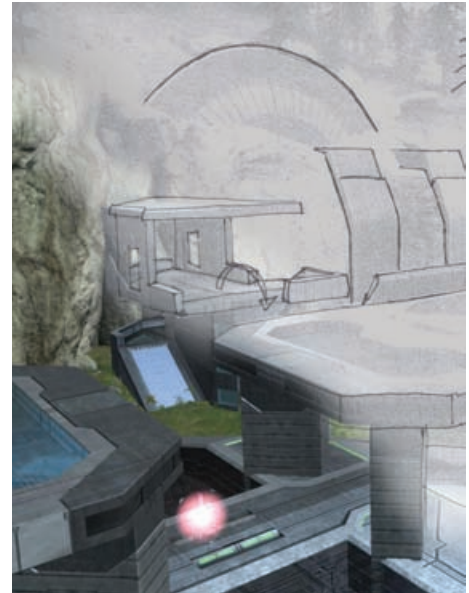I have designed and modelled a series of cars based on the idea of creating a unique national identity for each one. Inspiration was based on my opinion of current car design and how many cars, regardless of which country they come from, tend to look very similar with no real character. Cars from the middle of the 20th century had a lot more charisma, for example the Jaguar E-Type can be considered one of the most beautiful cars ever made even though it is 70 years old. This was the main drive behind my work, making cars objects of people's affection rather than a just a disposable product. The cars were all designed in Photoshop, then used 3ds Max to model and texture them.

MATTHEW GRAEME HUNTER
BA (HONS) COMPUTER GAMES DESIGN

I chose to design and create a 3D environment playable as a multiplayer level. Loosely based on Middlesbrough train station, I re-imagined and applied my own artistic judgement to accommodate common level design principles. The level demonstrates my knowledge and ability to design and produce a working environment within an industry standard game engine. I wanted to create a realistic textured environment using photo referenced imagery that I had taken personally on location. The scene was created using 3ds Max, textured within Photoshop, and then imported into the Unreal Development Kit.

MOBASHIR IQBAL
BA (HONS) COMPUTER GAMES DESIGN

I decided to tackle the lack of innovation in first-person shooter multiplayer level design by creating two multiplayer maps, unique in both design and gameplay. The first map was designed for 1v1 gameplay; the map itself mutates as both players duel. Doing this adds a fun twist on how the game is played and also introduces a type of exploration element which is only usually found in the single player experience. The second map was designed for competitive 4v4 games which meant I needed to create a well balanced/flowing and fun map. Both maps were created within the Halo Reach in-game level editor Forge, which I chose as I find it user friendly and easily accessible.
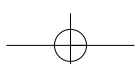
CHRIS JOHNSON

JAMES KELLY

DAVID STUART GRAFTON

CHRIS JOHNSON
BA (HONS) COMPUTER GAMES DESIGN

Based on a personal game concept, I chose to use my project as an opportunity to research and design a complex 3D environment for use within a single player campaign. Taking advantage of current graphics capabilities, I developed this environment from concept and design, through to asset modularisation, modelling, detailing, rigging and texturing, using workflows employed by studios. I used industry standard software 3ds Max, Photoshop, ZBrush and the Unreal Development Kit. The project has allowed me to showcase both my skills and artistic abilities while exploring new technology and tools to help me become a stronger games artist.

JAMES KELLY
BA (HONS) COMPUTER GAMES DESIGN

My project was based around a computer game design idea – a futuristic space colony named Frontier. I created 3D assets which included several current generation character models with concept art pieces to support the creation and design documentation. The inspiration behind the project was from my interest in futuristic and sci-fi games such as Dead Space and the Halo series, and my interest in Real Time Strategy games. To create the 3D assets I used 3ds Max, using Mudbox to create the high resolution detail needed. To finish the assets I used Photoshop for texturing.

DAVID STUART GRAFTON
BA (HONS) COMPUTER GAMES DESIGN

I set out to master a tool of my trade and in doing so created an interesting and fun-packed game full of action. Dive into the suspense filled world of Project Larry, a third person adventure game that requires the player to survive the horrors of the undead. Use items found around a hospital to fight, and barricade against, and ultimately escape from, your undead pursuers. To create this subversive world I taught myself how to use the Unreal Development Kit (UDK) to create a working game. Then, by applying my knowledge of 3ds Max with the UDK, I was able to create a working demo for Project Larry.
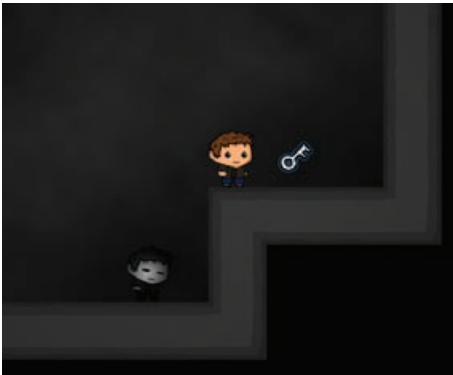
SHAUN SPALDING

DALE TUBB

NIKITA DAWSON

SHAUN SPALDING
BA (HONS) CREATIVE DIGITAL MEDIA

I have created a short puzzle game as part of an exploration of puzzles and riddles. My main focus has been the mind of the player and the approach people take towards problem solving. Attempting to build puzzles that are interesting and challenging while being welcoming and fair to inexperienced players is a design challenge I've been fascinated by for years. My project explores the depth of a simple puzzle mechanic, and how it can be a challenging experience, while presenting an accessible and welcoming world for the player to be drawn into. I used Flash and Photoshop to produce art assets and Game Maker 8 to construct the engine and game levels.

DALE TUBB
BA (HONS) COMPUTER GAMES DESIGN

I have designed and created several 3D assets and sections of a video game design bible that include a character, a vehicle and a world overview for my own personal game design based on a post-apocalyptic world where the economy is centred around the mining of precious ores. The 3D assets are the main focus of the work and are all built for current generation games platforms and constructed to industry standards. The design bible sections provide information about the game design and the world that the 3D assets are designed for. All 3D models were created in 3ds Max and additional sculpting detail was applied using Mudbox. All textures were created using Photoshop.

NIKITA DAWSON
BA (HONS) COMPUTER GAMES ART

I have compiled an art book centred on an idea for a fighting game. The book includes a summary of the games plot, and then goes onto the process of designing and creating numerous characters and environments to fit into the story. I added some extra drawings such as pictures of characters fighting or general images that further express something about that character. To create my images I mainly used Photoshop, although some images were created using traditional media. Finally, I used 3ds Max to take one of my characters through the modelling process and then Zbrush to create normal maps and texture my character.

MATTHEW HARRINGTON
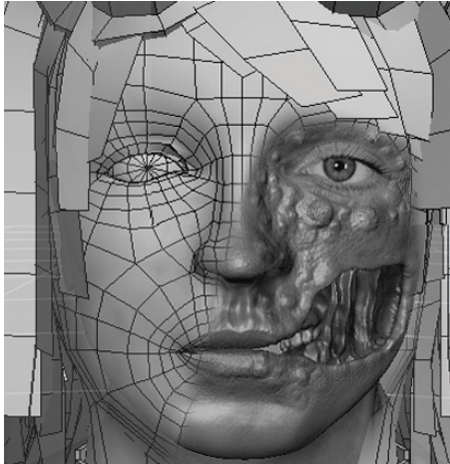
KYRA LEIGH HILLS

TIMOTHY KONG

MATTHEW HARRINGTON
BA (HONS) DIGITAL MUSIC AND COMPUTER GAMES DESIGN

My project is made up of three parts. The first is a comprehensive design document for a game entitled Shade, which covers the gameplay, plot, character progression and other elements of the game. The second part is a 3D interactive environment based on this document, built in the Unreal Editor which serves as a visual representation of the atmosphere of the game and as a theatre for the showcasing of the third part of my project – a soundtrack composed in ProTools. The intention behind the unified parts of the project is to convey the spirit of the game in more than just the words of the design document, by using the visual and audio aspects of the environment and the music.

KYRA LEIGH HILLS
BA (HONS) COMPUTER GAMES ART

I have created a current generation character for a survival horror game genre. This character undergoes a transformation, mimicking that of a violent reaction to an infection and becoming zombiefied. The aim of my project was to follow the process of creating an appealing game character, from conception to completion, with the added challenge of having the character transform. To create an appealing character, it was necessary to research and review the survival genre thoroughly. The transformation itself had to comply with in-game constraints, which required a mix of different current generation techniques to successfully achieve the desired outcome. The character was created using industry standard tools such as 3ds Max, Mudbox and Photoshop.

TIMOTHY KONG
BA (HONS) COMPUTER GAMES ART

I created artwork for a hypothetical steam fantasy game that features unique character, environment and creature designs. The design inspiration is from a combination of Victorian and Oriental periods and to create a convincing fictional atmosphere I researched different cultures, art movements and historical times. All work has been put together into a concept document that has several finished character designs, environments, creature designs and level designs, as well as a back story on the world and characters. This is to be used in a pitch to show art direction and the theme of the game. Artwork was primarily created in Photoshop with sketches done in pencil.
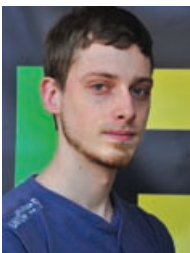
JAKE HOLDEN

CHRISTOPHER GEORGE PEPLOW

BEN BRYAN WATSON

JAKE HOLDEN
BA (HONS) COMPUTER GAMES ART

I created a remake of a classic Playstation 1 character from the game Vagrant Story developed by Squaresoft using the latest techniques and software complying with industry workflow. Using the original concept art from the game I created a high resolution mesh in ZBrush and added details such as skin pores, scar tissue, muscle definition and abrasions to clothing and armour. They were rendered out as a normal map to give detail to the low polygon in-game model. The in-game model was produced using 3ds Max. I used the graphite modelling tools to effectively draw the geometry and topology of a new mesh onto an existing model. This approach was very versatile and allowed me to make quick and easy adjustments. To texture the model I used Photoshop and a combination of photo reference and hand painted techniques to create the diffuse, specular and opacity maps.

CHRISTOPHER GEORGE PEPLOW
BA (HONS) COMPUTER GAMES ART

My project is a compilation of 3D assets and environmental constructions for use in a game using mainly 3ds Max and Photoshop. These were made into an actual level using the Unreal Development Kit, and will be integrated into a game being created by the University. My level is a section of the University which has been overridden with zombies, and is fully playable. The game plays using the University's own game system, and also other students' assets, such as enemies, to turn it into a complete level, meaning it is not just a simple environment. My aim was to create a fully playable level to demonstrate my skills, adaptability and versatility. Along with my creations, and the assets of others working on the project, my level is representative of what a small section of the final game will be like. In the future, it will also be compatible with the University's Advanced Visualisation System, The Cave.

BEN BRYAN WATSON
BA (HONS) COMPUTER GAMES ART

I have created a real time environment based on the Velociraptor pen scene from the hit film Jurassic Park (1993). I based my initial concept on scenes from the movie, and began to build more of the world around the enclosure. I tried to imagine what the park would have been like if it hadn't closed down and how things would look if you where simply visiting it as a tourist. The intention here was to create an aesthetically pleasing scene that could be explored. This gave me a lot of creative freedom to make every aspect interesting and unique. I created the assets using 3ds Max, Mudbox and Photoshop. I then imported these props into the Unreal Development Kit where I designed and built the scene.

DANIEL ROBERT BAILEY

JAMES CASHMORE

JASON THOMAS HARDY

DANIEL ROBERT BAILEY
BA (HONS) COMPUTER GAMES ART

I have created an industrial section of a prosperous, futuristic city that has been ravaged by its once faithful servants, the OMEGIS robots. This was based on a game design idea I had many years ago. Also created are two survivors, a cop who lost his job to the OMEGIS and a secretary who is trying to escape. Created in 3ds Max, the environment is built with several modern-day architectural structures in mind but with added futuristic flare, as seen through its texturing and assets. The survivors are dressed appropriately to their professions but are textured to show wear and tear on clothing, and bruises, scrapes and bandages on their skin to coincide with the attack. Generally everything is low poly, with the detail coming from the diffuse and normal texture maps. Lighting is used to convey an eerie, crumbled and bloody ghost town.

JAMES CASHMORE
BA (HONS) COMPUTER GAMES DESIGN

I created a working artefact for a game level. It is set on the Scottish Isle of Auchendorf in the Outer Hebrides in the early 1800s. The story is about a young man called Alexander, who seeks to take back the castle he was brought up in. But the enemy, his father, is not so well relaxed. The inspiration was based upon my own enthusiasm and keen interest of castles and fortresses, with a liking for big scale in mind, and with a keen interest in Scottish history. The level was constructed and put together using the Unreal Engine, as well as postproduction effects. Assets were created using 3ds Studio Max and texturing was implemented in Photoshop.

JASON THOMAS HARDY
BA (HONS) COMPUTER GAMES ART
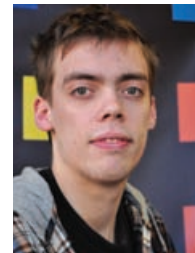
I have created a fictional medieval village, for a computer game, recovering from a recent attack by a dragon. This particular scenario allowed me to further explore 3D environment art and destructive scenery. The village is set in a fictional location but has been influenced by the architecture of 12th century England. The aim of this project was to develop a realistic environment that could be implemented into a current generation computer game. I used the Unreal Development Kit to build the scene and populated it using binary space partitioning and imported static meshes built in 3ds Max. Texturing was handled in Photoshop and high resolution meshes were sculpted in Mudbox.

ANDREW MORGAN

JOVAN MURRAY

LEWIS CHARLES SANDERSON

ANDREW MORGAN
BA (HONS) COMPUTER GAMES ART

I chose to concentrate on producing a number of concept art pieces for an original game idea called Tribe. I created a concise game bible as well as a series of finished concept designs showcasing a variety of approaches and art styles. I focused on design development for the main characters, environments, enemies and props for producing artwork in traditional and digital media. Tribe involves a group of people marooned on a desert island. This aims to be a refreshing take on the popular post-apocalypse theme in games, as it asks the same question – would a modern day person cope in an environment where vital resources were scarce?

JOVAN MURRAY
BA (HONS) COMPUTER GAMES DESIGN

I created a game concept called Justice Arms: Twin Fates and developed character concepts and user interface (UI) designs. The concept art was created from initial sketches then put into Illustrator, where the line art and colour were applied, then into Photoshop for the final touches, to create the final conceptual artwork for the six game characters. The UI designs I created are part of the in-game menus where the player can access such information as status, equipment and skills and also the battle system UI designs. This was created in Photoshop, where all the assets for the menus were created, then taken into Flash and compiled to create the interface with working navigation to pages using ActionScript, animations and music that give an insight into how the interface operates in game.

LEWIS CHARLES SANDERSON
BA (HONS) COMPUTER GAMES ART

I have undertaken all the necessary tasks required to accomplish a playable game character. I designed four characters; all part of the same story in a game and modelled, rigged and textured one of these characters. To demonstrate my understanding of anatomy I created an animated skeleton mesh of that character. The mesh was exported into the Unreal Engine and made playable.

JASON PHILLIP SPENCER-JONES

JAMES WALSH

JASON PHILLIP SPENCER-JONES
BA (HONS) COMPUTER GAMES ART

I modelled and textured four low poly characters; a realistic pirate and three fantasy creatures based on a monkey, bird and lizard. They are also rigged with the intent of going into a next generation game. The pirate's head was modelled using a photo of myself; I wanted to create a virtual avatar to explore an in-game environment. I also wanted to experiment with different textures, which is why I chose different animals. I am fascinated by animals, mythical and real, so this project gave me the opportunity to study animal anatomy from a fantasy perspective, thus allowing creativity and to develop creatures that are unique. The characters were initially modelled in 3ds Max, with additional higher resolution modelling done within ZBrush. Afterwards, the Normal maps and AO maps were derived from the high resolution meshes. They were combined with the diffuse textures created within Photoshop. These assets were exported to the Unreal Editor and then materials added. In the final stage, the assets were placed within the engine itself.

JAMES WALSH
BA (HONS) COMPUTER GAMES ART

For my project I created a series of models using modern character creation techniques employed in the video game industry. The theme for the models was the search for Solomon's gold. Each piece was created to use within the Unreal Development kit games engine, so I constructed them with a constricted polygon count and texture size in mind. To create the characters I used Zbrush to sculpt and texture the models, as well as Topogun to retopologise and create the low poly meshes. Xnormal was used to capture the lighting and detail information and Photoshop was used to colour and correct the textures. The last stage was to set-up rigs using 3ds Max so each character could be posed. I chose this project to gain a better understanding of the pipelines and processes used to create games content.

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> Concept Art for Games and Animation, MA

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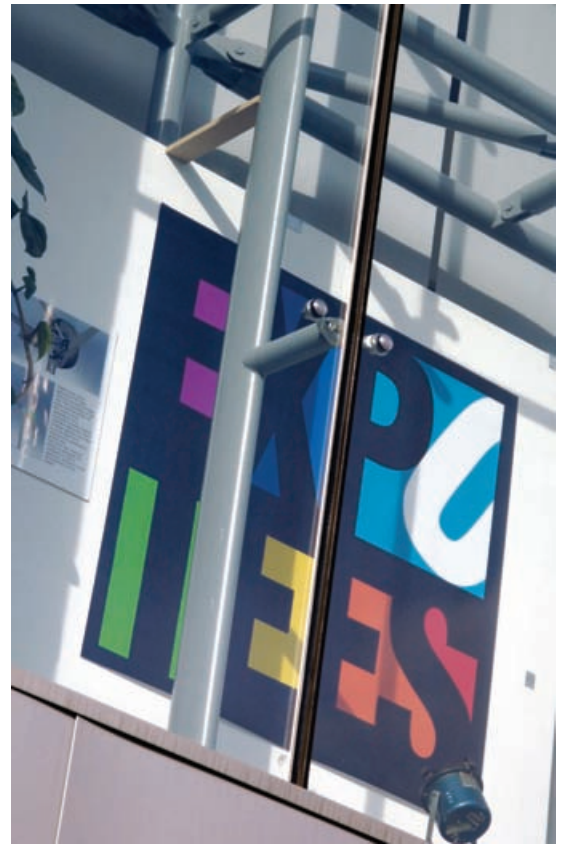
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EXPOTEES is the result of the hard work and dedication of many colleagues and supporters, and the EXPOTEES team would like to thank everyone who has contributed to the success of EXPOTEES 2011. We would particularly like to give our heartfelt thanks to our sponsors of the event and of the EXPOTEES Awards. We are very grateful for the support and dedication given by the School of Computing management team, the Workforce Development team, the Institute of Digital Innovation and the Department of Marketing & Student Recruitment.

Every final-year undergraduate student is guided through their project with the support of a project supervisor. We would like to express our gratitude to Dave Eagle, the projects co-ordinator, all the project supervisors for their continuing support and of course to the stars of the event, the final year students for their hard work and enthusiasm.

For any questions about EXPOTEES please contact Joanne Noble at j.e.noble@tees.ac.uk or on 01642 342639.
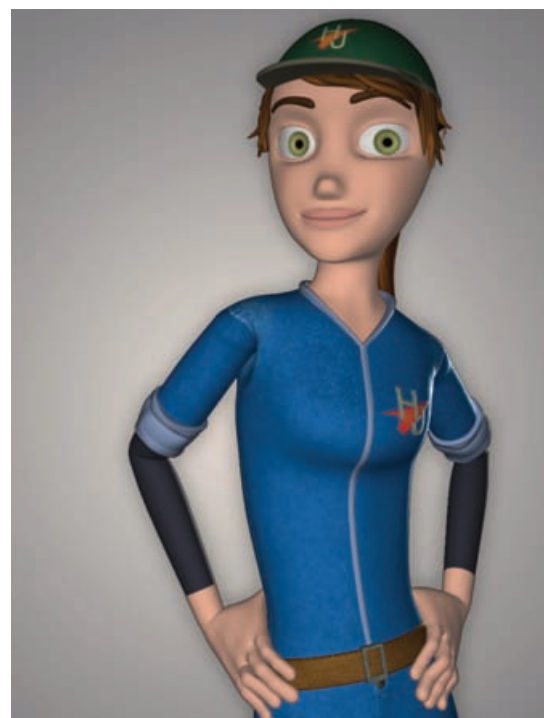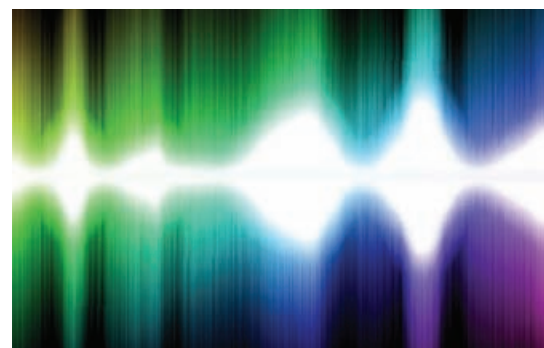
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