# **ExpoTees** 2014

Showcasing the next generation of digital expertise

## School of Computing

**Inspiring success**

Teesside
University

# Welcome

ExpoTees 2014 is our ninth annual exhibition of students' work from Teesside University's School of Computing. This year our event is bigger and better than ever before. Once again we showcase some excellent work with a wide selection of projects from our final-year students – subjects range from advanced software engineering and programming to computer games, music, media and animations.

This year ExpoTees runs over two days, with computer science and digital media subjects on day one and games and animation on day two.

We also include some of the research work undertaken by our postgraduate students. And I extend a special welcome to our transnational students who have joined us at ExpoTees from our international partners in the Czech Republic, Botswana and Spain.

This brochure is evidence of the outstanding world-leading work that our students produce – an exemplar to universities worldwide. It is a great credit to our students and the staff who have taught, enthused and supported them during their studies, that our graduates enter employment with many world-leading organisations.

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

**Dr Simon Stobart**
Dean, School of Computing

# What is

## ExpoTees 2014

ExpoTees 2014 is our School of Computing's exhibition of outstanding computing innovation, technology and design. It offers an opportunity to recruit bright, new talent to your organisation.

ExpoTees, now in its ninth year, has grown significantly in size and reputation. This year's event is held over two days to accommodate over 200 exhibits selected from some of the finest examples of work produced by our final-year students.

These exhibits represent the full spectrum of subjects taught at the School of Computing;

### Day 1
Computer science, web and digital media

### Day 2
Animation, visual effects and games

Our students undertake an in-depth exploration of a chosen subject and demonstrate their ability to research, analyse, synthesise, and creatively apply what they have studied. Their project is within an area they have gained an interest, either through a work placement or their studies. Some students undertake projects with external clients that require project managing to industry standard. These innovative, research, design and development projects make up an exciting and diverse showcase.

This year we are delighted to include exhibits from Prague College, ESAT and Botho University – their students are exhibiting alongside the UK students on day one.

We can proudly boast that our graduates achieve great success in industry, sometimes even fame. This is a superb opportunity to meet our rising stars of 2014 before they embark on their careers.

Find out more about our our School of Computing's digital expertise and range of programmes.

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## Friends of ExpoTees

ExpoTees has grown in reputation and size over the last nine years with many visitors returning year on year. This year we welcome back Amplience as our headline sponsor – a supporter of ExpoTees and the School of Computing (see profile on page 4). We are very proud of our growing community of supporters and would like to invite you to join us on our open LinkedIn ExpoTees group where you can meet academics, ExpoTees exhibitors past and present, and all our supporters who have worked to make ExpoTees such a success.

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# Student showcase helped Sam secure employment



**Showcasing her work in a students' exhibition helped Teesside University graduate Sam Waistle launch her career with an international rich-media company.**

Sam, who graduated from the BA Web and Multimedia last year, secured employment with Amplience before she'd even graduated – after impressing the firm with her work at the University's annual ExpoTees event.

ExpoTees enables talented final year students from the University's School of Computing to showcase their work, while connecting with the many employers who attend the annual event. Amplience, which has offices in Middlesbrough, New York and London, is this year's headline ExpoTees sponsor.

Sam, 22, of Stockton, is currently working as a QA (Quality Assurance) Engineer with Amplience. She said, 'Being involved in ExpoTees really helped me to launch my career. It was nerve-wracking meeting employers who came to the ExpoTees event to see our work, but it's a great opportunity.

'ExpoTees helps students see what employers are looking for, while also putting employers in touch with talented students. It also helps graduates to stay in the area, while helping to promote Teesside as a thriving place for technology.'

Sam said she initially chose to study at Teesside due to its reputation and location. 'Teesside is close to home and when I heard it was known as a good university for technology I thought I'd be a

fool not to go there. I chose to study web design as I'd been interested in coding and web design since I was about 11.

'We were taught in school how to create our



own HTML page and from then I was hooked. Throughout the degree we were taught to always thoroughly test our work, which helped me develop a keen eye for errors. This helped me land the job with Amplience in QA.'

Amplience, which is among firms recruiting talent in the region by getting involved in Teesside University's annual ExpoTees, has taken on several Teesside University graduates after seeing their work at ExpoTees.

John Williams, CTO (chief technology officer) with Amplience, said, 'ExpoTees offers a great opportunity to meet and recruit talented graduates. Having such easy access to students has allowed Amplience to build an exceptional multidisciplinary technical team, which has been instrumental in developing a world class software platform.'

John, himself a Teesside University graduate, added, 'We've built up a great relationship with the University in recent years, as it's been really easy to engage and have direct contact with students during their final year. Being able to meet students face-to-face at events such as ExpoTees is vital, as it provides a chance to get a better understanding of their work and what they are passionate about.'

Darren Lee, Head of Development at Amplience, said, 'The students who take part in ExpoTees demonstrate a willingness to put in hard work and apply what they have learnt. Speaking to students in person and seeing their work has really helped us understand what they can bring to our business. At Amplience we have been very pleased with how well expo graduates have become important members of our teams and we look forward to meeting this year's students.'

# ExpoTees goes global

**This year students from our partnership colleges in Spain, Botswana and the Czech Republic exhibited at ExpoTees, making it a truly international event.**

We welcomed Mpho Ben Motsamai from Botho University in Botswana. While studying our BSc (Hons) Computing, he won ExpoTees Botswana. Mpho joined us at ExpoTees UK to present his award-winning cloud student management system. Michele Nuovo from Prague College, Czech Republic also studied our BSc (Hons) Computing. He generated a business data integration tool and was chosen by his lecturers in Prague to exhibit his project at ExpoTees UK.

Students from ESAT (School of Art and Technology) in Valencia, Spain also showcased their work this year. These students completed their final year at Teesside University working on projects alongside UK students. ESAT's director, Jaime Torres Lloréns attended the event to appreciate his students' games programming projects.

ExpoTees was created in 2005 to showcase the work produced within the University's School of Computing. The School now delivers its programme portfolio in the UK, Malaysia, Botswana, Hong Kong, Sri Lanka and the Czech Republic as well as enjoying partnerships with institutes in Spain and Norway. We are proud to showcase the growth and success of our School of Computing through the fantastic work produced by our international partners.
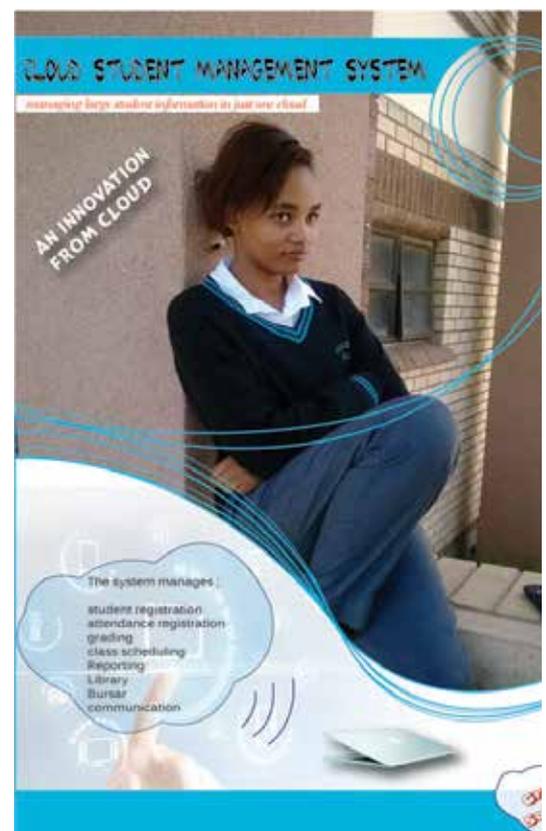
# CAGTA 25th anniversary reunion



**25 years ago Teesside University established the first MSc Computer Aided and Graphical Technology Applications (CAGTA) – a ground-breaking new course that blazed a digital trail for the School of Computing.**

To celebrate, the University's alumni team has worked with former staff member and University supporter, Janice Webster to reunite past students and lecturers. Janice helped establish Teesside's prestigious MSc CAGTA – she then led the Institute of Design for several years before becoming Director of the Virtual Reality Centre in 1997, then founding Director of DigitalCity in 2002.

The CAGTA reunion took place during ExpoTees 2014. Alumni enjoyed the best work of the School of Computing's class of 2014 with former peers and colleagues, and a drink with old friends.

Stay in touch with the University, alumni and friends.

**alumni.office@tees.ac.uk**

**tees.ac.uk/alumni.**

# ExpoTees NextGen





**ExpoTees NextGen is an exciting new initiative supporting the next generation of computing talent. It encourages school pupils to consider further and higher education, and it offers our second-year degree students encouragement to undertake an industrial placement.**

NextGen for second-year students took place in March. By exhibiting their portfolios to industry guests and academic staff, many students earned a year-long placement in industry as a direct result.

NextGen for school pupils was held in May, inspiring them to consider the different computing routes available as study and career options. Seven teams of school children from across the region came to the University to compete. Each team was challenged to identify a subject they thought important to their generation, and to consider how to use technology to educate others about it. There were no limits on the technology that could be used – only that it had to be fun, engaging and innovative.

The teams presented their ideas to a judging panel and ExpoTees exhibitors. The winners were given an exhibition spot at ExpoTees, an opening for the next generation of computing talent.

# animex 2015

## International Festival of Animation and Computer Games

**9-13 February 2015**

# The UK's biggest and best festival of animation and computer games

The Animex International Festival of Animation and Computer Games takes place every year at Teesside University. It is the largest festival dedicated to animation and computer games in the UK. Speakers and representatives from the global animation and games community gather for a week every year to educate, inspire and entertain an audience made up of professionals, students and enthusiasts.

**Find out more:** www.animex.net
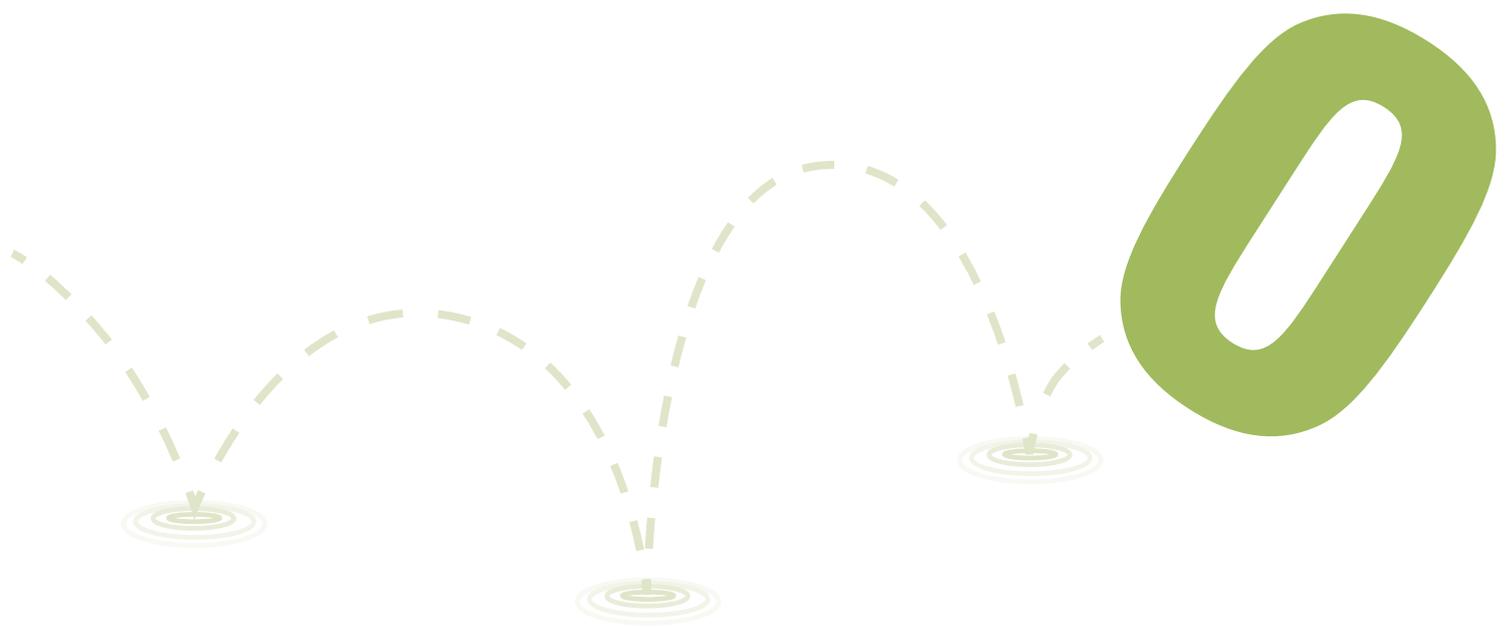
# Animation & Visual Effects

These projects illustrate the level of expertise that students on the School's animation and visual effects courses possess. The projects allow them to focus on a range of skills that enable them to move effectively into an industry setting and be productive from day one.

Graduates from these courses have gone on to achieve success in major animation and visual effects studios in the UK and around the world such as Framestore, Double Negative, Moving Picture Company, Cinesite, Pixar, DreamWorks and Industrial Light + Magic. Some have forged successful careers in games development and industries such as medical, oil and gas, and architecture. Others have become successful entrepreneurs running their own studios.

Teaching in this area is backed by Creative Skillset, which has accredited our BA (Hons) Computer Animation and Visual Effects and BA (Hons) Computer Character Animation.

## BA (Hons) Computer Animation



### Marie Stokland Hagen
### The art of storytelling

I have produced an environment design for an imagined 3D animated feature film set in the Norse mythological world. The film follows a series of events leading up to Ragnarok which is the Norse term for the end of the world. I started this project wanting to learn more about visual development and visual storytelling. I spent a lot of time doing background research, looking at the Vikings and Scandinavian landscapes and thinking about how to implement this into my art. I have a strong belief that, even though it is a fantasy environment, it needs ties to the real world to make it believable. To create my environment concepts I used Adobe Photoshop for digital painting and implementing stock photos, and Autodesk 3ds Max to model, texture and light architecture that I rendered out as stills to put in my environment concepts.



### John Howard
### The map of replication

I have produced a showreel focused on environments, based on a synopsis for a film in the form of a trailer. A planet called Zorthenvar is the alternative reality I have created; a fantasy world I built from ideas and techniques that I have wanted to use in a project for a long time. The trailer consists of matte painting with combined 3D layout of each scene and additional fully realised elements to make a previsualisation. The final result is visually impressive, designed with an intentional contrast in detail levels so as to demonstrate the final overall look without being hindered by too much detail in certain areas. Other elements are finished to the highest possible standard or close to the appearance in the complete film. I have produced a four-scene sequence that establishes the scenes of Zorthenvar and introduces the key features and concepts that the entire film would be built around.



### Pei San Chua and Pei Gin Chua
### The Illuminated Mushrooms

This is a collaborative project in which we have created a short fantasy film entitled The Illuminated Mushrooms. This short film is about two characters, Monstie and Monskie, who are preparing to decorate their place filled with mushrooms. Monstie and Monskie have a father and son relationship. They have been colouring and arranging the mushrooms for the whole day. At last, the mushrooms that they have decorated will light up during the night. The software programmes we have used for this short film are Autodesk Maya, Adobe Photoshop, Adobe Premier Pro and Adobe After Effects.

## Jack Wallace
### Sutherland Manor – a haunted house



I have a created an art book based around a haunted house modelled in Autodesk Maya. This is accompanied by an animated walk-through of the house with an added surprise. I decided to prioritise a section of the house so I could focus my skills on creating a cohesive modelling process, but also to attempt to show a whole production process. A key part of the project was to explore the importance of lighting and how it can affect the atmosphere of a scene. The programs I used were Autodesk Maya, Adobe Photoshop, Adobe After Effects and The Foundry's Nuke.

## Sophie Smart
### Rainforest



Rainforest is a short visual effects sequence showcasing a live action actor walking through a 3D modelled, lit and textured rainforest scene. My inspiration came from visiting the Eden Project, where there is an indoor grown rainforest. I was immediately struck by the entire atmosphere of the place and knew this was something I wanted to recreate in 3D – I just had to figure out how to incorporate my passion for being a compositor as well as a 3D artist. I used a combination of different softwares to model, code, texture, render, composite and track my piece including Autodesk Maya, Houdini, The Foundry's Nuke, Vicon Boujou, Autodesk Mudbox, Adobe Photoshop and Adobe Premiere.

## Luke Hastie
### Car industries: making the future



I have created a short visual effects advert that sells new technology which can transform any car to make it more economical when travelling long distances – through hovering. My aim was to create a visual effects piece in which I could demonstrate my knowledge and skill of the VFX industry. To create my advert I modelled and rigged a car and other assets in Autodesk Maya and textured them in Adobe Photoshop. I filmed a series of live action shots and, after tracking these in Vicon Boujou, I exported the scenes to Maya. I then combined my CG-elements and animated my car for it to transform and hover.

## Sam Baker
### TOM: Reboot In Progress

TOM: Reboot In Progress is a short animated film set on an abandoned ship in orbit of a dying star. It tells the story of Tom, a lonely little maintenance robot who is stranded amongst the wreckage. After countless millennia of solitude, he wants nothing more than a friend by his side. But during his search for companionship, he accidentally awakens something monstrous... For my final year at Teesside, I was determined to grab the opportunity to go all out on a large-scale project, and push my ideas and skills to their fullest potential. This resulted in a draft outline for a short film, with a strong focus on an engaging narrative, as well as a cast of likeable, distinctive characters. A big emphasis was on character animation to showcase my capabilities, with a consistent and visually impressive aesthetic. It was a big challenge to model, texture, rig, light, animate and render a production of this length by myself but I loved the concept from the beginning and have had great support from friends and family. I couldn't have done it without them, and I couldn't be prouder of how Tom: RIP has turned out. I hope all the sleepless nights have been worth it, and that you enjoy my work.



## Jack Serpell
### Laicos Oston

I wanted my film to showcase my skills in CGI and visual effects. My speciality lies as a generalist and so I decided to create a film that would use a wide range of my abilities. Set in the future, Laicos Oston is a short film about a man living in a time dominated by social media. He is on a space mission and has been cut off from the world for eight days – a scenario deemed unthinkable in such a time. I chose this story because I believe it is important to create the impossible in CGI; and that being something that cannot be captured in live action. I modelled a set that is futuristic, interesting to explore and acts as a tool to tell the story. I chose a project that would heavily feature VFX and needed skills such as tracking, match moving, relighting and colour grading, and required live action footage captured on a motion control rig. I also included more traditional filmmaking skills such as soundtrack design, cinematography and story direction.
I used Adobe Creative Suite, Autodesk Maya, The Foundry's NukeX and Pixologic ZBrush.



## Audun Lillemark Ase
### Decay

Decay is a visual effects piece with the focus being on environmental effects and lighting. I wanted to create an environment going through several stages of decay visualised as if someone had shut the door, never to return again. One of my main goals was to create an environment that the viewer would want to go and explore for themselves. There is something truly wonderful about nature taking control again. I used the project to learn more about photorealism in 3D and making something believable and, at the same time, dig deeper in the technical aspects of lighting, simulation and rendering. Decay was mainly made in Autodesk 3ds Max, with Autodesk's renderer Mental Ray. All textures were made from real photographs and edited in Adobe Photoshop. To achieve more control of the final footage, I used The Foundry's Nuke to bring all passes together and add my own visual appeal to it. Finally it was cut together using Adobe Premiere.

## Jacob Baylis
### Chimera

I have created a short animated movie which is a mock product pitch for a fictional military robot. The robot is called the Chimera – an animal-like weaponised machine. The film shows off the robot including its movement and offensive capabilities. The animation was modelled and animated in Autodesk Maya, with Adobe Photoshop to create detailed textures. The film was edited in The Foundry's Nuke.



## Jazz Varley
### The art of tormented tales

I have created a series of conceptual design pieces inspired and based on the fairy tales *Little Red Cap*, *Little Briar-Rose* and *The Little Mermaid*. These designs include characters, environments and creatures with props that support them. I kept true to the original by keeping them dark and obscure instead of the modern lighthearted environments they are now portrayed in. The design process included simple thumbnails and sketches which were then developed into full and detailed concepts. The initial designs were created using traditional means and then developed digitally using Adobe Photoshop and Paint Tool SAI for line art and application of colour and textures.



## Robert Mcleod Lilley
### Compositing showcase

I have created a compositing showreel in pursuit of a job in the visual effects industry. The project allowed me to focus on developing my core skills as a compositor. I included rotoscoping, cleanup, keying and integration techniques, as well as more advanced 3D projection methods. I used The Foundry's Nuke and Adobe Photoshop to produce my project.

## Nathan Lawrence
### Interactive vehicle rigs in Autodesk Maya

I have created some interactive vehicle rigs in Autodesk Maya with the intention of making the blocking out of vehicle animation more efficient and intuitive. I created high-resolution models of the different vehicles driven by interactive rigs to push my modelling and rigging abilities. The vehicle rigs work by using the input of a game controller to drive the rig in Maya. The rigs have a series of dynamic properties and constraints which means that the vehicles behave and react to terrain, similar to a real-life counterpart in real time. I set up dynamic proxy models to react to different terrains and to connect the vehicles to a controller. I used Maya plugins combined with Python and Mel scripting to drive a proxy model which is connected to a high-resolution model.

## Jamie Blyth
### The art of articulation

My project is all about articulation, specifically that of the face. Following anatomical and musculature reference, I have created a facial rig which mimics reality. My hybrid-rig method blends together an underlying muscular and skeletal structure along with industry techniques such as sticky lips and soft-eye setups. I have also textured my piece to further advance the overall realism, painting maps for each skin layer along with specular and displacement maps. Autodesk Maya was used throughout for the rigging process, along with Mari, which was used for the texturing work. I rendered my stills using Solid Angle's Arnold and used The Foundry's Nuke as my compositor.

## Lin Coban
### The Mouse, the Frog and Little Red Hen

I have created a children's book as well as an iPad app in the form of an interactive e-book. To create a hardback landscape-style book I used a website called Blurb, and for the illustrations of my book and my app I used watercolours and some digital editing. My children's e-book is animated with simple movement and includes a narrative and background music. To create the book I used Adobe Photoshop for editing and tweaking, BookSmart (by Blurb) for putting together the pages to be ordered from Blurb and a tool for creating iPad apps by Interactive Touch Books. This tool is not available for download but allows the creator to work within an internet browser with the aid of Adobe Flash Player.

## Andy Bartholomew
### 3D ranch environment

I have constructed a 3D environment of a desert-based ranch with the intention of improving my abilities in modelling and texturing. My scene features an old barn house amidst a range of scrap objects strewn around the exterior. A hovering drone explores the scene as it curiously scans through the surrounding environment, and is used as a means of viewing the 3D models within my scene. The dilapidated nature of the environment gave me the desire to push imperfections in my models and textures, separating them from an artificial CG appearance. A lot of my research involved the study of weathering and decay of certain materials, such as the rust on an old vehicle. I used Autodesk Maya and Autodesk Mudbox to create the models, and UV unwrapping was carried out in UV layout. Post-effects, such as camera vignetting and lens distortion, were achieved in The Foundry's Nuke. Texturing was accomplished using Adobe Photoshop and Crazy Bump.

## James Robertson
### An exploration into compositing and VFX

I set out to explore many areas of the compositing and VFX field, including the use of camera projections to create a believable environment and compositing CG renders within fully matte painted landscapes. I wanted a better understanding of all areas of the production pipeline and to produce an effective piece worthy of a composting showreel. The short animation consists of a camera fly-through of a mountain range with a crashed aircraft at the bottom of the valley. The project was designed in such a way that I would have to learn many industry techniques that I had previously not encountered. It was created primarily using Autodesk Maya, Mental Ray, The Foundry's Nuke, Mari, Adobe Photoshop, Pixologic ZBrush and Headus UVLayout.

## Phil Wray
### Daniel Six

A short, slightly silly live-action short film shot entirely against a green screen, following the biblical story of Daniel in the Lion's Den, also known as Daniel Six. Daniel is a Babylonian city administrator serving under the reign of King Darius, and is about to be promoted to an even higher position. The other administrators are not happy so they create a new law that forces Daniel to be thrown into the lion's den. However, they didn't expect an angel to get involved. This film is technologically designed to be a Nuke compositing exercise involving large amounts of keying, tracking, paint, roto, colour correction and CG integration with live action. The digital set extensions have been built using a combination of Autodesk Maya and The Foundry's Nuke projection mapping techniques.

## Phil Kilshaw
**Agni Hima**

Agni Hima is a short computer-generated animation to be used as a commercial. It uses a combination of motion capture and fluid dynamics to create a professional and visually appealing piece of work. The setting is an elemental football match, with the characters and environment made up of smoke, fire and water. The animation focuses on high-quality fluid simulations attached to motion capture-driven characters. A combination of Autodesk's Maya and MotionBuilder was used for motion capture, animation, smoke, fire and lighting. Textures were created using Adobe Photoshop. Rendering was done in Autodesk Mental Ray and Maxwell Render. Next Limit Realflow was used to create water and compositing done using The Foundry's Nuke. Finally I edited everything using Adobe Premiere.

**BA (Hons) Computer Animation (with Foundation Year)**



## Sumit Neupane
**Particle crowd simulation with Massive and Autodesk Maya**

For my final-year project, I created crowd simulation with Massive and a python script which allowed me to import simulation data from Massive into Autodesk Maya. To create the simulation data from freely available motion capture libraries, this was imported to Massive and different actions were setup and triggered through the Brain Editor. A basic joint structure was created in Massive and a body model was imported and skinned – all the action was then linked to the joints. The human models were generated using open source software, Makehuman. Terrain geometry was loaded for collision detection and simulation was exported out and read in Maya for rendering.

**BA (Hons) Computer Character Animation**
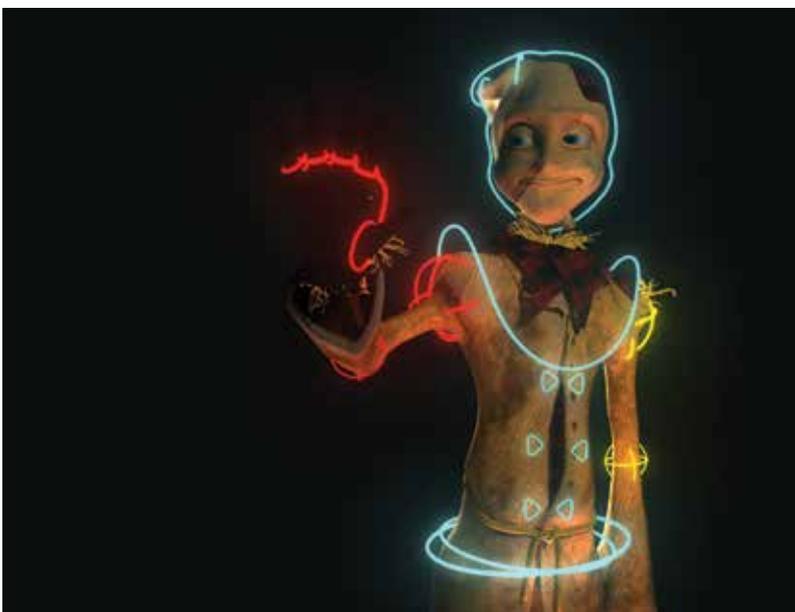


## Andy Bashforth
**Bespoke character rigging for a short film**

I designed, modelled and rigged a character for a short film. I created the story and script, and the character in the story is a Scarecrow. My goals were to create a functional, animator-friendly rig that can perform the requirements identified within the script. The rig includes simulations with nCloth and nHair, IK/FK joint chains, a curve-based solution to facial rigging, and various deformers including Jiggle and Blendshapes. Software used was Autodesk Maya, Autodesk Mudbox, 3D-Coat, Adobe Photoshop, Adobe Illustrator, Adobe After Effects.

## David Lloyd
### Concept art book

I have produced a concept art book that shows the development of characters and an environment for a potential series. The story is about a banished prince seeking to return to the kingdom he once lived in to claim the throne he believes is rightfully his. The project was inspired by art books that don't just have pages of art but also contain comments by the creator(s). I drew the designs traditionally on paper first before taking the work into Adobe Illustrator for inking, then into Adobe Photoshop and Corel Painter to add colour. Finally I put all the work together in Adobe Indesign.
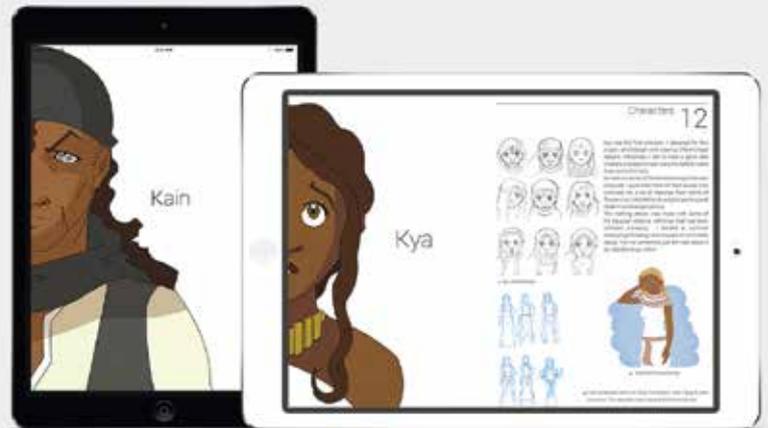


## Sam Dowey
### Downfall

I have created a short 3D animation that shows off a modelled environment based on the introduction to the video game *Fallout 3*. The animation features an abandoned street, based on Linthorpe Road in Middlesbrough. The camera pans back though the street showing the environment. It's cold and moody and, at the end, reveals the protagonist. To create the animation I used a range of software including Autodesk Maya for animating, lighting and rendering, Autodesk 3ds Max for modelling, Autodesk Mudbox and Adobe Photoshop for texturing, Adobe Flash for the animated texture on the radio, Audacity for audio editing and The Foundry's Nuke and Adobe Premier for final compositing and editing.



## Katherine Terzieva
### Soul retriever

I have created two semi-realistic character busts, one male and one female. My concept revolves around the theme of Native American shamanism. My main inspiration for this project was my visit to the Louvre museum in Paris, and my fascination with Native American cultures. The sculptures were created with Pixologic ZBrush, Autodesk Maya and Adobe Photoshop. My aim was to learn character sculpting techniques within ZBrush and create something to a good standard and aesthetically pleasing.
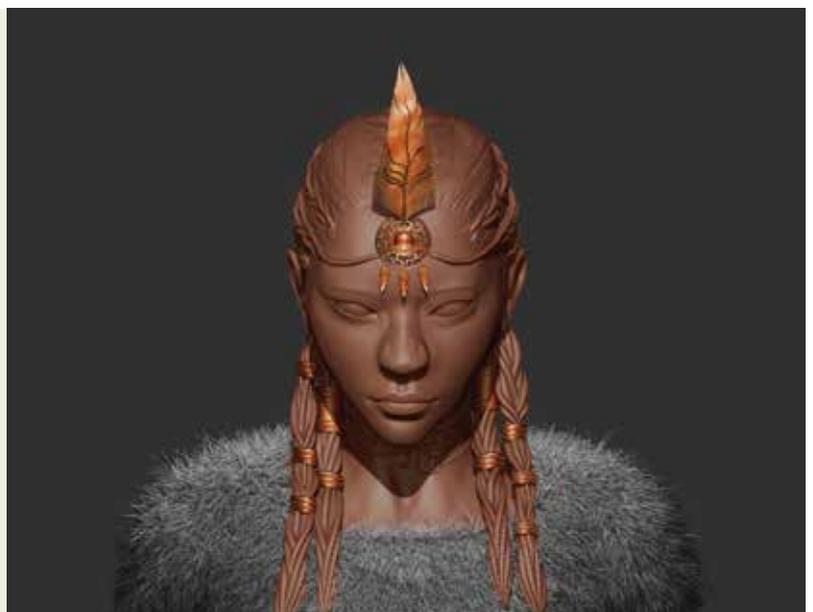
## Tiffany Hall
### The Assassins' Society

I digitally sculpted different characters of my own design, all based on different fashion styles and their own weapon of choice. Each character has their personal style in terms of outfits and weapon choice. However, all the characters share the same role as a mercenary. While one character is a rifle-wielding lazy introvert, the other is a cutesy yet psychotic claw wielder. They are all based on characters from other media such as *League of Legends*, *League of Extraordinary Gentlemen* and both Marvel and DC comics, and more. All the 2D aspects of the project were created in Adobe Photoshop. 3D aspects such as modelling were created in Pixologic ZBrush, from base models, to detailed models, to posing. I also used Xnormals for normal mapping, Autodesk Mudbox for texturing, and Autodesk Maya for creating hard surfaced objects and for some of the final render layout spaces.



## Sarah Franks
### Heroic Holly

I have created a production bible for a children's TV show. It contains the information for pitching the show and for creating the first 2D animated short episode. Heroic Holly follows the adventures of seven-year-old Holly and her best toy lizard friend Shirley as they use their wild imagination to solve the problems of their friends and family. The episode I have developed takes place on Halloween when the school disco starts to get spooky, so it's up to Holly to use her homemade ghostbusting kit to save the day. The production bible covers the pre-production stages of development, from outlining the world, to the script and storyboard for a two-minute episode. My primary software was Adobe Photoshop for both the artwork and the layout of the document.



## Caitlin Vickers
### The life of a student animator

I have animated a comedic short film based largely on my own experiences as a student, showing both the funny moments and the stresses of a deadline day. I have always thought an animator's work process must look a little bit crazy from the outside, given the self-reference and uninhibited triumph (or rage) that no-one else may ever see. I wanted to convey this strange sense of companionable solitude that comes from working in one's own bedroom, having only the temperamental computer for company. The 3D modelling and animation were done in Autodesk Maya, with The Foundry's Nuke used for compositing, Adobe Photoshop for 2D images and design elements, Logic for music creation, and Adobe Premiere for the final edit.

## Andy McBride
**True Power**

True Power is a comic book idea I started work on a year ago. I finalised the overall story and put it into action. True Power is based in the real world but where superpowers have just become a reality – so the superhero culture and image are put into play with the 'real' superheroes. It explores many aspects of human emotion and behaviour in a world where fear, greed and power become more common, as well as what happens when power falls into the wrong hands. There are many other characters that appear (superpowered and not) that either help or hinder the world's balance. This series is intended for a mature audience.

## Heather Gretton
**A good judge of character... animation!**

My final-year project is a showreel compilation of 3D character animation exercises featuring a range of performances and variety of characters. These exercises include stylised animal locomotion with the happy-go-lucky German shepherd dog Freddy, and conflict in the pursuit of beer for mates Al and Richard as Carol rains on their parade. My aim was to animate convincing and believable characters that are appealing, engaging and really feel alive. By doing this I hope to improve my technical proficiency with the software and develop an excellent grasp of the animation principles, taking my skills to the next level. The main focal point of my project was planning and creating high-quality animation so I decided to use pre-made rigs as the best option for showcasing my skills as an animator. The characters were brought to life using Autodesk Maya and Adobe Premiere.

## Roy Tang
**Anigon**

Anigon is a short animated film about a fruit picker who meets Minigon, a squirrel-type character, on his farm. To protect his farm Anigon has some interaction with Minigon. In the end, Anigon gets fooled by Minigon. My main focus point for this short film was to improve my skills by doing a simple yet memorable animation to appeal to a wide audience. I produced characters with personality using my own rig for the animation. I also created a very simple environment design. To create this short film I used Autodesk Maya, Adobe Photoshop and Adobe After Effects to do my final compositing.

## Rebecca Wooding
### Creating dinosaurs

I focused on creating two digital models of two different dinosaurs as well as a maquette of one of them. The purpose of the project was to test the two methods of referencing for a digital model. One was created using just concept art and for the other I created a maquette for reference. I did extensive research into both the Baryonyx and Edmontosaurus to make sure that the details of each were as correct as they could be, given the limited information I had. I chose to do this project to help my learning of Pixologic ZBrush as well as to improve my digital modelling skills. I created the concept work in Adobe Photoshop, modelled the two digital models in Pixologic ZBrush and created the maquette with wire and polymer clay.



## Bianca Iancu
### Island Song

I created an animation bible and an animated music video to *Island Song* by Ashley Eriksson. It focuses on the meeting of two characters and the time they spend together on a floating island in the sky. My motivations behind this project were to refine my stylistic art skills, to further develop my character animation abilities, and to learn more about filmmaking and visual storytelling. My inspiration was largely the style of David O'Reilly, an animator whose work I admire. I modified two existing free rigs, modelled the environments you see and animated the characters. I used Adobe Photoshop to draw up the concept art, Autodesk Maya to model and animate my scenes as well as Vicon Boujou to match move cameras from live action footage. I then used Adobe Premiere Pro to put it all together.



## Naomi Cook
### Animals in motion

I have animated three different animals moving in 3D to create a showreel to submit to animation studios. As I have a good deal of experience with animal behaviour, I felt it would help to bring the two interests together and concentrate on that area of character animation further. This gives my showreel a common theme throughout and develops my workflow with animation run and walk cycles, and blocking. My research involved watching slow-motion videos, looking at anatomy and animation tutorials, and other people's showreels and animation cycles. I also had feedback from tutors and an animator. I drew rough images to get an idea of the movement and flow, and did a few small test 2D animations in Adobe Flash before I started animating in Autodesk Maya 2014.

## Sammi Cannings
### Easy As Pie

I have created a short 3D animation along with a 2D animatic and animation bible. The main aim of the project was to gain a thorough understanding of the short animation production pipeline, from idea to finished product, and develop my skills in each area. The story is of a mischievous raccoon attempting to steal a pie, and the girl who won't let him have it without putting up a fight. The film is influenced by old cartoons from studios such as Warner Brothers and Hanna-Barbera, taking inspiration from their fast-paced and often chaotic action scenes. Easy as Pie was created using a variety of software including Autodesk Maya, Adobe After Effects and Adobe Photoshop.



## Claire Ailsa Mackenzie
### Water Nymph

Water Nymph is a 2D animated project about my personal take on a trapped mythological Greek water nymph. The nymph is finally freed from a fountain and, with the guidance of a small sprite, is led on a journey towards its home in the ocean. As part of my project I have gone through the pipeline and produced a detailed pitch bible, an animatic and a fully animated short. I have completed these tasks with a combination of Adobe Photoshop, Paint Tool SAI and Adobe Flash, and Adobe After Effects for final editing.
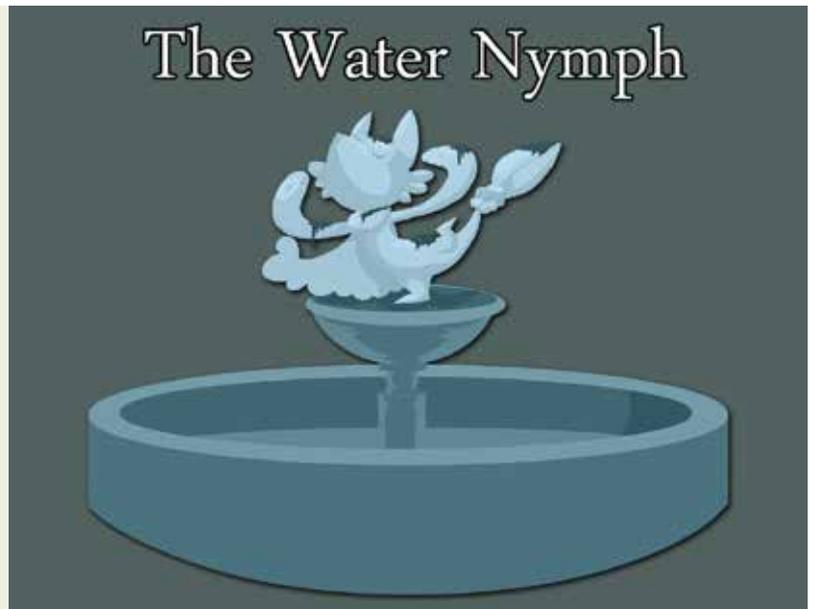


## Miffy Chen and Sean Zhang
### Dream

We created a short animation film. The story is about the friendship between a girl and a small robot in her dream. After working hard Caroline falls into a dream and meets a kind robot called Charlie. Although she is a scared stranger in Charlie's city, he helps her have a good time in his city. When Caroline wakes up, she finds that something in her dream has come true. The animated characters are 3D set in a 2D background. The characters were created and animated in Autodesk Maya and the background pictures were painted in Adobe Photoshop. We used Vicon Boujou to get the camera information of the background for animating the characters. Finally, we used Adobe Premiere to edit the film after compositing the characters and world in Adobe After Effects.

## Leo Jacobs
### Junior Boy

Junior Boy is an original video game concept that has been brought to life in a one-minute animated trailer including an original soundtrack. Junior Boy is set in the style of retro video games from the 1990s, much like the *Super Mario* series and *Sonic the Hedgehog*. The soundtrack is also influenced by this time period. Adobe Photoshop was used to create all of the artwork and illustrations for Junior Boy along with the sprites used for creating the animation. Adobe Flash was used for compositing all of the original sprites together to form the animation. The music was created using the free composing software Famitracker.



## Emma Berry
### A bit of acting: a character animation showreel

I have created a showreel which focuses on character animation. I have established a small but cohesive story within each of my animations and focused on instilling personality and emotion into my characters' actions. I have also ensured that the 12 principals of animation were in place as a firm foundation throughout the entirety of my showreel. All of my animation clips were completed in Autodesk Maya, composited with The Foundry's Nuke and compiled together in Adobe Premiere. In addition, I have completed my showreel using entirely pre-made rigs to focus my skills entirely on animating the characters to the best of my ability.

## Liz Beer
### Creating a champion

I have created my own *League of Legends* champion, from design through to maquette models and digital models. I have also created an animation bible to present the pre-production work. Riot (creators of *League of Legends*) released a few cinematics over the spring and summer of 2013. These were my inspirations to make my own champion of animation standard, rather than game standard. My interests lie in maquette and digital modelling so I used this project as a chance to further expand and refine these skills. The maquette models were made using wire and polymer clay and the digital models were made using Pixologic ZBrush. The concept art and animation bible were made using Adobe Photoshop.

## Chi Woon Leow
### Pace Light

Pace Light is a short animated film in which a young boy is battling his fear and fights to get rid of a dark shadow. I wanted to create an animated film with an emphasis on effective lighting to bring out the atmosphere and mood, and to make the scene look comfortable and peaceful. Every film has a spectacular scene to attract the audience and inspire the viewer. To create my animated film I used Autodesk Maya for 3D modelling, lighting and animation, Adobe Photoshop to create my textures, Adobe After Effects for colour correction and compositing, and Adobe Premiere Pro and Adobe Soundbooth to edit sound.

DREAM

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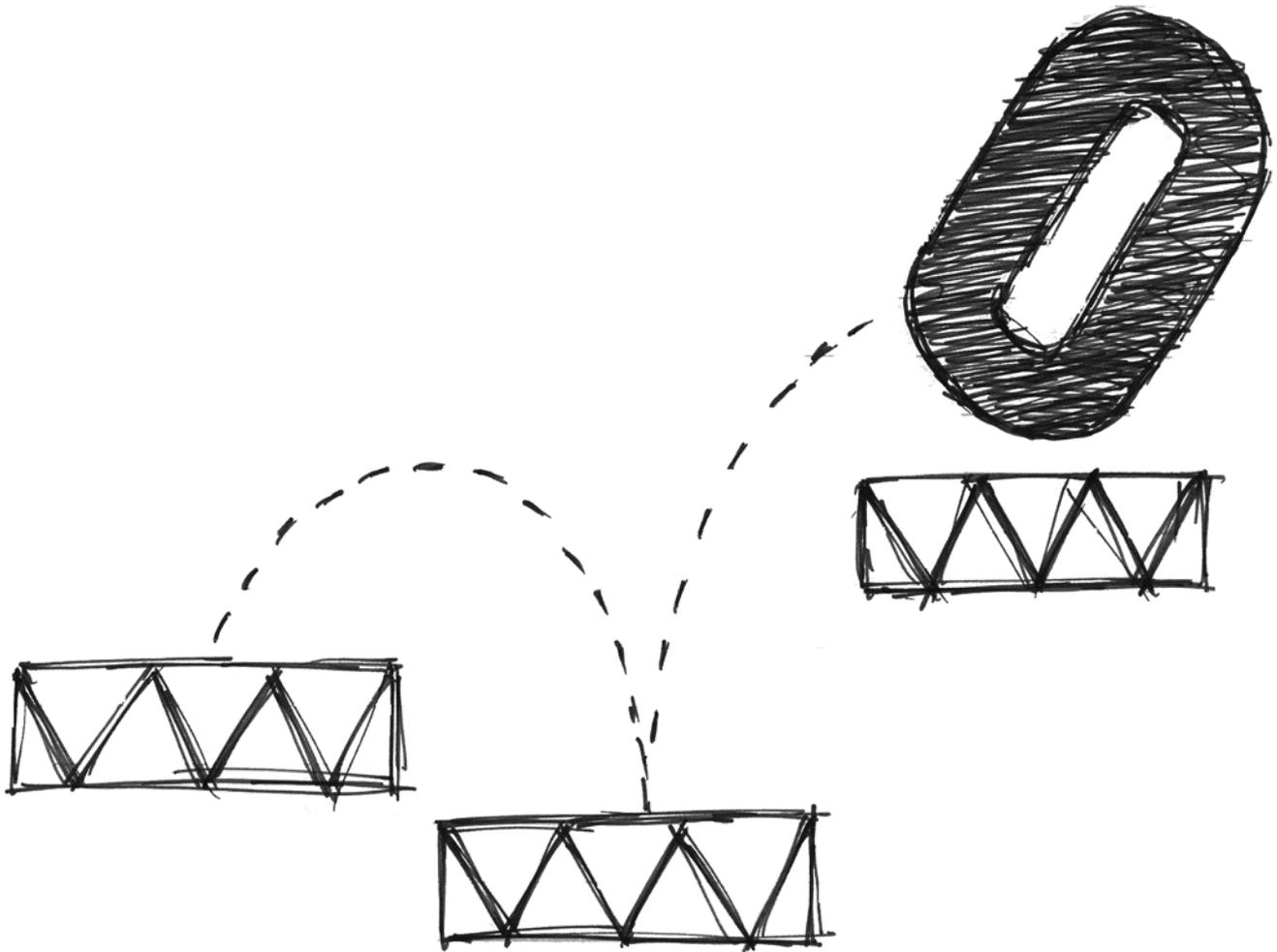
# Games Concept & Design

The birth of a computer game occurs within the imagination. The concept, creating the world, the characters that inhabit that world and subsequently 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.

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## BA (Hons) Computer Games Animation



### Jordan Cain
**Wright Co**

Wright Co is an animated short based on the Wright Brothers' invention of the plane. I worked with a 3D artist, Luke Tovee, to create a pre-visualisation of the animation as a whole and proceeded to animate a short section to a polished finish using freeform animation. The aim of the project was to explore the workflow for the pose-to-pose animation pipeline to create an animation for a young audience. It allowed me to demonstrate my ability to work with freeform animation in a context outside of games. The project was created primarily using Autodesk 3ds Max. Other animation software packages were also used, including Autodesk MotionBuilder and Cortex.



### Joanne Chan
**Digimon in Epic Games' Unreal Engine 3 (quick-time events and special effects)**

I have created a series of quick-time effects and cut scenes in Epic Games' Unreal Engine (UDK) based on the Japanese anime, *Digimon Zero Two*. The original anime is about a group of children being pulled into the digital world and their adventure. They team up with different Digimon to defeat and protect the digital world from the evil Digimon. The original anime is full of energetic animations and a variety of fantasy special effect elements. Recreating it in a game engine provided an opportunity for me to showcase my animation and special effects skills and to use a game engine. Animations were created in Autodesk 3ds Max and by motion capture (cleaning up data in Cortex, re-targeting data in Autodesk MotionBuilder and final editing in Autodesk 3ds Max). Special effects were created in UDK Material Editor and Cascade Particle System. Texture particle was created in Adobe Photoshop. UI was created in Adobe Flash and imported into UDK though Scaleform. All cut-scene, quick-time events and basic character movement are created in UDK Kismet.



### Kieran Gates
**From 2D to 3D: the study and analysis of 2D animation for implementation into 3D**

I studied an example of 2D animation so I could recreate the characters and art style in 3D. I chose a very specific franchise to study, one I felt would be a great challenge to replicate with its very unique style and flair. The franchise in question is the GAINAX series *Panty and Stocking with Garterbelt*. The inspiration for this project came from my love for traditional animation and my belief that, should a franchise move from 2D to 3D, the artistic roots it comes from should be honoured as closely as possible. I have put together a short concept film, made up of storyboarded segments and key scenes that represent what the final product could be. I used Autodesk 3ds Max for character models and environments (with BonesPro and FinalToon for skinning and rendering), Adobe Photoshop for storyboarding and Adobe Final Cut Pro for video editing.

## Megan McCloy
### *The Lion King* reimagined

I have hand animated a short scene from Disney's *The Lion King*. The scene I have chosen features the characters Simba, a male cub, and Nala, a female cub. Simba is teasing Nala about an idea they both had, claiming the idea was his own while Nala also claims to be the one who created the idea. The teasing leads to the pair play fighting leaving Simba annoyed and embarrassed when he is pinned down by Nala. This piece was created using Autodesk 3ds Max for modelling the characters and scenery, as well as producing the 3D animation. I used the tools within Autodesk 3ds Max to hand animate the characters in an overdramatic, Disney-stylised way. For the facial animation of both Simba and Nala, I have created a combination of a bone-based system and 42 different morph targets, as Disney use a wide variety of facial expressions.

## Rebekah Giddings
### **Rosalynn**

Rosalynn was conceived as a way to learn more about creating a playable game character as well as giving me an opportunity to gain more experience in the field of motion capture. The end result is a small playable level with my own character inside, complete with a full animation tree. I used several pieces of software to bring my creation to life including Cortex for recording and cleaning the motion capture, Autodesk MotionBuilder for additional cleaning, Autodesk 3ds Max to further clean and loop my recordings and Epic Games' Unreal Development Kit so that Rosalynn can be playable. The project has developed confidence in my work as well as building a greater desire to learn even more.
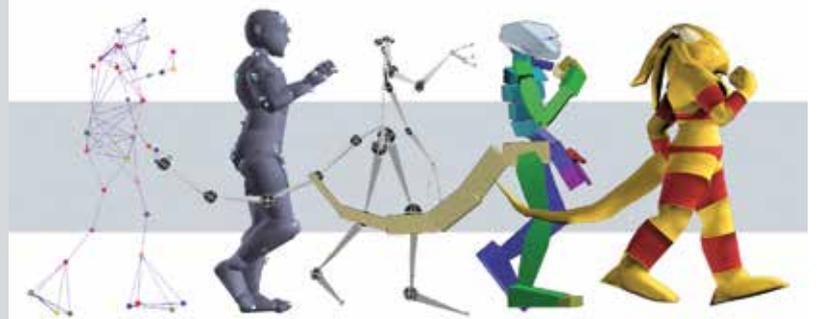
## Sam Brown
### **War of the Workspace**

An animated short incorporating both motion capture and freeform hand animation. The story depicts a dynamic fight scene between two action figures on a computer desk populated with numerous objects, some of which the characters interact with. For my motion capture actors I used two expertly trained fighters with multiple Dan black belts in mixed-martial arts. I encountered various challenges throughout this project such as the difficultly of choreographing a large fight scene and only having a small motion-capture studio to capture it in. The project highlights my strengths in motion capture and freeform animation, and developed my peripheral skills such as lighting and cinematography. I tried to keep the animation as true to the motion capture as possible but some scenes needed a lot of hand animation to exaggerate or edit certain movements. My motion capture was captured and cleaned in Cortex, before moving the data through Autodesk MotionBuilder and into Autodesk 3ds Max. The majority of work was done in Autodesk 3ds Max, mainly editing the motion capture data and any hand animation that was needed. I also created the environment lighting and cameras in this program.

**BA (Hons) Computer Games Art**



## Steph Dammrau
**The Murder Train**

I have replicated the interior of two carriages of the Orient Express, inspired by Agatha Christie's *Murder on the Orient Express* and the video game *The Last Express*. The train is a crime scene, full of traces left by a murderer. I wanted to build a small environment within an exotic location. The enclosed nature of a train was a perfect foundation and allowed me to focus on both small details and create a believable setting. The scene is built in Unreal Development Kit. Assets were created in Autodesk 3ds Max, detailed in Pixologic ZBrush and textured in Adobe Photoshop.
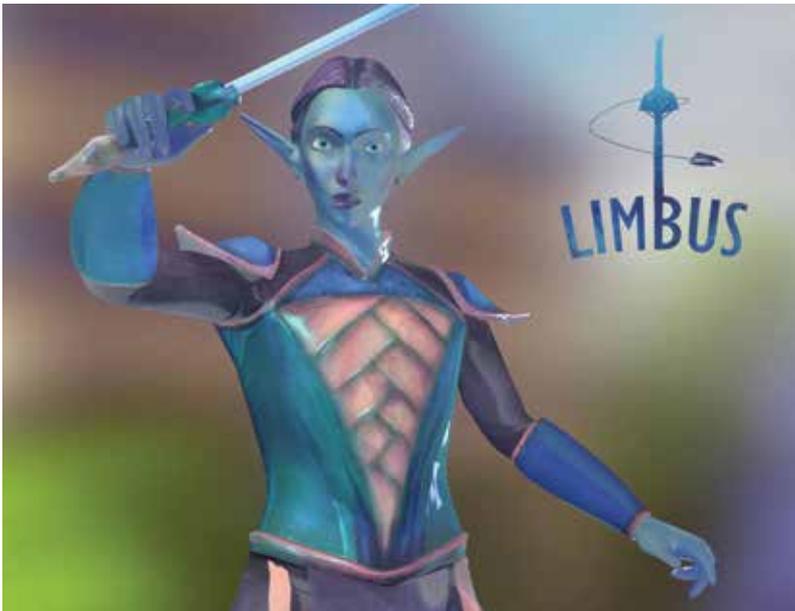


## Emily Clarke
**Limbus**

I have created a fantasy world through 2D concept art, as well as two characters which have been designed in 2D and developed into 3D models. The setting is a Hub World environment for a role play game (massive multiplayer online) and displayed as an art book (PDF). The characters are player avatars that exist within the world. I wanted the range of work to present and develop my interests and skills in both concept art and 3D character art. The environment concept art was produced in a range of visual styles, and then developed into a 3D environment with mood concept, colour keys, and technical planning (such as basic maps) which environment artists could use. The characters show my ability to develop characters from concept art into to a low poly mesh and then developed into a high poly sculpt and textured. The 2D concept art was created with Paint Tool SAI and Adobe Photoshop. The 3D characters were created using Autodesk 3ds Max and Autodesk Mudbox, and rendered using 8 Monkey Labs' Marmoset.



## Heta Kettunen
**Stylised character concepts and models**

I have concepted and created two stylised characters, a young hero and a reindeer monster, inspired by wintery Lapland. I chose the project to showcase my skills in character concepting and modelling with the style I feel I am specialised in. I wanted to make the meshes as simple as possible and only used diffuse textures to show that models can look good even without the use of more advanced texture maps and rendering features. The models were created by using Adobe Photoshop, Pixologic ZBrush and Autodesk 3ds Max.

## Georg Engebakken
### Grave of giants – science fiction from the 18th century

I took inspiration from a series of cards found in cigar and cigarette boxes drawn by Jean-Marc Côtè in the late 1800s to early 1900s. The cards are called En L'an 2000 which translates to 'in the year 2000'. The cards reflect Côtè's vision of the future. They show a surreal world with whale submarines, flying battleships and policemen with wings. My scene takes place in the middle of the ocean but there are environmental elements from the human form. The environment was created from giants turned to stone; a grave of Giants. The project is presented with CryEngine. My main focus was art so I chose to present it as a diorama where a camera moves in a freeze-frame situation to a climax point. All the characters were pre-positioned before being exported into the engine. I have also pre–simulated particle effects (pressure waves, wind and water) and exported them as static objects to get the effect I wanted.



## Jade Crosby
### Seclusion

I created a small interior environment – an abandoned log cabin – to be used as part of a game environment. I imagined the cabin belonged to someone who relied on the land to provide for them; someone who isn't afraid of a little hard work and doesn't surround them self with technology like we do today. As I was creating the cabin I was constantly reminded of my granddad and used him for inspiration and a source of motivation. Other influences include environments from *The Last of Us*, *Naughtydog* (2013) and Urbex photography. I used Autodesk 3ds Max, Autodesk Mudbox, Adobe Photoshop, Crazy Bump and Unreal Engine.
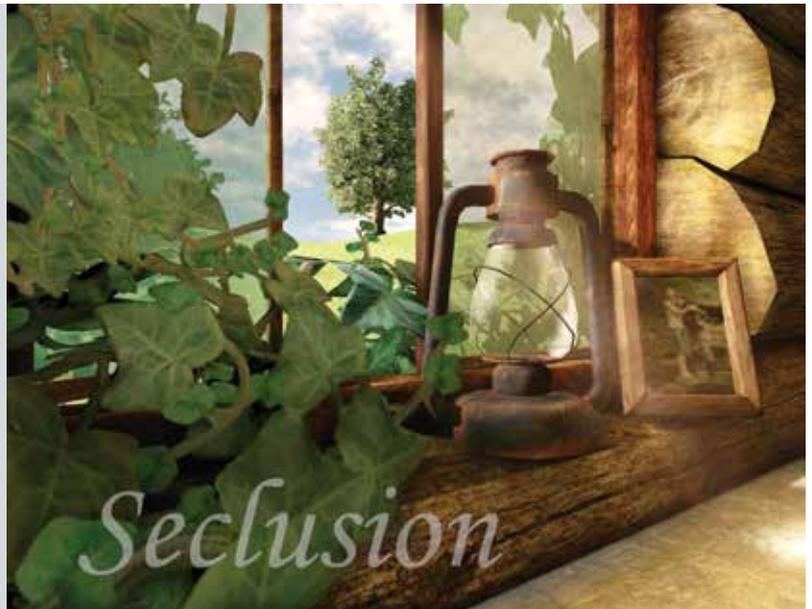


## Vladimir Andrejevskis
### Katana – characters design, modeling and presentation for next-gen games

Katana is a next-gen game-ready 3D character that is based on my own concept art and story set in the future. Scientists created elite cyborg soldiers by turning the most dangerous people into unstoppable killing machines to protect earth's resources from alien monster attacks. Katana is a Japanese female warrior and her weapons of choice are blades. This character development included a combination of organic 3D sculpting in Pixologic ZBrush, mechanical hard surface modelling in Pixologic ZBrush, texturing in Adobe Photoshop, skinning and rigging in Autodesk 3ds Max. The project presentation is available both in UDK as an interactive turntable and as a showreel video

## Elle Dudley

**Cosmic Latte – an arcade fighting game visual concept for iPad, combining 2D and 3D elements**

Cosmic Latte is an original interactive visual concept of an arcade-style fighting game for the iOS platform. It reflects my love of the fighting game genre and use of 2D graphic design in games. Developed in Unity, the aesthetic uses 2D and 3D elements brought together in a vibrant and illustrative world heavily inspired by retro fighting games and Japanese animation. The project demonstrates my skillset developed during my year-long placement and contracting role at Microsoft Studios. This includes concept art, user interface, graphic design, 3D and 2D asset creation, technical art, and coding. Water Colour and Adobe Photoshop were used in pre-production and 2D asset creation. 3D modelling, texturing and sculpting were completed with Autodesk 3ds Max, xNormal, Adobe Photoshop and Autodesk Mudbox. I used Adobe Premiere to create concepts for animated user interfaces that were then translated through the NGUI plugin for development in Unity.



## Øyvind Hyldmo
**1349**

I designed characters and environments for a game set in Western Europe, 1349. The backstory focuses on a witch hunter sent to France by the Pope to investigate a situation in the Free Imperial City of Rhona. I decided to design two of the most prominent characters of the city – the bishop and captain of the guard – as well as the protagonist and the antagonist. The environments are designed to show a city on its knees. I also wanted to design the largest and most important structure in the city, the cathedral. The last environment I designed was the exterior of the witches' lair.



## Neil Goodman
**The Riddler's Den**

My project environment is from the Batman universe built within the Epic Games Unreal Engine. One of my main goals was to tell a visual story, not just create a space but to fill it and make it feel lived in. This required a lot of research and thought into how The Riddler might think and live – I enjoyed planning and creating the various parts of the scene with this in mind. I used Autodesk 3ds Max, Unreal Development Kit, Pixologic ZBrush, Adobe Photoshop, xNormal, and Quixel's nDo2 and dDo packages.

## Robert Spence
### Nouveau workshop

I wanted to demonstrate my skills as a 3D artist by creating a science fiction environment. The environment in question was heavily influenced by the Art Nouveau and Art Deco movements, as well as a few science fiction works such as *Farscape*. I chose this subject because I was curious as to whether a science fiction environment could be created and look interesting by using a different style and still keep the futuristic quality. The separate elements of the environment itself were modelled in Autodesk 3ds Max, textured in Adobe Photoshop, and the scene itself was constructed with Unreal Development Kit.

## Jussi Brox
### Pub time-lapse

I have created a time-lapse of a pub within CryEngine inspired by the Pelican Inn from *Uncharted 3*. The question I sought to answer with this project was whether environments can feel alive and vibrant even without the presence of humans. The goal was to create a breathing and organic scene through the use of a one-day cycle using CryEngine's time-of-day system, cloth simulation, particle effects, as well as furniture and props moving within the environment itself as the pub goes through its day. I used Autodesk 3ds Max, Pixologic ZBrush, Adobe Photoshop, Knald, xNormal, Quixel's nDo2, and CryEngine.
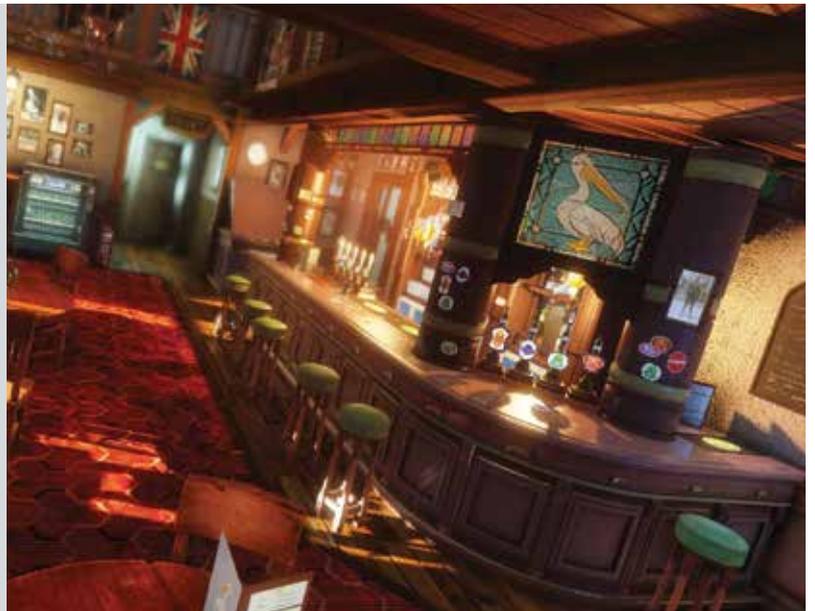
## Emma Charnley
### Radagast's house: an environment in CryEngine

A model of the interior of Radagast's house from *The Hobbit: An Unexpected Journey*. My inspiration was an initial concept from *The Hobbit* art book which was never refined or brought into the movie. This blank and basic concept allowed me to stamp my own personality onto the scene and pushed me to fill in the gaps. The whole scene is about the storytelling and the set dressing that artists need to consider when they model, texture and light their assets. Assets that have history and detail ingrained into them have such a strong ability to pull you into the imaginary game world. I didn't want to create an environment that just looked pretty at a glance but had no detail and meaning when examined. I wanted to create a strong ambience which revealed Radagast's uniquely sylvan and rustic lifestyle, I showed the beauty through the simplicity of the way he resides in Rhosgobel. My project is implemented in CryEngine and to get it there I used Autodesk 3ds Max, Pixologic ZBrush, Autodesk Mudbox, SpeedTree, Knald, Quixel's nDo2 and Adobe Photoshop.
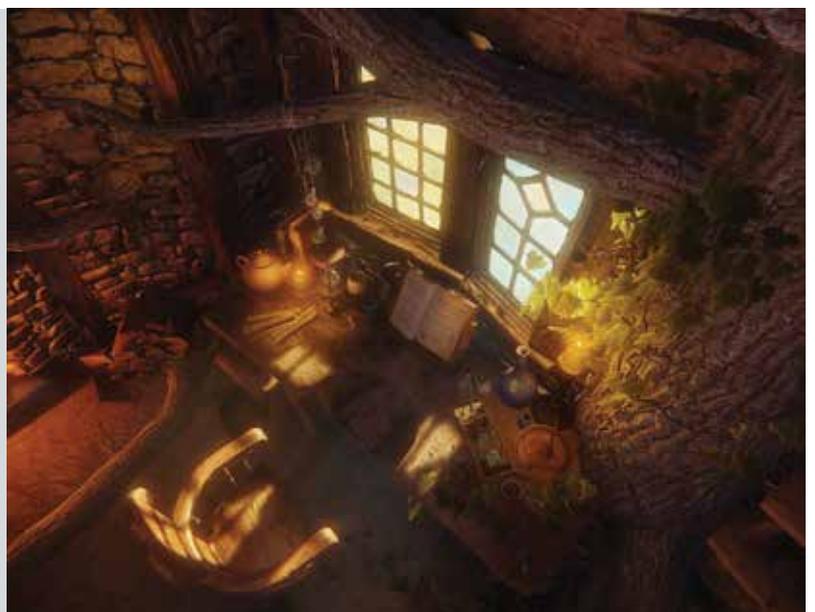
## Dan Harris
### Reimagining *Dead Space* in CryEngine

I created a 3D environment based on concept art from the computer game series *Dead Space*. The focus was mostly on the art within *Dead Space 3*, though I did reference the series as a whole. The idea was to create a real-time environment that would incorporate next-generation techniques to create a detailed environment. I wanted an environment that had a strong contrast between the separate areas but still had the elements feel as if they belonged within that environment. This was the main reason why I chose to do my project on a particular area within *Dead Space 3*. I used Autodesk 3ds Max for the modelling and UV unwrapping, Adobe Photoshop for texturing assets, Pixologic ZBrush for any sculpting details, and CryEngine to bring it all together within a game engine to light the environment and make it come alive.



## Alec Tse
### *Ip Man 2* character production

I have sculpted two characters from the film *Ip Man 2*, a martial arts movie that I love. From it I chose the main character, Ip Man, and the English boxer, Twister, for the subject of my character sculpt. Each character provided a different challenge in character modelling. Ip Man wears Kung Fu clothes in the movie and so the attention was focused on the material of his clothing and the form of the drapery on the body. Whereas with Twister, the key focus was on the anatomy and form of a boxer's appearance. Combining these aspects helped me portray a believable and realistic appearance for both characters. The project allowed me to showcase my sculpting skills, helping me to produce a good standard of anatomy and clothing detail in my future work. The characters are modelled in Pixologic ZBrush and Autodesk 3ds Max, and Adobe Photoshop was used for compositing and editing.



## Anne Helene Steinsund Furrevik
### Croatoan Virus – a character-modelling project

For my final-year project I made two character models based on TV characters from the show *Supernatural*. One was optimised for game usage, the other was left in its high poly state. This project was my response to there being no game content related to the series. I wanted to make sure the project met next-generation standards, so I lifted the tricount to 30,000 per character and used Albedo maps instead of Diffuse. Valve's *Left 4 Dead 2* was used as a reference and standard, as I imagined the engine and gameplay would work well with the setting of the TV show. I looked at how Valve had built the characters, the maps they had used and how they were skinned and animated. I used Autodesk 3ds Max for modelling, Pixologic ZBrush for sculpting, and Xnormal to bake out the different maps. The textures were done in Adobe Photoshop before I finally rendered in Marmoset Toolbag 2.

## Paul Abley
### The Museum

I have created an environment set in an old stone building that is now used as a museum exhibiting animal-based robot technology. My inspiration for this project came from the Natural History Museum. I wanted to create an environment that combined the old with the new and, in doing so, produce a visually interesting piece. My aim was to make use of modular assets and harness the power of vertex painting to enhance this. I also wanted to include some mechanical assets to contrast the old style building. In creating this environment I used Autodesk 3ds Max, Autodesk Mudbox, Adobe Photoshop and the Epic Games Unreal Development Kit.



## Alec Courtney and Sam Lake
### Transmission

We have each created our own 3D models that are fully integrated into the world of *Grand Theft Auto IV.* We showcase these unique models by featuring them in an intense cinematic trailer. Transmission is a vision for a sandbox game where players get to step into the shoes of a legendary getaway driver, Suit. Suit was nicknamed for his smart dress sense and discipline. He is the only getaway driver to turn to if you want the job done properly. Suit has made a name for himself in the underworld of New York over the past 20 years – it is well known that he has never been caught on a job. That is until now. The main reason behind using *Grand Theft Auto IV* as a base for this trailer was because it has its own video editor. It was also the best suited game for the feel and atmosphere that we wanted to put across to the audience.



## Melissa Fionda
### Kiandra Kithkin

I designed and modelled an original female character with depth and personality, which is why I chose a character from the world of live-action roleplay. I pulled out all the stops, drawing in my personal interest of sewing and creating costumes so that I could create the costumes that she would wear and test them out first. I played as Kiandra for a weekend at a festival before reiterating the practicality and creativity of the costume through the concepts. Using Pixologic ZBrush and Autodesk 3ds Max to sculpt her and Adobe Photoshop for texturing I brought her away from reality and into something more fantastical than I could create on a budget.

## Ben Exell
### Creating cars for *rFactor 2*

For my project I have created two cars and implemented them into the PC racing simulator *rFactor 2*. I have a big passion for cars. I grew up playing *Need for Speed, Burnout* and various other racing games but I recently started playing more hardcore racing simulators on a PC. The two cars I have made are both Japanese classics, the 1969 Nissan Skyline GT-R (Hakosuka) and the Datsun 240z. I love the style of Japanese cars and enjoy the driving feel of classic cars more – so these two cars were perfect for my project. I modelled both cars in Autodesk 3ds Max, used xNormal for baking and Adobe Photoshop for texturing. I used the correct workflow to get both my cars in the game which involved setting up all the materials in Autodesk 3ds Max and exporting meshes from Autodesk 3ds Max using the gMotor plugin. I used all the correct naming conventions and edited the code in Notepad ++ to get it all working correctly in game which included things like the gauges and lights. I used *rFactor 2*'s development mode to test everything before I compiled the two cars into the full game.



## Darren O'Neill
### *Game of Thrones:* the iron throne room

For my final-year project I created a next-gen 3D interior of the iron throne room based on the popular series, *A Song of Ice and Fire* written by GRR Martin and the popular television series, *Game of Thrones* using Epic Games' Unreal Engine. In my version I have House Lannister ruling the kingdom, showing off their character and wealth through the environment. I chose *Game of Thrones* because I am a huge fan of the series, books and TV show. The throne room was of particular interest as it is the main focal point of the story. The iron throne itself was the main inspiration as it is the symbolic source of power, wealth and the bloodshed that is ominously present throughout the world of Westoros. The assets were created in Autodesk 3ds Max and textured in Adobe Photoshop and Sculpting was done in Autodesk Mudbox.



## Lloyd Craske
### From a single piece of concept art

I explored the creation of a 3D environment from a singular piece of concept art to the soon-to-be released title *Witcher 3* from CD Projekt RED. My main goal was to challenge myself as an artist by presenting myself with challenges I may encounter within industry. I focused on creating a 3D scene from a single 2D reference, and studying materials and different period objects. Learning a new engine was a challenge, but it was refreshing to work with a new set of tools. I used Autodesk 3ds Max for the assets, Pixologic ZBrush for some higher detail assets, Adobe Photoshop, xNormal and Knald for the textures, and built the scene with CryEngine.

## Matt Seprini
### Teesside University student rift

I have created a virtual art gallery for the purposes of displaying art and assets, created for use in games via the Oculus Rift. The aim was to create a virtual space that adequately presents models, concept art, animation and level design in a portfolio format that stands out. The gallery is designed to be modular, capable of expanding to accommodate large quantities of content, and minimalistic to guide the user to focus to the work on display. Components of the gallery were created in Autodesk 3ds Max and textured through a combination of Adobe Photoshop and XNormal. A version of the Epic Games Unreal Developer Kit specific to the Oculus Rift acts as the engine within which the gallery operates.

## Chris Watts
### Kitchen environment

I have created an environment piece in CryEngine based on concept art by Benoit Godde. The main influence for this piece was the film *Dead Man Down*. The visual style of this film really interested me and I decided to mix this with the concept art to produce a unique environment. The objective of my project was to learn a new engine, while pushing my texturing and lighting skills to a new level. I wanted to experiment with producing modular environment pieces using several techniques. I used Autodesk 3ds Max and Pixologic ZBrush for modelling and then Adobe Photoshop and Quixel's nDo2 for texturing. The final piece was then presented in CryEngine.

## Dan Sonley
### Old abandoned warehouse environment

I have created a detailed environment in CryEngine based on a piece of concept art by a well-known artist, Atey Ghailan (AKA Snatti). Throughout my three years of studying games I've had a fascination with overgrown environments – there's something about them I just can't get enough of, so coming into final year it was something I was really keen to try. I created the low poly asset in Autodesk 3ds Max then the high-resolution mesh in Autodesk 3ds Max or Pixologic ZBrush. However, I didn't feel the need for this for every asset – most were just textured in Adobe Photoshop with a photo-normal using Quixel's nDo2. My final environment was put together in CryEngine.
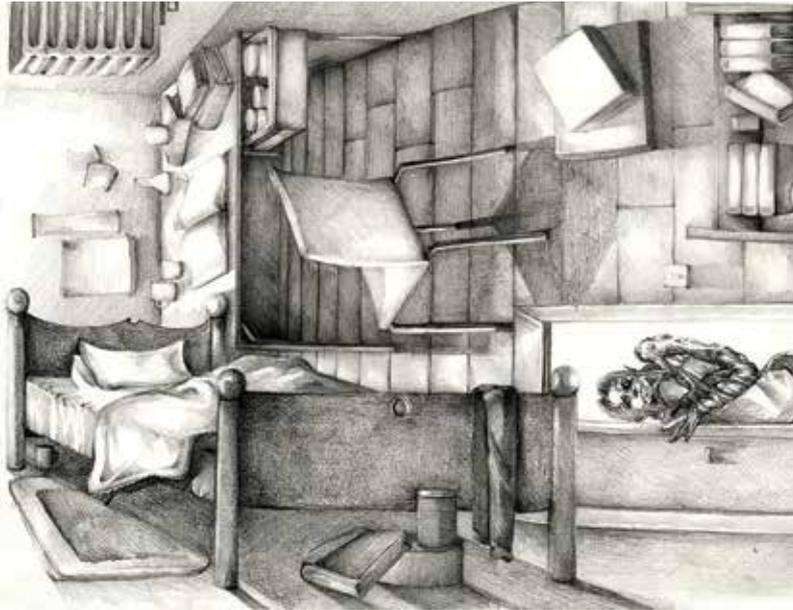
## Sarah Kate Forstner
### Concepts from a horror world

I have created a concept art book documenting a character's encounters with creatures and environments that make up a surreal horror world. The two main inspirations for my concept work were horror and functionality. The puppeteer creatures are strange and fantastical in appearance, but their anatomical structures indicate, as much as possible, that they can realistically function in the real world. Using the artist MC Escher as inspiration for my environments, I created impossible structures using skewed perspective while maintaining a sense of practicality. The pieces were all created using a mixture of traditional materials and Adobe Photoshop. The book itself is handmade to resemble the look of in-game lore books, full of little creature doodles and scraps of information.



## Kai Chong Christopher Du
### Next-gen dynamic environment – TLoU

I have created a cutting-edge, dynamic and real-time environment in CryEngine based on *The Last of Us Hotel Lobby* concept. I developed an understanding of the rudiments of lighting, material processes, visual storytelling, attention to detail and gathering references from the real world. I synthesised them in CryEngine into a living, breathing environment to bring a high level of next-gen realism. The game assets were created in Autodesk 3ds Max, Pixologic ZBrush, xNormal, and textured in Adobe Photoshop. I employed standard DX11 next-gen rendering techniques such as parallax occlusion mapping, screen space subsurface scattering and physically-based texturing. Although the version of CryEngine SDK used for this project does not support a physically-based render, the new texturing pipeline still applies very well with CryEngine's deferred rendering. These include albedo and gloss maps, with texture layering techniques in addition to Adobe Photoshop masking techniques for creating textures with enhanced material definition.



## Ryan Pinder
### RP motorsports TR4 project

For my final-year project I have modelled and rigged a race-modified Triumph TR4 presented within a scene in Autodesk 3ds Max and a game engine. The game engine version has been optimised and I achieved a driving feel that suggests that the car is a lightweight track car. The car features in the Unity3D engine and GTA San Andreas. Additionally I worked on a series of short animations within Autodesk 3ds Max and Marmoset Toolbag 2.0 to present my car. I am very excited about how my final product looks because I can see a lot of potential in it.

## Peter Orton
### Inside the world of Batman

I used CryEngine to create the Batcave, as imagined in Titus Simirica's concept art, to be fully enjoyed with the Oculus Rift virtual reality headset. I chose this piece because I found the concept art very engaging and saw that it was open to interpretation while still giving me a very strong base to build on. I loved the contrast of the natural cave scene with the modern technologies and buildings. I chose to work with the Oculus due to the potential I believe this product has when it comes to games, and the believability it can bring to game worlds. To build my scene I created all the base meshes within Autodesk 3ds Max and used Autodesk Mudbox to create the high-resolution details. Adobe Photoshop and Quixel's NDO2 were then used to create the textures. The final scene was implemented within CryEngine and lit.



## Adam Felgate
### From concept to *Halo*

For this project I created an iconic scene from the *Halo* universe. Rather than recreate the environment, I have reimagined it from the concept that it was originally inspired by. The scene is set within the forests of Tanzania on the southern slopes of Mount Kilimanjaro. I wanted to create a visually stunning exterior environment with a unique blend of natural organic beauty and man-made architecture. To do this I studied dam construction while also looking into the geographical layout of an eastern African environment. I used a range of different tools such as Autodesk 3ds Max, Adobe Photoshop, 3D-Coat, Crazy Bump and Quixel's nDo2 and brought into Epic Games' Unreal Engine.

**BA (Hons) Computer Games Art (with Foundation Year)**
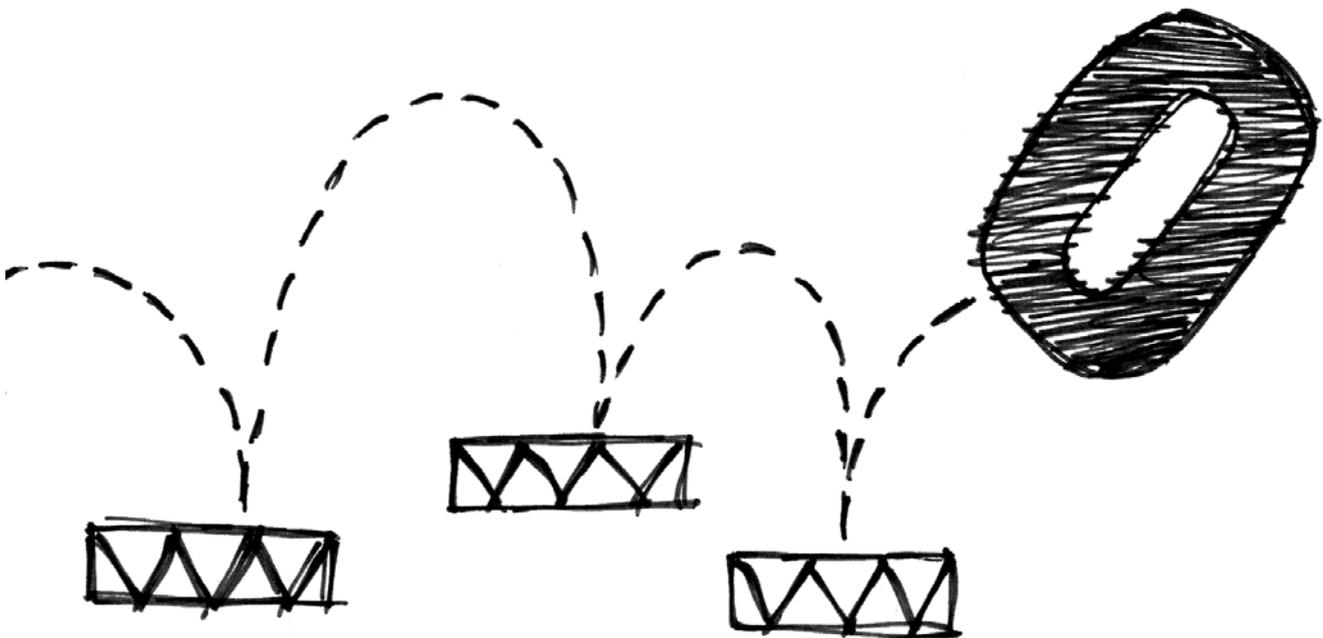


## Joe Borley
### Reclaimed

I have created a 3D urban cul-de-sac environment for a game in the survival and action genre. The environment is based on British architecture that has been left abandoned for many years allowing nature to reclaim it. The idea of the project was to create an urban environment that had become overgrown with foliage. The cul-de-sac had been uninhabited for many years after a virus wiped out most of the population. It was inspired by the game *The Last of Us*, the TV show *A Life After People* and the book *The World Without Us*. I used Autodesk 3ds Max for asset creation, Autodesk Mudbox for high poly sculpting, Adobe Photoshop, Crazy Bump and Quixel's nDo2 for textures, and Unreal Development Kit to display the final product.



## Tony Dyson
### Aston Martin DB9

I have created a realistic 3D model of the Aston Martin DB9 which is regarded by many as one of the most beautiful cars produced. It has a very luxurious interior and exterior, and conveys a sense of elegance. As one of my favourite cars I chose to recreate it as a 3D model for my final-year project. The DB9 is a high poly asset modelled completely in Autodesk Maya. Certain parts of the asset needed texturing – this was done using Adobe Photoshop. The final images were rendered using Keyshot 4 with HDR Light Studio 4. I have modelled the interior and exterior of the car to show my attention to detail and skill in mechanical asset creation.
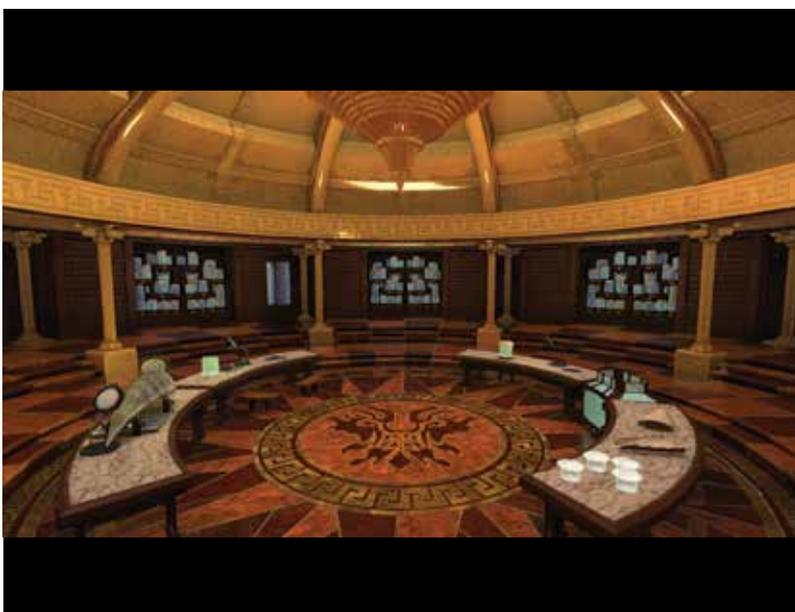


## David Griffiths
### Kaiju Remedies

I created an environment based on a scene from the movie *Pacific Rim* within Epic Games' Unreal Development Kit. I wanted to explore new rendering techniques and one major addition was the implementation of a physically-based shading material working with DirectX 11 features, such as image-based lighting. The environment I created was based on the Hannibal Chau scene from Pacific Rim. I chose this scene because I felt the differences between the traditional shop and the lavish laboratory complemented each other and the reflected character of Hannibal Chau perfectly. The scene was created in Epic Games' Unreal Development Kit using assets modelled in Autodesk 3ds Max, Pixologic ZBrush and textured using Adobe Photoshop and xNormal.

## Andrew Findlay
### Black Market Parlour

For my final-year project I have created a computer game environment inspired by the piece of concept art entitled *The Surgeon* by concept artist Hethe Srodawa. The aim was to recreate an environment following the concept art as closely as possible while adding my own artistic input. Creating a game environment in this way allowed me to showcase my ability to follow a piece of concept art closely and implement the artist's vision. I used Autodesk 3ds Max, Pixologic ZBrush and Adobe Photoshop to create and texture the assets. I chose Epic Games' Unreal Development Kit to showcase my environment and execute the technical aspects of my project.



## Bryony Huke
### Port of Tanzia

I have created a small environment inspired by the Port of Tanzia featured in the computer game *Monster Hunter 3 Ultimate*. The environment was created within Epic Games' Unreal Development Kit. The style I adopted is a reflection of the Monster Hunter art style. Creating an environment this way allowed me to showcase my creative ability to take an idea or existing piece of work and add my own artistic flare. The assets were created in Autodesk 3ds Max and Pixologic ZBrush. The assets were textured using Adobe Photoshop. During texturing I used 8 Monkey Labs' Marmoset Toolbag to preview my assets swiftly.

## BA (Hons) Computer Games Design

## Liam Wilson
### The perfect pitch:
### Gauntlet Runner

I constructed a three-tier project by creating a game, design document and supporting research documentation to accompany the project. The game in question, Gauntlet Runner, showcases my many skills in various areas of design. However, my fundamental aim was to focus on lead designer and producer roles to better highlight my ability of not only creating an outstanding game, but in being able to lead and guide a team. Gauntlet Runner is supported by a comprehensive design document which gives insight into much more than the prototype by detailing level designs, game mechanics and controls. I have also included an additional document which delves into the analysis of the producer's role, as well as games in the current market, advertising, platforms and how I used my skills to manage a team in making this game. Gauntlet Runner was created in Epic Games' Unreal Development Kit, while Adobe Flash and Autodesk 3ds Max were used to create assets for the game such as UI and HUD. Adobe Photoshop gave a professional and polished look to the final documentation.

## Matt Macer
### *Hitman Absolution* – Chicago apartment environment

An environment concept for the game *Hitman Absolution* brought to life in a real-time games engine. Based on a *Hitman Absolution* concept of a dingy apartment complex in Chicago (concept courtesy of IO Interactive), where a group of bohemian occupants are growing cannabis and lying low to evade the police. In this environment, my aim was to create an adequate sense of atmosphere and storytelling in a small space using lighting, modelling and my own research into the subject matter to create a colourful and immersive world. I have also researched various materials, shaders and workflows to add visual appeal to my work. Although trained on the design pathway, I felt my skill was more applicable to art, and thus pursued the role as an environment artist to enhance my skillset and learn more about the pipeline. I hope you enjoy! I used Autodesk 3ds Max, Adobe Photoshop, xNormal and Pixologic ZBrush, rendered in CryEngine.



## Max Pears
### Chest Quest

Chest Quest is an exhilarating, frantic, fast-paced, fantasy platformer/runner for Android devices. The player takes the role of an inquisitive knight who is on an adventure in the cold dark dungeons below his hometown to find magical treasure. However, it won't be as easy as the player thinks. In the dungeon lies all kinds of traps, creatures and dangerous monsters who want to stop these brave adventurers, including an evil dragon called Thorn who will stop at nothing to protect his beloved treasure. To create Chest Quest I used the Unity game engine having used it to create other games, it also allowed me to export to Android devices with ease. I created all interactions within the game by using C#, JavaScript and UScript. I also used Adobe Photoshop and Autodesk 3ds Max.
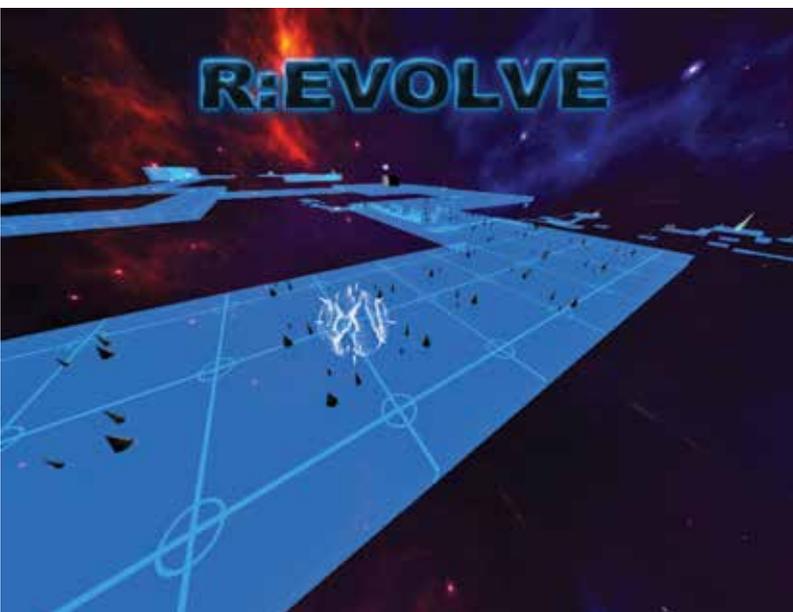


## Alanya Rigg
### R:EVOLVE

I created a ball puzzle game where the player takes control of a ball and must overcome a number of tasks and obstacles set in a floating world. In my prototype level the player can change the state of the ball to make it function differently. Using a transformer machine the player must convert into the correct state to progress further in the level. If they were to fall off track during the game then it's tough luck and they end up at the nearest checkpoint. Obstacles range from moving platforms to pushing blocks – the player must keep their wits about them until they reach the end. I used Epic Games' Unreal Development Kit to build the world and implement gameplay, Autodesk 3ds Max to create some assets and Adobe Photoshop for creating textures.

## Focus Fu
**Granite**

I have created two game levels with game play, story, game menu, simple user interface and simple assets for these levels. The player controls a stone creature called Granite who is guardian of an artefact which seals a cursed soul. One day a human archaeology team comes and tries to dig up the artefact. Of course, the Granite is activated by this action and does his best to prevent the archaeology team from releasing the soul. It is a first/third-person adventure game with some shooting and puzzle elements. The player can also enjoy exploring the game world to reveal the story of Granite, which could finally decide the destiny of both the human team and Granite. Making an interesting game level has been a long-term dream of mine, and telling a story has been my hobby since I could talk. As a game design student, making game levels like this is the best practice for testing and strengthening my game prototyping skill. My life and gaming experience gives me a lot inspiration for asset layout and story development. I used Epic Games' Unreal Editor to create my game levels. Some assets in the level were created by Adobe Flash, Adobe Photoshop and Autodesk 3ds Max.

## Sarah Franey
**Veritas – a narrative sound design project**

My project relies on sound and music as its primary narrative devices to explore a character's progression from sanity to insanity – this also demonstrates my skills in sound design and music composition. The music was created with live instrument and vocal recordings and centres around five different themes, ranging from classical to experimental, to reflect the character's state of mind. Most of the sound effects were Foley-created, with some supplementation from modified stock sounds. All sound effects and music tracks were edited and assembled in Audition, and the project environment was built in Unity 3D.

## Blake Middleton-Jones
**World Finger Championship**

I have created a touch screen mobile game. I used research to inform design pillars for the game and then created the game World Finger Championship. World Finger Championship is a mobile game designed for most touch-screen devices where you complete a series of mini games to achieve a high score. I created five mini games, all with different mechanics including running, archery and curling. My inspiration for this game comes from *Point Blank* and *Dump Ways to Die* as these are also compilation games. My product was produced in the codeless engine Stencyl 3.0 which uses small code blocks to create complex game logic used to create game play. I also used Adobe Photoshop to create all of the art for my game.

## James Loh
### Spray – creating a focused game pitch

I have created a game concept pitch, entitled Spray, combining ideas from games like *Mirror's Edge* and *Jet Set Radio*. I have created a video walkthrough of a concept level, along with a design document to convey the game's mechanics and feel. It is a game about freerunning across rooftops to turn a cold, drab world into a loud, interesting canvas, evolving the music the player is listening to as they bring colours to the landscape. The goal is to pitch a game that has a colourful, vibrant style, that lets the player feel excited and free. The previously mentioned inspirations for this idea made me feel this way, and I would love to design a game that made others feel the same. The game itself was created in the Epic Games Unreal Development Kit, using UnrealScript to create some of the more complex game mechanics. I created the sounds used in the game in Logic Pro 9, and the custom art assets were created in Autodesk 3ds Max and Adobe Photoshop.
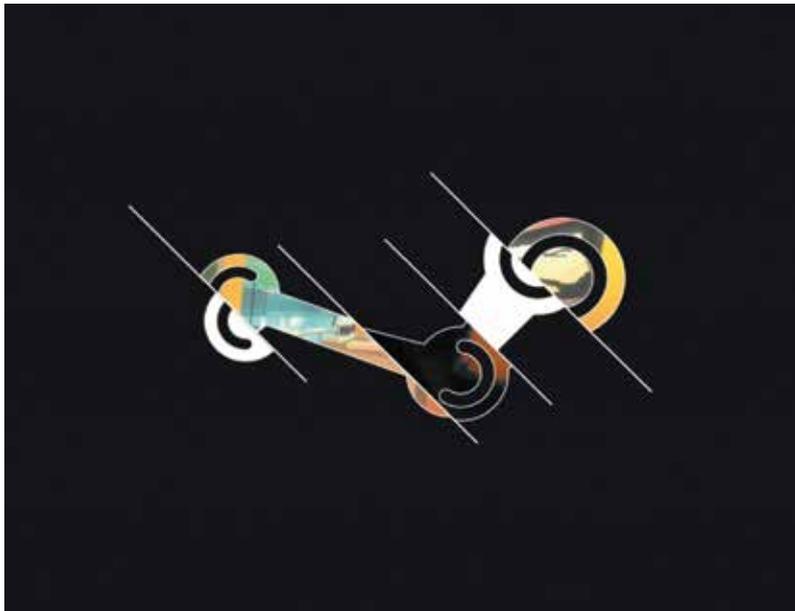


## Joe Garbutt
### An alternate model for Valve's Steam platform

For my project I have researched and partially prototyped a model of Steam which could exist within two years. The design focuses on leveraging the community and supporting crowd-sourced games development. Simultaneously I have improved the wider user experience and applied the knowledge I acquired while interning at Microsoft on their Windows phone design team. To achieve all of this I used a range of software including Adobe Illustrator and Adobe Photoshop for design, Visual Studio (C# and XAML) for the prototype and Adobe After Effects to demonstrate the wider extent of the redesign.



## Will Marsden
### Moving mountains: creating my final-year project.

For my final-year project I decided to take on the wide and often scary world of modding. As I am a big fan of the game and the way it is structured I decided to make my mod for *Skyrim*. My mod adds a quest line to *Skyrim*'s rich story. As the Dragonborn, you are approached by a travelling witch hunter representing Lighthowlers Witch Insurance and asked to help in ridding Skyrim of its next great witch infestation. I used Bethesda Softworks Creation Kit to create the mod – there was a rather steep learning curve but as the project developed so did my skills and I feel the final product shows the fruits of my labour.

## James Vassiliou
### Competitive level design

I have created a multiplayer level for the game *Counter Strike: Global Offensive* with a focus on creating interesting and balanced gameplay for competitive matches. The level has a Japanese setting with custom textures and meshes. My inspiration came from playing Epic Games' *Unreal Tournament* at a competitive level and creating levels for it. I wanted to return to what I was passionate about for my final-year project. The level is created for an active multiplayer game and uses mainly CSG brushes to create the level geometry. However, some props and textures were created by me, allowing me to showcase not only my level design skills and my skills as an environment artist. The level was constructed using Valves Hammer editor, with custom textures, normals and props created in Adobe Photoshop, xNormal and Autodesk 3ds Max respectively.



## Carl Morley
### One Tiny Dream

I have worked on a hub environment that acts as the centre point of an action adventure game set in a medieval fantasy. The project makes use of the Oculus Rift headset. A key mechanic I focused the hub on was exploration without an expansive open world. This works by using a teleport gate that leads to maps generated by the gaming community. The idea behind this was to allow players to share maps they have created with their friends and let the community stumble across them as hidden gems. Tying all things together are dreams – the story is based around a world where the evil character Ink has stolen and accidentally released all the dreams from the dream tree into the world causing chaos, magic and endless nightmares for all who have lost their dreams. However, as most fairy tales go, one small hope remains in the form of a child who retained his dream. I used Unity along with various plugins such as ProBuilder and ProGrids. It has been a great learning experience being new to the engine – thanks to the amazing Unity community and resources available I have achieved my goals and look forward to showing you my project.



**BA (Hons) Computer Games Design (with Foundation Year)**

## Harry Brockley
### Remembrance

Remembrance encapsulates the player within a heavy story-driven experience enclosed in an isolated environment. The protagonist, patient Charles Bullock, has been incarcerated into a new therapy to recall tragic events from his memory. Using notes scattered across the facility and small puzzles to open the mind, the player slowly uncovers their misdoings with a twisted conclusion. My project was created in Epic Games' Unreal Development Kit to demonstrate my abilities using multiple software packages. Using my mixed skill set I created a short playable game that focused on delivering a story in a convincing and mysterious way. Enjoy the gameplay, embrace the story. What has been done? Who was harmed? Who is observing you and are you insane or just repressed? Enter the mind of Charles Bullock and discover his life and uncover his future.
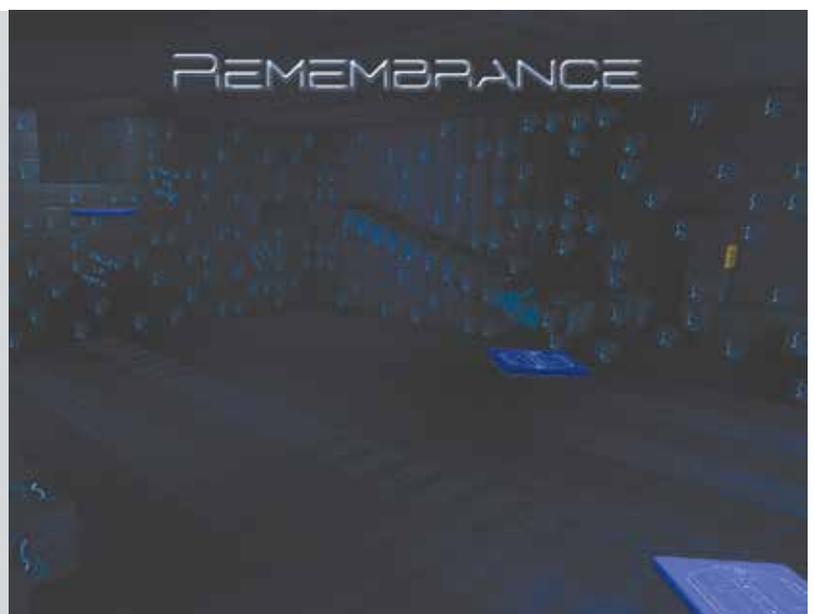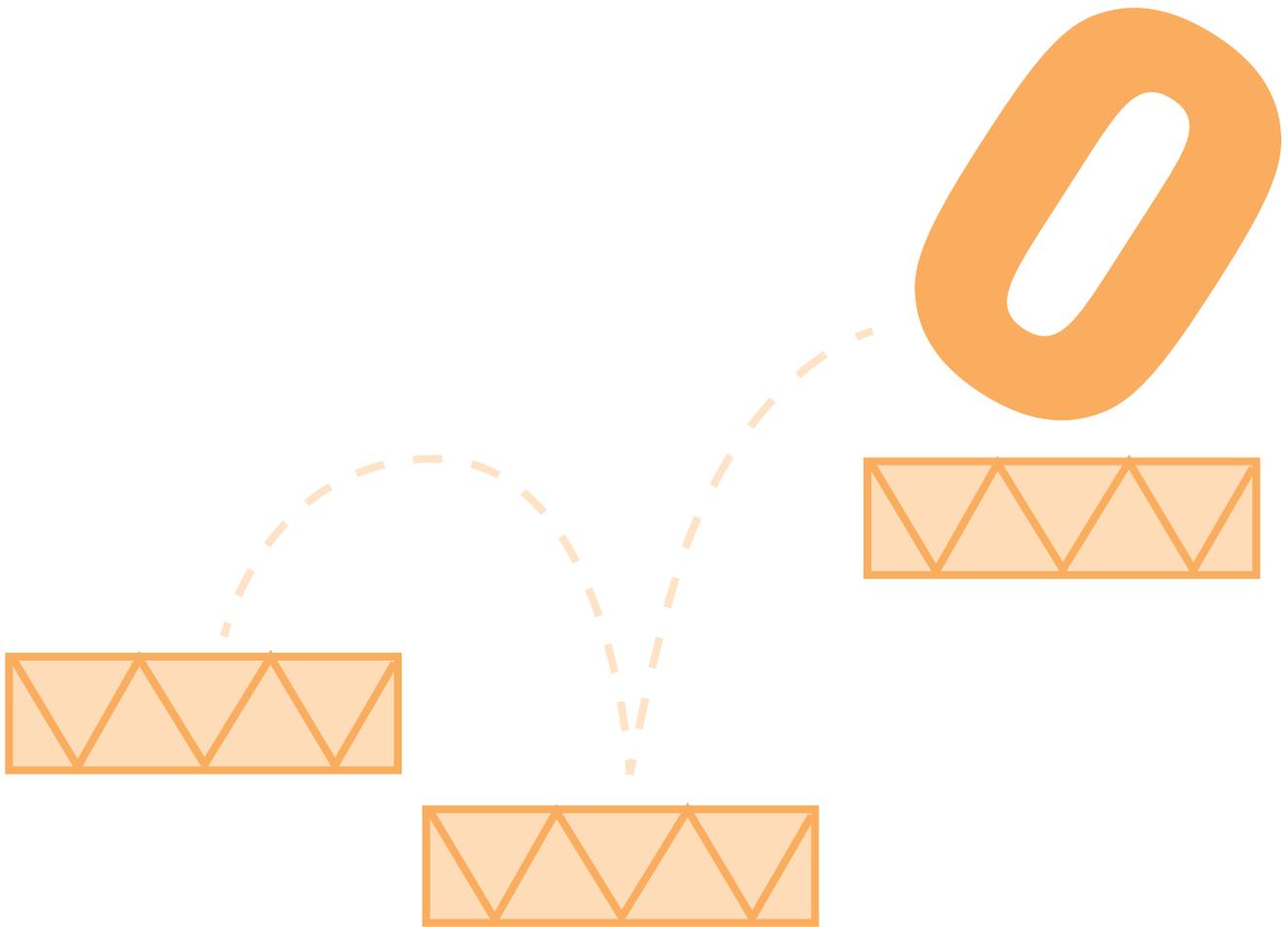
## Games & Graphics Programming

The imagination of the 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 focus on prototyping new gameplay features, developing flexible but efficient software architectures, or constructing software technologies to visualise virtual worlds and mimic the beauty and complexity of reality.

Our games programming course is delivered by lecturers with previous industry experience alongside those with strong research activities in the area of games. These skills are passed on to our graduates, some of whom are now working at prestigious games companies around the globe and contributing to some of the big games titles. The success we've enjoyed is recognised by Creative Skillset, which has accredited our games courses. All of our BSc programmes are reviewed and accredited by the British Computer Society.

## Francisco Ruiz Pons
### Artifical intelligence for squad combat

Multiplayer online battle arena (MOBA) games are becoming more and more popular, so I decided to make a smart artificial intelligence (AI) system for this kind of game. Prior to the development of the AI system, I spent a lot of time looking for a behaviour pattern in teams in MOBA games. By playing these games, I identified patterns such as: a heavy guy taking all damage possible and disturbing enemy damage dealer units, a squishy guy that does a lot of damage per second who tries to kill the enemies as fast as possible, someone healing allied units, ranged and closed combat units. My idea for this project was to implement such behaviours into a simulated scenario. I created a scenario using Unity, with two five-man squads in a combat situation. The level of AI and the squad composition can be chosen before combat begins.



## Chris Taylor
### Stealth scenario implementation with AI

In terms of gameplay, one aspect of video games that has considerably evolved over the years is the stealth element. I created my own stealth scenario, implementing artificial intelligence (AI) that will search for the player once spotted. A lot of games have used it as an optional method to play the game and my project recreated that element on two levels: as a tutorial and as an actual level. It is a playable stealth scenario with multiple options given to the player. The project is created using Unity with C#. Implementation includes AI, gameplay using physics with objects, hiding mechanics and so on.
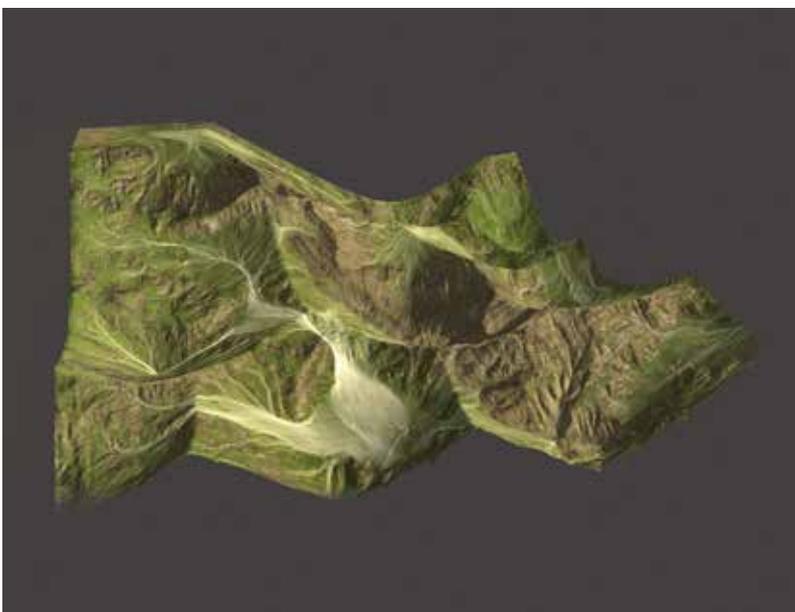


## Richard Sherriff
### Physically based weathering and erosion simulator

I have created a system that generates a terrain, then erodes and weathers it using physically based algorithms. Most terrain used in games is crafted by artists fitting it to the specifications of what is needed. This terrain is then static, open only to carefully planned changes. This process is typically used instead of procedurally generated terrain because it appears more natural and realistic. Procedural terrain often looks too 'mathematical' because of its reliance on fractals and noise functions. I believed this problem could be solved by aging terrain through weathering and erosion. The system is provided as a C++ application programming interface (API) that can then be used by programmers in their own projects. For my demonstration I have used it as a dynamically linked library (DLL) used within Unity. Both the API and the Unity C# scripts were produced in Visual Studio 2012.

## Nathan Brown
### Multiplayer turn-based game

This game is intended to combine key features to a turn-based game and then improve on them, making the game more appealing, fun and in-depth. The game is developed with the intention of being a multiplayer game played over the internet. I have implemented a 3D grid system instead of a 2D grid system, giving me the option to make the gameplay more interesting and fun. The units movement uses an A* algorithm to determine their movement paths. I have produced the project in Unity, allowing me to focus on the code for the features.
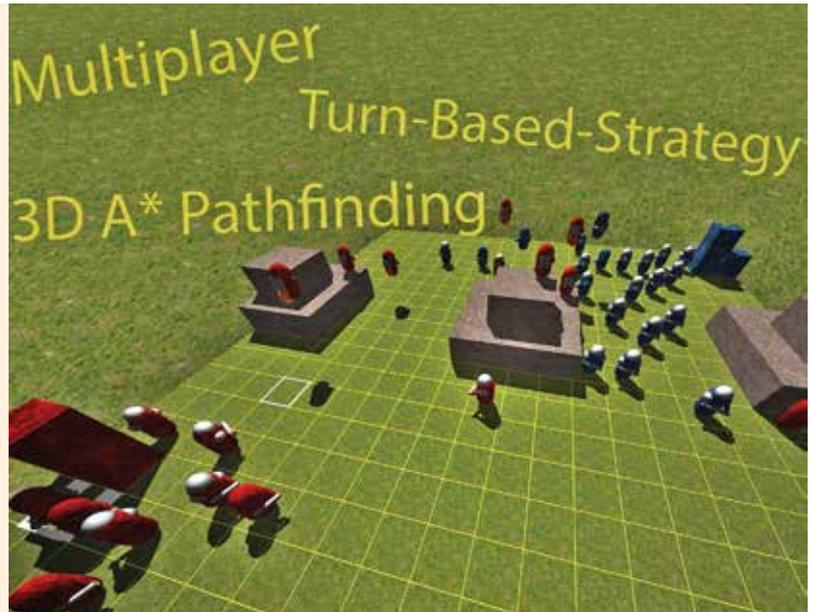


## Aleix Lopez Hinojosa
### Artificial intelligence world simulator

Role-playing games (RPG) are a popular genre of video games. In these games the world is an essential part of the player's immersion and often seems static as it only reacts to the player's actions. The goal of my project was to get the world's reaction to a new level, creating a multi-agent system simulating a world that evolves by itself with no need for interaction from the player. This will let the player see how the world reacts to their actions and at the same time believe that there are other things happening without their interaction. This multi-agent system will be unpredictable but, at the same time, it will have bounds that can be set to get the expected results. I will not focus on any specific type of game world so it can be placed in any setting, allowing the basic interactions that exist in almost any RPG. This project has been developed in C++ as an external library, accompanied by a small demo using SDL to show how it works.



## David John McCann
### Smooth voxel-based terrain

Whilst the idea of voxels is not new, performance and memory requirements meant voxels were not feasible at the time. With performance gains over the years, older ideas are being expanded on. I explore this through the use of voxels and terrain generation methods to produce smooth procedural terrain from voxel data. This is done by seeding a 3D space (a voxel) with 3D noise that is then used in conjunction with a smoothing algorithm that generates the mesh. Performance has been considered by dividing the world into chunks to aid with rendering performance. The demo has been written in C++ using OpenGL and Visual Studio 2012, due to the nature of the project potentially being resource heavy, I decided that creating my own engine was more beneficial to allow me more freedom and to focus the design.
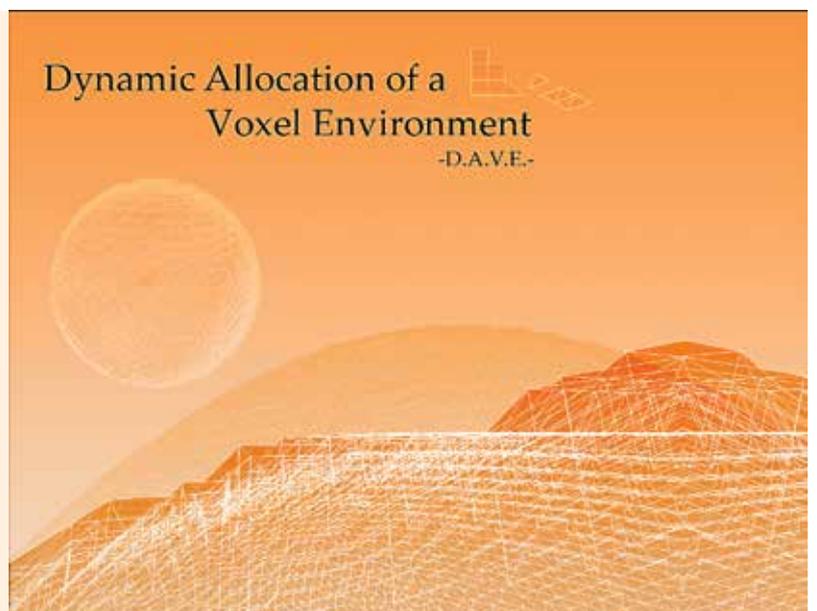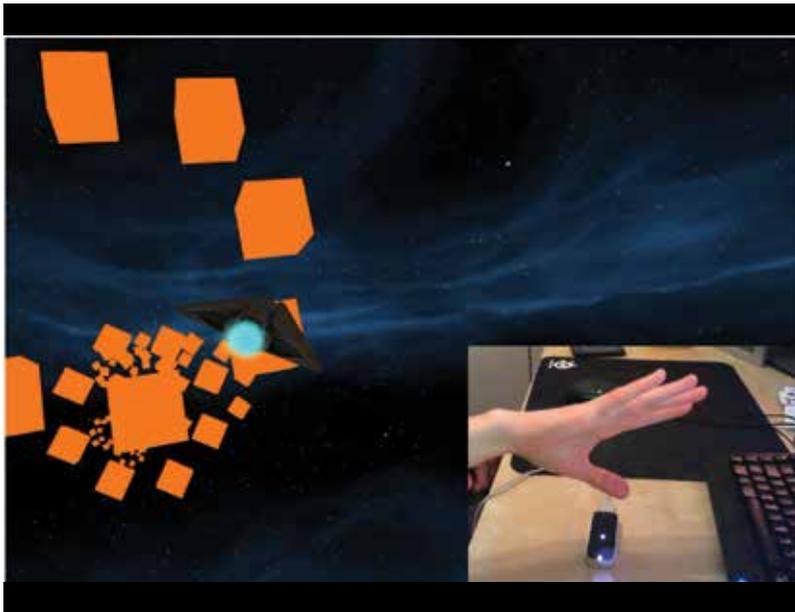
## Malcolm McNeely
### Evaluation of gaze and gesture modalities in a game environment

Gesture tracking and eye-tracking technologies have existed for some time, however very few games have attempted to make use of them. I am interested in evaluating these modalities through user testing to establish a guideline for implementation within a human-computer interaction system. Using related works to establish a benchmark to evaluate against, I have designed tests to measure the effectiveness of these modalities under various conditions. Armed with the Gazepoint GP3 eye-tracker and a Leap Motion for gesture recognition I integrate these devices into Unity using MonoDevelop and C#.



## Nathan Eliott White
### Real-time indirect illumination API using OpenGL

Achieving realistic lighting in games can stress hardware and reduce frame rate, impacting on enjoyment. By building an application programming interface (API) allowing developers to integrate a feature-complete implementation of indirect illumination into their graphics pipeline, lighting in games can begin to support a more immersive aesthetic whilst achieving interactive frame rates. Given that OpenGL is available on most modern hardware and that there seems to be an industry push for its consumption, building a cross-platform API would engage a large audience and would be well integrated into the current technological push by companies such as Valve.
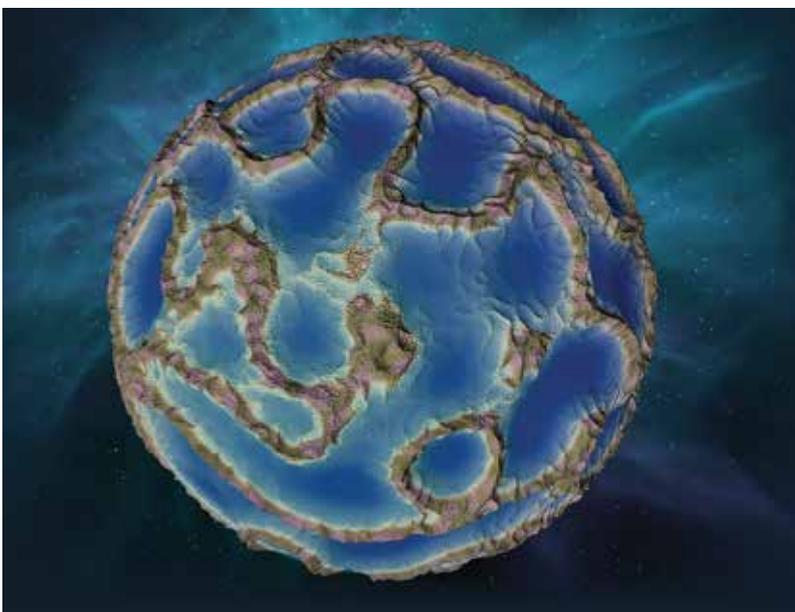


## Jacob Keane
### Procedural generation of planets in real time

Content creation has always been an issue for games, especially for larger worlds. More time is required to create the content, and a lot of storage is needed for it. This is an issue for games that require vast universes such as space exploration games. I have created an expandable framework for providing procedural planet generation for games and other real-time graphics applications. The result is an easy system for a near infinite amount of unique planets. It consists of a variety of sub-systems for different tasks, such as dynamic mesh and texture generation, variable level of detail, feature placement and more. I have also explored the performance trade-off and considerations that emerge from providing a real-time system for generating procedural content, and how to handle different level of detail.

## Gary Nield
### Real-time strategy AI behavioural simulation

I have created a real-time strategy (RTS)-based artificial intelligence (AI) simulation, showing agents managing and collecting world resources without any user input. The 3D world is generated from a 2D tile editor, allowing the user to design a customised world. The world creates and manages different resources, depending on the current amount of available resources and how many have been previously stored. The agents, the 'resource collectors' in this case, use an AI-based behavioural system as well as A* pathfinding to navigate around the virtual world, collecting and storing resources as they go. The project has been developed using Visual Studio 2012 and the XNA, the C# framework. This allowed me to develop an example application to visualise the simulation in a 3D world.



## Joan Torres Perez
### Procedural RPG map adventure generator

There are many advantages in procedural generation maps for videogames. From technical aspects such as game size to the gameplay experience, where a player can enjoy different generated places to explore. Procedural map generation typically uses complex algorithms to cover all problems and is developed by large teams of programmers. My intention was to simplify the process for an Indie developer and/or where rapid development is necessary. I have developed an example of how to generate maps, in this case inspired in a medieval role-playing game (RPG) environment. The project is composed of two programs: the first to generate the scenario data, size, access paths, transitions and other necessary elements to generate a correct map after an optional setup to find what kind of map is required. The second program manages the scenario files with the data map to load the required assets to generate the map within Unity. It has been developed in C#, C++ and developed for Unity.



## Sam Tague
### Reactive agent for a real-time strategy game

The aim of the project is to create a system for controlling units, in a real-time strategy (RTS) game similar to *Starcraft 2* or *Command and Conquer*. Developed in Unity, the reactive agent is given an environment or map and it will assess the situation, reacting with the goal of eliminating any opposing units. The agent will build a base and units designed to counter the opposition, and will be able to restructure and organise to react to changing opponent actions. The end product will be a reusable approach to creating a reactive agent for any real-time strategy game.
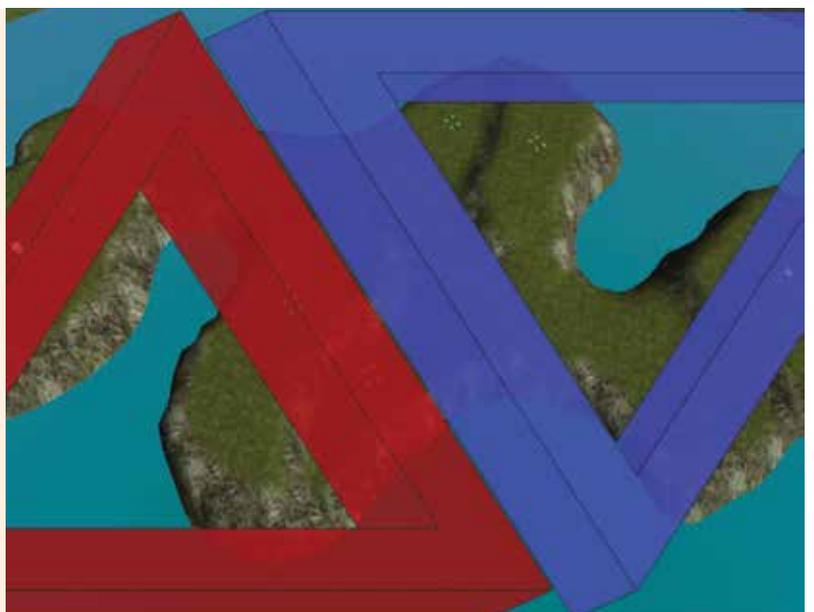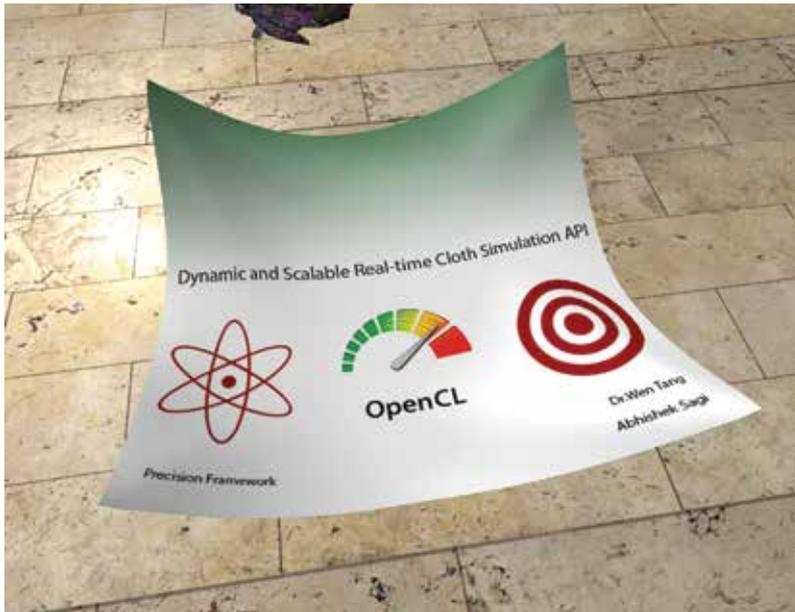
## Abhi Sagi
### Parallelised dynamic and scalable real-time cloth simulation API

Even today in video games, accuracy and level of detail for soft bodies such as cloth in-game is coarse due to the complex, non-linear, physical properties and the processing power necessary to simulate it real time. I investigated and implemented a platform independent, scalable, real-time cloth simulation application programming interface (API) to simulate clothes such as capes, flags and garments for humanoid characters. The project's focus was accuracy and stability by exploring robust algorithms for solving internal and external forces and collisions with other objects. The framework leverages parallelism to speed up the simulation by making use of open-source general-purpose computing on graphics processing units (GPGPU) language OpenCL.



## Nick Dupker
### Procedural dungeon generation

Procedural-level generation is usually used for rogue-like games with luck-based mechanics. My project explores the creation of a dungeon level with one completion route by forcing the generation to follow certain rules. The gameplay involves the completion of puzzles, defeat of enemies and collection of items. The goal was to create a variance between levels by generating the puzzles, room sizes, layouts and enemy types randomly. The levels can then be saved and loaded as needed. The game and generator have been created in Unity3D with C#. Unity allowed me to separate the generation scripts easily with the component based system, and I was able to quickly preview my generation using the scene viewer.
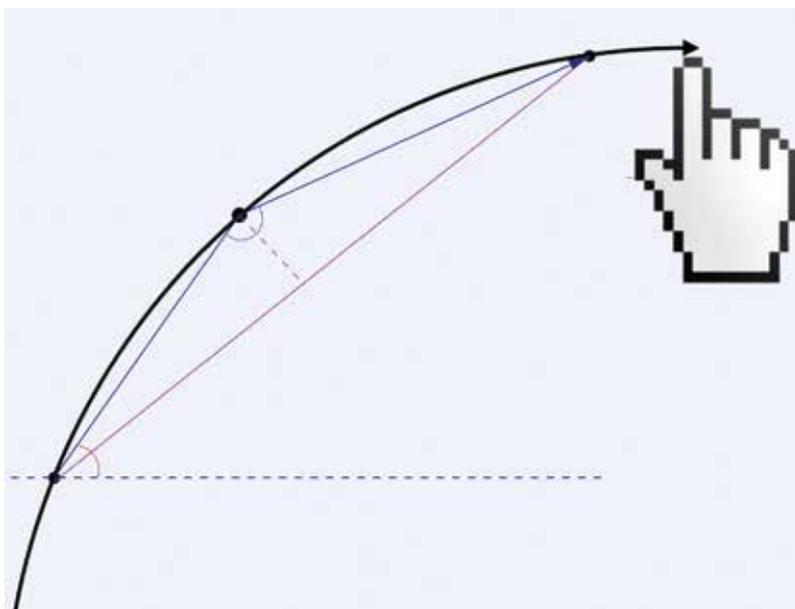


## Adam Brown
### Behavioural analysis and macro detection

I have developed software which, when attached to a game, can detect differences between two different people playing it. It works by scanning all mouse movements and analysing them with a series of complex factors. This works on the basis that different users have different habits and motor skills when using a mouse. My aim for this project was to explore such a system's use in macro detection. All the programming was done in Visual Studio 2012. The software itself is written in pure C++ with no dependencies, thus platform-independent. For demonstration purposes, I have also developed several small games in C++ using various different libraries.

## Ollie Powell
### Cross-dimensional game world interaction

Partly inspired by Edwin A Abbott's novel *Flatland* I have developed a generic method for creating 2D game objects from 3D meshes. If a 2D game world is imagined as a flat window existing in a 3D game, geometry may pass through this window and have their cross-section become an active part. To demonstrate the game play implications of the project I have created a game prototype similar to *Geometry Wars* that interacts with passing 3D objects to create morphing zones in the 2D space. This provides an exploration into shape deformation as a central game mechanic which I feel is relatively rare in modern computer games. The project was developed in Unity using C# focusing on cross-section generation algorithms, methods to detect intersecting points and triangulating the resulting 2D mesh.
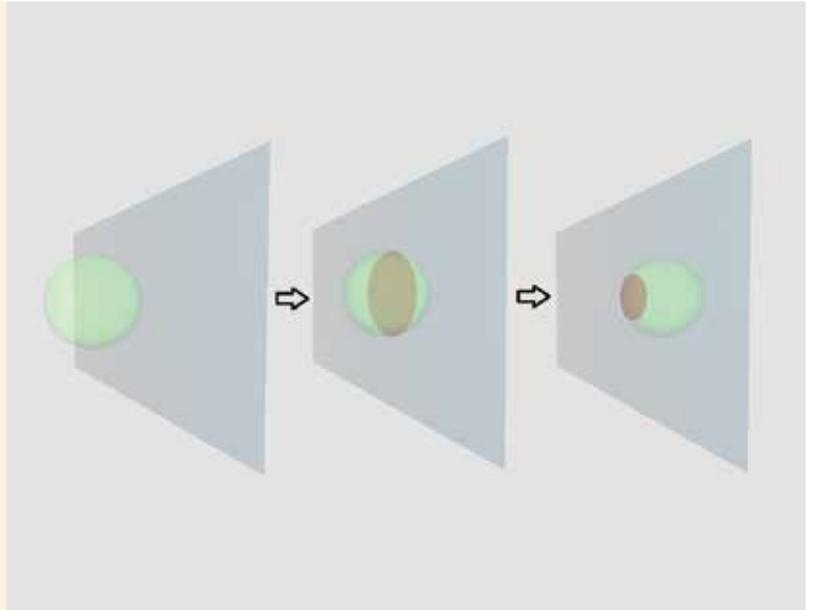
## Carl Reid
### eSports API

I have created an eSports application programming interface (API) and website which provide a service that allows game developers to easily implement competitive gameplay within their games. Although eSports is gaining popularity, there is a lack of tools to assist game developers in making their games competitive. I provide a flexible infrastructure that allows any game developer to easily add competition to their game. To make the infrastructure easily accessible, I used ASP.NET MVC5 and Web API 2 which helped me to implement a RESTful API allowing access from any device with internet access. The technologies used were C# and Visual Studio 2013.

## Geoff Birch
### Utilising vector graphics as textures in real-time 3D environments

Vector images are created using mathematical equations to draw shapes using points, lines and curves, giving them an instant advantage over their raster-based alternative, infinite scalability. By using vector graphics instead of a raster-based image when texturing a 3D model, the visual acuity will not deteriorate as the texture is manipulated. However, whilst vector graphics are infinitely scalable, they incur an overhead with large mathematical calculations needed to re-evaluate the rendering resolution based on the viewing distance from the image. This project attempted to segment a vector image into smaller sections in a lattice grid formation to allow for these smaller sections to be evaluated quicker, reducing the amount of calculations required to render the image each frame.
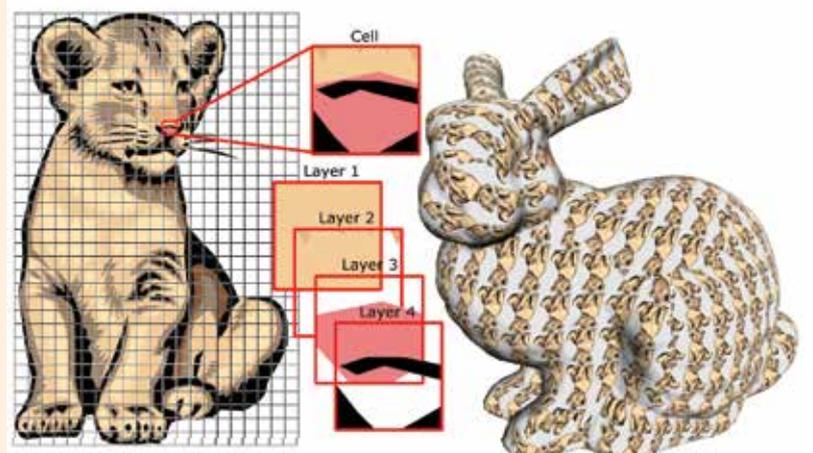
## Nathan Hendry
### Addressing the impact of curriculum changes in delivering computing in schools

I have created a tool which teaches primary school children the basics of programming using Python in a controlled manner, whilst providing feedback from the programs they create – better preparing pupils for programming experiences in secondary school. It provides a controlled and friendly programming environment, featuring error messages that are meaningful, and buttons to insert code they may be unfamiliar with. A custom application programming interface (API), simplifies communication with a Rasberry Pi's GPIO pins, allowing a focus on learning the basics without getting confusing error messages. Breckon Hill Primary School in Middlesbrough helped with product development. The product features a Raspberry Pi model B running Raspbian with a BerryClip attached to it. The BerryClip features six LEDs, a buzzer and a switch which can all be interacted with easily using the custom API. This hardware gives stimulating feedback to the children, and gives them a sense of accomplishment when their programs do something that they can physically see. The GUI and API were created using IDLE and Python 3.3.3.

# Digital Media and Web

These projects are wide ranging and cover several disciplines, which all share the common theme of using highly engaging visual and audio media to support commerce, business-to-business web services, education, social networking and entertainment. The R&D projects in this section present work that reflects the creative, interactive and technical aspects of website and multimedia development demonstrated using emerging technology and developed for a range of platforms.

## BA (Hons) Creative Digital Media



### Thomas Phillips
**Don't Look Down!**

Ever get bored of all the games with restrictive, universal gravity? Why does everything have to fall the same way when you drop it? What's so good about the floor anyway? Introducing Don't Look Down! a relative gravity ball game. Race your opponent to the centre of the map, grab the ball and try to make it back to your own goal without it being stolen. But remember, 'down' is relative. Manipulate the controls and fall through corridors, jump off ceilings and plummet past the opponent. Quick reflexes and a malleable mind are what you need in this arena. Pick up a controller, grab a friend and give it a whirl. Don't Look Down! is a technical design project built and coded in Unity using C#. It makes use of visuals from the Unity Asset Store.



### Stacey Williams
**State of darkness**

State of darkness is an animated short set in the midst of a deadly pandemic. A heroic truck driver rescues a gas station owner from a zombie attack. After the truck driver frees him from the zombie, the gas station owner steals the truck as it is the only means of escape, leaving the truck driver to fight the remaining zombies single-handedly. The focus of the project was to create a quality, atmospheric animated short, comprising both motion capture and key frame animation. The software used was Autodesk 3ds Max, Cortex, Autodesk MotionBuilder, Adobe Photoshop and Adobe Premiere.
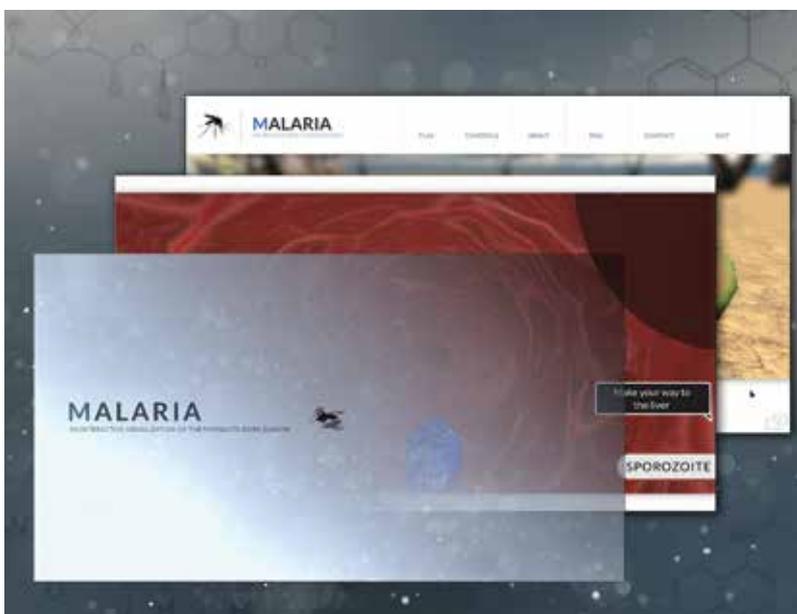


### Jakob Rossner
**Interactive edutainment application centred on malaria**

Understanding malaria is the first step towards conquering it. With this project and product I will increase the user's knowledge and awareness about malaria in an entertaining and creative way, utilising Unreal Development Kit (UDK) and Scaleform. Scaleform GFx enables the use of motion graphics created in Adobe Flash Professional in Epic Games' Unreal Engine. This game product is intended for a niche audience such as teachers, awareness organisations and special interest groups. The ability to play as a mosquito and parasite in the lifecycle of malaria is a neat way of portraying this infectious disease. The motivation behind this undertaking was to visualise a subject such as malaria with the help of edutainment, with content that is designed to entertain as well as educate. The project allowed me to bolster my UI/UX design skillset, as well as my overall design ability. It was also a smashing opportunity to bring a unique idea to life.

## Charlie Hansen
### The Devil's Dandy Dogs

I created 2D concept art for a fictional video game called The Devil's Dandy Dogs. The concepts were for characters, creatures, environments and props. I have a history of creating murky art with either a monochrome or a limited colour palette. For this project I went out of my comfort zone to improve my art and broaden my skillset. To explore new techniques, styles and colour palettes I created a brightly coloured mad world where I threw in all my crazy and random ideas – which in some miraculous way resulted in a product that was accepted into ExpoTees. All of the digital aspects of this project were created in Adobe Photoshop.



## Emily Hilditch
### Seasonal Harvest

I have created a responsive recipe website to promote the use of seasonal produce. The project focuses on the underlying problem of consumers failing to recognise the importance of seasonal produce. Seasonal Harvest is an educational resource that inspires users to use local and seasonal produce, promoting sustainable food purchasing habits in an engaging and visual way. By embracing seasonal produce it means better value, better taste and a better deal for the planet. The motivation behind the project was to enhance my skills learned on placement as a digital designer. The product is made for web using HTML5, CSS3 JQuery and developed on WordPress. The designs for the site were made with Adobe Photoshop and Adobe Illustrator.



## Emily Robinson
### How could mobile technology enhance photography skills?

I have designed and implemented an Android application acting as a guide to photography. The application includes the basics of photography displayed with text and high-quality graphics and also gives the user the opportunity to take and upload a photograph if they wish to do so. Mobile technology is changing the way we experience and share images, smartphone cameras give users the freedom to spontaneously capture images and share them instantly with the world. I have gone back to basics to give users the opportunity to take a photograph with quality comparable to that of something created almost automatically. I have created the application in Adobe Flash with the use of Adobe Photoshop and Fireworks to create any content.

### Dan Sorahan
**Live at Uni – an accommodation comparison service for students**

I have created a web-based utility to allow students to effectively compare letting agencies and their properties, and also to express their opinions on them. I realised early on during my time at university that finding the right place to live can be a hard task, especially if you don't know all your options or what each agency is like. Live at Uni was created to solve this problem, and is the first of its kind. Built with performance in mind, Live at Uni is built in a single, highly optimised virtual machine, showcasing ease of scaling and deployment for large-scale web applications. The site is built from the ground up on PHP and MySQL backend, with modern web technologies for the front-end.

### Stacey Brocklebank
**The Legacy**

I have developed a series of marketing products for the upcoming opening of a new theme park I have created called The Legacy – contained in the London 2012 Olympic stadium. The artefacts consist of a promotional website advertising the park's forthcoming opening, a companion mobile application which visitors can use whilst in the park, as well as promotional prints such as posters. I have a huge interest in designing for print, so being able to create my own brand and marketing materials has really allowed me to be creative. This theme park I'm branding will be in memory of the 2012 Olympics and have themed areas for different countries that took part in the event. The website was created using HTML5 and cascading style sheets (CSS), and jQuery Mobile was used to create the app. The marketing materials you will see were created using Adobe Photoshop.

### Axl Crawford
**Movie app**

I have designed and developed an app that displays movie information. It does this by consuming a public JSON application programming interface (API) to receive and display the data. I chose to do this project because I wanted to explore working with APIs and how I could make use of JavaScript to make the application work – I wanted to strengthen my skills in this area. After my research and design of the app, I chose to make use of the AngularJS JavaScript framework to power my application.

## Norman Saad
### Member Training Monitoring (MERIT)

MERIT is a website that will enable organisations such as non-governmental organisations to track and monitor their members' training progress. Using Joomla as its content management system (CMS), MERIT will feature a ranking system to differentiate various access capabilities into the website, a report submission module to enable authorised users to submit training reports of their members, as well as the ability to analyse reports submitted from authorised users and present the data in graphical representation.



## BA (Hons) Web and Multimedia Design

## Mark Finn
### SCM-Reach – reach the SCM students you need

I have developed a profiling website for students currently enrolled in the School of Computing (SCM) at Teesside University. The idea of the website is for students to be able to advertise themselves to potential employers by providing their skills and degree information along with any relevant links and contact details they may wish to add. This is a tool that could potentially be used by the School of Computing in the future for companies recruiting web-related students. The website is built within a custom content management system with PHP, MySQL, HTML5 and CSS3.



## Nathan Falcon
### Hands Vibe

I have created a user friendly website called Hands Vibe. It is a British Sign Language (BSL) website where users can learn sign language at their own pace. It has various categories and levels that the user can progress through. At the end of each level there is a 'test yourself' section. It is a free website which is easily accessible and promotes the learning of BSL. This in turn supports the communication between deaf and hearing people. I have created it using HTML5, CSS, JavaScript and PHP. For the video content I have used a green screen and Adobe Premiere Pro CS6. Adobe Flash Professional CS6 was used to create the animated logo.

## Matthew Harrington
### Middlesbrough Mela – a new website

I have redeveloped the existing Middlesbrough Mela website to make it more accessible in today's internet-orientated society. The project started from an email sent to hundreds of companies on the Volun-Tees register. After receiving over 50 responses, I narrowed it down to just one – Middlesbrough Mela. I've created a fresh, new and responsive website with a custom administration panel using HTML5 and CSS3, employing the responsive grid system as a framework and embedding PHP to ensure that it is dynamic. In addition, I have also ensured that the site is accessible according to W3C standards.
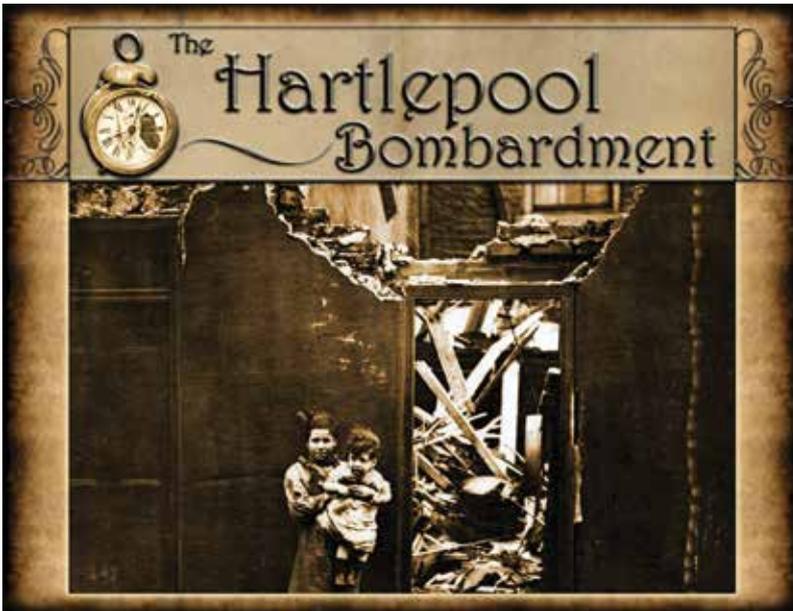


## Jeff Bramfitt
### The Hartlepool Bombardment

I have created a multi-platform website to commemorate and document a major historical event for which this is the centenary year – the bombardment of Hartlepool in 1914. There was no comparable dedicated site, despite there being a wealth of visual and historical material available, particularly in the hands of Hartlepool Cultural Services. The event is mentioned as an aside here and there, but has been largely ignored historically and forgotten nationally. So, it seemed very appropriate and opportune to give it a comprehensive platform, while the country is focused on the First World War centenary in general. The site is predominantly about showcasing its content respectfully and, as such, I started with a very basic CMS template, but heavily customised the HTML, CSS3 and PHP and produced a lot of material with Photoshop to produce what I hope is a sober but attractive, distinctive and informative site.



## Tom Hughes
### A web based game

I have created a web-based game inspired from games like *Cookie Clicker* and *Candy Box*. Classified as an infinite grinding simulator the goal is to click the knife to gain kills. The player then spends those kills on items and upgrades to automate the killing so they can buy more items and upgrades faster. The functionality of the game is written entirely in Javascript, and uses HTML and CSS to structure and design the page.

## Johnny Boland
**Manga Critic**

I have created a website called Manga Critic, which lets users review and comment on their favourite Manga titles, right down to the individual volumes. The site uses an e-commerce plugin, WordPress to show all the Manga volumes and a review plugin that goes alongside the e-commerce to provide an easy-to-use review system that lets users submit reviews without having to sign up for the site through the use of social networks to access the site. The site was created in WordPress using WooCommerce to populate it with products to review as well as to find the best places to buy them. The theme was made using PHP, Html and JQuery, and Twitter Bootstrap provides the framework for the responsiveness.



## Jay Paleschi
**Android-based student companion app**

I have created a native Android application, based on Teesside University's existing intranet system used by the School of Computing. The application is created using a combination of Java/XML for the application itself, MySQL and PHP for the functionality and JSON Parser to draw the two together. The aim of this was to create a fix for the unresponsive intranet site that many students access via smartphone when in transit from one place to another, using the current most popular type. This project allowed me to delve into Java for the first time, and push my limits to gain new skills which I can continue to develop. The project was all completed using Adobe Photoshop for the design and graphic work, Android Developer Toolkit GUI (Eclipse) for the application build, and PHP MyAdmin for the database build.
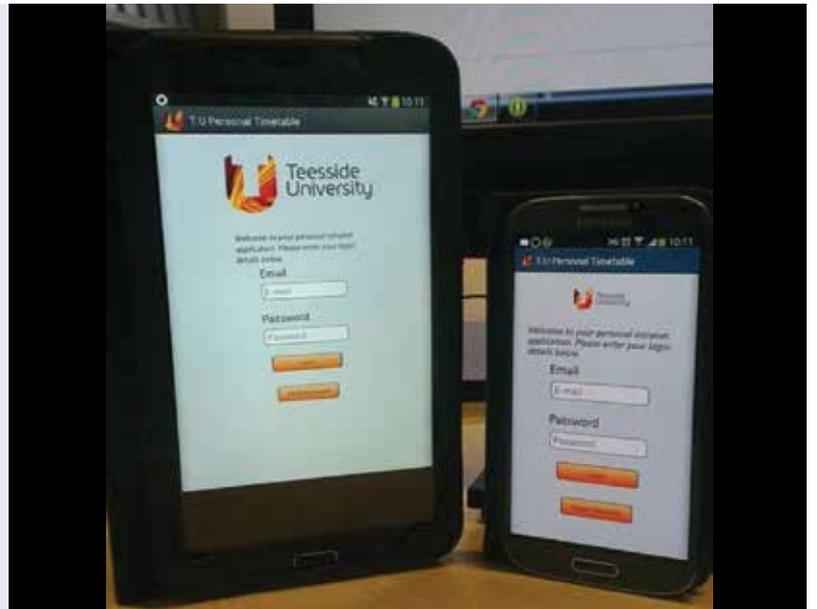


## Steven Blyth
**One Stop**

I have designed a website aimed at hip hop rappers and producers, giving them everything they need in one place. The website offers hip hop music producers and artists a place where they can view each other's music, buy beats and contact one another. The site has a 'tutorials' and a 'downloads' section where the music producer can learn tips from experienced producers and also download files such as various drum kits and other elements to enhance their production equipment. There is a 'media' section where the user can view different producers and artists music. Creating a solution where you can find a wide range of tools in one place instead of searching through the whole of the internet is a problem solved. The website is also fully responsive on tablet and mobile devices. HTML5 and cascading style sheets (CSS) are the main languages used to design and build the site, with Javascript also playing a vital role bringing animation to the homepage gallery. PHP and MySQL are the backbone of the site allowing user profiles to be created. I used Adobe Dreamweaver to implement the programming languages.
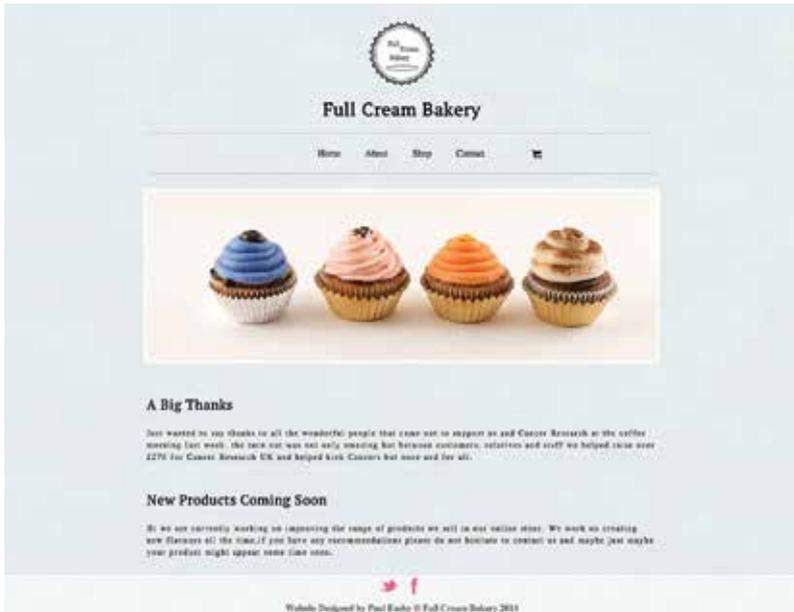
## Paul Easby
### Full Cream Bakery – an e-commerce template

I have developed an online shop using e-commerce features associated with WordPress to show off my skills as a web designer in the hope that I can attract potential clients for their future ventures into the online market place. Full Cream Bakery aims to take its local shop into the 21st century with an online store that shows off its personality and heritage. The site aims to be totally client focused putting all the control into their hands for tasks like increasing prices, adding new products and updating stock each month. Doing this not only frees up my time to work on other projects but also makes my site expandable and adaptable for future projects. Alongside this I have created a reverent theme and a video walk-through that would be provided to clients.
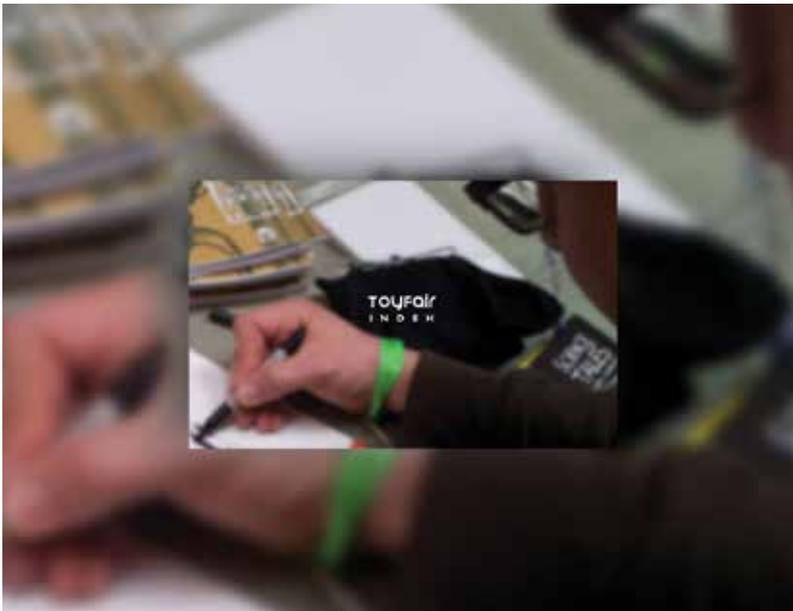


## Jamie Wright
### Toy Fair Index – a dynamic, multi-device solution

I have built a fully responsive and dynamic website that provides event information for the country's leading toy fair and convention events. The Toy Fair Index provides a solution to the currently out-dated and limited number of sources and makes the process of finding information for a specific event as easy as possible. The website brings together all of this information to provide a one-stop shop. It works by giving users the opportunity to click and search event information. Finally it provides a bonus feature of allowing users who run an event to log in and manage that specific event whenever they wish. To achieve this I have used four main technologies: HTML5, CSS3, PHP and MySql. Using these technologies allowed me to build the functions needed to allow all users to use the website appropriately on any device whilst gaining the best possible user experience.



## Becky Wilson
### Learning Your Way

I have created an e-learning website which highlights the most effective learning style of individual pupils aged 6-8 years old. It makes young children aware of their own personal learning style, which could help to improve their learning. I hadn't made an e-learning website before so I thought it would provide me with some new challenges. It also provided me with new and more advanced skills, which I can now take with me into employment after university. The skills I have developed through this project are my PHP, database and design skills. I used HTML5, CSS3, PHP and MySQL. I have used a database to create a login system and to save the results from the tests for each individual pupil, so the teacher will be able to associate the test result with the appropriate pupil, thus highlighting that pupil's individual learning style. The website is fully responsive so it can be viewed on tablets, desktops and any other device. I have used Neil Flemming's VARK as it covers the four main learning styles: visual, auditory, reading/writing and kinaesthetic.

## Joe Drane
### My Away Day – an informational mobile application for football supporters

Welcome to your independent guide to the 20 Premier League football grounds in the UK. Nothing beats following your team away from home – there are no 'plastic' fans at the away side's end of most grounds on a Saturday afternoon. Travelling, finding a pub, the camaraderie, the confrontation with the home fans – it's all part of the away-day experience. But it helps to do a little research before you go. Where's the best place to park? Is it really safe to go in that pub wearing colours? What's the best ground? Who has the best fans? Where's the nearest train station? All of these questions and more will be answered here at My Away Day – which incorporates an examination of all 20 Premier League football grounds in the UK and provides a review of available facilities at each one. So whether you're planning a trip to Old Trafford or Upton Park, The Hawthorns or White Hart Lane, you'll be armed with all the knowledge you need to enjoy your away day.



## Jordan McCord
### Efilfo – the database of life

I have created an interactive web application called Efilfo – the database of life. It lets users view and submit pages with information on animals and plants, and showcases how information doesn't have to be shown in a boring way and can be easy to use and displayed in a more visual and interactive way. To create my web application I used HTML, CSS and JavaScript libraries such as Knockout JS and jQuery, on the back of WordPress to create an animated and educational place for people to contribute, learn and enjoy.



## Emma Holmes
### MEE – the maths, English, education website

I have created a website which can be used to help adults with maths and English. In the world we live in today the level of your maths and English can have a great effect on any career path you wish to take. I came up with the idea for this project through seeing members of my family struggle with maths and English. My original idea was for the website to be based around Level 1 and 2 numeracy and literacy tests but my research found that many people struggled with basic maths and English, so I decided to incorporate this into my site. To form the structure of my website I used HTML and cascading style sheets (CSS3), I then used PHP and MYSQL to make the website more dynamic and database driven. To create the images I have used Photoshop.
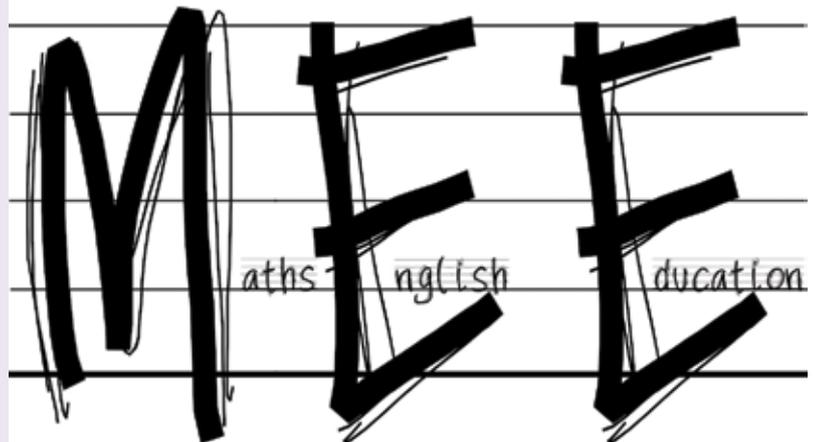
## Jonathon Goodall
### Respawn Online Gaming Magazine (ROGM)

I spend a lot of my free time reading gaming websites and I felt that not enough of them allow users to submit their own articles or reviews. I have decided to create my own site that allows fans and the community to be a part of the journalism and have their stories displayed on the site. The site has a page for non-administrative users (editors) with an article submission section which emails these articles to ROGM, which are then moderated and posted if they meet the standard. The site will be made using HTML, cascading style sheet (CSS), PHP and a simple content management system (CMS).



## Ashley Goldsbrough
### AccommoTees

AccommoTees eliminates the hassle of searching for student accommodation. You no longer have to trawl through different agencies to find the most suitable place to live during your studies. The project was inspired by my personal struggle to find the most suitable place to live at university. Other students expressed this as an issue, as some agencies require you to visit their company premises to view properties available to rent. Information is still scattered through a maze of different student housing agencies whereas AccommoTees has all of this available in one place, and it only takes one search. The project has been developed using HTML5, CSS3, jQuery, JavaScript, mySQL and PHP. Using a Windows PC, I was limited by which text editors I could use. I opted for Brackets instead of the standard Notepad++ as I feel the interface is cleaner and easier to work with. Sketches, wireframes and designs were completed with a mixture of Adobe Photoshop and Illustrator (most recent version), as well as Paper for iPad.



## Phineas Murwira
### Drug misuse and technological advancement – applying new technologies in supporting drug users to 'get clean'

I created a web application which is capable of broadcasting messages to support individuals who are coming out of drug dependencies. My main inspiration for doing this kind of project was my involvement with the victims of drug abuse and I wanted to explore how technological advancements could be used to help them abstain from substance use. It came as a result of my community involvement working with the disadvantaged and those whose lives had been disrupted by the use of substances. The application utilises real-time chat and is able to transmit and deliver messages instantly – it is based on jQuery Mobile and jQuery and was built for the Android platform. I used Dreamweaver, HTML5, cascading style sheets 3 (CSS), JavaScript and Ajax to run the chat engine.

## Mark Lloyd
### Fitness Geek – social networking application

I have developed a social networking site using PHP, jQuery and mySQL. Fitness Geek allows users to share their exercises, meal ideas and to follow other users on the site. Fitness Geek has the capability to allow users to post a status of a meal example or exercise demonstration. Users also have the option to upload an image to go with a post or as an individual status. Posts will be displayed in a live feed that can be viewed by the user's followers. Users have the option to like or leave a comment on a status.

## Vicky Bainbridge
### Farming On The Moove – farm management web app

This app is for farmers to help with farm management on the go. It can be used on a mobile phone so that farmers can record information quickly and easily. The app will help farmers to record animal births, help keep track of medicines used and how many animals they have. I chose to create a farm management app that will be similar to desktop versions. I decided to do this because from personal experience – my farming family background and living in a farming area. At the moment farmers are using desktop versions which means they have to spend a lot of time on the computer. This can be a problem during busy times such as lambing time, so if they could do it on the go this would be quicker. The app has been made with HTML5, CSS3 and a programming library JQuery mobile and the programming language PHP. For the information to be recorded in the app there is a MySQL Database connected to the app with PHP.

## Emma Holmes
### Writing Buddy

I developed a responsive website and a prototype app, the main focus being on the website. The topic of the project is creative writing – an interest of mine. From personal experience, I know how difficult it is to find a good digital source for creative writing. Due to this, the products were designed and developed for the beginner writer, providing them with useful content to aid in and guide their creativity. Using WordPress, a content management system (CMS), a child theme was created with the parent theme 'responsive' to build the website. During the development, I used the Firefox Firebug tool to assist in the development. The prototype app was developed using jQuery mobile and Adobe Dreamweaver.

**BSc (Hons) Web Development**
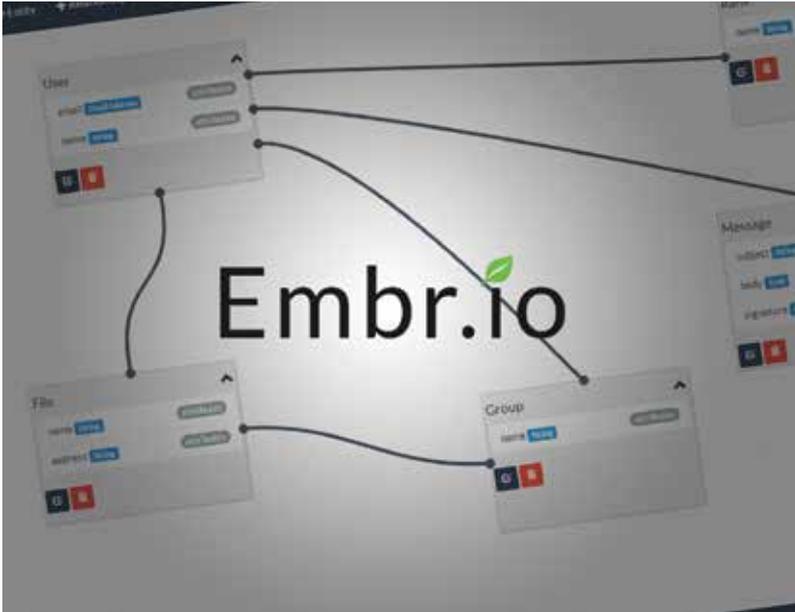


## James Drew
**Embrio**

I created a web-based user interface for modelling prototype web applications in an efficient and reusable way. During my year in industry, I was fortunate enough to be able to set up a new development company specialising in software development for the web. As the year progressed, I began to notice some key inefficiencies when prototyping ideas for the purpose of sourcing investment. The plan was to create something that would improve this situation for small teams, and investigate the possibility of use within larger teams. Interface designs were done in Adobe Photoshop CS6 and data-models were drawn in MySQL Workbench. The software was built using MySQL, PHP 5.3 (with FuelPHP framework), HTML5, CSS3, Javascript and various Javascript libraries (including jQuery and KnockoutJS).



## Cam Pearce
**DoItGrad**

With 47% of graduates unable to find employment within their degree subject, it begs the question why? Lack of experience and confidence in the field sees many graduates fail at the interview stage of employment. DoItGrad offers an exciting, dynamic, comfortable environment that provides a platform for students to gain the work experience they need to improve their CV and confidence before graduation. DoItGrad allows employees to auction off contract work specifically to students, but with a twist – as the auction timer goes down in price relative to a custom timeframe. Students' bids are collected at the end of the auction, from which the employee can choose a winner.

# Computer Science

These diverse R&D projects encompass a range of topics from the highly abstract and theoretical branches of computer science to the practical applications of the theory in systems design, software development and ICT. Our courses are constantly updated to ensure that we are ahead of the game in providing students with the skills to develop systems and solutions using the very latest technologies. This can be seen from the selection of projects on show, which share a common theme – innovation and experimentation. All of our BSc programmes are reviewed and accredited by the British Computer Society.

## BSc (Hons) Computing – Botho University
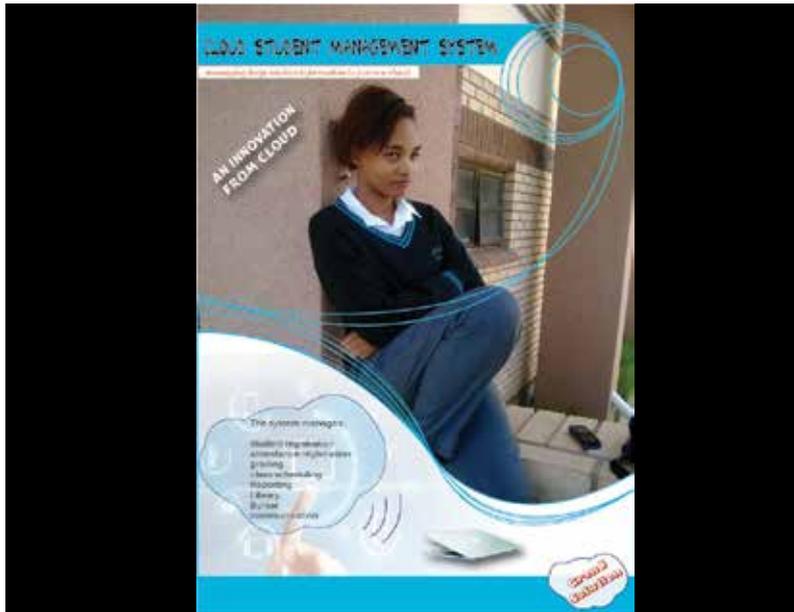


### Mpho Ben Motsamai
### Cloud student management system

I have developed a cloud student management system to manage the education of schools in Botswana. It is an automated system which eliminates manual work, losing of files and data redundancy. The system can be used to store all the information a school needs, including personal, academic, guardian, attendance, library and teacher's information. The system gathers almost all the information for all schools in Botswana and keeps it safe on one database on Microsoft Azure cloud. The system is centralised on a cloud so as to help the Ministry of Education monitor all schools in one place and they can track individual student performance in a particular school or check if the school is in need of any equipment or help without the need for them in person. Basically, the cloud student management system will help improve the education of Botswana as it will close the gap between the Ministry of Education, the schools and parents. The system was developed using Microsoft Azure cloud for storage, the Microsoft platform for the client in C# and the OzekiMessageServer for the SMS gate way.

## BSc (Hons) Computing – Prague College
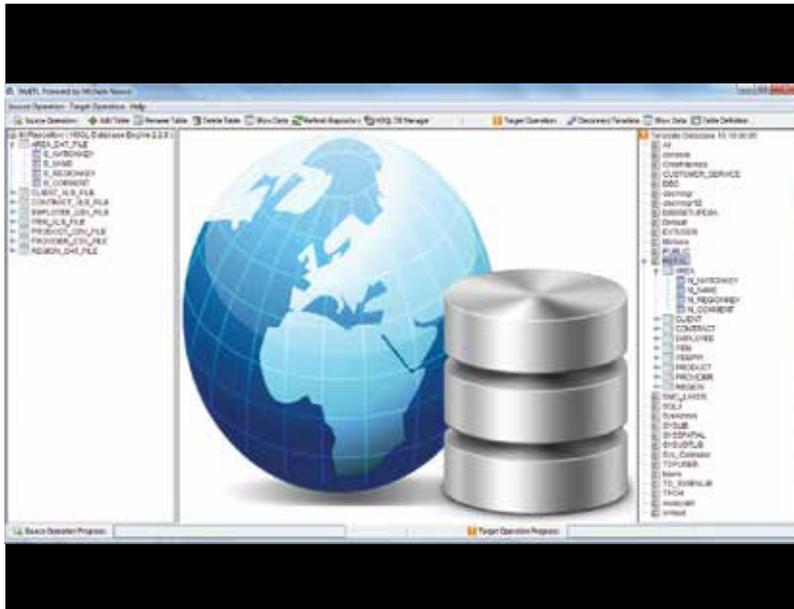


### Michele Nuovo
### MyETL: a Java software tool to extract, integrate and load business data

I developed a Java application named MyETL that allows an organisation to integrate data from multiple sources. MyETL is able to extract data from heterogeneous file formats such as flat files (fixed length record type), CSV (comma separated values), and XLS (Microsoft Excel 97-2003 worksheet file), to integrate and transform them in a format more suitable for the business. MyETL centralises the data in a DM (data mart) or a RDMS (relational database management system). MyETL is a cross-platform product as it is completely developed in Java programming language. MyETL uses the open source library Java Excel API to read information from Excel spreadsheets, and it integrates the embedded SQL relation database engine HSQLDB as a repository for the transformation layer. I chose this topic because usually ETL (extract, transform and load) processes are done manually, and the use of MyETL automates most of the involved operations.

## BSc (Hons) Business Systems Design
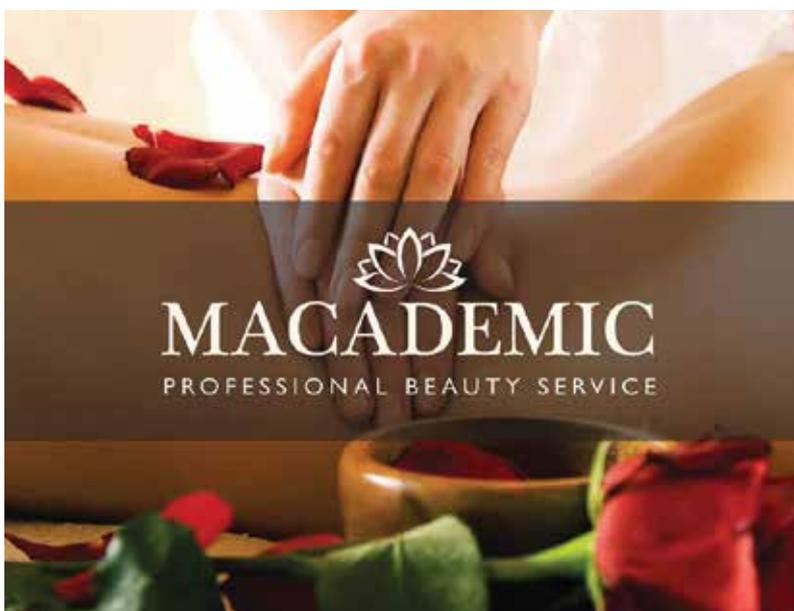


### Ian Campbell
### Developing an online presence for a SME

I worked with a live client, Jilly's Beauty, to provide their online presence. The following elements successfully created a valuable digital presence:
- Re-branding – to give the company a cleaner, more professional brand image and create consistency throughout the company
- Creating a custom content management system (CMS) website – to promote the business and increase revenue
- Digital marketing strategy – to maximise social media to promote the business and successfully implement a search engine optimisation (SEO) strategy to direct traffic to the website.

This project showcases my stakeholder management skills that I learned on placement as a junior business analyst at Drax power station and shows a more creative side to my work. The website has been developed on WordPress using HTML5, CSS3 and JQuery. Designs for the website and business stationary were developed using Adobe Photoshop and Adobe Illustrator.

## BSc (Hons) Computer Networks

### Josh Reeves

**An application that calculates Creep for different alloys using the Larson-Miller Parameter**

I have created an application using Java and SQL that calculates the life, stress and temperature values for a given alloy specification based on the Larson-Miller parameter, as well as the minimum sound wall thickness for each alloy. My application allows metallurgists to calculate creep for several different alloys. This is the predicted time it takes for a casting of a specific alloy type to deform or even fracture whilst placed under stress at elevated temperatures. The motivation for my project was fostered on my industrial placement; I worked for a fabrication company supplying the petrochemical industry. This software provides business leaders with quick access to statistical information about the estimated lifespan of their products, as well as the more granular technical details for the metallurgists. The front-end was developed using the Java API, as well as the JFree and Apache Commons libraries. This was built on top of a MySQL Database, hosted through the University.

### Lawrence Bird

**AutoMATE – maintaining IT service delivery for scale-out architectures**

To maintain service delivery for critical business applications, I have created a web-based application that manages clusters of servers from provisioning to deployment and mitigates resource bottlenecks. The application is capable of detecting nodes on a range of networks and assigning them to a list of managed services defined by the user. The application monitors node collections associated with services and determines a service state. If the state of a given service drops below acceptable parameters, the software provisions a 'free' node with an appropriate system image for the service and deploys the node into the cluster. In reference to the deployment model, the project is centered on scale-out architectures. The web application was created using PHP and MySQL and interfaces with several Linux services such as PXELINUX, ISC DHCP Server, BIND DNS Server and Apache. While the end product was a web application, the project shows clear understanding of the Linux operating system, network and service design and uses concepts of IT service management throughout.
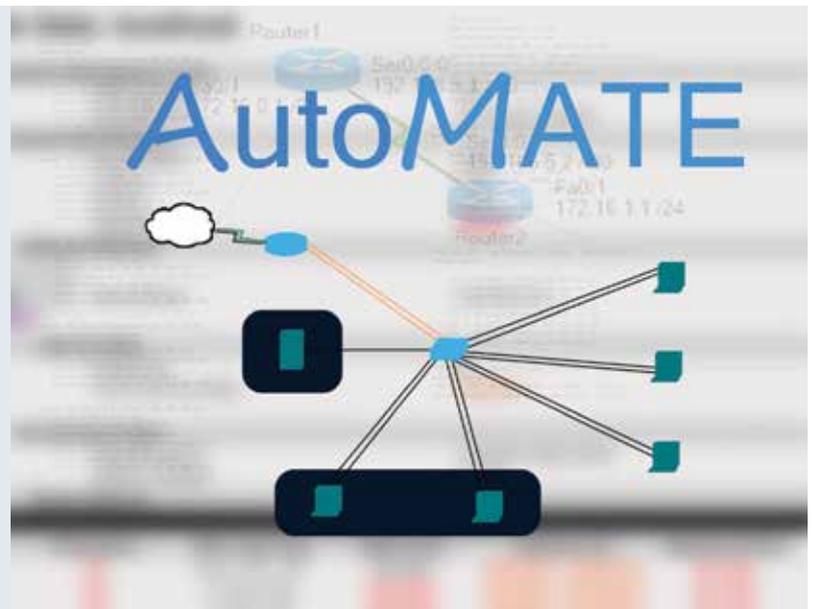
## BSc (Hons) Computer Science

### Carl Morphet

**Automated business intelligence filtering**

The aim of this project was to extend an intelligence aggregating application, developed during an industrial placement year for DuPont Teijin Films (DTF), with more advanced filtering algorithms to reduce the volume of defect information shown to end users. The primary task involved the research and implementation of natural language processing algorithms to identify and remove advertising along with determining the relevance of an alert item to user-defined search criteria. My solution utilises a combination of latent semantic analysis and sentence-based sentiment analysis. After examining the alternatives in the design phase, the algorithms have been implemented using the same C# architecture, utilising Microsoft Visual Studio as the existing distance-based filter due to its powerful resource management and wide use, which allows other developers at DTF to maintain and extend my solution. The existing SQL server database has also been augmented to accommodate the new architecture.
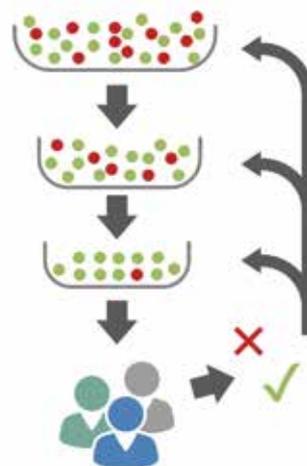
You don't know what you don't know

Business intelligence with iterative goal seeking
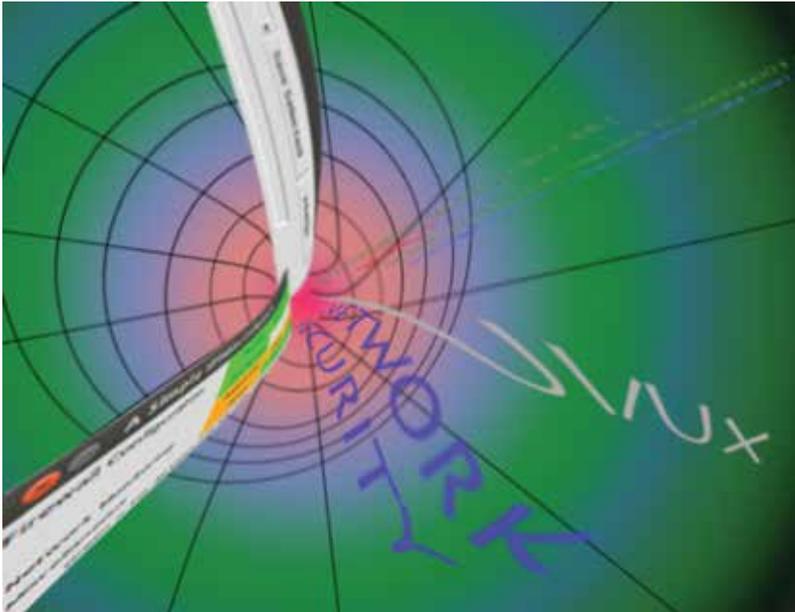
## Sera Chosoné
### Research into user acceptance based on interface design

I created a graphical user interface (GUI) for the IPTables in Ubuntu 12.04 with scripts for allowing opening and closing of ports on specified internet protocol (IP) addresses and on any IP addresses. I conducted research on the usability of modern software programs, and how it can affect users in a home setting, especially those who are not so expert with computers and struggle with terminology, understanding or the main elements of computer networks. I have looked into ways GUIs can be used to simplify this process, how designs can be more streamlined to fit more users' needs, and how a minimalist design can simplify how users feel when approaching a product. I did this to look at how we can improve usability for home users and look at how GUIs can be changed to be more appropriate to this type of user.



## Kathryn Holliday
### Researching hard drive maintenance tools and utilities

I looked into the effectiveness of hard drive maintenance tools and how this affects the vulnerability of data. My client, a counselling service, is worried about the data stored on their current hard drives as they are planning on recycling their current machines. My client asked for a technical guide detailing how to carry out tasks on hard drives to improve data security and to minimise the vulnerability of data. They also wanted to understand how hard drives work and how they store data. I have always had an avid interest in digital forensics and I am currently a volunteer in the Hi-Tech Crime Unit at North Yorkshire Police, the investigators have helped me significantly with my project. A virtual machine was created to mount a DBAN operating system to the machine to wipe hard drive data. I also downloaded FTK to image hard drives and recover data from the images. I used a write blocker when imaging the hard drive to prove I had not edited any data on the disk. I looked in to the Windows hard drive utilities such as Disk Defragmentation to see the effect these have on hard drives. CCleaner was used to investigate security features available. I produced a guide on how to carry out different tasks and how to download the various software. It includes screenshots and diagrams to help my client understand what is going on and how everything works.



## Chris Wills
### Wightlink Ferries booking system

I have created a reservations system for a Portsmouth-based ferry company Wightlink Ferries. It includes a front-end booking system and database to store the data needed for the system. The project will be used in an office environment by a booking agent to create, delete and alter ferry reservations and customer records. I chose to create a booking system for this company as I worked there during the summer. During this time I became interested in creating a system that handles requests more efficiently than the current system. During conversations with other workers and supervisors I listened to their ideas and grievances with the current system and took these into account when designing this system. I created the database segment of my project using Microsoft SQL Server 2012. I chose SQL Server because as it is the most widely used database tool in industry. The front-end reservations system was created using the Java programming language and the Netbeans development kit. I chose to create the software in Java due to its ability to be used on multiple operating systems without needing to change the code and to enable me to further develop my skills at programming in this language.

## Ste Pammenter
### Miru – mobile access to geographically aware data through augmented reality

I have built Miru, an Android application which aims to increase spatial awareness and human perception in process industry environments. The project gives engineers and contractors the ability to easily find and discover assets on the plant. By making use of the geolocational sensors of an Android device, Miru is able to display geographically aware data by augmenting asset information over reality. It has been designed to work without an existing geographic information system by providing a geotagging function. Much of the motivation for this project came from the work done in my placement year with SABIC UK Petrochemicals. The application has been built in Java for Android using the Android software development kit (SDK) and harnesses the power of the Google Play API.

## Mohamed Roshan
### iCaMouse – the hands-free mouse

iCaMouse is a Java-based desktop app which enables the user to control mouse movements and clicks using their face and eyes with the help of a webcam. Users control the mouse pointer with their head movements and make mouse clicks by winking (right-eye wink for a right click, left-eye wink for a left click and closing both eyes for a double click). iCaMouse continuously captures frames with the help of a webcam and without saving the frames. Every frame is checked to detect a face. If a face is detected in the grabbed image, it returns the face co-ordinates from the frame. Using face co-ordinates, iCaMouse detects the eyes and nose (the nose helps to control mouse pointer when the user moves his head). The image is then converted to greyscale for improved efficiency and iCaMouse checks for eye winks – if an eye wink is detected it makes the mouse click accordingly and then captures a new frame. iCaMouse may help some physically challenged people to access their computers more easily than before. The software used for building iCaMouse were Netbeans IDE, Java Development Kit and Java Media Frame. Webcam is the hardware used to capture images.
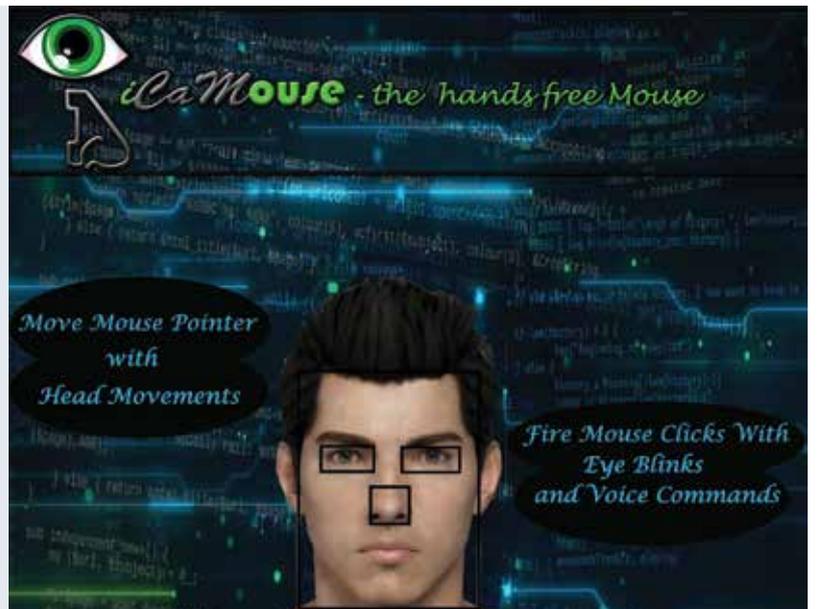
## Rob Thompson
### SocialAndroid

I created an application that can find the shortest distance between two paired Android devices. The application first finds or updates the user's location, then retrieves a list of the last known locations of its paired devices. The user can then select a paired device from the list, and the application will find the shortest route to it and display that route on a map. As security is a key factor when dealing with private data such as location, the application can only be accessed by first asking the user to login or register, and tracking can be turned on and off at will by the user. The Android application is written in Java and XML, created using Eclipse with the Android software development kit (SDK). The application uses PHP web scripts to interact with a database I created using MySQL and phpMyAdmin. The response is parsed into JSON so that the application can display the results. Both the database and web scripts are hosted on university servers.

## Benjamin Green
### Is artificial intelligence the future of security threat mitigation?

Computers trust whoever can provide the correct credentials. Even if people try to gain access to computer systems using credentials gained from another user with or without their knowledge making them untrustworthy, the system still has to trust them. I believe this problem can be solved using artificial intelligence. The system would make a judgement based on the sensory inputs it receives and determines whether the user is who they say they are. I believe if artificial intelligence is to be the future of security it will also need to be affordable, therefore, I created the project using mostly low-cost or open-source software. I used Java to program the computer-side software which linked all the aspects of this project together, such as Microsoft SQL database and Arduino. The Java application also measured time between keys strokes and compared them to the times stored in the database linked to the account which was being accessed. The Arduino was used to measure the user's pulse rate when responding to questions asked – the response was picked up by the EasyVR shield for Arduino, and sent to the Java application via a COM port along with the pulse rate to be processed. The structure of the sentences used by the user wishing to gain access was processed through Lisp and the verdict returned to the Java application.
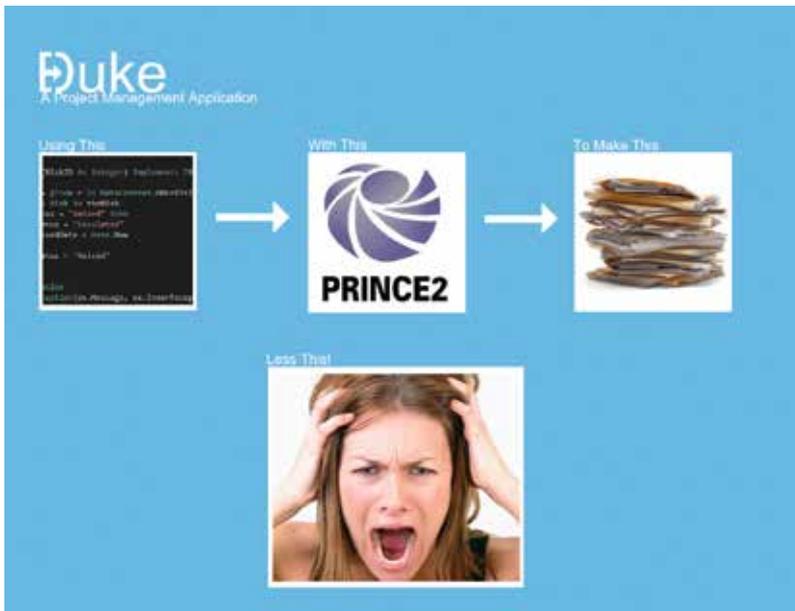
## Rob Nuttall
### Duke – a PRINCE2 project management application

I developed a piece of software intended for structured, well-documented project management, entitled Duke. Duke helps structure a project using a simplified project in controlled environments (PRINCE2) methodology. The software provides task distribution, risk management and document automation capabilities, to be used in a small to medium business environment. The idea was inspired during my industrial placement where project organisation was often a key debate. The software was written using Visual Studio 2013 in Visual Basic (VB.NET) and the Windows Presentation Foundation (WPF). Duke uses a modular design to provide ease of change with minimal code reuse.

## Charlotte Varley
### Database and GUI for a hotel booking system including a user guide

I created a database with a graphical user interface (GUI) for a hotel booking system, including a user guide. The system stores guest information, creates room and function bookings, checks guests out and holds guest feedback. The database stores all of the information and is entered by a hotel receptionist through the GUI and saved to the database. The hotel had been using an old paper-based system where guest information was not kept securely and mistakes were easily made with bookings. By using the new system the database can be kept closed while the user is using the system so information is kept securely. The user guide is created for the owners and the staff of the hotel to refer to if they are unsure about features of the system, how to enter the data or open and close the system.

## Jay Anukam
### Analyses of cookies and their uses in forensic investigation

My research is based on internet cookies, also known as HTTP cookies. It further explains the way cookies works, their importance and especially a broader look into the potential risks (disadvantages) of cookies including how to secure data stored on cookies. This research also demonstrates the difference between first and third parties' cookies and their uses. The type of data stored in cookies and how these data can be used either by website operators or hackers was also examined. In addition, this project explores how cookies help in forensic investigation.

## Kiril Anastasov
### Extending AlgoTrader with new features

Everyone in the field of finance and hedge funds uses software to trade. It is common practice within the trading environment to produce algorithmic software in order to make successful trades in the stock market. Although it is possible to trade manually, most of the trades are done through software such as AlgoTrader because of the complexity and the volume of data necessary to be processed. I have extended AlgoTrader to be able to read data from multiple data sources with the Bloomberg API Emulator. There are four more ready trading strategies that can be used in the extended version of the AlgoTrader compared to only one for the open source version. Risk and money management tools have been improved significantly with maximum stop loss of the position and being able to invest a percentage of the capital. Finally, a dynamic data model was integrated with the extended version. The quality of the software that has been developed plays a vital role in demonstrating the effectiveness of the trading strategy.

## Kyriakos Ioannou
### RFID self-checkout system

I have created a self-checkout system that uses radio-frequency identification (RFID) instead of barcodes for use in supermarkets or any other stores that use this service. The system aims to make self-checkout in stores less time-consuming. It works by scanning the RFID tags of the products that the customer wants to buy and that are scanned into the system, where the customer has several options regarding their products. The software was created using Visual Studio 2012 and the code was written in Visual C# using the Windows Presentation Foundation application.
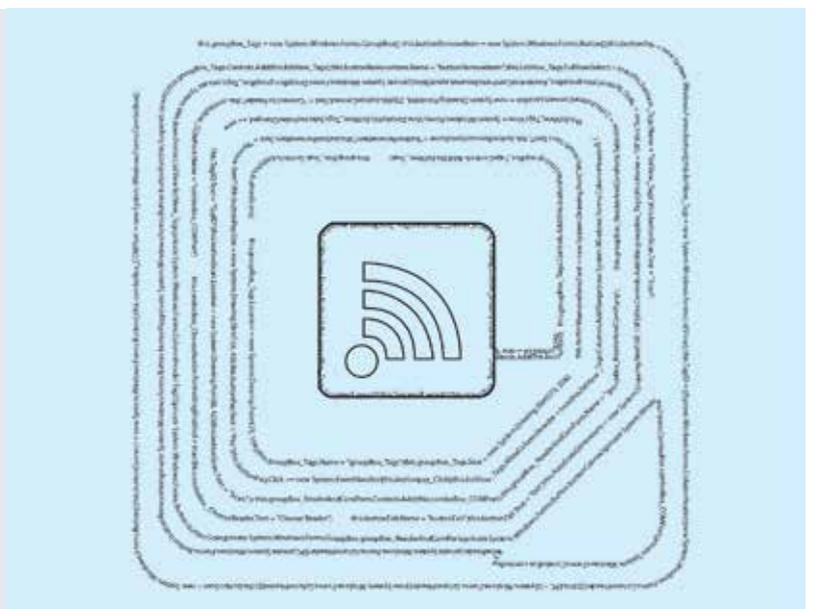
## Lewis Ramel
**Gamer Gossip**

For my final-year project I have created a mobile application that allows easy social interaction between groups of gamers. My application allows users to create their own account so they can then create and join groups allowing easy interaction and chat with other members using the application. It also allows the user to create events visible to everyone in their group, so they can easily plan simultaneous play if, for example, a new game is released and all users want to participate. I developed my application using Android Development Studio – this is quite new software but it is Android's official integrated development environment. In addition, I used a Google Nexus 5 as the hardware to test that everything in my mobile app was working correctly.

## BSc (Hons) Computing



## Neb Pekovic
**E-commerce website to create a custom t-shirt design**

I have created an e-commerce website for a range of products that are created by hand tied dyed technique. The website was built as a single-page application in conjunction with a model-view-control approach to apply latest trends for building applications with smart devices in mind. The software allows users to choose multiple colours for a randomly generated circular pattern, which is then moved and positioned by a user anywhere on the t-shirt template to create a user custom design that could be re-produced. The HTML5 canvas element was used for generating a pattern. To create a model end MySQL database was created and PHP scripts to interact together. Controls were created by using Javascript events that use Asynchronous Javascript and XML (AJAX) to insert views into document object model (DOM). jQuery Mobile library and CSS3 media queries were used to ensure responsive web design (RWD).



## Mohammed Baybars Mehdi
**Trading Card Generator**

I have created a trading card generator. Trading cards are sets of related picture cards that contain statistical data. They can be traded or used in simple games in which players nominate statistical values from the card and the player with the highest value wins the card, like Top Trumps. The game continues until one player has won all the cards. The trading card generator can also be used to create picture cards, widely used in classrooms, and original gift cards. Companies such as snappygifts.co.uk already offer this service but the user must design their own cards. Although there are a number of online trading card generators their functionality is extremely limited – users cannot store their cards in a database nor can they edit or add fields. A responsive website that displays on all devices, it has a database backend that users access via a content management system (CMS). The CMS allows users to create their trading cards, and add images and statistics, for example if a user wanted to create a set of predator trading cards these statistics would include data on the type of predator (mammal or reptile), the number of continents it is found in, weapons as well as generic statistics such as height and weight.

## Sam Hurley
### Jack In The Box CIC

Jack In The Box CIC is a community interest company that offer activities to engage disadvantaged children with disabilities or additional needs. My client is currently using a paper-based system for registering and storing personnel information about her members. I have custom-built an online, database-driven system which replaces the paper-based system. Members and administrators can use this system to perform a range of functions electronically such as login and register, update and delete member information, organise planned activities, and register interest. For the front-end I have redesigned my client's web presence using a Twitter Bootstrap Grid for responsiveness and SASS to save space and enhance performance. For the back-end I have modelled and created a database which I have then developed into an application using MVC4 Entity Framework 5. My client's enthusiasm for my project has stimulated my interest and effort. There is potential for this kind of approach to be extended to similar organisations and groups using emerging web technologies. www.jackintheboxnortheast.co.uk

## Kallaum Martin
### Radio frequency identification – developing a system to track entities through access points

I have produced a demonstration of a prototype for a system to track a number of entities (people, packages, items, equipment) in and out of a location (beach, building and site) via a system of radio-frequency identification (RFID) readers that act as virtual gates. This is done by capturing an identifying piece of data from a tag. This identifier is then transmitted to a localised database where it matches a record identifying the entity. The database records the location at which the identifier is captured, the time and date, and the identifier itself. The database has a graphical user interface that is intuitive to use. It allows for low-level access rights to all users and selective access rights to administrators. This setup is designed to protect any sensitive information that may be held from unauthorised access. The database structure was created using MS Access (database) which is linked to an application, developed using Visual Studio 2010, used for capturing the data from the reader and transmitting it to the database.

## Aidan Zealley
### PRJECTR – share your craft

Prjectr is a social web application where people can share projects they are working on for others to follow and discuss. Projects can be short or long term but all consist of many updates that show the project's progression from start to finish. The intention is to fill a gap in the market for a purpose-built platform for people to document their projects such as car restoration, computer case design, electronics projects or anything else they wish to create and share. Prjectr is built on the latest version of the Ruby on Rails framework.

## Matthew Parven

**Implementing modern mobile technology in ecological fieldwork to improve productivity and performance**

I have developed a mobile tablet application to improve the productivity and performance of a local ecology company run by one of the UK's most highly acclaimed ecologists. My placement year with Accenture provided first-hand experience of the job satisfaction derived from developing a product or software which can enhance a business and this was the inspiration for my choice of project. The application transforms their current slow and error-prone recording system into a modernised mobile technology solution. This allows them to record information taken in the field, manage their own personal vegetation library on the device, store plant images in a gallery linked to their library to help to prevent misidentification, and export finished field projects onto a digital spreadsheet. The application was made using the Android development platform. It was programmed in Java and uses SQLite for storing vegetation and project information on the device.



## Jacob Smith

**What is the most effective way for a simple robot to track and follow an object or person?**

I decided to experiment with different methods of tracking someone around an environment. I looked into different techniques of doing this including infrared detection and frame comparison. I finally settled on sonar, colour recognition and skeleton tracking. I have constructed a base on which a laptop is held to run a program that processes a video stream. Using serial communication, the laptop interfaces with a microcontroller (Arduino Uno) that regulates the servos. The sonar worked with a handheld transmitter and two receivers on the microcontroller. However, due to hardware limitations with the microcontroller, I was unable to reliably process the signal. I used a Microsoft Xbox 360 Kinect for skeleton tracking, Arduino Uno for the microcontroller and a Windows laptop to run the program. The program was written in Visual Studio 2013 in C#.net, with the Kinect for Windows SDK and AForge libraries to develop the program.
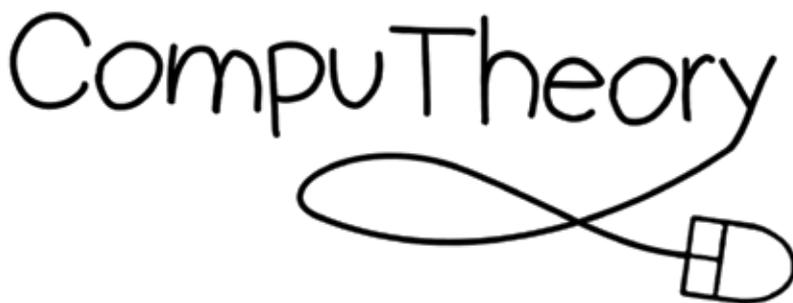


## Molly Schofield

**CompuTheory mobile application**

I have developed a computer theory mobile application called CompuTheory. It is a learning tool available on smartphones to potentially aid in learning computer theory in a quiz-styled application. Computer theory is something that has interested me throughout college and university. During my studies I found it difficult to revise some aspects of computer theory – the quiz style of this app would have been a great help to me as a revision tool, and will hopefully be beneficial to others in the future. The app was created using a combination of the content management system Drupal, some of its contributed modules and the open-source framework PhoneGap. Almost the entire application has been developed using open-source software, other than the graphics, for which I used Adobe Photoshop.

## Alaethea Gregory-Gamblin

### Trinity Youth and Children's Project video game

I have developed a video game for Trinity Youth and Children's Project (TYCP). TYCP is a charitable organisation which provides afterschool clubs for local children, aged 5-12. They work closely with primary schools, Trinity Church and the local community to offer a safe and supportive environment for children to learn and play in. Having volunteered at TYCP for over three years, I wanted to explore whether I could use my passion for video games to benefit the organisation and to engage the children who attend the sessions through a new medium. I chose to base the game on TYCP and the many clubs it runs. Working closely with staff at TYCP, I conducted research into what themes and features the children would most enjoy and engage with. I then used Unity to create the video game, using the research conducted to cater it to the target audience.
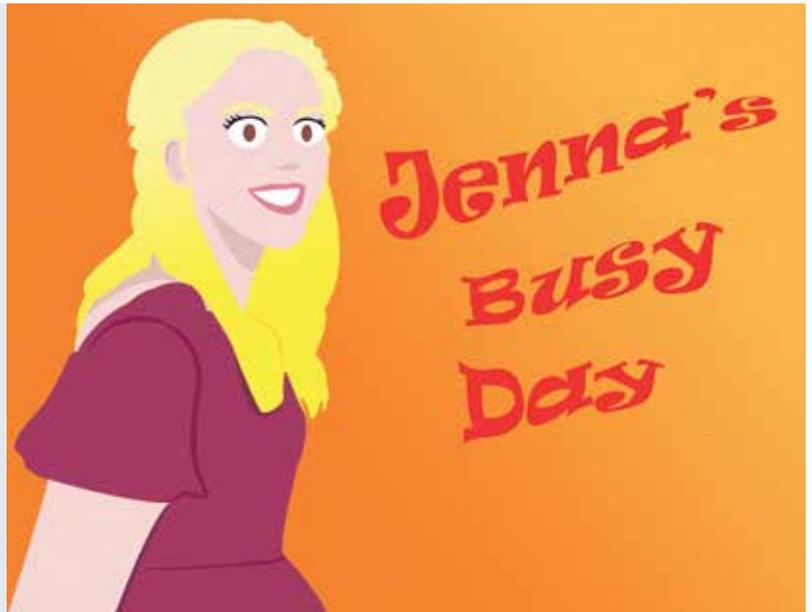


## Nick Green

### A simple platform for a start-up business

I have created a generic platform for a business to begin trading and create their identity without the need and expense of having to employ web specialists. I have created a set of files that can be dropped onto any server with a MySQL database. The only item that the administrator needs to modify is the configuration file. Once configured, when the site is first viewed the database is created. This, in turn, creates the site with its generic content. The administrator then has full control over all the content on the site. The only requirements for the framework are the database, web server and domain name. Powered by PHP and the latest HTML5 and CSS3, the framework allows companies to create their online brand with the greatest of ease. The only aspect of the product requiring a technically minded person would be the need for a theme. A generic one is always provided but there is a lot of scope for companies to develop their own to support their own brand.



## Darren Holliday

### Esk Valley Railway Walks

I have created a prototype app for the Android platform by Google which shows walks from two of the 15 stations along the Esk Valley railway line between Middlesbrough and Whitby. The prototype app features two stations – Danby and Whitby. Each station shows two walks plus information about facilities local to each station such as pubs, tourist information centres and accommodation. Where appropriate, links to external websites are included. The walks are displayed using Google Maps and show a polyline overlay of a walk route. The app is coded using Notepad++, HTML5, jQuery Mobile, Cascading Style Sheets (CSS) and JavaScript. The app was packaged in Adobe PhoneGap Build to create the .apk installation file. The .apk file was loaded and installed to a Google Nexus 7 tablet for testing purposes.
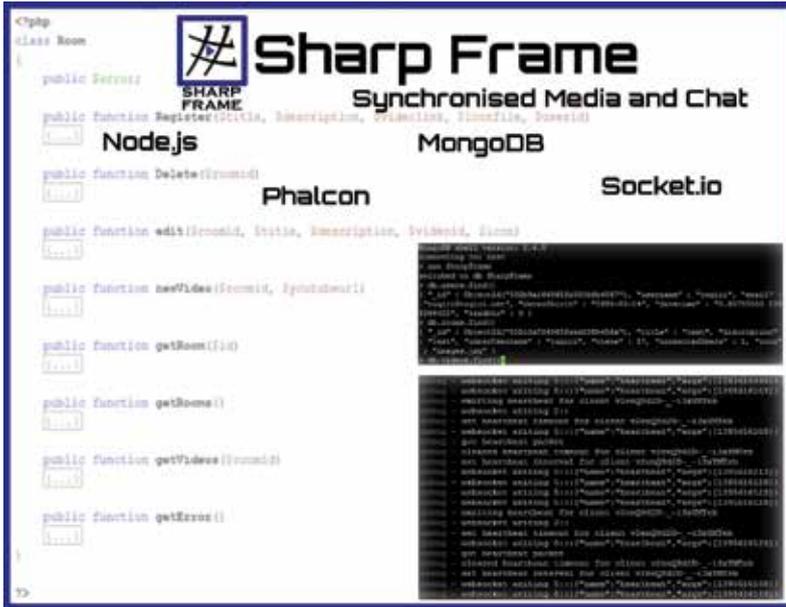
## Nathan Morgan
### SharpFrame

SharpFrame is a web-based application that allows users to create their own chat rooms that have the ability to play a synchronised video stream to many users at once. This project is useful for people who want to stream video but do not have good enough internet upload speed. Since streaming video requires a lot of bandwidth, a user's home computer may not be up to the job. SharpFrame uses a mix of programing languages to synchronise the media to its users. The main part of the project is coded in PHP using the Phalcon framework due to its speed compared to other competitor frameworks out there. Node.js is also used for this project as it is a solid choice for its ability of controlling the synchronous chat and video in real time. Lastly, MongoDB (an object-orientated database) was used because of its speed in accessing data in a table.
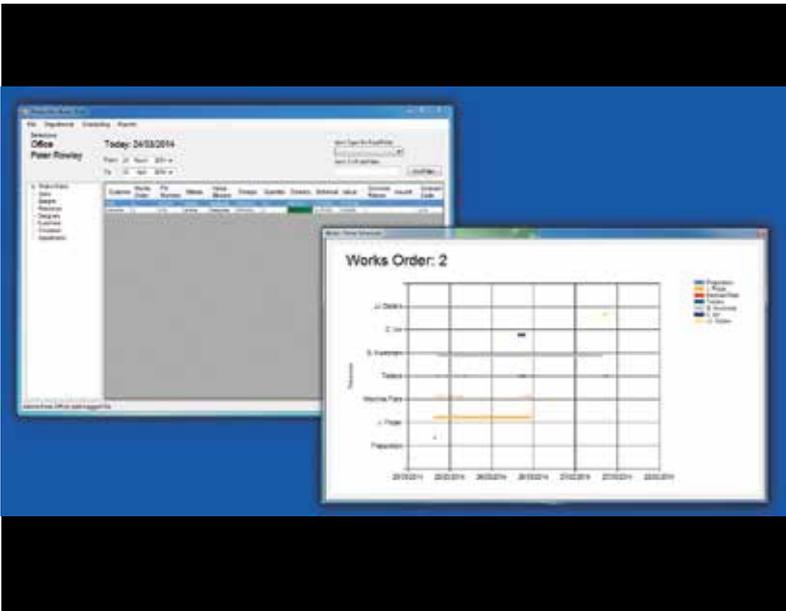


## Peter Rowley
### Production Book

I have developed a prototype of an application that allows for the capacity planning, management, tracking and scheduling of works orders for a medium-sized transformer manufacturing business. The intention was to replace the current system which uses Microsoft Excel to track orders as they progress through the plant. I am currently employed full time by Carroll & Meynell Transformers Ltd as the production planner for all work orders processed through the plant. My role necessitated the creation of planning software based on the Microsoft Office platform, specifically Excel and Access. I found the current system had major limitations which impeded my ability to successfully plan plant processes so decided to make an application capable of fulfilling all the requirements of factory planning. This project also gave me the opportunity to learn how to program an application in C# using Visual Studio. The application is based on a client-server configuration where there is a central database developed using Microsoft SQL Server 2012 and client graphical user interface (GUI) developed using Microsoft Visual Studio 2012 using Entity Framework and written in C#. StarUML was also used to create database models used in the design process and the application was implemented using a model-view-controller design pattern.

## BSc (Hons) Information and Communication Technologies



## Temwa Banda
### Website to store bookings and financial data for a company with multiple businesses

I have created a dynamically driven website to store bookings and financial data for a company with multiple businesses (a conglomerate company). The website has dedicated pages for each business under the parent company. Key areas such as the truck business, housing, and a hair and beauty page allows clients to view product information online and then make a booking. The administrator receives an email for this booking and this information is stored in an SQL database. The administrator is able to reply to the client by email or text for confirmation. The owner can record how much each sector is making and the data is shown as a graph to compare how each sector is doing financially. I created this dynamic website using Visual Studio and SQL Server as the acting database.

## Rachel Smith

### Designing an interactive e-learning website

I have created designs for an e-leaning website. They include a logo, the layout of all content-holding pages, design games and quizzes that, if implemented, would be made available for users to play on the website. This website is for students studying ICT, age 15 and older, who are in secondary school, college or at university. I chose this idea because I want to become an ICT teacher and I wanted to provide an ICT e-learning website as there are not many available on the internet at the moment for this subject. I researched such websites as BBC Bitesize and e-learningforkids.org. I created four games and two quizzes as prototypes that could be used on the website if implemented – I used pen and paper to design these. I also used Adobe Photoshop to create the layout designs for each page of the website.



## Lauren Smith

### How using online methods can benefit a small business

I have created an online booking system for a play centre located in Gateshead. The booking system allows customers to login and book their child's birthday party choosing from a range of options. The booking system is a prototype for the play area to consider. The project idea came about after working part time at the play area for several years. I identified the problems customers had when booking a party as well as problems with the current part-paper-based system used by reception staff. The system provides information on parties at the play centre and allows multiple users, with different user roles, to book their party online without contacting the play centre directly. To create the system I used Visual Studio 2012, using dynamic data and written in c#. To create the database I used SQL server.
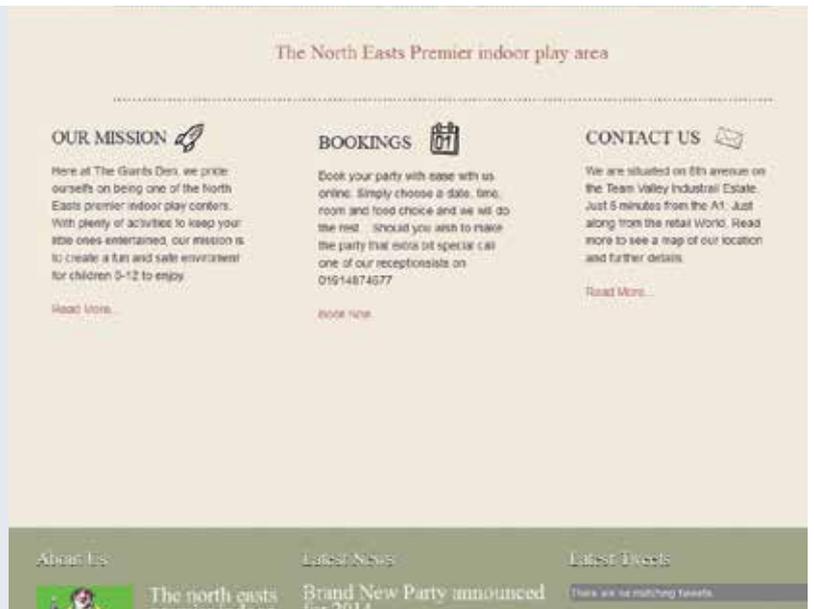


## Mathew Fish

### Codename Fish

For my final-year project I have created a website that aims to get Key Stage 3 students interested in computer science. After spending my placement year as an ICT teaching assistant at Macmillan Academy I saw first-hand the need to include more aspects of computer science in the current curriculum. The website was created in Dreamweaver and features tutorials for creating programs in Visual Studio 2012. The programs in the tutorials closely match the national curriculum. The Codename Fish website also features a dedicated section for girls focusing on theoretical aspects of computer science, a history section that profiles influential people in computer science and a takeaway section that shows students how they can keep interested in computer science outside of school.
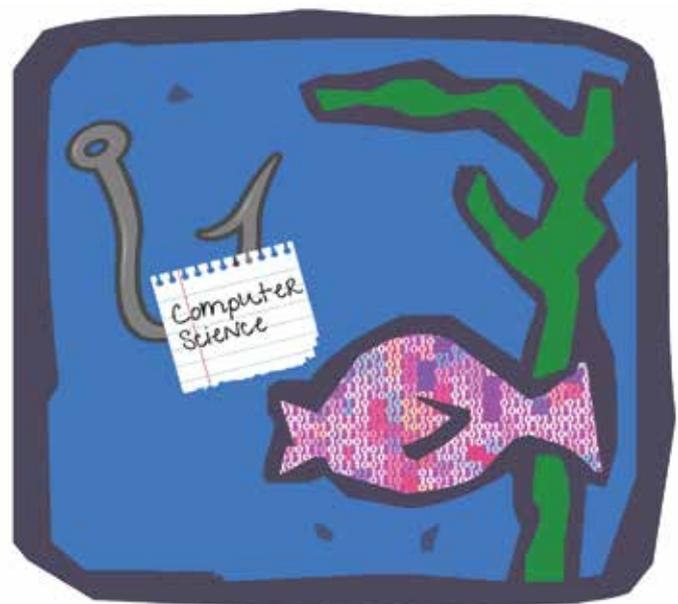
**BSc (Hons) Software Development**



## Dan Howden
### intelliRegression – adaptive fault localisation for better regression testing

Software testing is an expensive process. Previous work experience at IBM provided insight into testing enterprise-level software and informed the decision to investigate new ideas to improve this neglected process. This project, intelliRegression, automates the fault localisation and debugging process to reduce the time needed to find failures and prioritise them. It then calculates a realistic confidence rating for an application, allowing teams to monitor evolving performance over time. The novel algorithm used identifies common failure reasons within a suite of tests and condenses them into prioritised, manageable chunks for teams to evaluate and deal with. The algorithm classifies results based on their nature, from unstable tests to system failures and reoccurrences to known regressions. This new approach produces a solution that can reduce the time developers spend testing and debugging by more than 50%, leaving more time for better software engineering.

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- Creative Digital Media, BA (Hons)
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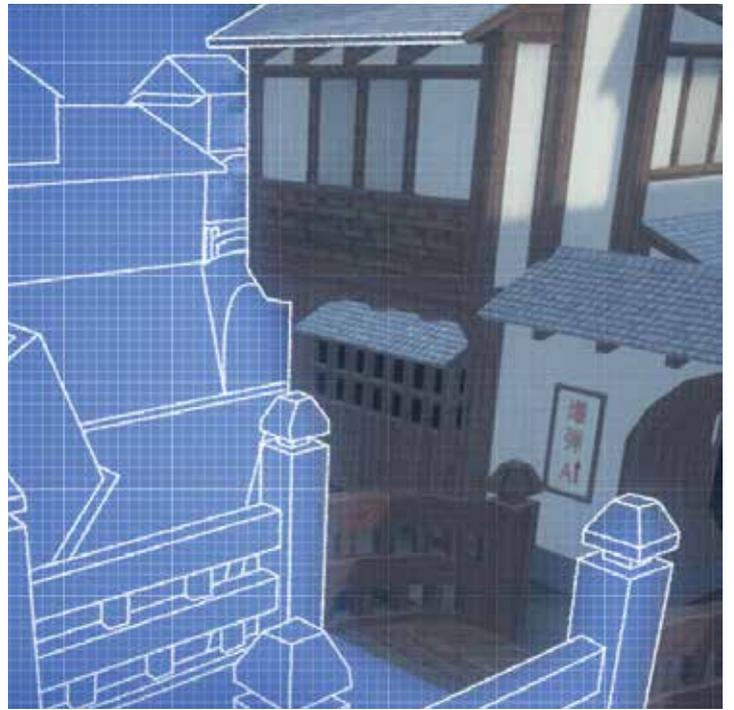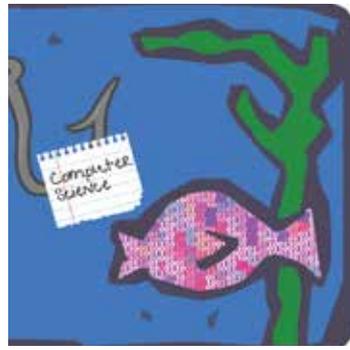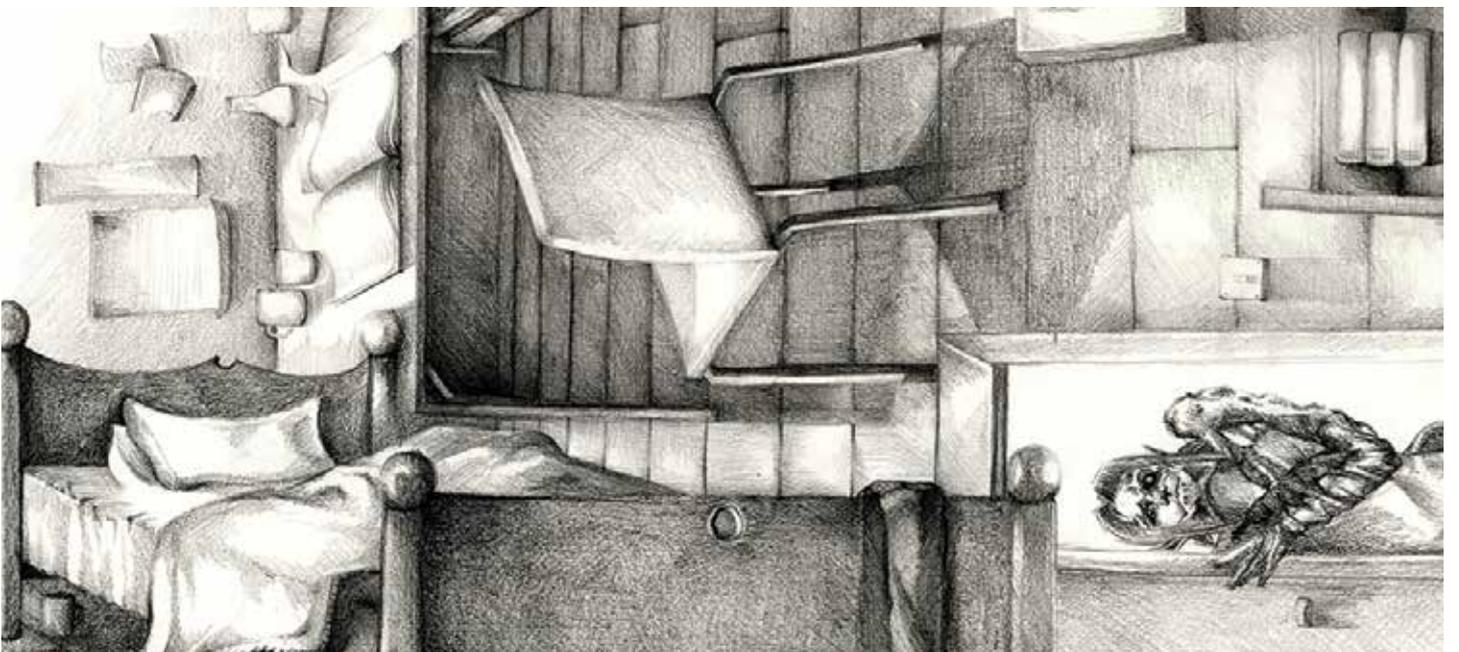
## Acknowledgements

ExpoTees is the result of the hard work and dedication of many colleagues and supporters. The team would like to thank everyone who has contributed to the success of ExpoTees 2014. We would particularly like to give our heartfelt thanks to our sponsors of the event and the ExpoTees Awards. We are very grateful for the support and dedication given by our School of Computing's management team, Academic Enterprise team, staff at the Darlington campus and the Department of External Relations.

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, projects co-ordinator, all the project supervisors who make ExpoTees possible, and the final-year students who make the hard work worthwhile.

For any questions about ExpoTees please contact Joanne Noble at j.e.noble@tees.ac.uk or on 01642 342631.

Stay in touch — join us on our open LinkedIn ExpoTees group and meet academics, ExpoTees exhibitors past and present and all our supporters who have worked to make ExpoTees a success.

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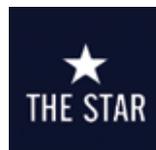
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