EXPO TEES

2010

Showcasing the next generation of digital expertise

School of Computing

Inspiring success

Teesside University

2010 EXPOTEES

WELCOME
TO EXPOTEES 2010

Nothing gives me greater pleasure as an academic than to see students develop their knowledge and skills to such an extent that they are amongst the best the UK can produce, and are an exemplar to universities worldwide. I am sure you will agree, as is evident from this brochure, that students from the School of Computing have produced some outstanding work. This is a great credit to them and to the staff who have taught, enthused and supported them during their studies. I hope that you will really 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

The School of Computing is pleased to present EXPOTEES 2010, the fifth annual showcase of final year undergraduate projects, demonstrating innovation, research and development in a wide range of computing subjects.

EXPOTEES 2010 is our largest and most exciting exhibition to date, displaying a wide range of innovative and diverse work from over 100 final year students. It showcases the next generation digital expertise, research and development skills of our students

Exciting new additions includes work in our state-of-the art music laboratory for digital music students, and a selection of work from some of our postgraduate students. This lively and interactive exhibition is a great opportunity for the education and business communities to discuss R&D projects that reflect the broad range of computing degrees at Teesside University. It's also a chance to meet newly qualified graduates who are about to start their computing careers – perhaps with your company!

The work presented at EXPOTEES 2010 will continue to build upon the reputation for diversity that previous exhibitions have

established. Our diverse range of exhibits vary from research and development projects – involving advanced computer technology with wide-ranging applications in science, society and commerce – to others that centre on entertainment such as computer games, animation, storytelling and music.
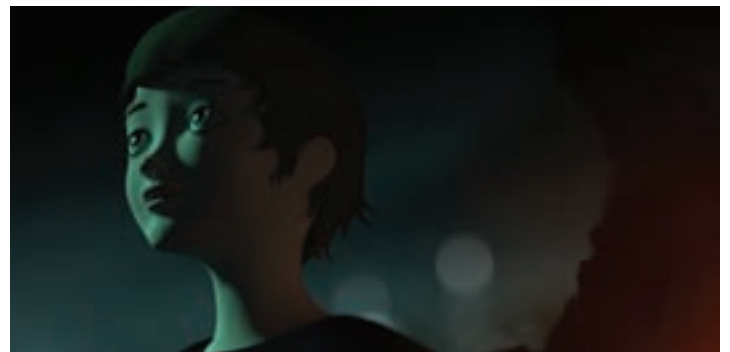
Students undertake an indepth exploration of a subject area and demonstrate their ability to research, analyse, synthesise, and creatively apply what they have studied. Their project is often based in an area they have gained an interest in, either via a work placement or through their studies. Some students have undertaken a project for an external client and which requires project managing to an industry standard.

The content of this exhibition will be representative of a cross section of our final year work and as such will demonstrate the spectrum of subjects taught at the School of Computing.

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

Contents

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Teesside & District Branch

As part of their commitment to maintaining and improving the professional status of computing students, the Teesside and District branch of the BCS is proud to sponsor **EXPOTEES**.

About the BCS

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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, Toon Boom and USAnimation. Our BA (Hons) Computer Animation course 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 world of work.
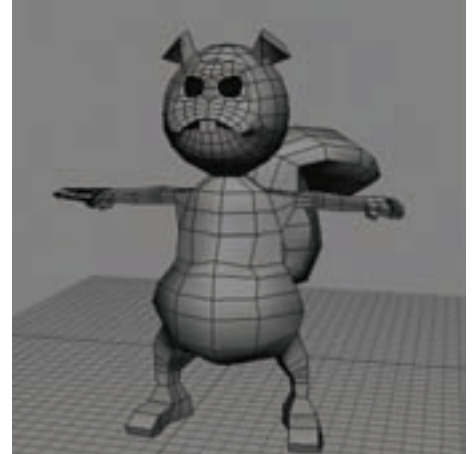
STUART GREEN

HEMIN RASUL

WASEEM SHAHID

STUART GREEN
BA (HONS) CREATIVE DIGITAL MEDIA

I have created a short 3D animation about Icarus. It begins with the young man flying past the camera, screaming with joy. There are plenty of close ups on his face to show all the emotions going through his body. Some seagulls fly alongside Icarus and he follows them higher into the sky. Eventually arrogance prevails and he flies too close to the sun, bursts into flames and his wings are gone. He then falls to his deep sea death.

This animation has been generated using Autodesk 3ds Max, Afterworks FumeFX and Vue 8

HEMIN RASUL
BA (HONS) CREATIVE DIGITAL MEDIA

The aim of my project was to create two hyper-realistic robots fully textured and rigged so they could be composited to a photograph or real live footage. The sample was rendered in Autodesk Softimage with no textures and materials, just lighting information. It was then imported to Adobe Photoshop to be fully rendered to give an impression of how the texture should look for the final render. I experimented with different types of materials and textures, primarily metal textures in Autodesk Softimage, and how they react in the environment and observing the results. I also looked at how to generate bumps, normal, displacement, specular, ambient and diffuse maps. I intend to integrate the characters and composite them with real life footage by using camera matching, and then create a short animation.

WASEEM SHAHID
BA (HONS) COMPUTER ANIMATION

My aim was to create a short animation of less than two minutes from concept to finished animation. I am inspired by the traditional cartoons that play heavily on exaggeration, such as the Warner Bros. Looney Tunes and Disney's Silly Symphonies. My animation pays homage to this golden era.The story revolves around a not-so-clever thief attempting to retrieve a jewel that he stole from a merchant's stall. A variety of programs were used in the production ranging from Autodesk Softimage and Maya for initial scene setup and animation respectively.

PAUL ROBERTS

STEVEN NANSON

PAUL ROBERTS
BSc (HONS) ANIMATION AND VISUAL EFFECTS PROGRAMMING

The main goal for my project was to demonstrate a mix of technical and creative skills through a series of visual effects shots, produced to a high standard, to expand my portfolio for the film industry. My inspiration originated from Mary Shelley's novel, *Frankenstein*.

I devised a retelling of the story, using a robot in place of the creature. By giving the robot humanoid features I felt that viewers would be able to sympathise with a creature isolated and feared, rather than disregarding it as a mere collection of cogs and pistons. The long term objective was to create photorealistic renders of the robot in its respective environment. To produce my project I used Photoshop for conceptualisation, Autodesk Softimage XSI and the built in ICE functionality for modelling, simulation and rendering and finally, the Python and MEL scripting languages for GUI creation.

STEVEN NANSON
BA (HONS) DIGITAL VISUAL EFFECTS

My project shows a single character that has woken from a coma to find that the world as he knows it has ended and all signs of civilisation are gone. A series of shots show the character as he explores this destroyed, abandoned environment. I filmed the footage and used 2D compositing techniques, paint and rotoscoping to completely transform the scenes. I also created detailed shot breakdowns to show the process and techniques that I used to produce the final product. My project demonstrates my digital compositing skills.
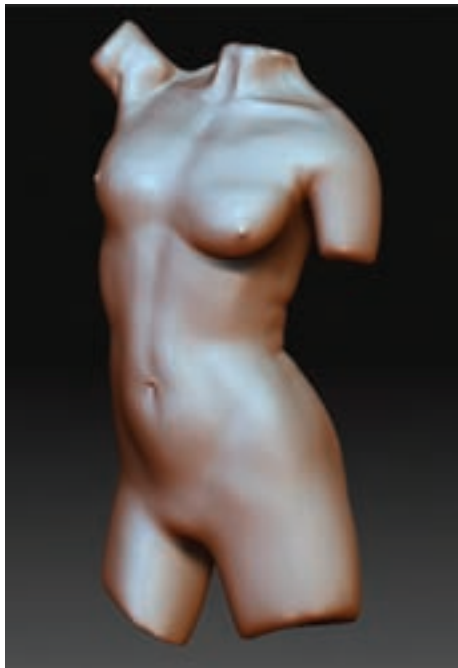
MATHEW LEIGHTON

DUONG TRAN

TREVOR SHARPE

MATHEW LEIGHTON
BA (HONS) COMPUTER GAMES ART

My project was based around the design and modelling of believable characters with the main focus on the ability to create accurate anatomy and clothing. The aim being to produce both a high polygon version of the character and an in-game copy suitable for a modern game engine. Particular attention was spent on high polygon sculpting and the creation of realistic skin tones. This involved research into human anatomy and learning the tools and techniques of Pixologic's ZBrush which enabled me to produce very contrasting characters. I chose an iconic film character – Lieutenant Ellen Ripley (Sigourney Weaver) from the *Alien* films, which left no margin for error.

DUONG TRAN
BA (HONS) COMPUTER GAMES DESIGN

I created a 3D short animation, testing my ability as a 3D artist. The short is about a young student learning the ways of enlightenment. However, a distraction arrives on the scene causing trouble and he soon realises that he still has a long way to go. The project allowed me to understand the animation process from concept and story development to final product. It has been produced using Luxology Modo, as part of my own task to learn a new 3D software, alongside Autodesk 3ds Max, Adobe Photoshop and Adobe Premiere.

TREVOR SHARPE
BA (HONS) COMPUTER GAMES ART

My aim was to model, texture, rig and create realistic animations of a selection of 3D dinosaurs suitable for use in a game. I am concentrating on three dinosaurs – a stegosaurus, Tyrannosaurus rex and a raptor because I feel they each have very different characteristics and will show a good range of animation. For each model I intend to create a looping walk and run cycle as well as problem/recovery scenario that will show a dinosaur tackling an obstacle, stumbling and then recovering.

COLIN PERRETT

JAMES TAVET

BECKY STEVENS

COLIN PERRETT
BA (HONS) COMPUTER ANIMATION

I have produced a short 3D character animation set in space. The main character, an astronaut, crashes into the moon and has to work out how to get back to earth whilst also trying to survive the treacherous conditions and the unexpected characters. I set out to produce a story that keeps you enticed by the visual style, strong characters, subtle humour and feelings of loneliness. These principles can only be conveyed through good animation and staging. The modelling and texturing was done in Autodesk Mudbox and animation and rendering in Autodesk Softimage. Most of the texture manipulation and video compositing was achieved in Adobe Photoshop and Adobe After Effects.

JAMES TAVET
BA (HONS) CREATIVE DIGITAL MEDIA

An out of control robot on a destructive rampage! The piece demonstrates the use of effective camera tracking, 3D modelling and texturing and the use of compositing to put the final work together and create visual effects to enhance the piece. I captured my own footage and then camera tracked it. I used Boujou to track the footage and the 3D model was built in and textured to look as realistic as possible in Autodesk Softimage. The robot moves around casting shadows correctly and reflecting the environment. I composited the piece using Adobe After Effects. The secondary objective was to have the robot fire missiles/rockets causing explosions and flying debris which were created in Adobe After Effects and Autodesk Softimage respectively.

BECKY STEVENS
BA (HONS) COMPUTER ANIMATION

I animated a short film based on a story I wrote as a child. The story revolves around Brian, a little creature that sits on top of a weary woman's head. He controls her every move, even deciding whether she likes mushrooms or marmite. But everything is not what it seems after a peculiar incident involving a red double-decker bus. To create my film I used Flash and ToonBoom for the 2D animation, Adobe Photoshop to add colour and effects, and Adobe After Effects to design a 3D world in which the 2D character lives in. It's an ambitious piece but Brian wouldn't let me do it any other way. . .

ANTONIO JOSE COVELO PELETEIRO

LOUKIA KYRIAKIDOU

NATALIE ROCKS • MATT COX

ANTONIO JOSE COVELO PELETEIRO
BA (HONS) COMPUTER ANIMATION

I have produced a visual effects live-action short film featuring one character that can see an alternate reality of his surroundings using an empty picture frame. The different effects I created in these alternate realities include meteorites colliding with the earth, a triumphal arch walking out of its position, and a cathedral launching up into space. My primary goal for this project was to showcase a variety of visual effects skills, such as particle systems, camera tracking, keying and compositing.

LOUKIA KYRIAKIDOU
BA (HONS) COMPUTER ANIMATION

My project is a 2D animation short about a student waking up in her apartment, not being able to remember much from the night before. She is supposed to take care of her little brother but things get out of hand. I chose this subject because people are familiar with the idea of letting others down or situations getting out of control. The style of the piece is very cartoony, with interesting characters, vivid colours and upbeat music. The project successfully combines my passion for character design and my animating abilities in 2D.

NATALIE ROCKS
BA (HONS) CREATIVE VISUALISATION
MATT COX
BA (HONS) DIGITAL CHARACTER ANIMATION

In an idyllic English country garden, perfectionist gardener Humphrey Fotheringham constantly wants everything to be in order. Whilst tending to his garden, he is rudely interrupted by a small furry intruder. Conflict ensues in a battle of wills between Gardener and Gopher. Who will prevail? Our aim was to create a short 3D animated film to submit into international festivals. The animation was created using Autodesk Softimage and Luxology Modo.

JOSEPH BIRDSEY

PHILIP ASKINS

ADAM SWEENEY

JOSEPH BIRDSEY
BA (HONS) COMPUTER ANIMATION

I chose to do a 2D animated short as a demo reel for a potential children's television show. The Odd Job Mob features five loveable characters and their escapades as they pursue anything that they deem valuable. With their inevitably flawed plans, their arch rival and the police on their back, the mob has a lot of challenges ahead. The short features the leader of the gang as he narrates their plan of action. He dictates which person is assigned to what job, and how they will do it as they go on to steal an over-sized gem, only to then have it stolen from them by their rival.

PHILIP ASKINS
BA (HONS) COMPUTER ANIMATION

The Shadow Lamp is a short film about a young girl who returns to her home to find it in ruins. She comes across a lamp that brings back memories of her youth and wishes to be with her family once more. It was my intention with this film to move away from slapstick humour (a quality that animation handles easily) and try instead to attempt to create an emotional piece that deals with loss and acceptance. Visually, too, I was keen to have a go at making a dystopian environment that draws from my addiction to classic science fiction films such as Blade Runner. The bulk of the film is made using mainly Autodesk Softimage, with character modelling produced within Luxology Modo and texturing with Pixologic Zbrush.

ADAM SWEENEY
BA (HONS) COMPUTER ANIMATION

My project is a short fairy tale themed 3D animation about a girl and her pet monster living alone in a snowy fantasy forest. One peaceful night they are disturbed by the distant sound of a haunting scream. The emphasis of my animation was to convey the relationship between a little girl and her pet. The music in my animation was a big inspiration; it influenced the theme and helped structure the narrative. My animation was produced using Autodesk Softimage.

TOBIAS WILKINS

TOBIAS WILKINS
BA (HONS) COMPUTER ANIMATION

My goal was to create a stylish 3D character that would maintain a fresh and unique visual style, mimicking my original painted concept more acutely rather than relying on a toon shader to create the illustrated look. I used static textures to indicate the shading rather than allowing the 3D software to determine where I was going to have shadows on my model. Obviously you need some form of light in a 3D scene illuminating the model, however my aim was to dampen its influence to the point where any drastic change in light and shade on the model would be shown though the textures. I rigged him and applied shape morphs to the face and clothing to test how well this method holds up on a fully animated character. The software package I've used is Autodesk Softimage. Coming originally from more of a 2D illustration background, it's been a burning desire of mine to realise a 3D character that retains the same visual flare as the illustration.
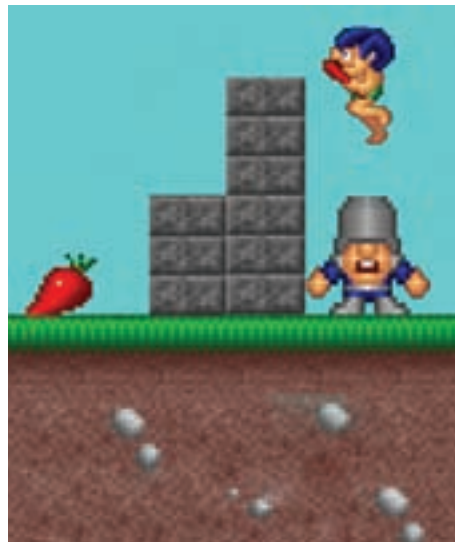
GAMES
DEVELOPMENT

The imagination of game designers must be turned into a reality by 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.
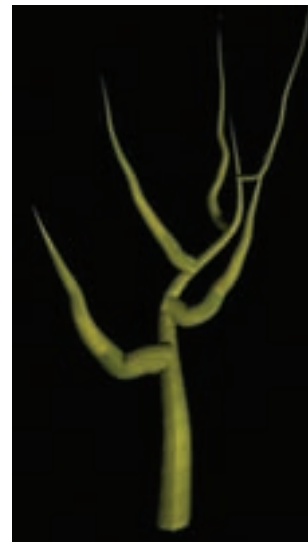
SEAN TROMANS

DARREN CUTHBERT

ANDREW MILSOM

SEAN TROMANS
BSc (HONS) COMPUTER GAMES PROGRAMMING

A growing trend in modern games is to allow the player to create or customise their in-game avatar. The two main methods are via a creation tool at the start of the game, or by allowing player attributes and statistics to automatically change the features of a character. I created a game independent library to cater for both of these scenarios. This provides the perfect opportunity to try several games programming techniques that I have not yet implemented (for example Decals), as well as becoming more familiar with GPU shaders. I eventually intend to make the library available for use to any developer so more projects can provide full character customisation to the player. The primary objective of the library is to output data in an optimised format, so the difference in rendering time between an output avatar, and an identical avatar created in an external 3D asset creation tool is negligible or none at all.

DARREN CUTHBERT
BSc (HONS) COMPUTER GAMES PROGRAMMING

Players no longer expect their artificial intelligence opponents to just run and attack, they expect groups of enemies to work together formulating plans to trap them. Creating this complex behaviour with traditional systems can quickly spiral out of control creating un-scalable, un-maintainable code. To research into alterative systems I have developed a script driven system based on Goal Orientated Action Planning (GOAP) to solve puzzles based on multiple agents working together to reach a goal – creating the complex behaviour that is needed in the modern game. GOAP allows for maintainable, complex behaviours to be easily implemented. The system uses a C++ backend with Lua scripts supplying the data for ease of maintenance.

ANDREW MILSOM
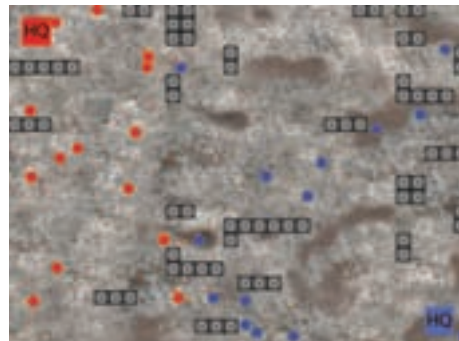**BSc (HONS) COMPUTER GAMES PROGRAMMING**

Plants and trees are seen in almost every game and with the power of computer hardware no longer need to all look the same throughout the game. My project is a plant creation and growth system which uses algorithms to produce plant geometry structures that do not only look different, but also grow with time and react to inputs. My personal aim for this project was to have this running as fast as possible, by making good use of optimisations and multi-core CPU's so that it could be viable to apply this technique to possible future games. The method allows for an unlimited amount of different plant life in a scene.
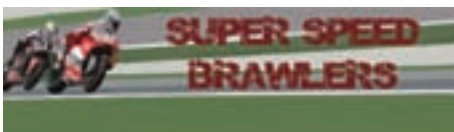
JOSEPH TINKLER

MATTHEW MARKEY
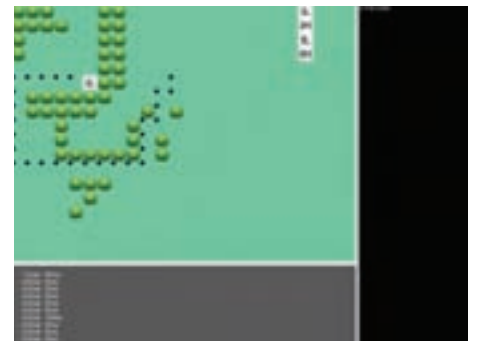
DAVID ATKINSON

JOSEPH TINKLER
BSc (HONS) COMPUTER GAMES PROGRAMMING

I have produced a 2D racing game demo developed on limited hardware, using parallax scrolling and other pseudo 3D techniques to give the illusion of depth. In the style of *Road Rash* and *Super Hang On* game play focuses on racing and fighting. Developing for limited hardware let me explore drawing techniques rarely used on modern consoles and powerful desktops. I decided to develop for the Zune HD. The touch screen interface presented challenges about control, but with a powerful processor and support from Microsoft's XNA Games Studio 3.1, it was perfect for my project. It was important to scale and rotate sprites, to achieve a pseudo 3D road, and XNA Games Studio 3.1 made this possible on a handheld device. Programming in C#, using Microsoft Visual Studio 2008 and XNA Games Studio 3.1 allowed me to develop my game demo rapidly and prevented me from accessing low level code, creating new challenges when drawing to the screen. My largest challenge was to keep the frame rate high.

MATTHEW MARKEY
BSc (HONS) COMPUTER GAMES PROGRAMMING

I focused on adaptive artificial intelligence (AI) in a gaming environment. I have researched several different techniques and implemented the one I found most efficient and effective. The aim of this project was to find a way to adapt to players' actions in a game play environment. This would enhance the experience for the player and increase the re-playability of the game. I researched several adaptive AI techniques including Neural Networks, Genetic Algorithms and fuzzy cognitive logic. Following the research some of the techniques have been implemented into a graphically simple 2D Real-Time Strategy game. This was done using the SDL Library in Visual Studio 2008. The graphics were drawn using Adobe Photoshop and Microsoft Paint.

DAVID ATKINSON
BSc (HONS) COMPUTER GAMES PROGRAMMING

This project shows an area of artificial intelligence used to control a set of units on a battlefield. The simulation tries to express a good tactical and strategic knowledge in a number of differing situations using a command hierarchy similar to that of real world military, taking into consideration chains of command. A few main components driving the simulation include Behaviours Trees, A* path finding, and a scheduling system. The project is created using C++ and Microsoft Visual Studio 2008 and uses Simple Direct Media Layer for its graphical output.

DAVID HOLLAND

ALISDAIR CHISHOLM

DAVID HOLLAND
BA (HONS) COMPUTER GAMES ART

I used a hypothetical game idea to design a world and characters to populate it. My aim was to create several unique and fun main characters visually appealing to younger and older audiences. I used fairly conventional methods to design the characters but for the environment I experimented with many different techniques to create something visually unique and original. The project has taught me a lot about what it takes to create something even slightly original and how using unconventional methods to answer design problems can really help.

ASHLEY MUNCASTER
BSc (HONS) COMPUTER GAMES PROGRAMMING

Maestro is a music game that aims to break the mould of the current generation of music games by allowing the player to play with real-world instruments, following real-world musical instructions that follow the Western Music Notation style. It accepts MIDI files which you can then play along to, with any MIDI-capable device (for example, keyboard, MIDI Guitar and MIDI Breath Controller).

ASHLEY MUNCASTER

ALISDAIR CHISHOLM
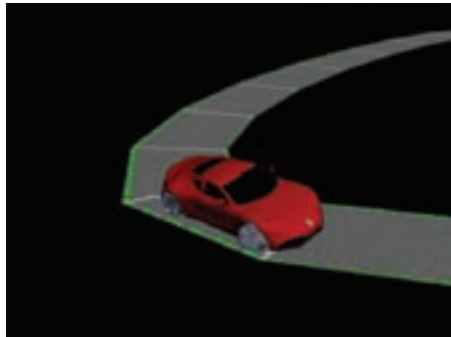### BA (HONS) COMPUTER GAMES ART

Inspired by the hostile reception from fans to Valve's *Left 4 Dead 2* my project looks at what a possible third instalment in the *Left 4 Dead* franchise could be. A major concern about *Left 4 Dead 2* was it did not have enough new content to warrant the release of a full priced product. I have created a fictitious brief written by Valve expressing a desire that a Left 4 Dead 3 should take a radical new direction in terms of visual appearance and theme. I decided that this new game should be set in the future aboard a space station. I created four original characters and a small section of the newly proposed environment. I wrote a profile for each character and conceptualised them in 2D. I created turnaround sheets suitable for reference in Autodesk 3Ds Max. The low poly models were then created and textured using current gen methods such as normal maps from high poly 'bakes'. Finally, the environment was created in a similar manner and all the assets were presented together and printed on a poster ready for advertisement.

MIKA TURUNEN

HAYDEN PATTERSON
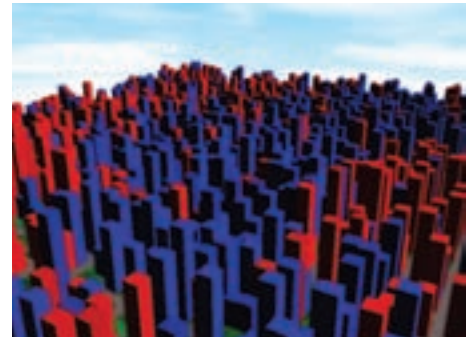
PHIL BEVERIDGE

MIKA TURUNEN
BSc (HONS) COMPUTER GAMES PROGRAMMING

Cores Defender is a Tower Defense type game for Google's Android phones. The game demo is aimed for use on Android phones with touch screen and uses the touch screen's capabilities extensively. The *Cores Defender* demo was produced to test the capabilities of the platform. Through *Cores Defender's* development one of the key points was to study, research and test the Android platform and the limitations of OpenGL ES. I learned a lot about programming for mobile platform and the different ways to optimise the performance to match the platforms capabilities.

HAYDEN PATTERSON
BA (HONS) CREATIVE DIGITAL MEDIA

I have created two working vehicles – one of my own design and one for existing vehicles. Both the models were created and textured and rigged up to work like a game car. To test the power and manoeuvrability I designed and created my own test track in Autodesk 3ds Max. I used Adobe Photoshop to create the textures and normal maps to give the vehicles a more realistic effect. Then I took the vehicles into the Epic Unreal Engine, rigging them up and having them work as in game vehicles. Each vehicle has a different polygon count so I could be more creative with the design. It Gave me a limit and target to work to and made sure the vehicles would run in the Unreal Engine smoothly. I added normal maps for more detail within the textures at the resolution of 2048 x 2048; for a high quality texture at a range of sizes.

PHIL BEVERIDGE
BSc (HONS) COMPUTER GAMES PROGRAMMING

The current limitation with modern sandbox games is the size of the world in which the user can explore – despite these areas getting bigger with each new release, they always have boundaries. I have created a Direct3D demo which creates a procedurally generated pseudo-infinite city, allowing for unlimited exploration. The grid-based world uses appropriate algorithms, and also random number generators, to divide the city into different areas of similar building types (for example commercial and residential), create a road network and generate unique building geometry.

Timothy Kong

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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.

MARTIN DAVIES
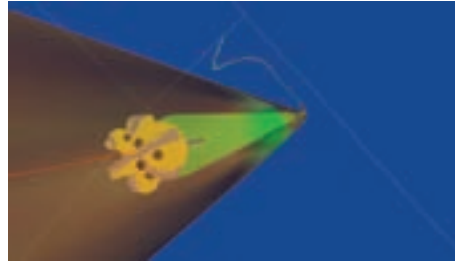
ANTHONY BARBIER

DAVID SIM

MARTIN DAVIES
BSc (HONS) ANIMATION AND VISUAL EFFECTS PROGRAMMING

I propose a system to reduce, and in some areas eliminate, the amount of manual UV mapping for 3D models. This process will be different to unwrapping methods that are currently used, it will be easier and won't require any prior knowledge of modelling or polygon layout, and will create a significantly more efficient and understandable layout for UV maps. This will include a 3D painting environment for artists to paint directly on to the model and create textures without worrying about the UV layout. My system will also lay out the UV map in a sensible and understandable way in 2D with areas of higher resolution taking up more space than others. My system will provide a way to UV map 3D models, which is significantly easier and more intuitive to understand than any other method currently available. Modellers and artists will no longer have to worry about UV maps.

ANTHONY BARBIER
BSc (HONS) VISUALISATION

My project is a modular and extensible 3D library, called Matlab and developed in partnership with Schlumberger Cambridge Research. Its main goal is to allow scientists to visualise in 3D the data collected during drilling operations in the oilfield. The library also integrates virtual reality capabilities (stereoscopic display, head tracking and control by 3D remote) demonstrations to clients and visitors. You can also plot 3D trajectories to procedurally generate a borehole using a calliper file, visualise the drilling tools positions, orientations and deformations inside the borehole. It supports animation and multiple 3D windows and different types of data can be mapped on to the different objects. The library is written in C^{++}, it currently uses OpenGL/GLSL, WxWidgets, VRJuggler (or CaveLib), and runs on the Windows platform, but the application programming interface has been designed so that each of these components can easily be replaced by a different one.

## DAVID SIM
BSc (HONS) COMPUTER GAMES PROGRAMMING

The storm library is a weather library focused on storm effects that can be integrated into an existing engine. The visual effects are able to run real-time while using a minimum amount of processing power. The storm library uses a set of algorithms that connect to the existing engine using an interface. If the engine is changed only the interface needs to be rewritten. Weather transitions are available allowing the user to transition between a sunny day to a big thunderstorm. The simulation will be time based allowing the user to control the speed of the simulation.

MATHIEU SANCHEZ
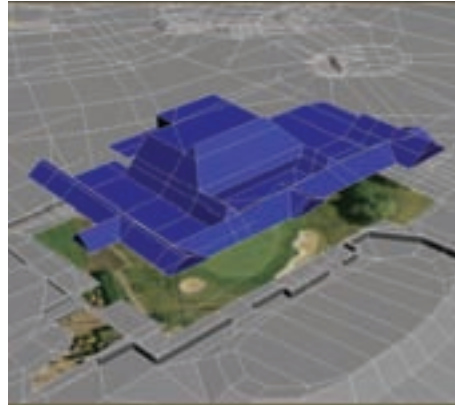
KEVIN KIRK
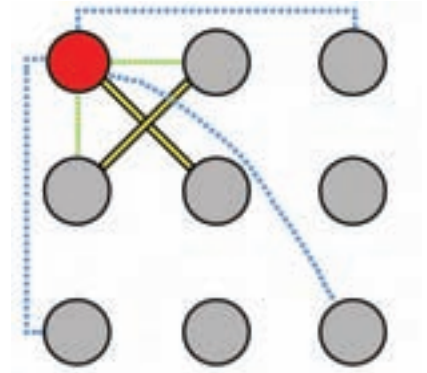
JAMIE SMITH

MATHIEU SANCHEZ
BSc (HONS) VISUALISATION

Although triangle meshes are widely used they cannot define smooth shapes, and accuracy is dependent on the number of triangles, which could take a lot of memory and time. Non-uniform Rational B-Spline Surfaces (NURBS) are an alternative for defining shapes. They have an infinite accuracy, but it is not convenient to render directly, therefore it needs to be tessellated. My project adaptively tessellates the NURBS to render them by generating the minimum number of triangles, but keeping the quality of NURBS. Adaptive tessellation means it tessellates more if it covers more surface on the screen, therefore limiting the computations needed. It also reduces render time and keeps the details of the surface. It is implemented in C++ and uses the Oslo algorithm for subdivision. The final library is integrated as a plug-in for Maya that compares uniform tessellation and adaptive tessellation.

KEVIN KIRK
BA (HONS) COMPUTER GAMES ART

My project creates a 3D environment in Autodesk 3ds Max, of my home golf course in Tiverton. The idea is to create fly through videos of each hole to use on the golf club website. As an upcoming 3D artist, looking into environmental modelling as a future career a golf course is a great opportunity to show my potential. Golfers who enjoy playing at different golf courses wonder why the only form of website preview of different golf courses is a bird's eye view. As good as the bird's eye view photo is, a 3D preview would show more detail on each hole and provide height detail, showing golfers how interesting the golf course is.

JAMIE SMITH
BSc (HONS) COMPUTER GRAPHICS SCIENCE

My project is a concept to simulate, in real time, the physical properties of rigid materials using traditional cloth simulation techniques. Although expandable to other material types I have chosen to simulate sheet metal and will demonstrate effects like deformation, bending, crumpling and shearing. I was motivated to attempt this project during my placement year at Eutechnyx. The team I worked with discussed a damage system for a future title. When the requirements and wish list had been outlined I thought a cloth simulation would be a suitable way to meet the needs of the project, this will be a great opportunity to see if my idea was viable.
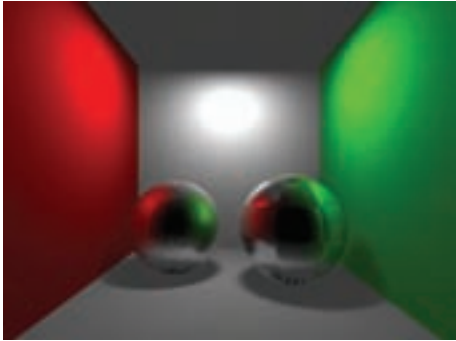
THOMAS DOHLEN
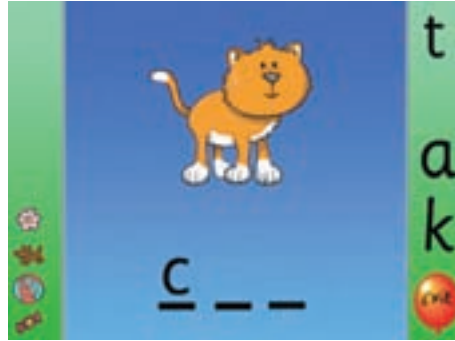
LESLEY LUMSDEN
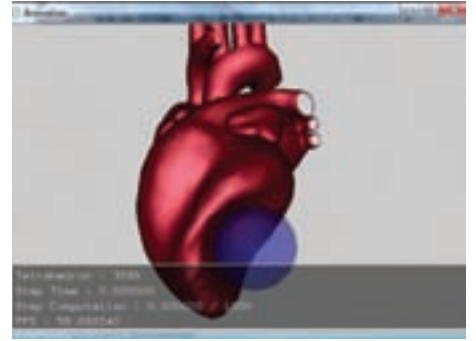
MATHIEU EINIG

THOMAS DOHLEN
BSc (HONS) VISUALISATION

My project demonstrates how point-cloud data can be used for glossy reflections in computer graphics. Point-clouds are an array of points in 3D space. I chose this project because it would give me a great insight into a technique that is used for complex illumination calculations on high detail 3D geometry in the visual effects industry. I have built a plug-in for Autodesk's Maya that exports 3D geometry as point-clouds to a binary file-format. Direct illumination is baked into each point. The file is then read into a Ray tracer that uses the point-cloud to calculate the surface reflections.

LESLEY LUMSDEN
BSc (HONS) COMPUTER STUDIES

I have created a piece of software to help pre-school children learn the basics of reading and writing. The program deals with learning how to write precursive letters correctly and associating the letter symbol with the phonetic sound. This is also applied to the phonetic sounds known as digraphs, where two letters are used to create the phonetic sound. The program also introduces simple spellings and the frequently used words which require learning, known as tricky words, as they cannot be read by just blending the phonetic sounds.

MATHIEU EINIG
BSc (HONS) COMPUTER GRAPHICS SCIENCE

My project is about creating a physics simulation of soft bodies for medical training to allow the insertion of a needle or catheter into virtual organs. Keeping real-time performance is a real challenge as the simulation needs to be extremely robust to support the arbitrary piercing of the volumetric body. The physics uses a finite elements technique for representing the soft body and standard triangles mesh for its surface. As a computer graphics student, this project gives me a good opportunity to become more skilled in the fields of mathematics and physics.
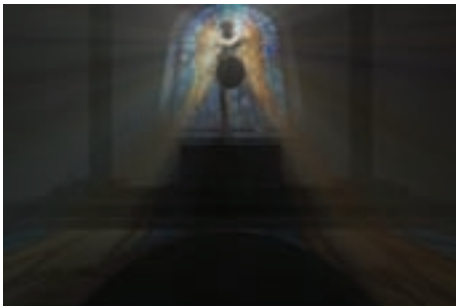
JAMES SEN

MATTHEW NEALE

JAMES SEN
BSc (HONS) COMPUTER GAMES PROGRAMMING

I have explored applying the current cloud computing architecture to more graphically demanding applications such as games. I have created both client and server applications that make use of multi-threading, networking and the Direct3D API to produce a graphical representation of a game world solely handled by the server. The player can move around and interact with objects in real time from another machine using the client application. This will stream the rendered game world as images from the server, whilst removing the need for high hardware requirements and preventing piracy.

MATTHEW NEALE
BSc (HONS) VISUALISATION

Augmented reality, true 3D vision and intuitive input methods are set to be key themes in the next generation of computer games. US sales predictions for 2010 show one in nine TVs sold this year will be 3D Vision enabled. The Nintendo Wii and DS/DSI (both using innovative input techniques) have captured 48% of the console market and 69% of the handheld market respectively. With this in mind, I set out to create a truly interactive environment. My project fuses user input with the virtual world and then outputs the augmented reality using state of the art techniques. My application is a 3D virtual environment that uses head tracking to find the user's eye position in relation to the screen. This data is then used to move the virtual camera in the 3D scene. Your movement in the real world moves your avatar's position in the virtual world. The image captured by your avatar's eyes is then displayed stereoscopically allowing you (with the aid of polarised glasses) to see virtual objects as real world objects.

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 on to 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

ADAM BOOTH

ANDERS OLIVERSEN

ADAM BOOTH
BA (HONS) COMPUTER GAMES ART

My project aim was to produce a set of realistic, modern day characters. The look of the characters reflects their personality and the environment they are from. The base mesh has been modelled in 3ds Max 2010. The models have been normal mapped from high polygon sculpts using Mudbox.

MICHAEL BERTRAM
BA (HONS) CREATIVE DIGITAL MEDIA

My project is an interactive map application called Student Maps, providing potential and current students of Teesside University with information about Middlesbrough. Apart from individual research, students have no way of finding out information about facilities in the area. This application is a central resource to information on facilities and places of interest and can be accessed in advance of their visit. It also allows students to add comments and upload images. The application was created using Adobe Flash CS4 with ActionScript 3 and Adobe Illustrator CS4.

ANDERS OLIVERSEN
BA (HONS) CREATIVE DIGITAL MEDIA

Coma Deer is an illustrated book about a neurotic young man, Jamie, who goes into a coma due to a head injury. Coma is a place between life and death and Jamie has to struggle through an unusual environment filled with abnormal creatures to get back to life. Most of the illustrations are sketches done with col-erase pencils on paper. More finished illustrations also appear throughout the book which are traditionally inked and then scanned in and coloured using Adobe Photoshop. I used Microsoft Word for writing and the page layout for the book was done Using Adobe InDesign.

JEAN YEE LIM

SARA ROSS
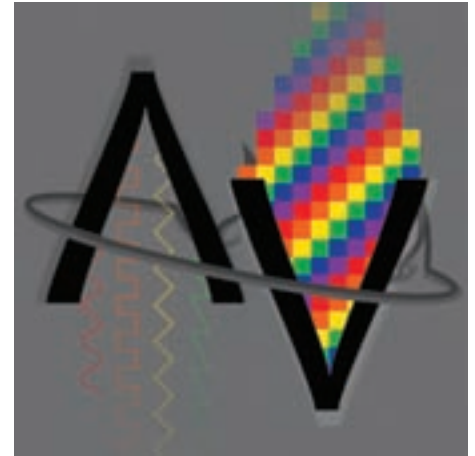
EDWARD GUY

JEAN YEE LIM
BA (HONS) CREATIVE DIGITAL MEDIA

My project objective was to introduce Middlesbrough and Teesside University to potential students or freshers who are new to the university and the area. The Teesside University Living Information and Proposal (TULIP) is a novel application which provides more information about the area, school, and life within Middlesbrough, giving basic information on everything from accommodation reviews and upcoming events to finding local attractions or places to go for a night out. The application is highly visual and will utilise photographs, text information, and interactivity to help keep the users' interest while at the same time providing the necessary information through the application. This multimedia project primarily uses Adobe Flash as the medium of construction, while other tools such as Adobe Photoshop, Adobe Illustrator and Microsoft Silverlight have been used in order to support the construction of the application.

SARA ROSS
BA (HONS) DIGITAL MUSIC CREATION

I am presenting a musical composition in three movements portraying the Azores Islands within the context of the Fifth Empire – a messianic view in the destiny of Portugal about which much has been written and theorised, becoming almost prophecy. This project embraces various music styles and techniques. The first movement, 1432, is an acousmatic piece derived from original recorded sounds of water and sea, describing the discovery of the Islands. The second, Margarida, is based on one of the main characters from Vitorino Nemésio's novel *Stormy Isles* (used in a symbolic way) and is an instrumental piece in praise of her nobility and strength of spirit. Pedra Filosofal (Philosopher's Stone), the final movement, is a declamation of the poem by António Gedeão, in a multichannel (5.1) mixed piece, solely from recitations of five chosen people. The main programs used for the production of this work were Digidesign Pro Tools, Sony Sound Forge and GRM Tools.

EDWARD GUY
BA (HONS) DIGITAL MUSIC CREATION

My project centres on sound design and music production for a computer game in its early development stages. The aim is to illustrate the significance and impact audio can have on the success of an audiovisual experience, as well as illuminating the effectiveness of combining aural and visual elements. Audio is not well understood in the computer games industry. The current techniques in use are ageing, and aural technology is falling behind its visual sibling. Sound elements are frequently left until the last minute, and often suffer earliest in the event of a budget cut. The result is audio in games which is often disjointed, lacklustre, and clashes with visual style, leading to an overall less enjoyable interactive experience. Working alongside a writer/designer, artist, and programmer, rudimentary game-play demonstrations, concept art reels, and design documents will be employed to help streamline the flow of production and ensure tasteful, consistent work. Audio features will be shaped in Cakewalk Sonar, Digidesign ProTools, Ableton Live, and Sibelius software, with an amalgamation of recorded and sequenced sounds and instruments.

THOMAS BROWN

GARY WHELPDALE

AARON TURNER

THOMAS BROWN
BA (HONS) DIGITAL MUSIC CREATION

I have created a series of pieces of music based on the book *Hard Boiled Wonderland* and the *End of the World* by Haruki Murakami. The pieces are all created using real-time processing of shortwave radio signals, in different styles to match the progress of the book. The aim is to explore some of the themes prevalent in the book, and in modern day life, such as the interdependence of technology and communication, and the effect that each has on the other. Creating music in this way also allows me to showcase my sound design and compositional skills. The pieces were all created in Ableton's Live Digital Audio workstation, and a wide range of other audio products were used, including Absynth 5.0 and Audiomulch, a modular DSP environment.

GARY WHELPDALE
BA (HONS) DIGITAL MUSIC AND DIGITAL MEDIA

My project shows a series of electro acoustic compositions that act as a book-score to the Kurt Vonnegut novel *Cat's Cradle*. Much like a film score, the pieces of music deal with the imagery, characters and emotional content of the book, but through the medium of sound. Each movement of the work represents a specific chapter from the novel.

AARON TURNER
BA (HONS) DIGITAL MUSIC CREATION

I have created a set of sound effects and music tracks and implemented them into the Unreal Editor to create a playable level of *Unreal Tournament* that uses my sounds. My interests lie in the interactivity between the actions of the player and the music in the game, and how this enhances the gaming experience. For me this differs greatly to scoring a soundtrack for film or animation as, ultimately, the player has control over the sounds they hear, which forced me to think of new ways of dealing with sound design and implementation. The music was created using software including Ableton Live and Digidesign ProTools and the sound effects were a combination of audio recordings and synthesis using Propellerhead Reason. Implementing the sounds into the game has given me a great insight into working with game engines and making my music become interactive to work with the various degrees of action within a game.

WILLIAM DEVOS

TSUI YING CHUNG
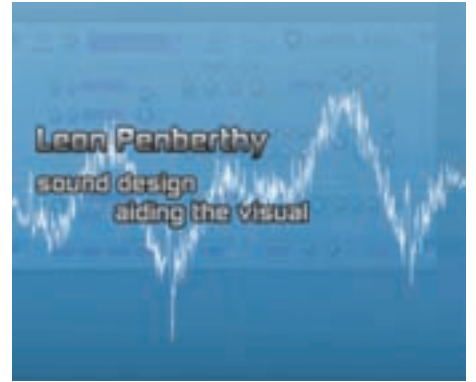
LEON PENBERTHY

WILLIAM DEVOS
BA (HONS) DIGITAL MUSIC CREATION

My objective was to produce professional quality audio material for both the music and television/film industry. For the first part, I recorded two bands and produced, mixed, and mastered 20 minutes of their music at CD quality. The second part saw me scoring and post-producing the music/sound effects for at least two short videos, lasting about ten minutes. I designed this project to demonstrate the variety of field-based skills I have to potential employers. I used Digidesign's industry-standard software package ProTools.

TSUI YING CHUNG
BA (HONS) DIGITAL MUSIC CREATION

My project is a concept album. Tracks in the album were inspired by the five classical elements, earth, fire, water, air and aether. Each track represents either one or two elements. The album features five remixes and two of my own compositions. Tunes express different emotions, some are dark and melodic, some are upbeat and minimal and some are funky electro. I aimed to put different feelings (inspired from events in my life) into the tracks to surround the concept with cohesive atmospheres.

LEON PENBERTHY
BA (HONS) DIGITAL MUSIC CREATION

My project aims to give visual producers the means to enhance their pieces with material normally not available in the market. Abstract recording techniques would enhance the production giving the sample library unusual distinct characteristics. Ambient FX and sound beds would sit seamlessly over one another following very few rules, giving the artist lots of opportunity to easily create something of their own.

WEB DESIGN&
DEVELOPMENT

Web design and web 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 KEENAN

DAVID BRIGGS

AARON RUSSELL
BSc (HONS) COMPUTER PROGRAMMING

PromoTools is an advanced database-driven Web 2.0 Ruby-on-Rails application, providing highly desirable promotional facilities. It is primarily targeted at nightclubs, and live music venues, but would also benefit any venue or event requiring promotion. It is able to make use of a wide variety of communications, such as email, websites, SMS and MMS messages, voice over IP, and even printed material. It can also provide geo-location information about the target audience. This can be displayed and manipulated using any KML compliant software, such as Google Earth.

SEAN KEENAN
BA (HONS) WEB DESIGN

Returning from my work placement at Durham County Council and the Disney Channel I have decided to showcase the best of my design work in a sleek new online portfolio. I've included a flash application/branding campaign for my own fragrance range, a dynamic PHP gallery for the School of Computing and movie poster designs in the style of *The Dark Knight*. There is also an accumulation of live work from my placement year and a selection of personal work such as photography and freelance. Also included is a live project for BUPA's Great North Run on behalf of the company 13 Strides.

DAVID BRIGGS
BA (HONS) WEB DESIGN

I have developed a prototype web application that allows users to build and maintain a customisable online portfolio of their work. Users can easily add images, descriptions and social media information, such as their Twitter feed, to create a personalised website with custom colours, layout and graphics. My motivation is based on many creative people wanting to be able to show employers an online portfolio of their work without the associated cost and development time that comes with building a website from scratch. As well as the functional side of the application, I created a strong visual identity for the brand including a recognisable logo and a modern and unique, yet usable, interface. The designs for my application were created in Adobe Photoshop CS4 and Adobe Illustrator CS4 and the application was coded using a combination of XHTML, CSS, PHP and MySQL.

ALEX MILBURN
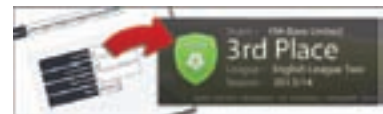
SEAN TAYLOR

ALEX MILBURN
BSc (HONS) BUSINESS COMPUTING

Albatross is a Silverlight application which collects blogs from Twitter and plots them on a visual timeline where the user can view their 'Twitter Timeline' (a chronological list of blogs detailing the user and their followers) in a visually interactive representation. Blogs are represented by coloured shapes and are plotted along the timeline by the date they were created. When clicked on, the shape opens an information box displaying the blog and other details about the user. The application can be used simply for casual use but also in a professional sense. For example project team leaders could use Albatross in order to keep track of the work being done by their team. Albatross was created using Silverlight 3.0 and was built using Microsoft Visual Studio 2008. Due to the application being fully rendered at run time, it is built solely from C# which has allowed me to build a dynamic and flexible solution.

THOMAS CORBETT
BSc (HONS) COMPUTER STUDIES

My project is a social networking/timetabling site for students to easily store and share their timetable online. You can simply click on your free time and see who else is free, it also has a group timetable function which automatically calculates shared free time. This project is written mainly in PHP and MySQL and also utilises the massively powerful open source JavaScript library jQuery, which makes the site very user friendly and stylish.

SEAN TAYLOR
BSc (HONS) BUSINESS COMPUTING

I have developed a web application that allows the user to create a dynamic signature image for use on forums, in email, on blogs and on social network sites. The signature image corresponds to the user's current progress on the PC and Apple Mac game *Football Manager 2010* by Sports Interactive. I developed this web application because I ran a popular website dedicated to the *Football Manager* game series for seven years and it was something that was constantly requested by the users. Before I started this project I created a very simple version and without any major advertising and promotion over 4,000 people signed up to use the service. The web application has been written using the latest web technologies PHP, PHP:GD, JavaScript, jQuery, AJAX, MySQL, XHTML and CSS. Most of the web application was written using Adobe Dreamweaver CS4 and the graphical user interface was developed using Adobe Fireworks CS4.

ANDREW REED

NICOLE SARGEANT

ANDREW REED
BSc (HONS) SOFTWARE ENGINEERING

My project is an online word processor. The application works solely through a web browser allowing users to access their files online. During my placement at Defence Analytical Services and Advice there were numerous versions of word processor software being used. The situation caused display errors when converting from a different version. I found that a web solution would resolve the issue, with the added benefit of access to users' files from a remote location. My application was built adopting the Model View Controller architecture and uses a server sided scripting language called PHP, meaning most of the processing is actually processed by the server and not the user's machine. I also used JavaScript, AJAX and the integration of a MySql database which adds some features to my word processor. These technologies allowed me to produce an application which is extremely lightweight and has a low prerequisite.

NICOLE SARGEANT
BSc (HONS) COMPUTER STUDIES

Raising awareness about The University Hospital of North Tees Haematology Unit is a very important project for the local community. A large amount of patients passing through the Haematology Unit are fighting against Leukaemia. Charity websites are often aimed at adults and overload the user with facts in blocks of text. My website is aimed at young adults who are patients at the Haematology Unit. Information is presented using high quality flash animation in a fun and attractive way. The website has a commercial function to raise funds via merchandise sales. The website has been created using Adobe Dreamweaver, Adobe Flash, Adobe Photoshop, Microsoft Visual Studio and SQL.

MATTHEW THOMAS
BA (HONS) WEB DESIGN

This unique car parking website designed for simple parking solutions is aimed at a large untapped market – football fans. Match day parking is a first come first served mad rush. This website takes all the stress away, allowing the user to book, pay, reserve and enjoy the day. Although many websites allow users to upload car parking information, my website has sectioned this off to business users and personal users. It also offers two sub-categories of buy or rent, and is manageable, depending on primary user type, under one account. Users can also access the latest news and events in football or car parking information. Future development plans, are to create a portal website for match day parking, theatre parking and airport parking.

CHRISTOPHER MERRITT

ANDREW MAYO

SIMON MUDD

CHRISTOPHER MERRITT
BA (HONS) WEB DESIGN

My final year project, See the Walk, is a one stop resource website aimed at hikers and backpackers in the United Kingdom who, for whatever reason, find themselves lost or misdirected while hiking. It contains links to hiking supply stores, forums, interactive maps, images and details of various hikes all over the country. It functions on all PCs and laptops (regardless of specification) and current and next generation mobile phones. This website was built using Adobe Dreamweaver CS3 and Adobe Photoshop CS3.

ANDREW MAYO
BA (HONS) WEB DESIGN

I have developed an internet protocol TV service as a mechanism to exhibit animation taken from Teesside University's Animex: International Festival of Animation and Computer Games, via a podcast. The project has three components; the podcast itself, the website allowing authorised users to upload podcast episodes and the iPhone application, which allows users to stream the content on their iPhone and iPod devices.

SIMON MUDD
BSc (HONS) COMPUTER STUDIES

My project is for Teesside University's Accessibility Research Centre and is a portal to aid people with different learning needs. The portal encompasses different tools to cater to the individuals needs and is customisable so the user can change everything from the tools they require to the colour and size of the text. By registering for an account, and through the use of cookies, an individual's settings and preferences can be stored. The portal can also be re-arranged to suit the user with the tools in the order of most importance and with the option to add and remove widgets they do not require. The portal has been built using XHTML, CSS, JavaScript, PHP and MySQL.
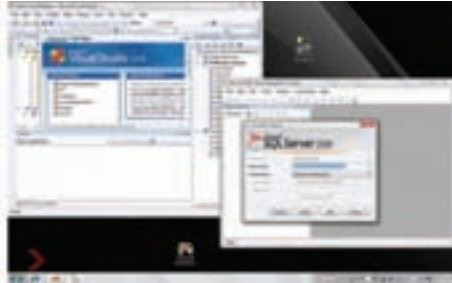
SMAIRA (SAMIRA) HUSSAIN

RICHARD LILLEKER

RUSHIKESH MAKWANA

SMAIRA (SAMIRA) HUSSAIN
BSc (HONS) INFORMATION TECHNOLOGY

The idea of developing a Project Control Database came to me during my work placement. The department used a spreadsheet application to manage projects and I believed a web based application would be an improved solution. The resulting application focuses on the management of software development projects, and aids the manager in determining how many projects they can take on. It will also play a vital role in giving the customer feedback about start and completion dates for a project. I have used Visual Studio 2008 ASP.Net to develop my project with a SQL 2008 back-end. It also incorporates Language Integrated Query to manipulate the data I receive from the database.

RICHARD LILLEKER
BA (HONS) CREATIVE DIGITAL MEDIA

My project involved providing personalised timetable integration for Blackboard, the University's Virtual Learning Environment. The project came about through my work placement year in the E-learning Team at Teesside University. There is a requirement for personalised electronic timetables for students.

I designed and developed a custom plug-in for Blackboard, known as a building block, which connects to a web service to retrieve real-time personalised timetable data in XML which is displayed to end users via the Blackboard interface. The building block, which is essentially a web application, was developed using Java and the Blackboard API, with Eclipse for Java EE Developers as the Integrated Development Environment.

RUSHIKESH MAKWANA
### BSc (HONS) INFORMATION TECHNOLOGY

I have created a recycling management website, which provides both financial and environmental benefits. A registered user will be given a cash reward for the kilograms of scrap they deliver, encouraging people to recycle whilst also leading to a cleaner environment. The scrap is forwarded to an appropriate recycling company who, through this site, can also earn revenue. The website will extract and publish an unwanted item, which can be re-used by other registered members of the website. The application has been built using C# in an ASP.Net framework.

COMPUTER SCIENCE&NETWORKING

From developing tools with environmental applications to face recognition software, these diverse R&D projects encompass topics ranging from computer programming to devices and systems, and from computer networks to artificial intelligence. But, they all have one thing in common – innovation.
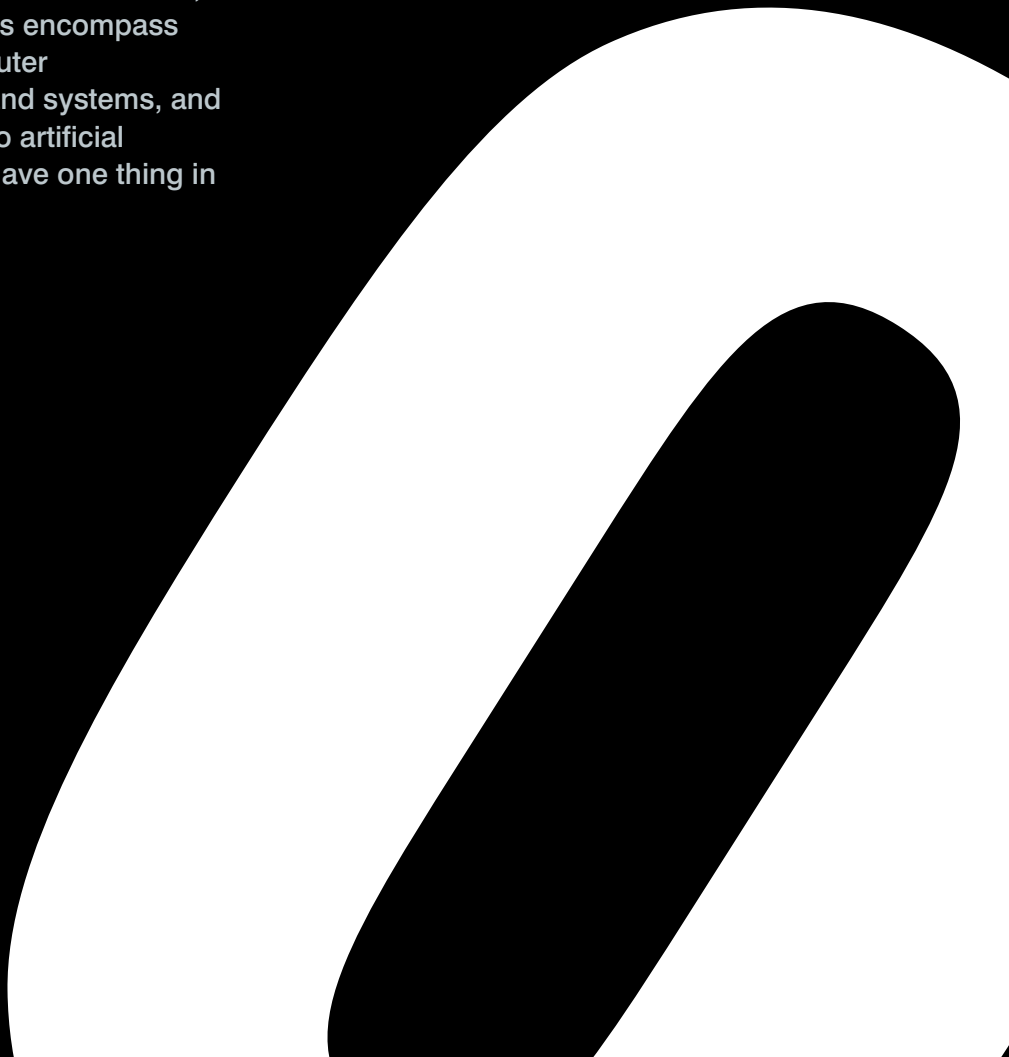
FRANCIS PARKER

KATE WHITAKER

DAVID GRAY

FRANCIS PARKER
BSc (HONS) COMPUTER STUDIES

This project investigates possible changes to a network infrastructure due to a major change to a business. It deals with possible infrastructure design changes and makes recommendations on the policies and procedures needed. During my placement I worked at a local Arms Length Management Organisation, undertaking a stock options appraisal whereby the housing stock will be purchased from the local authority and the housing will be managed by the company as a registered social landlord. I have a passion for computer networks and service management and wanted to investigate this interesting change to the business and see what impacts it has. I have been utilising Information Technology Infrastructure Library Version 3 for the service management aspect and Cisco's Distribution Centre Architecture for the network infrastructure aspect.

KATE WHITAKER
BSc (HONS) INFORMATION TECHNOLOGY

My project, Smarter Energy Management, helps the user understand how they use energy in the home and encourages them to reduce their consumption. It presents their usage visually in graphs and converts watts used to an actual cost. The data comes from a Current Cost Meter installed in my home and has already made changes to my lifestyle so I can reduce my monthly bill. I became interested in a green project after spending my placement year at IBM Hursley labs and seeing the work they are doing to drive down their carbon footprint. The project uses the XML data feed from the meter and I have developed in C# and ASP.NET.

DAVID GRAY
BSc (HONS) INFORMATION TECHNOLOGY

My project focused on the application of green IT solutions within data centres and server farms. In an era of rising energy costs and green legislation on the horizon creating energy efficient data centres presents a powerful cost cutting opportunity to businesses. My design utilised a mixture of techniques to minimise data centre power consumption on physical computing systems as well as support devices such as air conditioning and fans. By investigating the use of zero energy systems primarily used in modern green show case homes, I was able to reduce the overall power consumption of data centres within temperate climates.

ARUN GUPTA

ZAINAB ALALAWI

SCOTT MELLORS

ARUN GUPTA
BSc (HONS) COMPUTER SCIENCE

I have researched and implemented a recursive descent compiler that can parse a simple reversible computing language. I have created a two pass compilation technique that is based on a functional approach. My compiler converts infix expressions to postfix by parsing twice through the compiler. The first pass will generate a postfix tagged with type data, and then the second pass will generate the final postfix string. The compiler has been developed in RVM Forth. Reversible computing allows a program to backtrack to previous choices made and then to reselect them, it uses syntactic constructs, choice and guard, to achieve this. Functional programming solves problems with the computation of mathematical functions; this paradigm avoids state and changeable data.

ZAINAB ALALAWI
BSc (HONS) COMPUTER STUDIES

My project involves investigating and applying a web ontology language. The investigation involves building an ontology using Protégé. The example scenario is based on an information system for a medium-size radio station. It also involves choosing appropriate semantics and syntax. I am also investigating the use of an object-relation system to overcome the object-relation impedance problem. This problem is usually encountered when trying to store the persistent objects defined in the ontology in a relational database system. A database application based on an ontology conceptual model will be produced. This application is developed using Protégé, NHibernate, C#, .NET, and Microsoft's Visual Studio 2008.

SCOTT MELLORS
BSc (HONS) COMPUTER STUDIES

My project was completed for a colleague requiring a piece of software to help develop and manage their website. Research into current content management systems (CMS) revealed they contained several flaws and were missing some features which would make the process easier. I developed a new CMS based upon my research findings, which includes some additional desirable features for an effective and efficient CMS.

AILEEN ZHAO

KARL WARREN

JEAN-YVES KIMENAU

AILEEN ZHAO
BSc (HONS) SOFTWARE ENGINEERING

My project is an application that helps a cinema to manage tickets and customer information. The main functions are similar to what staff do in a cinema, such as booking tickets, cancelling bookings, taking payment, movie selection and maintaining customer information. The development tool was Microsoft's Visual Studio with the application developed using the C# language.

KARL WARREN
BSC (HONS) COMPUTER SCIENCE

I have built a piece of software which aims to personalise the delivery of web feeds through the use of statistical content filtering. Web feeds (also known as RSS feeds) offer users a convenient way of reading the content of a website on a regular basis via subscription. Users often subscribe to feeds from many different websites which can result in an overwhelming number of incoming articles which may be of no interest to the user. By researching content filtering methods such as the Naive Bayes Classifier, which powers many spam email filters, I have designed and constructed a web feed aggregator with an inbuilt filter. It adapts automatically to the user's reading patterns to display only those articles which they are likely to find interesting. The software has been designed using object-oriented techniques and built using C# and Microsoft .Net technologies.

JEAN-YVES KIMENAU
### BSc (HONS) COMPUTER GAMES PROGRAMMING

Multi-touch surfaces are currently emerging, very fashionable and the centre of attention at technology shows. For this reason I chose to complete my project in this area. My project consists of three parts – building my own multi-touch table, designing and programming an application for it, and extending the table with multiple screens. The technique used is a rear diffused illumination, the camera is a modified PlayStation Eye to see infrared light and the finger tracking system is Community Core Vision. The application has been designed to help stroke patients to recover from their injuries, and has been developed using open Frameworks and the add-on ofxTuio.
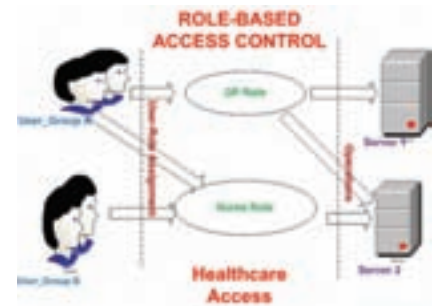
MARCUS JAXON
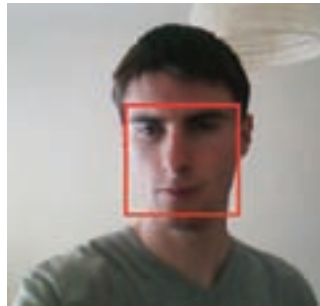
STEWART HUTTON

TREVOR ZVIKOMBORERO JACOB

MARCUS JAXON
BSc (HONS) COMPUTING AND NETWORKS

I got the idea for my project from seeing news reports on laptops and desktops being stolen. There is already plenty of software that tracks the computer when it's turned on again but most hackers know how to get around this. I thought about a program closer to the hardware which would stop the computer from turning on. I have developed a way of authenticating a computer to a network, creating a security server of sorts. The program would, at boot up, wait for authentication from a server. If it did not receive this authentication the computer would then shut down preventing access.

STEWART HUTTON
BSc (HONS) SOFTWARE ENGINEERING

For my final year project I have created a piece of software able to detect a face in an image. The software works by scanning through a set of training images, looking for common features which separate faces from non-faces. The training for this application is generic, it can apply to any object, not just faces. When a new image is presented to the software it uses the information it has gathered in training to decide whether the image contains a face. To learn quickly, and with a low error rate, the software uses a technique called boosting to refine its classification of images during the training phase. The software was written using Microsoft Visual Studio in C# and C++.

TREVOR ZVIKOMBORERO JACOB
BSc (HONS) COMPUTER SCIENCE

I am implementing a role-based access control for the healthcare service. I am creating database application roles which could be used to secure access rights on the database level. Application roles do not contain users but assigned privileges which an appropriate user can access by being associated with the application role. A user who wishes to connect to their respective application role needs to login using an allocated password (which can be changed by the client regularly). If client/user successfully connects to the application database all user permissions are then replaced with those granted to the active application role. However, if access to another application role is required during this time-slot in which client/user still has the privileges of an active application role, it can only be granted using a guest user account. Assigning access permissions to roles eliminates the need to persistently change user accounts. Users frequently change in organisational departments but existing roles do not change frequently, thus access permissions are maintained regardless of users changing or leaving roles.

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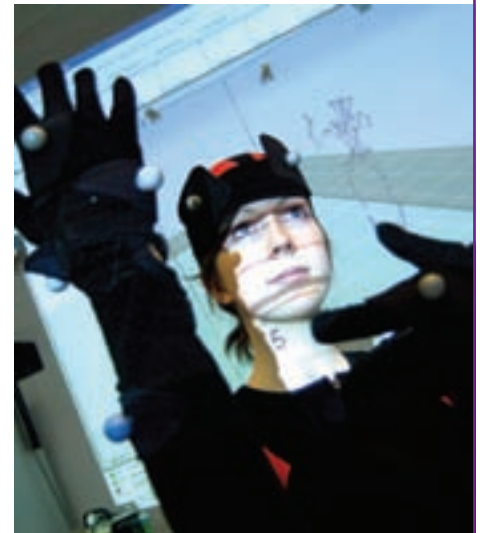
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GAMES CONCEPT & DESIGN

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.

PHILIP WALKER

TARIQ HAWKINS

ANDY ANDERSON

PHILIP WALKER
BA (HONS) COMPUTER GAMES ART

The development of computer game character design has excelled over the past 30 years, from a little character running across the screen made with just a few blocked out colours, to ultra realistic human beings smiling right back at you. For this project I wanted to represent the evolution of the computer game character over time. I have made two character models in a series of 2D and 3D designs. The first is a model of me built using photo referencing and the second is a mixed anatomical, multi-legged creature. The overall designs range from those of the early 80's up to the present day. Both characters were created using industry standard programs such as Adobe Photoshop for 2D sketches, final piece drawing designs and detailed maps for the 3D models. Autodesk 3ds Max was used to create basic to complex geometrical characters, and finally, Pixologic Zbrush was used for sculpting finer details and texturing of the more recent 3D models.

TARIQ HAWKINS
BA (HONS) COMPUTER GAMES ART

I have created four characters and an environment, from concept through to fully modelled, rigged and textured pieces. Each character plays their role in a short story based around the trials and tribulations of an African tribe's boy's initiation and his animal companions. Along with characters designs, I have also created concept paintings for the environments in which these characters will live, work and play.

ANDY ANDERSON
BA (HONS) COMPUTER GAMES ART

The purpose of my project – Back to the Future – was to fully reconstruct Dunluce Castle in 3D to show how it looked when it was lived in during the 17th century. The surrounding terrain is re-created and several of the town houses and streets. I surveyed and measured the ruins of the entire castle and any surrounding buildings still standing. The architectural plans were then drawn up in Autodesk AutoCAD. I interviewed Dr Colin Breen who has completed many archaeological digs at the site and he advised where Dunluce town was situated outside the castle. The architectural plans I drew up in Autodesk AutoCAD were imported into Autodesk 3ds Max to build the models accurately and to scale. I used Adobe Photoshop to make seamless textures from photographs and applied them to the models. I created global illumination to fake general daylight for a more realistic feel. I also exported my models to the Unity Game Engine to create a standalone product making it possible to walk around Dunluce as it stood in the 17th century.
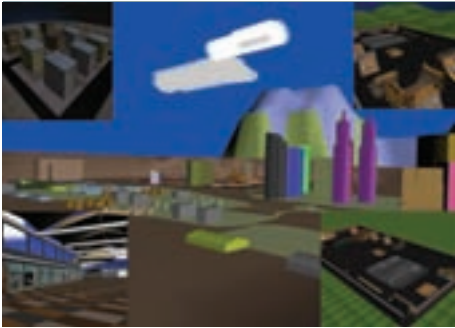
ADAM SMITH

JAMIE SMITH

DAVID ROBINSON

ADAM SMITH
BA (HONS) COMPUTER GAMES DESIGN

The main focus of my project was environment modelling and the creation of an architectural visualisation scene. This scene features a small sized city surrounded by mountains and water with various districts typically of a city such as a financial district, ghetto/downtown and industrial estates. There are contrasting moods and themes so the higher end of town has a new, clean, and fresh look, whilst the downtown, industrial area looks dull, grimy, gritty and rundown. All were produced using Autodesk 3ds Max and Adobe Photoshop and Premiere. Methods for texturing the scene have been a mixture of unwrapping and texturing in Photoshop, UV tile texturing and also creating procedural textures within the 3ds Max material editor itself.

JAMIE SMITH
BA (HONS) COMPUTER GAMES DESIGN

I enjoy playing sports games and thought it would be interesting to create a 3D model based on Middlesbrough's Riverside stadium, which has never been made for a football game. Initially it seemed a physical aesthetic model was all that was needed but to give a realistic depiction of the environment props, lighting and a level of detail for the surrounding, were essential to making it life-like. Assets were made using Autodesk 3ds Max and Mudbox and textures created in Adobe Photoshop and Crazybump, all of which comply with current industry methods and technological restrictions. The final model will be made for use in Epic Unreal 3 engine, which represent the model in real-time.

DAVID ROBINSON
BA (HONS) COMPUTER GAMES ART

I have created a principal character for a game concept based around imagery from the 1950s science fiction genre. My goal was to create a believable and interesting character by covering three main aspects of game asset creation; the character concept art from the initial designs to finished character sheets, modelling the character in 3D to current industry standards and texturing it and creating a short animation to be used as an in-game sequence. Various pieces of software have been used and contemporary techniques from the games industry, including Adobe Photoshop, Autodesk 3ds Max 2010 and Pixologic Zbrush.

PAUL AGAR

NICHOLAS BEALES

PAUL NEWMAN

PAUL AGAR
BA (HONS) COMPUTER GAMES ART

I have developed a concept art book for a role play styled game. The book features sketches of characters, environments and storyboards. It will demonstrate my ability to produce ideas and designs for the pre-production of a project for both the games and film industry. The artwork style is relatively realistic as opposed to something in the anime style. For this project I have used a variety of different traditional and digital mediums such as Adobe Photoshop CS3, and Autodesk 3ds Max 2010.

NICHOLAS BEALES
BA (HONS) COMPUTER GAMES ART

My project is a real-time strategy game design set inside the human body. The aim of the game is to play as a pathogen, for example bacteria, virus, or fungus, which has to systematically take control of the host. This is the first part of the game, after the human has been 'converted' the player would move into a role-play game scenario playing the infected human. For my project I have focused on the first part of the game and created character art for the second part.

PAUL NEWMAN
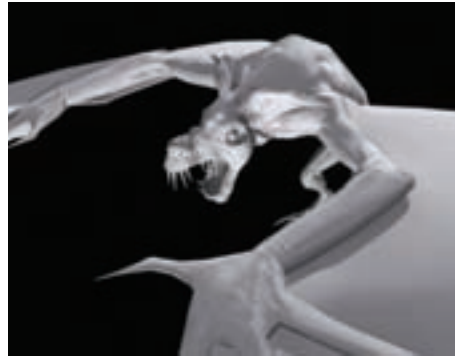### BA (HONS) COMPUTER GAMES DESIGN

My project is a pitch for an original game design. The game idea itself follows the exploits of a British soldier during the Napoleonic Wars of the early 19th century, a time when Britain is engaged in heavy fighting with the French in Spain. The pitch will include a game bible describing the products components, a pitch document summarising what the game is about and what makes it 'stand out' from the crowd, and also a walk through of a single level to explore the typical experience offered to the player.

FERGAL O'DONNELL

DARREN BENTON

SHAUN WILSON

FERGAL O'DONNELL
BA (HONS) COMPUTER GAMES ART

My project focuses on the 2D aspects of game design such as concept art and character design. I have produced a varied selection of character designs for a new fighting game called *Fisticuffs City*. Through studying the character art of various fighting games such as *Street Fighter* and *Guilty Gear* I have noted numerous character archetypes that tend to crop up in most games and have implemented some of these ideas into my own designs. For each character I have produced basic initial sketches, turnarounds, concept sheets and diagrams of movie sets with special techniques that characters can perform. My early concept work is usually created with traditional mediums such as ink pens and Copic markers, and my final designs are usually digitally produced with Wacom tablets in Adobe Photoshop.

DARREN BENTON
BA (HONS) COMPUTER GAMES DESIGN

The aim of my project was to design and develop a unique flying creature from initial concept to finished product – an effortlessly animatable creature. My main rationale was to push my conceptual design and production skills to the next level and improve my knowledge of 3D animation, texture creation, character rigging and artistic skills. To test my skills, and to ground my creature in reality, I researched the anatomy of a variety of flying species such as bats and birds. I also included animals that do not fly, for example wolves and tigers. This helped the creative process by mixing and matching creatures that exist amongst us today. The project increased my knowledge of software packages such as Pixologic Zbrush, Autodesk 3ds Max and Adobe Photoshop.

SHAUN WILSON
BA (HONS) COMPUTER GAMES DESIGN

I have produced a three-page foldout advertisement with its own cover sleeve. I wanted to produce a demonstrative piece that leaves no doubt as to the tone of the game it represents, in this case, isolation in the deep sea surrounded by hostile creatures and environments. The work was mostly executed from scratch in Adobe Photoshop and drawing from researched materials depicting the eerie, alien unfamiliarity of the deep sea and the extraterrestrial nature of its inhabitants.

DAVID PAGET

MATTHEW PEARSON
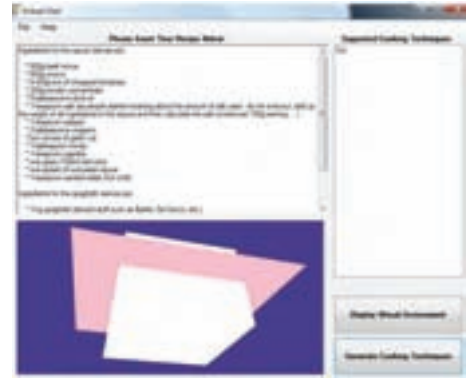
ANTHONY DEBIE

DAVID PAGET
BA (HONS) DIGITAL CHARACTER ANIMATION

My work involves character concept art work for a new first person shooter. After researching areas and levels for the game, from westerns to the Vietnam War and outer space, I decided on a circus setting. I have taken inspiration from fast paced and stylised games such as the *Timesplitter's* series, *Unreal Tournament* and *Borderlands*, because my characters have a much more graphic quality to them. The style will have an illustrative quality. The circus theme aids this style with a vast array of characters including clowns, gymnasts, performers as well as strikingly unusual people, all of which can have an undercurrent of humour throughout. By combining my research and traditional drawing techniques and engaging new professional digital painting techniques on Corel Painter and Adobe Photoshop, I feel I have created some new and interesting characters.

MATTHEW PEARSON
BA (HONS) COMPUTER GAMES DESIGN

I have researched the process of designing a multiplayer map for *Unreal Tournament 3*. From initial concepts and map designs, to the creation of the assets and placing them together in the engine. The main outcome of this project was to create a map that is fun to play above everything else.

ANTHONY DEBIE
### BSC (HONS) COMPUTER GAMES PROGRAMMING

My project is an interactive and educational cooking application. It gives guidance on basic cooking techniques. The application will create a safe environment to re-create some of the basic cooking techniques such as cut, slice, fry and boil. The application holds a small variety of cooking techniques for the final year project, but this could be extended in the future.

JOHN ATEIGEN
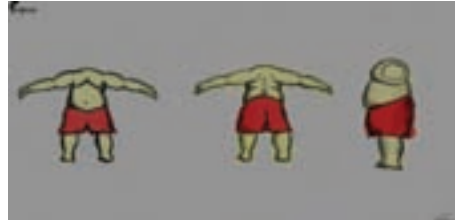
SIMON CHURCHILL

WILLIAM TRULSSEN

ALMANTAS SUKELIS

SIMON CHURCHILL
BA (HONS) COMPUTER GAMES ART

My project focuses on the design and creation of a set of playable enemy characters for a fictitious current-gen videogame. I felt it was important the characters reflected the situation the game had placed them in, while displaying their individual personalities. I also composed a short back-story entitled Alter-Core. To accurately develop my skills, the character production used industry standard software, procedures and limitations. My workflow began with concept artwork and progressed through to modelling, texturing (with normal mapping) and finally, rigging of all characters.

JOHN ATEIGEN
BA (HONS) COMPUTER GAMES DESIGN

WILLIAM TRULSSEN
BA (HONS) COMPUTER GAMES DESIGN

As a team we are making a single player puzzle/horror game. Called Fearground, it is set in a fairground, with a haunted house as one of the main areas. The game features dark and creepy environments and bright and happy sceneries. The main character is dreaming and we enter his dream. He's at a fairground on a bright and sunny day, suddenly his son disappears and the setting gets dark. The objective of the game is to locate the son by solving various puzzles and avoiding enemies. We went for a visually stunning and realistic look for this game using Unreal Development Kit, Autodesk 3ds Max 2010, Adobe Photoshop CS4, Autodesk Mudbox 2010, Crazybump, Pixologic Zbrush 3.5 and Microsoft Visual Studio 2008.

ALMANTAS SUKELIS
**BA (HONS) CREATIVE DIGITAL MEDIA**

My project is a small game level area in a realistic urban setting. Dystopian, but only portrayed through a deserted vintage flat. In the Unreal Engine 3, you will be able to walk around the abandoned living room, which the protagonist has been using as temporary living quarters. A living room interior of a contemporary apartment building is the primary focus of this small project. This has all been created in line with the current generation of video games, which means low-polygonal meshes are highly textured and then sculpted and normal map baked.
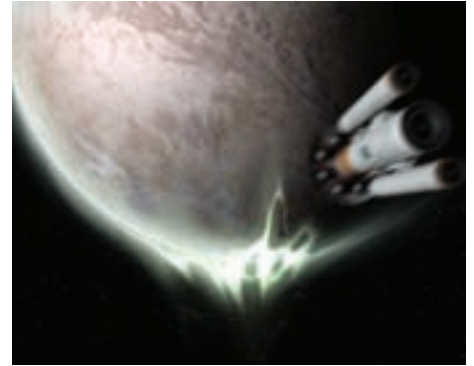
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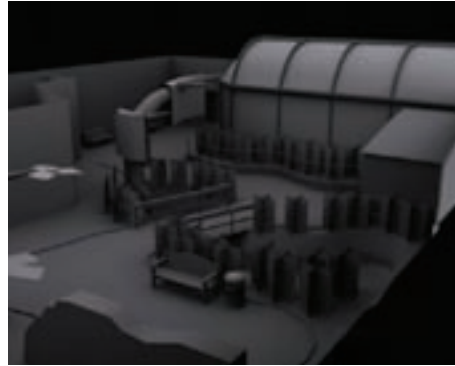
JESSICA YARNOLD

JAMES LEE

KECHI ANYADIKE-DANES
BA (HONS) COMPUTER GAMES DESIGN

I find the most exciting aspect of game design is the creation of the design document, where a developer begins to build an entire world from the virtual ground up. I chose to create a game idea – producing documents that explore the overall look of my game idea and detail the world I propose to make and how it will work. The result is an open world game where the player creates a revolution that will change the planet forever. When designing the gameplay, I tried to include new ideas. For example, unless there is something physically stopping the player, they can enter any building. I addressed what I saw as problems in similar games such as the limited interaction with non-playable characters. Likewise I incorporated what works well in other games, such as a free running mode that plays on the idea of tunnel vision, with possible interactive objects having a glow to them.

JESSICA YARNOLD
BA (HONS) COMPUTER GAMES DESIGN

I have created a 3D environment loosely based on a small area of a local zoo, which I have adapted to look abandoned and dilapidated. This demonstrates my 3D modelling skills and my experiment of creating textures from photographs. I wanted the scene to look as realistic as possible, and to present a visually stimulating piece of 3D art. I developed my scene in Autodesk 3ds Max 2010. All the textures within the environment have been hand created in Adobe Photoshop adapted either from photographs I have taken or made from scratch.

JAMES LEE
BA (HONS) COMPUTER GAMES DESIGN

I chose to create a design document for a sandbox survival game set in a time where humanity has colonised numerous other worlds. The game is like *Garry's-Mod* (GMod), a modification for the Half-Life engine only with a story/objective, and without requiring the player to be an experienced programmer. My game design tries to make the experience of GMod accessible to the masses, giving them the creative freedom offered to players in *Spore*. Using modular pieces of code the player can choose the appearance of their creations and their behaviours, for example drones to assist in resource collection and structures from power plants to ammunition factories. The final product is a written document interspersed with images using both Adobe Photoshop and Autodesk 3ds Max.

DANNY SUNG

THOMAS CHAMBERS

DANNY SUNG
BA (HONS) COMPUTER GAMES DESIGN

An aspect of games design I have always been interested in is the concept and art aspect, specifically character design. My project, Iris, focuses on an original fantasy role-playing game narrative. I have designed a range of characters with a personality to drive forward their appeal. I have focused towards illustration to showcase the design process, from sketches to development through model sheets to finalised concept art. A number of stylised art pieces have been composed as material to be presented in the form of an art book. Many of my illustrations were created using a blend of traditional materials such as pencils, markers and fine liners, as well as digital methods such as graphic tablets and software like Adobe Photoshop.

THOMAS CHAMBERS
BA (HONS) COMPUTER GAMES ART

Before Death is a game design document drawing on the research and abilities I acquired during two years spent in the industry. The aim was to produce a design document that is both technical and professional and artistic enough to convey the concepts to non-technical people. Before Death is a 'point and click' adventure for the Nintendo DS, drawing inspiration from the wave of games of the mid 90s, while creating new puzzles that take advantage of current hardware. It follows the humorous story of El Whoppo and Juan Minky as they search the afterlife to discover why El Whoppo hasn't moved on to eternal rest. This is where the game's unique mechanics come into play, switching between the land of the living and the dead. The design document was completed using a variety of programs and mediums from Adobe Photoshop CS3, Luxology Modo 302 to Microsoft Word and traditional art skills.

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Games Graphics Programming, BSc (Hons)

Postgraduate

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Computer Games Art (Environment), MA

Computer Games Art (Vehicle), MA

Computer Games Programming, MSc

Concept Art for Games and Animation, MA

Digital Animation, Sound and Visual Media, MA

Digital Character Animation, MA

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