

# ExpoTees 2015

Showcasing the next generation of digital expertise

School of Computing

Inspiring success

# Welcome

to ExpoTees 2015



I am delighted to inform you that ExpoTees 2015 is our tenth annual exhibition of students' work from Teesside University's School of Computing! In celebration of our tenth anniversary, we are showcasing some truly excellent work with a wide selection of projects from our final-year students. Project topic areas this year range from advanced software engineering and programming to computer games, music, media and computer animations.

Once again, ExpoTees is scheduled to run 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 computer science 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 and Botswana.

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 2015

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

This year, ExpoTees celebrates its tenth anniversary as the region's leading digital recruitment expo. The event is held over two days to accommodate over 150 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 Teesside University's School of Computing.

#### Day one –

Computer science, web and digital media

#### Day two –

Animation, visual effects and games

Our students carry out 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 management to industry standard. These innovative, research, design and development projects make an exciting and diverse showcase.

This year we are delighted to include exhibits from Prague College in the Czech Republic, and Botho University, Botswana – students from our international partners 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 2015 before they embark on their careers.

Find out more about the 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. We are delighted to welcome Accenture and Pea Soup Digital as the principal sponsors of this ExpoTees anniversary. We are very proud of our growing community of supporters, and

we would like you to join our 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 over the last decade.



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**Chris Walter**  
BA (Hons) Creative Digital Media  
CBeebies Interactive

# “Without ExpoTees I would never have got a foot in the door at the BBC”

**Chris Walter exhibited his work at ExpoTees and secured an internship at the BBC as a result. Now he produces content for CBeebies Interactive on a daily basis.**

ExpoTees enables talented final year students from Teesside University's School of Computing to showcase their work and achievements, and network with the many employers that attend. One such connection presented Chris with the opportunity of a lifetime, which he grabbed with both hands.

‘Upon graduating from Teesside, I went straight into the BBC as an Intern – an opportunity I won through Expotees and the VisAwards – where I created and maintained content for the CBeebies website. CBeebies Interactive invited me back as a Team Assistant in November 2011, and I have remained there ever since, working my way up from Assistant to Researcher and then

to Assistant Content Producer, and switching between working on Games, Web Content and Social Media outlets.

‘I read about Teesside University in EDGE Magazine and it was rated one of the best universities for what I wanted to study. At University, I developed my design skills, my project management skills and my people management skills through various projects. One of the most valuable lessons that Teesside taught me was that I could use my skills in other fields; I originally went to University to work as a Games Designer but through Teesside and into the BBC I have used the design skills I picked up and applied them elsewhere.

‘I helped make the CBeebies Playtime and Storytime apps, which have over 4 million combined downloads across various mobile platforms, and my crowning achievement so far was a Producer credit on the Swashbuckle Island Adventure game in the CBeebies Playtime app.

‘I hope to continue gaining production experience and working with developers in order to cross over into producing AAA Games in the Games Industry as a producer.’



**ExpoTees was launched ten years ago. The decade has seen significant advancements and changes in the technological landscape, and the way that we interact with and use technology in our everyday lives.**

Exhibits from the first ExpoTees in 2005 were, at the time, exciting and innovative ideas, which pre-dated Apple’s iPad, Android tablets, USB flash drives and wearable tech, as well as many social media sites such as Twitter, Instagram, and Facebook, which were still in their infancy.

The explosion in digital developments and the impact on individuals, society and business has provided our

graduates with an increasingly broad field from which to choose to explore in their final-year projects.

The School of Computing keeps pace with the changing digital landscape by developing new fields of study and research. This is illustrated each year at ExpoTees – it always has something new and interesting for visitors to see. Who knows what we will be exhibiting in the next ten years?



# "I work for one of the biggest software engineering companies in the world ...all thanks to ExpoTees!"

**Tom secured his first job after meeting two representatives from Push Button at ExpoTees. The company was bought by Amazon, and he is now part of their core features team.**

'I found out about Teesside by researching games programming courses. It was originally my insurance university until I attended an open day and switched it to my first choice. I was really impressed with the campus and facilities the university offered.'

'Moreover, the modules for games programming were varied, interesting and were relevant to the industry – e.g. C++, strong focus on maths, algorithms, etc. and modules relating to optimisation under memory constrained environments.'

'The project I showcased at ExpoTees was a genetic algorithm that learnt how

to play Asteroids. I've taken the genetic algorithm part and want to apply it to other things. My long term career goal is to create a fully automated, learning stock market trader.'

'During ExpoTees I talked to a company called Push Button. I later had a phone and face-to-face interview with them and was offered a permanent job as a software development engineer. I now work for one of the biggest software engineering companies in the world, as Push Button was bought by Amazon.'

'I'm pretty happy at Amazon, the work is constantly changing and I'm frequently out of my comfort zone.'

'I developed a video player for the PS3 as part of a 2-person team. We completed our task and our player had one of the lowest percentages of errors per session, and one of the lowest percentages of buffers during playback per session. Our team then grew in size as we were tasked to port this to new platforms.'

'I believe it's important to feel constantly challenged at work and that's something I've found at Amazon.'



**"I work for one of the biggest software engineering companies in the world and have shipped software to millions of customers across several different continents, all thanks to ExpoTees!"**



**Tom Craven**  
BSc (Hons) Computer Games Programming  
Amazon.com

# 'ExpoTees was a delightful and amazing opportunity for me to kickstart my career.'

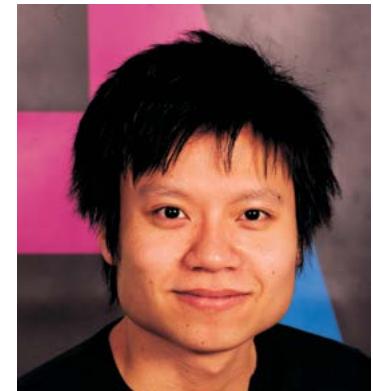
**'I was the winner of the Animation and VFX Award at ExpoTees 2011, which got me an internship at Framestore in London.'**

I was later offered a job as a Junior Animator and had the opportunity to work on the Oscar- and Bafta-winning Feature Film, Gravity and 47 Ronin. I am currently working as a senior animator at Cubic Motion where I've done work on Call of Duty: Advanced Warfare, Star Citizen and other unannounced game titles.

'ExpoTees was a delightful and amazing opportunity for me to kickstart my career. The opportunity to show

your work to a wide range of potential employers first hand is not to be overlooked! It was also great to see what the other students have been up to and do some networking.'

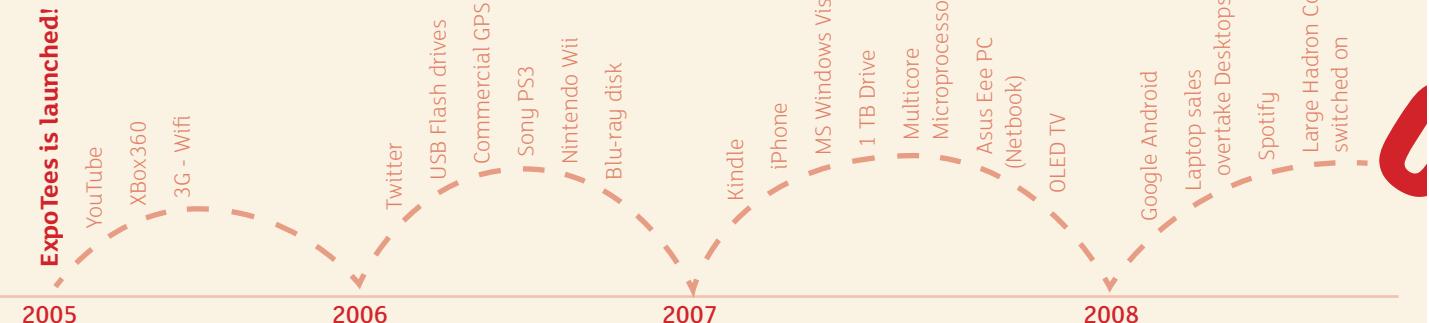
'I returned to ExpoTees the year after I exhibited there to check out student work and it's exhilarating and inspiring to see what recent graduates can do. I would be happy to visit again.'



**Wei Xing Yong**  
BA (Hons) Digital Character Animation  
Cubic Motion



**ExpoTees is launched!**



# ExpoTees international

We are delighted to welcome student exhibitors from two of our international partner institutions, Botho University, Botswana, and Prague College, Czech Republic.

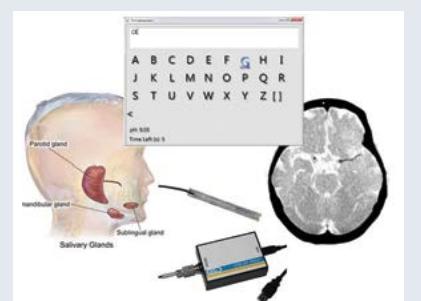


**Keorapetse Seboko's** award-winning project has the potential to change the lives of millions of Botswanans by simplifying the way they receive their post. His mail delivery notification system allows people living in remote areas of the country to receive notification, by SMS or email, that their nearest Post Office is holding mail for them. Before this system was invented, rural Botswanans would have to physically go and check whether or not they had received mail.

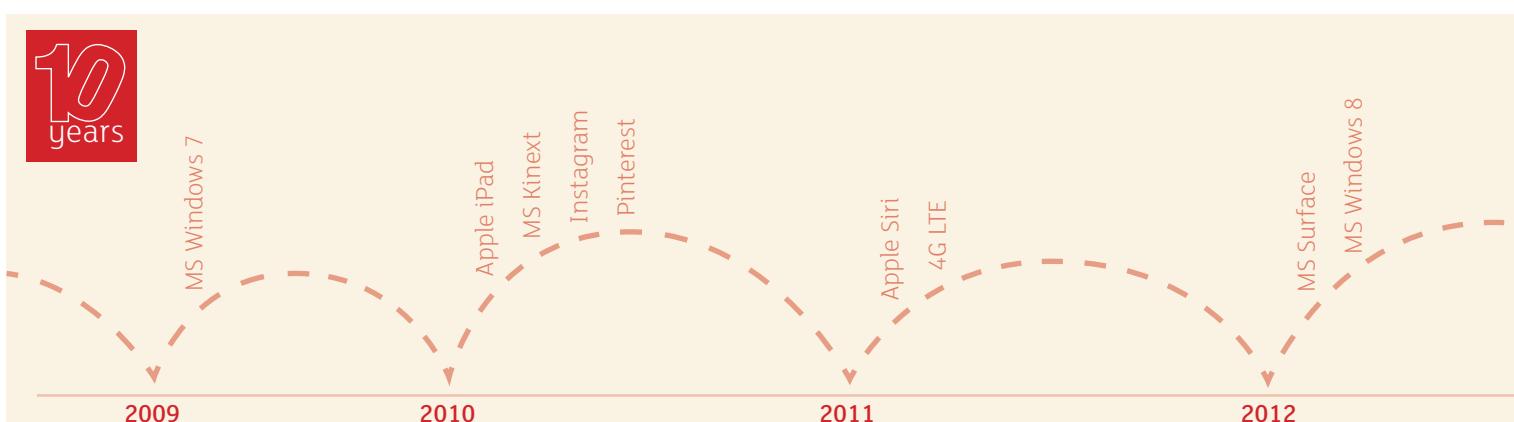


**Peter Roudensky** impressed his Computer Science tutors at Prague College, Czech Republic, by developing a system that can assist patients suffering from neurodegenerative diseases, such as motor neuron disease, to communicate with their friends, family and carers.

A patient's voluntarily-induced changes in salivary pH feed back into Peter's system to provide them with a basic means of communication.



The quality and impact of these projects is testament to the strength of our Computer Science degree, which is delivered alongside many other programmes in our portfolio at our partner institutions in Botswana and the Czech Republic, as well as in the UK, Malaysia, Hong Kong and Sri Lanka. We also continue to enjoy our partnerships with institutions in Norway and Spain, and are proud to showcase the growth and success of our School of Computing through the fantastic work produced by our international partners.



# School of Computing graduates' reunion celebrates 10 years of ExpoTees

**After the success of last year's inaugural event, and the follow up reunion at the RSA in London last January, there will again be a strong alumni presence at this landmark 10th ExpoTees exhibition.**

The School of Computing's most engaged members of the alumni association will join in the celebration of the finest work of the class of 2015 alongside the sponsors and the students.



The vision and energy to deliver the event comes from former member of staff and founder of the MSc Computer Aided and Graphical Technology Applications (CAGTA) programme, Janice Webster. Janice served the University with distinction for over 26 years and still retains a

keen interest in, and passion for, our University and our role in the Tees Valley's regional economy.

At last year's event we were overwhelmed by the support and generosity of the CAGTA alumni, as between them they raised over £5,000 to fund a new postgraduate scholarship for the next generation of the school's students. The successful applicant will begin their studies in the 2015/16 academic year. Full details of the scholarship can be found at [www.tees.ac.uk/pg/fees](http://www.tees.ac.uk/pg/fees).

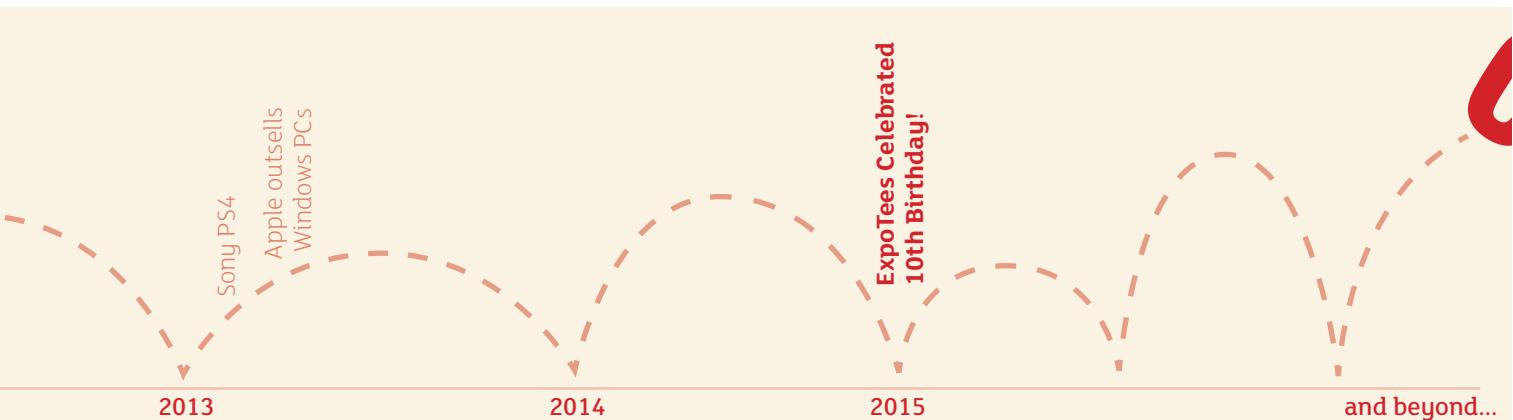
We are delighted that Teesside University graduate and Managing Director of the Federation Against Copyright Theft, Kieron Sharp, will deliver a keynote address at the event and inform attendees and colleagues of the latest developments in Intellectual Property protection. A topic close to the heart of everyone working in the creative industries.

Also visiting this year will be US-based honorary graduate and patron of the University's North

American network, Dr Steve Penrose, who will take time out from his return trip to the UK to deliver an employability workshop to exhibiting students. Dr Penrose graduated from Teesside Polytechnic in the 1970s and, after leaving the UK for the USA, rose to the rank of Senior Vice-President for global payroll company ADP. He is a keen supporter and advocate of the School of Computing and we thank him for his on-going support of our students.

On Thursday May 14, alumni are invited to view the exhibition and then spend time reconnecting with old friends, making new friends and meeting the event's sponsors between 4.00pm - 6.00pm. Drinks and canapés will be provided and guests are then invited to attend the ExpoTees Awards Ceremony from 6.00pm.

If you would like to support Teesside University by helping our students, sponsoring a prize or a scholarship or to simply find out more about philanthropy at Teesside University, please contact Alex Robertson ([a.robertson@tees.ac.uk](mailto:a.robertson@tees.ac.uk))



# Teesside animation crew's role in epic film adventure



Animation experts from Teesside University have played a major role in a new film about Apollo astronaut Gene Cernan's epic journey into space.

The Last Man on the Moon shares the memories of the space traveller who left his footprints and his daughter's initials in lunar dust when he stepped off the moon in December 1972. Now four decades on, Gene is sharing his story in this documentary which features interviews and rare archive material, along with stunning visual effects created by the Teesside University team.

Documentary maker Mark Craig spent five years putting together The Last Man on the Moon, with a team from Teesside University working on the special effects led by Penny Holton, Senior Lecturer in 3D Animation.

The visual effect sequences reconstruct Gemini 9 and Apollo 10 missions, using animation to depict the spacecraft during their epic journeys in space.

Working alongside Penny were her School of Computing colleagues and visual effects artists Paul Noble, Chris Wyatt, former lecturer Em Johnson who now works for a games company in Guildford and Dave Cockburn. BA (Hons) Computer Character Animation students, Bianca



Penny Holton

Iancu, Caitlin Watts, Emma Berry and Heather Gretton, who all graduate from Teesside University this year, were also involved in additional work, including retouching of stills.

The team worked painstakingly to ensure technical accuracy of the Saturn 5 and Gemini spacecraft as well as their correct position in relation to the Earth and the Sun. To create the sequences, they used techniques and skills that our students learn throughout their degree course.

Penny said: 'Mark and I took the film to NASA in Houston earlier this year for a screening at Gene's surprise 80th birthday party. It was seen by Gene, his family and friends, Apollo astronauts and NASA colleagues. We received so much positive feedback. It was one of the most memorable nights of our lives. It was a great experience for both staff and students to be able to work on this project and everyone involved did a tremendous job.'

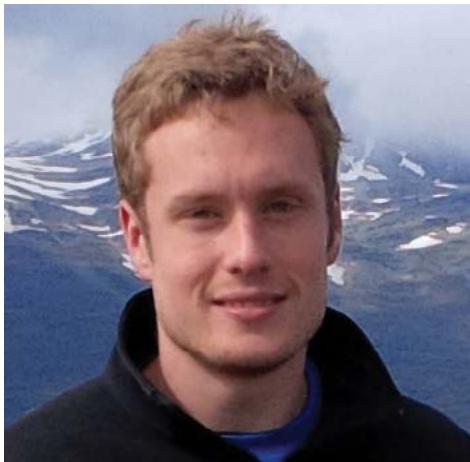
# Prestigious accolade for stellar work by 2010 ExpoTees exhibitor

Teesside University graduate Thomas Dohlen has won a prestigious award for his work on Oscar winning film *Interstellar*. He was presented with the VES (Visual Effects Society) award for his work at a ceremony in Beverly Hills, California.

Thomas received the accolade as lead lighter TD on the Tesseract sequence in *Interstellar*, achieving a VES Award for Outstanding Created Environment in a Photoreal/Live Action Feature Motion Picture.

He said: 'It was very exciting, a bit surprising, but it made me feel extremely honoured to have been nominated and then to win. It was a very challenging project, working with the high-res IMAX format and something that abstract was not easy.'

Thomas, who is originally from Norway and currently working for world-renowned visual effects company Industrial Light & Magic (ILM), said: 'I really enjoyed my time at Teesside, especially spending time in the University labs working with friends on different challenging projects.'



'I came from a more artistic background and chose the course at Teesside as I wanted to learn more about the technical side of computer graphics. I was taught about computer graphics algorithms for rendering, image-processing and simulation.'

'I knew Teesside had good computer graphics and animation courses and they were investing a lot of money in facilities and hardware for the School of Computing. I was also impressed with their connections to the visual effects industry.'

After graduating in 2010 from the BSc (Hons) Visualisation, Thomas joined Double Negative as Assistant Technical Director before progressing to Technical Director. He joined ILM last year in their London office as a Technical Director.



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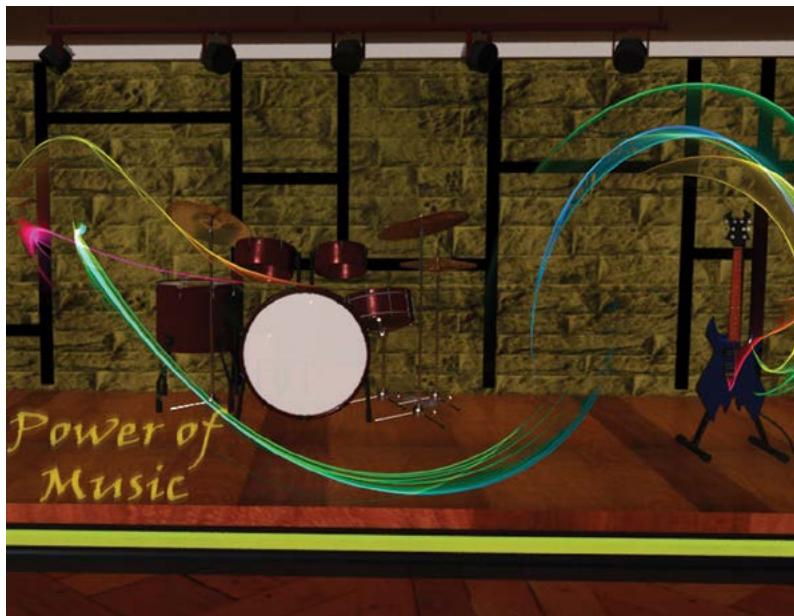
## Animation & Visual Effects

These projects illustrate the level of expertise possessed by students on the School's animation and visual effects courses. 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 and Visual Effects


**Neha Narayanan  
Defining Music**

Defining Music is a short 3D animated film that shows the power of music on a person or an environment. This is based on both personal experience and stories from the people around me. In this short, the main character walks into a café that seems dull and lifeless, but everything changes after he picks up a guitar that he notices lying on the stage. This project was modelled and animated in Autodesk Maya and edited in Adobe After Effects and The Foundry's NUKE. The music was composed and mixed by a fellow Teesside University student.


**Emelis Baltrusaitis  
Matte Painting Methods and Techniques**

The idea of crafting stories through the use of backgrounds and environments has always fascinated me, prompting me to choose matte painting as the central focus for my project. Throughout the past several months I have assembled a showreel of diverse, interesting shots with themes ranging from post-apocalyptic to fantasy to noir to cyberpunk, each telling their own unique stories through the use of form, motion, colour and light. In creating these environments, I have learned and utilised core skills that I will be expected to know in the visual effects industry, including projection mapping, 3D tracking and compositing. I made use of several software packages throughout the production of my project including Adobe Photoshop and After Effects, Autodesk Maya and Mental Ray, The Foundry's NUKE and Vicon boujou.


**Nathan Paul Collins  
American West Train Station**

For my final-year project, I wanted to recreate an American West scene. The main focuses of the project were modelling, texturing and lighting the environment. These different elements all come together to create a photorealistic final product. I decided that a train and suitable station were the main elements I wanted to create, and that the scene would be at dusk. It was an interesting challenge trying to achieve this. I particularly enjoyed the modelling and texturing. To realise the final product I used a number of software packages including Autodesk Maya, The Foundry's NUKE X, Adobe Photoshop and Adobe Premiere.



## Sophie Cullum Compositing Showreel

I have made a VFX showreel that shows off my skills as a compositor. My project has focused on the fundamental skills of compositing. The techniques I have included are wire removal, rotoscoping, tracking, clean up, keying and integration. I used the Foundry's NUKE and Autodesk Maya.



## Kareema Dacosta Sempira

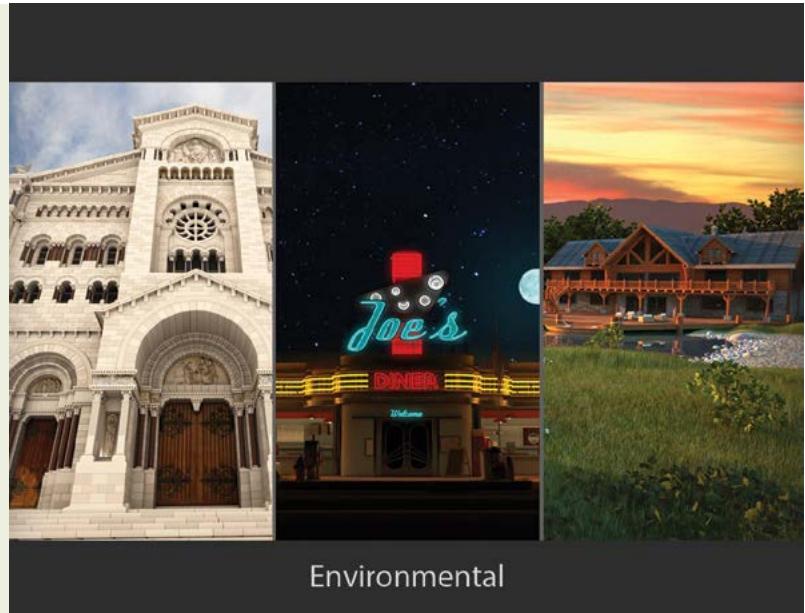
I have created a showreel in the form of a slow-motion sequence, entitled Sempira, which focuses on modelling, texturing and lighting. My project is a short piece centred on a confrontation between two characters. My aim was to develop and showcase my skills as well as to find an aesthetically pleasing semi-realistic style which would tie all the elements together. For this project I have used various software packages including Autodesk Maya for modelling texturing and lighting, Autodesk Mudbox and 3D Coat for sculpting, Adobe Photoshop for creating textures, and Adobe Premiere and The Foundry's NUKE for post-production.



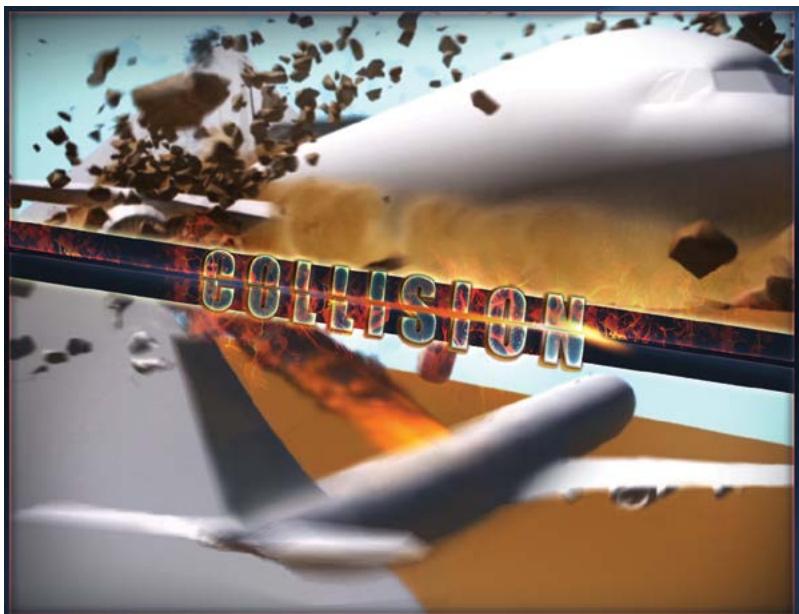
## Josh Docherty Environmental

There is a strong sense of wonder and beauty when we explore different parts of the world.

My objective was to explore this notion, and bring it to life through the use of 3D virtual space using the power of modelling, texturing, lighting and rendering. I decided to spend my final year building a variety of environments which show something entirely different each time. Retro – the time in the 60s when everything was lit beautifully with neon lights and flashy logos. Peaceful – the beautiful architecture of the Saint Nicholas cathedral in Monaco, with its colossal, peaceful ambience. Organic – a world with a mixture of both natural and manmade qualities, merged together with such dense vegetation with a tranquil setting. I tried to build these worlds to a photorealistic level, whilst actually comparing the cathedral to real images to demonstrate the realism I have managed to incorporate using a full pipeline of software. Software: Autodesk Maya for modelling, Photoshop and 3D Coat for texturing, Arnold and V-Ray for vegetation, lighting and rendering, The Foundry's NUKE, Adobe After Effects and Premiere for compositing.

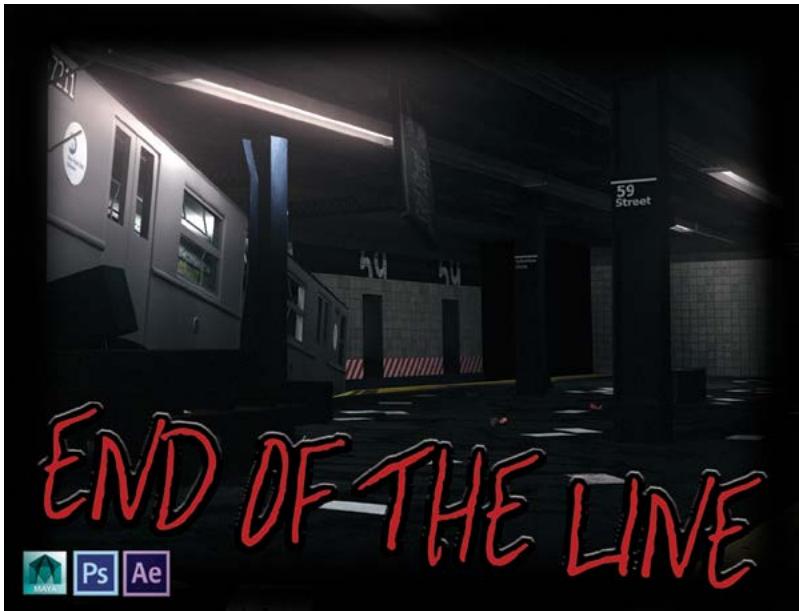


Environmental



## Mikhail Gubkin-Mateyski **Collision**

During my time at Teesside University, I have experimented in many areas, but simulations are what really interest me. For my final-year project I learnt Side Effects Houdini because it is one of the main industry software packages to create procedural simulation work. As well as doing a lot of separate FX tests, I wanted to apply what I learned into one complex FX shot. Collision is about showing multiple, complex FX skills working together. Everything I have done is procedural and will increase my productivity in the future. The good thing about Collision is that I can build upon it, as there are always extra details that can be added. I used matchmoved cameras, which were tracked in Vicon boujou, to get realistic small movements and also a good looking camera shake on impact. I animated everything in Autodesk Maya and all the simulations were done in Side Effects Houdini, transferred via Alembic cache files.



## Matthew Jackson **End of The Line**

I have constructed a 3D environment of a disaster scene set in a New York subway station. This project focused on improving my skills in multiple areas of the 3D pipeline such as modelling, texturing, lighting and rendering. The environment features a train crash and its resulting environmental destruction. As we enter, it seems as if nothing is wrong but, as the camera slowly moves through the scene, it slowly degrades to uncover the reality of the situation. Research included investigating industry practices and pipelines. I used Autodesk Maya for modelling, UV unwrapping and lighting. Textures were created and edited in Adobe Photoshop, while the scene was rendered with Maya Mental Ray renderer. Post-production work such as colour grading, vignette and lens distortion was conducted in Adobe After Effects.



## Amante Lombardi **An Exploration of the Matte Painting Profession**

I have always loved creating landscapes, places that I could believe were real and get lost in. I think matte painting is a natural progression of that desire. For my final-year project I set out to explore the tools and techniques used to create matte paintings in today's VFX industry, with the intention of building up my skills and abilities as a matte painter. To that end I have created a series of matte paintings that are worthy of a showreel. These matte paintings consist of different camera moves through different types of environments that are commonly seen in shots that use matte paintings. I designed my project to learn a wide range of new industry techniques, pipelines and workflows. These shots were created primarily using Autodesk Maya, Mudbox, Mental Ray, The Foundry's NUKE and Adobe Photoshop.



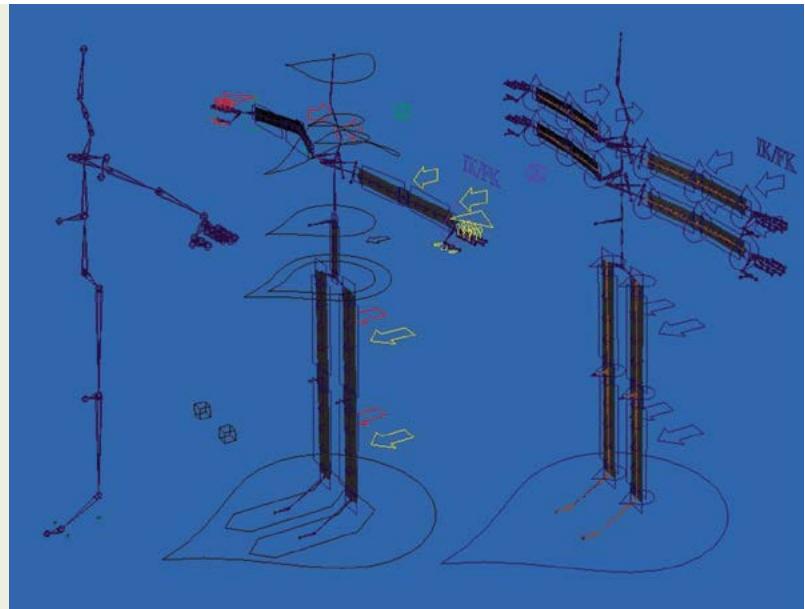
## Annie Mitchell **Inked**

For my project I have produced a short film incorporating various compositing techniques. The short focuses on the classic tale of boy meets girl. As emotions spark, the girl's tattoo begins to come to life, gradually moving on her back until the bird bursts from her skin. This builds up to the pair's inevitable meeting. I have used a combination of The Foundry's NUKE for the compositing, Vicon's boujou for tracking, Adobe Photoshop for filters, Autodesk Maya for some of the effects and lighting, and Adobe After Effects and Premiere Pro for the final editing.



## Kathryn Robertson **Procedural Rigging**

In the VFX industry, the pressure to do more work in less time couldn't be greater. There is an increased need for people to find ways of making high-quality products using a quicker workflow. For my final-year project I made an intuitive tool for rigging to support these individuals in meeting their often tight deadlines – this is in the form of a procedural rig. The user interface for this rig, using information provided by the user, will connect a premade skeleton and controls to the model. This tool offers time-saving benefits, allowing the time saved to be spent more productively either in perfecting or in animating the rig. In addition to developing this principal tool, I have created dozens of smaller tools to facilitate rigging for students and hobbyists. These smaller tools have been created using Python in Autodesk Maya.



## Sebastian Siggerud **The Crooked Tree**

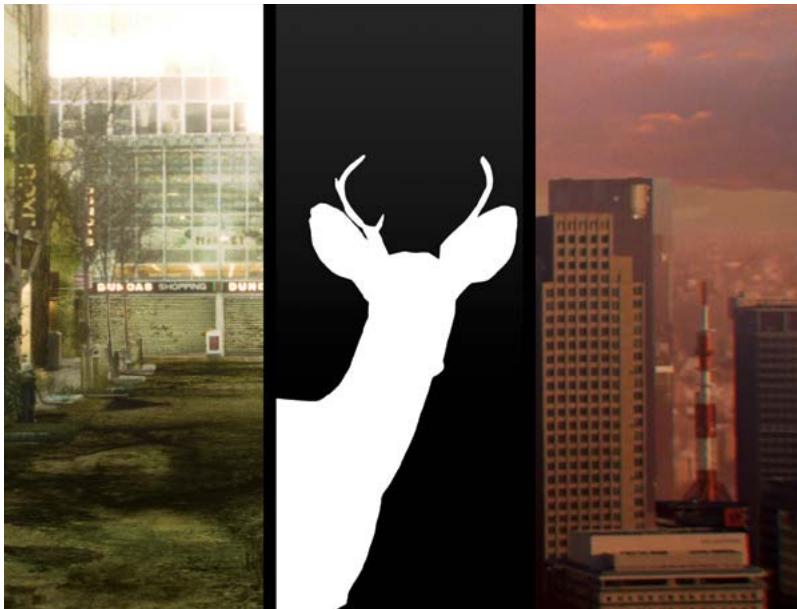
The goal of my final-year project was to showcase the style and elements I enjoy working with. My short film is based on a story written by Tom Waits, who also influenced me in the style and mood of the film. I was also inspired by nature and the landscape around my hometown in Norway. My final product is a short film created using 3D animation but focusing on visual effects to make it look beautiful. My ultimate plan was to have a complete project including a story with characters, environment, effects and sound, which together make a complete short animated film. I used OnyxTree Conifer to make the tree models and Autodesk Maya for the rest of the models, rigs, animations and lights. I textured the models with Adobe Photoshop and Autodesk Mudbox. I did the compositing within The Foundry's NUKE and edited the final shots with sound effects in Adobe Premiere.





## George Tomlin Exploration into Modern Sculpting Techniques

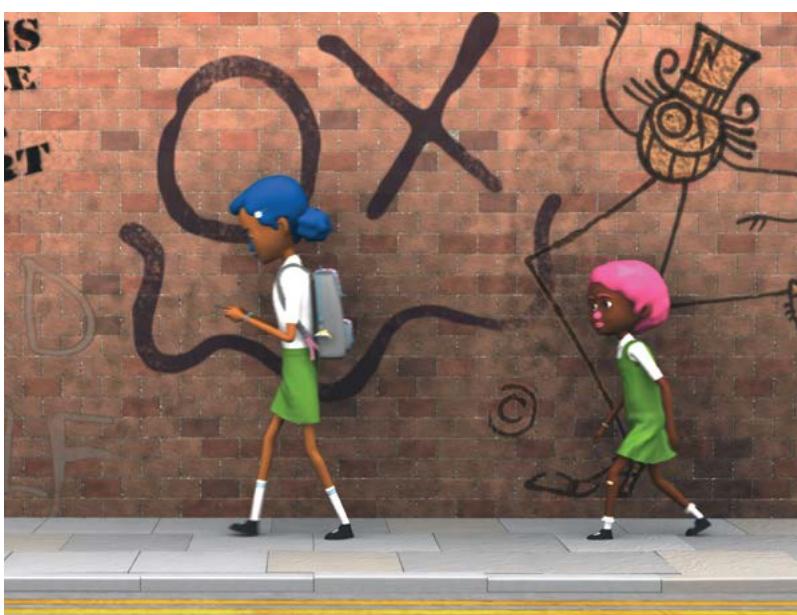
For my project I have taken a concept by Glauco Longhi and created my own version in 3D. My 3D sculpt features an undead king, with robes and armour, on a stone throne. He has one of his servants pouring him wine. My aim was to create something that would fit into my showreel and also improve my skills as an artist. I mainly used Pixologic Zbrush for the sculpting and texturing, 3D Coat for my UVs, with the final texture touches and stills compositing done in Adobe Photoshop. Rendering, lighting and shader work was completed in Autodesk's Maya with final video composite done in Adobe's After Effects.



## Mark Warui Delving into the Techniques of Digital Compositing

I have created a showreel highlighting a variety of compositing techniques. My goal was to showcase basic compositing skills to a high standard. The showreel consists of the camera projection of a city, rotoscoping footage of a deer, removing several people from a shot, in conjunction with 2D tracking. I used keying in conjunction with 3D tracking and integrating CG into live action. This project has enabled me to learn numerous compositing techniques, how to use them together, and how to work more efficiently. I used The Foundry's NUKE, Autodesk Maya, Adobe Photoshop and Science.D.Visions 3DEqualizer.

### BA (Hons) Computer Character Animation



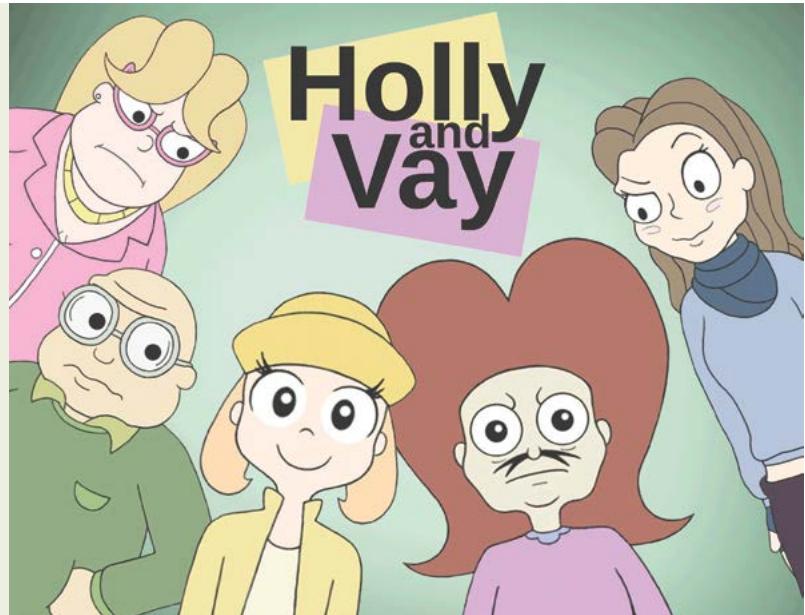
## Mayowa Asaju Good Morning

I wanted to work on creating a show reel encompassing a range of diverse skills for my desired role as a 3D Generalist & Concept Artist. Skills ranging from 3D modelling, character animation, rigging, lighting, texturing, rendering and of course concept art. This final year, I have mainly worked on a short film titled 'Good Morning', a story about the mundane early morning routine of two little girls which then reveals a very unfortunate concern. My motivation behind this project was to push myself to develop my overall filmmaking, organisation and planning skills by having a goal that would require me to utilise all I have learnt so far in my BA course and also improve my knowledge in other areas of animation production. I used software programs such as Maya, 3D Coat, Photoshop, Premiere and After Effects.



## Jordan Booth **Holly and Vay Pitch Bible**

Holly and Vay is an idea for an animated TV series, which follows the friendship of a young student named Holly and a homeless crossdresser named Vay. The pitch bible introduces readers to the series, along with its characters, storylines, themes, character designs and more. I have also produced a script for the 22-24-minute pilot episode. The purpose of these materials is to sell the concept of Holly and Vay to industry professionals, with the intention of paving my career in animation.



## Daniel Crook **Moving Forward with Animation**

My project was about taking my character animation skills to the next level, preparing for the industry by creating high-quality material for my showreel. My first animation sequence is a scene involving a woman talking in a restaurant. This scene has allowed me to work on my acting skills, which I would say is the most fundamental skill for all animators. Acting is the key, and the best acting is invisible. This left me with the challenge of all animators. How do you create acting that is invisible, and how do you apply this in the context of animation? The second animation is an action sequence where a boy is being chased through the forest by a horse and rider. This allowed me to explore creature animation and body mechanics as well as cinematography, shot continuity and staging. On my placement year with motion graphics company Smart Cookie, I broadened my software knowledge – I am comfortable using Autodesk Maya, 3ds Max, Blender, Toonboom Studio Pro, Adobe Flash, Photoshop and more.



## Domareen Fox **DressLocked**

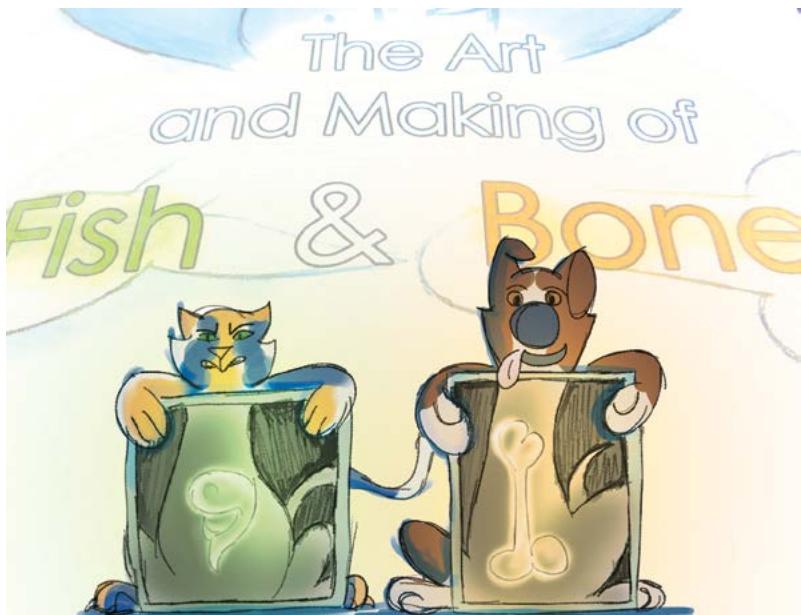
Dresslocked is a 2D animated short film that follows the struggles of a young woman who can't quite decide what to wear in the morning. I wanted to explore the subject of body dysmorphic disorder (BDD), a mental illness many of us suffer from without even realising. BDD is an illness in which someone has a warped perception of their physical self. Touching on such a sensitive subject was difficult and creating a story anyone can relate to, even more so. This project was a challenge to my storytelling skills as there is no right way to visually interpret a mental illness. I animated the project in TVPaint, created backgrounds in Adobe Photoshop and edited in Adobe Premiere.





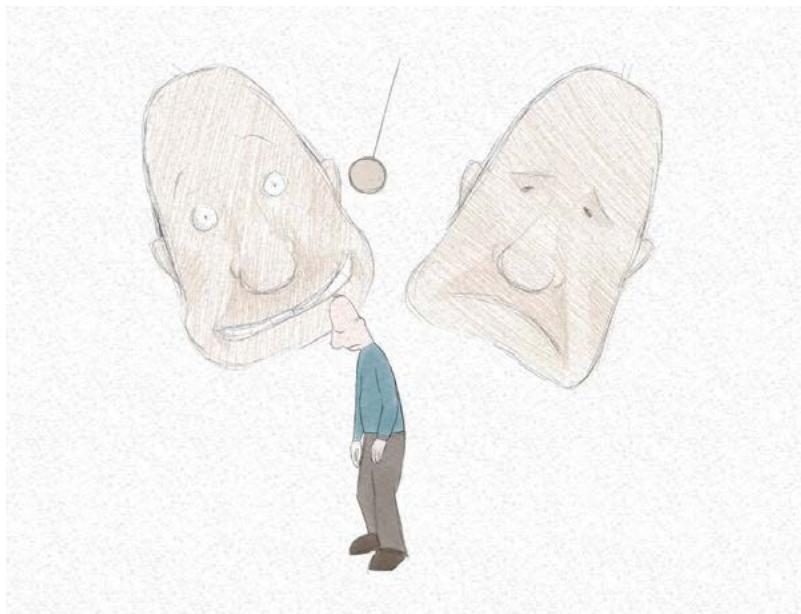
## Jordan Griffiths **Unbreachable**

I have created a 3D short animation based on the tale of an ambitious warrior trying to breach an impenetrable castle. It has a cartoon style and comedic genre, with models and textures influenced by fantasy. My motivation for this project was my interest in 3D animation. My research involved looking into new animation techniques that help improve the quality of my animation and push its cartoon style. I was inspired by and researched the Clash of Clans animation and Wreck-It Ralph, amongst others. I also conducted research into better modelling techniques such as the XGen plugin, which was used to help generate my large-scale environment. I used Autodesk Maya in creating the project. I also used Adobe Photoshop to generate and edit the textures I used in the production.



## Annie Norman **Fish & Bones**

I have created a concept art book that shows the development of pre-production work, characters and environments for a potential 2D animation. I also sculpted and textured the two main characters using Autodesk Mudbox. The story is based on a cat, called Fish, who wants revenge on the new household puppy, Bones, who constantly gets her in trouble. I was inspired by many different kinds of art books. I drew the designs using a combination of pencil on paper and digital drawing in Adobe Photoshop. I ordered the book from Blurb.com after creating it using BookWright, the book editing software.



## Ashleigh Perkins **Breaking the Cycle**

I created a short 2D animation highlighting the issues of depression – a condition so common, yet so misunderstood. My animation depicts a man who remembers the comments he had been subjected to in his life – some good, most bad. He stands under a pendulum that swings between his manic and depressed moods, representing his life hanging in the balance. Previous compliments are shown to have very little effect on him due to his low self-esteem – created by all the bullying he has endured in the past. Because of his low self-esteem, he believes all the harsh comments, which creates a vicious cycle that must be broken. The reason I chose this idea was because depression has affected those close to me and I feel there is a need to improve the public's understanding of this condition by making people aware of how much they can have an effect on someone who is depressed – good or bad. These drawings had been drawn directly into Adobe Photoshop with a Wacom tablet and I animated them using the program's animation features. I did most of my sound editing in Sony Sound Forge Pro and put everything together in Adobe Premiere.



## Scott Pryme **Scrap Metal**

I have created a 3D short film about a robot waking up lost and alone in a warehouse. He is searching for signs of anyone or anything alive. The project aims to create a strong story, expressed through good use of lighting and cameras to showcase and develop my skills in animation. To create my animated film I used Autodesk Maya for 3D modelling and animation – this was all rendered in Autodesk Mental Ray renderer. Other tools I used were Adobe After Effects and Flash for 2D animation, The Foundry's NUKE and Adobe After Effects for compositing, and Adobe Photoshop for texturing. Alongside this, I have developed a project bible to display my development process from scriptwriting through to final animation.



## Mark Reynolds **The Host**

My aim was to produce a short animation suitable for all ages, which showcases my storytelling and character animation skills. My film is set in a world where a minority of people have demon entities inside their bodies. They are known as Hosts. My short tells the story of a Host called Jason trying to rescue his sister who has been kidnapped and whether he'll succeed or watch her die. I have used Autodesk Maya, Adobe Photoshop, Audacity and iMovie



## Makhosethu Sibanda **The Art of Invasion**

I have modelled two characters – one human and one alien. I took both characters through various concept stages to the fully detailed final models. I created the concepts for my characters by sculpting and drawing to increase speed, so I could produce a number of concepts from one sculpt. I used Pixologic Zbrush to sculpt my models and Adobe Photoshop for further development. I used Autodesk Maya for the retopology of my final models and exported them to Zbrush where I added more fine detail. I used a combination of Zbrush and Adobe Photoshop to produce the textures. The final models were rendered in Mental Ray.





## Paige Thornton Channel Surfing: An Animator's Showreel

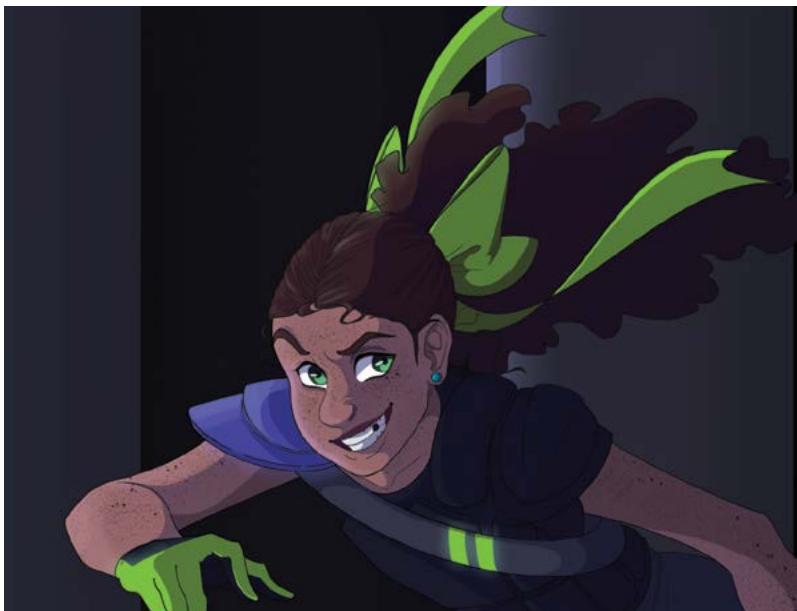
As an animator, I find it is important to be able to work with a diverse selection of character rigs from bipeds and quadrupeds to birds and insects. With this ideology in mind, I decided to create a showreel for my third-year project that incorporates all these elements into one featurette. I enjoy animating all types of characters so this project really gave me a chance to demonstrate this. I aim to use this animation showreel to apply for jobs within the film and television industry as a character animator. The software I used included Autodesk Maya, Adobe Photoshop, Headus UVLayout and Adobe After Effects.

### BA (Hons) Computer Character Animation (With Foundation Year)



## Stuart Blair Character and Vehicle Rigging

I have designed, modelled and produced a working bipedal character and motorcycle rigs using Autodesk Maya. The character is based on my own design, and the motorcycle is based on a modified Triumph America. The character rig has a curve-based facial rig, inverse kinematics and forward kinematics joint chains and twist rigs for more fluid rotation along limbs. The motorcycle has a working suspension and a dynamic wheel rotation setup, which adjusts the rotation speed based on how far over the motorcycle is leaning, to compensate for the reduced radii of the tyres during the lean.



## Jade Pope Sweet Dreams

In pursuit of a career in animation production design, my passion brought me to create a production bible for a short film animation. The short film is based around a little girl fighting to take control of her dreams from the clutches of the creator of nightmares, to overcome her own fear. Based on this idea I have created various character and environmental designs, all of which started from initial sketches and thumbnails, and went through a process when coming to the final concepts and designs. Included with the production bible is an animatic along with a 2D animated scene. The initial designs were created traditionally and developed further digitally using Adobe Illustrator for inking, and Adobe Photoshop and PaintTool SAI for colour. The animated scene started out traditionally as well before I took it into Toon Boom, Animate Pro 2 for clean-up.



## Jonathon Ridden Creature Animation and Entry-Level Techniques

During my years at Teesside University, I realised that I wanted to spend my time animating creatures. So, for my final-year project, I decided to create a creature animation showreel which features three animated sequences aimed at entry into the VFX industry. The first sequence features techniques used at entry-level positions – it includes a matchmoved camera with a live action bodytracked actress interacting with a digital creature. The second and third shots are primarily aimed at showcasing my creature animation skills. My goal was to demonstrate the contrast between the creature's difficulty through ground movement and the natural gracefulness during flight. My research was heavily based on looking at the job role structure of VFX companies to narrow down the techniques I had to cover. I also spoke to several industry animators to gain valuable feedback. And I researched several creatures that displayed a lot of weight through different means – this allowed me to take certain traits from each creature to create the final animated piece. In terms of programmes I used Vicon's boujou to matchmove, while my bodytrack and animation sequences were completed using Autodesk Maya.



## Laura Robinson The Fight-Flight Response

The Fight-Flight Response is a short satirical animation revolving around an arachnophobiac girl's encounter with a spider in her bathroom. Throughout the animation we see the spider taunting the girl, preventing her from using her bathroom normally, until she reaches breaking point. I wanted to highlight the satire of phobias in general, and how silly they can really be. To do this, I created my own design for the spider, making it appear cute and innocent in the eyes of the audience, but terrifying in the eyes of the protagonist. I wanted to create a piece that demonstrated my capability as a character animator and my understanding of cinematography to effectively tell the story. After my studies at Teesside University and my experiences whilst working at Bloom Studio, I used Autodesk Maya for animating, rigging and hard-surface modelling, 3D-Coat for modelling the spider, Adobe After Effects for post-production elements and Adobe Premiere Pro.



## Robin Sowden Garcia The Art of Baroque Aliens

For my final-year project, I wanted to expand my skills as a visual development artist as well as a storywriter. I felt that the best way to do this was to create an art book for a hypothetical film. The project involved improving techniques I have used over the past years and developing new ones. The film is about three baroque aliens on a mission to Earth who meet three human astronauts. The alien environments, characters and props were done traditionally with pencil, pen and ink as well as clay for the maquette. On the other side, all the human counterparts were done digitally using Adobe Photoshop and Illustrator. My project also shows examples of 2D rigging and animations that use Autodesk Maya and some title designs for the project.

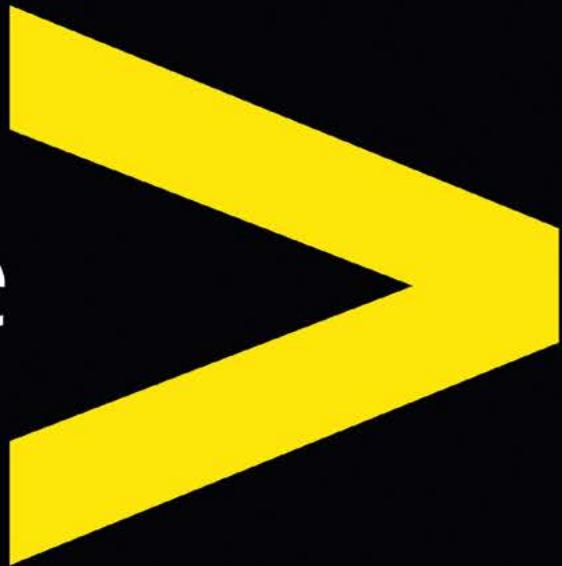




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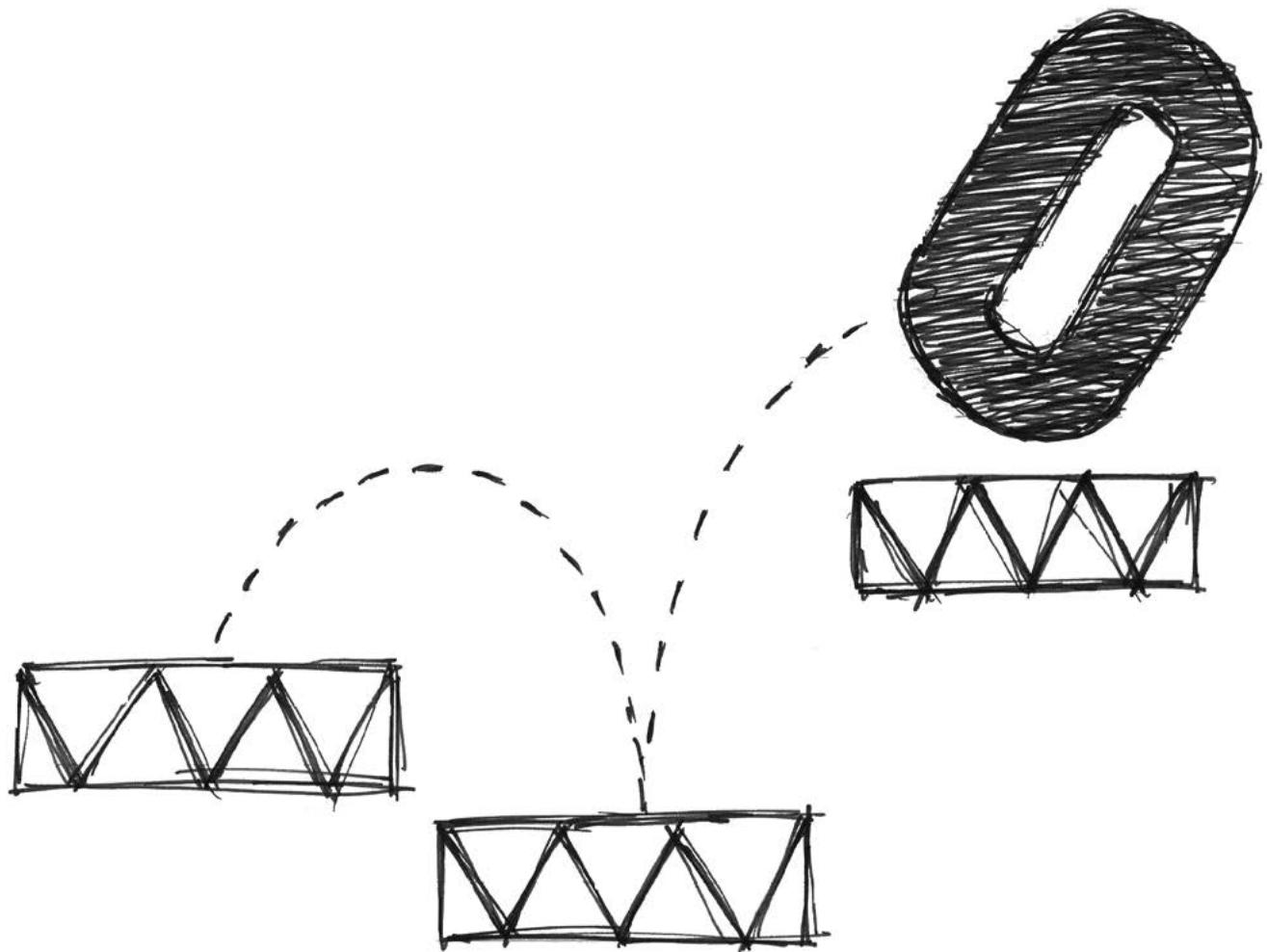
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## Games Concept & Design

The birth of a computer game begins with imagination. The concept, the creation of a world, the development of characters to inhabit that world and subsequently the interaction of characters through game play, the game play structure and the design of game levels are all represented at ExpoTees. These projects include storyboarding, and interface and level design. We're very proud of our graduates who are found at many leading games companies around the world.



**Jamie Reynolds  
Khan**

Khan is an animated trailer based on the story of Genghis Khan. It is inspired by the novel Wolf of The Plains by Conn Iggulden. It focuses on Khan's journey from humble beginnings to the creation one of the largest empires in history. My project recreates an authentic AAA game trailer similar to that of a modern blockbuster film. I focused on capturing the viewer's interest and creating a sense of intensity and awe to fulfil the ultimate aim of a trailer. I used my skills in motion capture for the majority of the piece. I freeform animated smaller sections such as the horse's gallop cycle and I experimented with MassFX on the cloth simulations. I honed my lighting and cinematography skills in the process. To accomplish this project, I used motion capture shot, Cortex Motion Analysis software and Autodesk 3ds Max and MotionBuilder. For editing I used Adobe Premiere and After Effects.



**Michael Taylor  
The Night Shift**

My project is an animated short based on Michael Jackson's Beat it dance routine, performed spontaneously by a shelf-stacker on a supermarket night shift. The choreography is entirely replicated from the famous music video and is hand animated with the exception of the end credits which feature motion-capture. I produced this short because I am fascinated by the complex movements created through the medium of dance. I wanted to challenge myself by replicating a well-known dance routine which all audiences can enjoy. I predominantly used Autodesk 3ds Max to create the secondary and facial animation, as well as producing the lighting and the environment. Other animation software packages including MotionAnalysis Cortex and Autodesk MotionBuilder were used for the motion capture in the credits.



**JJ Behan  
Recreating Oblivion**

My project goal was to recreate a small interior environment from The Elder Scrolls IV: Oblivion, updating the nine-year-old graphics to match current generation games. I focused on creating a realistic environment rather than a fantasy environment. Although I recreated the environment in a realistic way, I made an effort to retain the elements of the scene most relevant to gameplay. The project was created in Unreal Engine 4, using 3ds Max, Mudbox, Photoshop, xNormal and the Quixel suite.



## Luke Dawson

### Alien: an Unreal Engine 4 Recreation of the Nostromo Interior

Using Unreal Engine 4 and other current tools, I reconstructed the recreation room from the USCSS Nostromo of Ridley Scott's 1979 sci-fi masterpiece Alien, as a real-time 3D game environment. I used the project to develop my skills in lighting composition, material creation, high and low polygon modelling, physically based texturing, reference gathering and visual storytelling. I remained faithful to the tone and style of the original film and took inspiration from Alien: Isolation when adapting the scene into a functional game-space. Throughout the project I researched the film, standard industry pipeline best practices, current engine technology and advanced shader techniques. The project was created with a next generation pipeline, PBR material creation, DX11 effects, master shaders, post processing and a suite of tools including Unreal Engine 4, Marvelous Designer, Quixel, Mudbox, Xnormal, 3ds Max and Photoshop.



## Larissa Dixon

### SkullGirls: from 2D to 3D

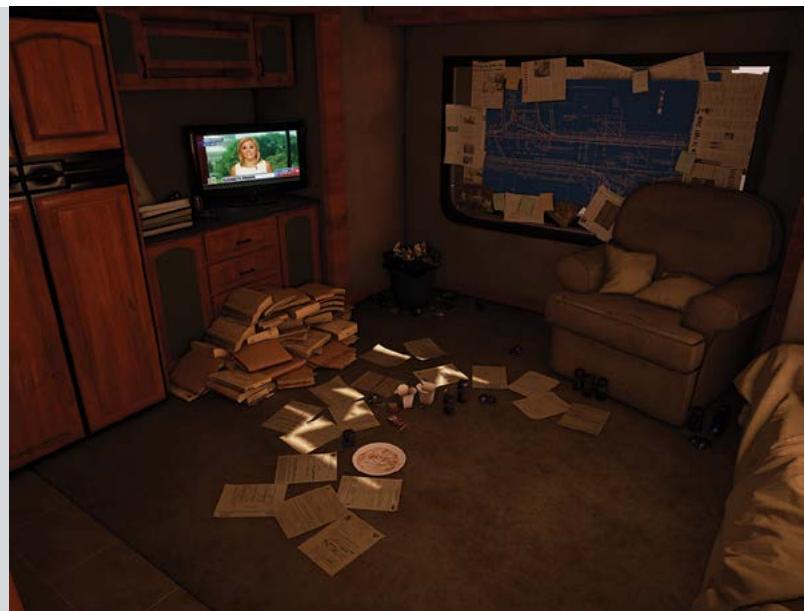
The inspiration for this project came from my interest in 3D character modelling and my love of stylised character designs in games, animated films and cartoons. I recreated some of the characters from Lab Zero's SkullGirls, a 2D arcade fighting style video game. I'm particularly interested in depicting characters that break away from realistic stereotypes and delve into stylised art. Transforming the characters from 2D to 3D was a great challenge for me. I believe 3D transitions should closely replicate their 2D counterparts to retain the original artwork style. My project allowed me to showcase my ability to model and texture in Autodesk 3ds Max and sculpt using Autodesk Mudbox. I created texture using a combination of hand painting in Adobe Photoshop and Ink n' Paint shading in Autodesk 3ds Max. I rendered using Mental Ray and Marmoset.



## Christopher Reid

### Embedded Narrative in Unreal Engine 4

The aim of this project was to produce a high quality 3D environment in Unreal Engine 4, keeping the focus on telling a narrative through the environment. I aimed to imply as much as possible about the character that would inhabit the environment without ever actually revealing the character to the audience. A large part of this project was developing my skills as an environment artist and implementing modern development techniques into my workflow. I focused on scale, composition, lighting, high to low poly baking, physically based texturing, and material creation and performance. The assets were created using 3ds Max, Zbrush, Marvelous Designer, xNormal, Quixel, Substance Designer and Substance Painter.





## Chris Rumsey Concept to Current-gen – Assassins Creed IV

I have recreated and brought to life the pirate hideout concept from Assassin's Creed IV: Black Flag in a current-gen, realistic real-time environment in Unreal Engine 4. This was my first venture into creating a cutting-edge environment in a physically based rendering engine. I created my own physically based material library in the Quixel suite. I employed techniques including subsurfacing, scattering and complex custom shaders in Unreal Engine 4. My goal was to create an environment rich with back-story. Each asset offers a small clue to who lives there and what it is used for. My assets were created using Autodesk 3ds Max, Autodesk Mudbox, TopoGun. I textured in Adobe Photoshop and Quixel.

### BA (Hons) Computer Games Design (With Foundation Year)



## Donny Eason Project Tempest

As an aspiring level and systems designer, I created my project in Unity. To work around my access of assets, animations and programming, I created a total conversion model for StarCraft II. I took advantage of existing assets and animations and added my own scripts. Using the galaxy engine, I created a third person point and click shooter. The player explores the Tempest facility, discovers the fate of the laboratory and finds survivors. The player collects specimen samples, prototype weapons and battles a variety of laboratory creatures. Set in a science fiction universe, Project Tempest is designed to be a visually stimulating level, with fast paced combat and a plethora of enemies to fight.



## Jamie Gray Level development for Unreal Tournament

My final-year project revolves around the development of multiple levels for the Unreal Tournament currently being developed by Epic Games. The development took me through the process of designing and creating playable levels of varying game modes for a competitive shooter. The final goal was to provide levels that are fun, competitive and in line with the play style that gamers currently enjoy through the Unreal Tournament franchise. Throughout the project, I participated in the Unreal Tournaments creative community and developed my passion for level design. Given the game's early stage, I was able to focus on gameplay levels – something that is crucial in fast, twitch-based competitive shooters. The project allowed me to use Unreal Engine 4 and widen my experience of game engines and the tools provided to develop content with them.



## Jordan Knights

### Skyrim; The Void Nights

For my final-year project I created a quest line in Skyrim using Bethesda Softworks Creation Kit. This project took me on a steep learning curve and required me to master the engine and its tools quickly; this really motivated me to improve as a designer and developer. I am a massive fan of The Elder Scrolls and chose to focus on an undeveloped area of the lore known as the Void Nights. In my quest line, the player is contacted by an unknown NPC who asks for help. Unbeknown to the player, the NPC is a traitor to the Thalmor. The player must negotiate an aged dungeon, avoid traps and fight off the Thalmor to uncover the truth about the Void Nights and the Thalmor's role within it. My project has been released on NexusMod, Moddb and Steam Workshop, is available as a free download and is regularly updated with new content.



## BA (Hons) Computer Games Animation



### Ben Ayling

#### Developing a Professional Showreel for Keyframe Animation

Following my passion for keyframe animation, I dedicated my final year to developing as this kind of animator. The goal of my project was to create a showreel of keyframe animation that focuses on body mechanics, which are at the core of games animation. I worked at developing a strong and effective pipeline for producing animation, from planning and creating through to the final polish. I focused on making the animations usable, responsive and clear, and ensured they had progression. I wanted to show a clear understanding of the principles of animation and how they can be used in games. I completed my project with Autodesk Maya using character rigs from Joe Daniels' collection of Body Mechanics Rigs. I also used Keyframe MP and SyncSketch to analyse reference footage – which I recorded myself where possible – and to review animations before polishing.



### Richard Desmond

#### Celestia: Pre-vis fit for a God...Game!

With an overarching focus on cinematography and freeform character animation, the goal of my project was to produce an industry-standard pre-visualisation, envisioning a cinematic design for the fictional God game, Celestia. Adopting an art style heavily inspired by the game Godus, the narrative sees a friendly, power-wielding prophet form a small village before being confronted by his nemesis whose only plan is to wreak havoc. Pre-visualisation and character animation are great personal interests and this project allowed me to develop and demonstrate my skills in these areas and others. I edited in Adobe Premiere Pro and created the final outcome in Autodesk 3ds Max from modelling, rigging and rendering, to the visual effects and fracture simulation, using tools such as MassFX and Particle Flow.





## Laurence George **Heavy Weights**



**Heavy Weights** is an animated short depicting two toddlers play-fighting in an imaginary city built from the toys and books in their bedroom. The toddlers appear to be giants as the scene is viewed from their perspective. The short ends when the mother enters the room interrupting their imaginary play. The aim of this project was to develop my cinematography skills and demonstrate how camera placement can help to portray scale and other things. The project also gave me the opportunity to develop skills in pre-production, including storyboarding, pre-visualisation and planning. The animation mostly consists of motion capture with some freeform animation. Great care was taken to choose actors able to give the necessary performance; stature and experience with children was essential. I attached wrist and ankle weights to my actors to slow their movements and give the impression of weight. All the data I captured using Cortex was processed and manipulated in Autodesk MotionBuilder before final polishing. Cinematography and rendering were completed in Autodesk 3ds Max and final compositing was carried out in Adobe Premiere.



## Daniel Green **Pro-bending Tournament: A New Era – Team Introduction**

This project is based on the pro-bending tournament featured in *The Legend of Korra*, aired on Nickelodeon. The pro-bending tournament includes two teams of three battling it out using the elements of earth, fire and water to push the opposing team off the arena. The cutscene is intended as an intro for a team called Sand Sharks in a pro-bending game. The cutscene was inspired by the entrances made by the stars of WWE, complete with an exuberant compere and giant screen above the stage entrance. It was necessary to match the art style of *The Legend of Korra* television programme; this was achieved using 3ds Max. Most of the motions for this cutscene were motion captured using Cortex and Motion Builder to deliver fluid and lifelike movements.

## Enhanced Motion



## Joel Hogarth **Enhanced Motion**

With a huge passion for animation and a love of cinematography, my goal is to work as a pre-visualisation artist or animator for games or live action films. My main skills include hand animation, motion capture and cinematography. 'The Comparison Project' aims to subjectively compare two different pipelines available in producing animation, motion capture and hand keyed animation from a creative perspective. Skateboarding was used as a focus for these comparisons as the movements are fast, exhibit fine balance and use a prop that moves in a complex manner. My project also aims to identify the pros and cons on the two methods, showing if hand animation, motion capture, or a hybrid method is best. Autodesk 3ds Max, Autodesk Motion Builder and Cortex from Motion Analysis Corporation were used to complete the project.



## Thomas Luck

### Interrogation: Motion Capture vs Keyframe

I created a short animation based on an interrogation scene from the 2013 film, Now You See Me. The detective in the scene is motion captured and the accused are hand animated. My project gave me the opportunity to gain experience in both animation methods and to learn complex facial animation methods. It provides a source of reference to beginners and professional animators. Two actors from the School of Arts & Media took part in my project, one as an actor and the other as a point of reference for me and an aid for the actor. I faced many challenges with the motion capture including syncing the actors and getting them to act as closely as possible to the source audio. My motion capture was shot and cleaned in Cortex. The facial motion capture was created with Brekel and Microsoft's Kinect. Cortex data was retargeted in Autodesk MotionBuilder and cleaned further in Autodesk 3ds Max. I used MotionBuilder to stream the facial capture in real-time and imported the final file in 3ds Max. It was polished further using the curve editor. I used the Chaos Group V-Ray rendering system for my final animation and Adobe Premiere for final compositing.



## Simon Powell

### Combo Dynasty

Combo Dynasty is an investigation of the Unreal Engine 4 animation systems for setting up a player character with an attack combo system in a game engine. I used Unreal Engine 4 to gain experience with a cutting edge game engine and increase my knowledge of creating animations for game characters. My inspiration for this project comes from my love of Hack 'n' Slash. I wanted to create a set of attacks that flowed fast and fluidly like the ones often seen in this genre. My goal was to put the attacks together to create a combination system similar to that seen in Dynasty Warriors. To do this, I hand animated a set of movement and attack animations using 3ds Max. I imported them into Unreal Engine 4 where I used a character blueprint, animation blueprint and animation montage to set up the fully playable character with a functional attack combination system controlled through the mouse. Along with the character, I created particle effects in Cascade, modelled a level filled with numerous physics objects and animated two types of NPCs to test attacks on.

## Combo Dynasty



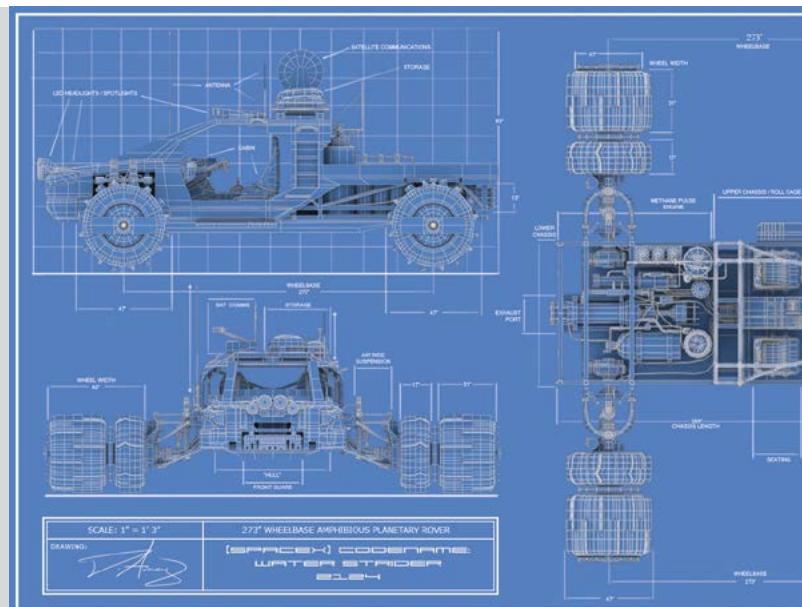
### BA (Hons) Computer Games Art

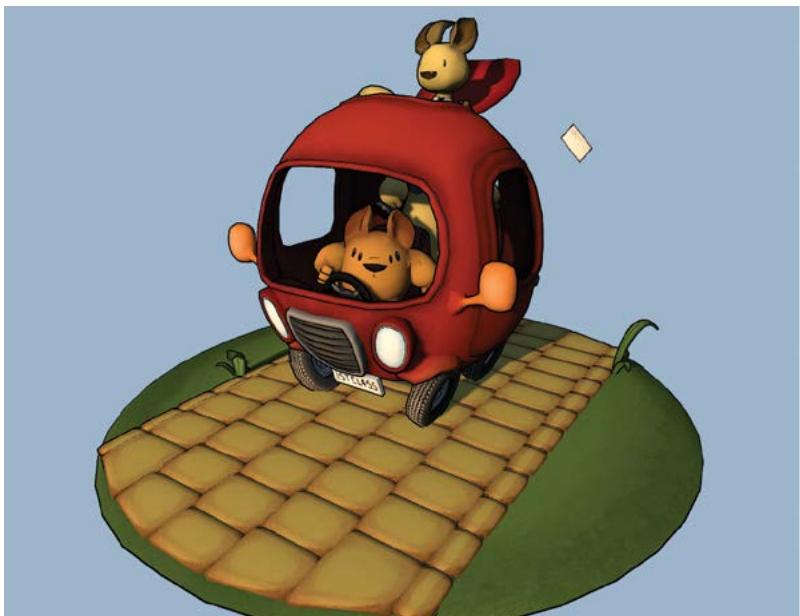


## David Amey

### Environments and Vehicles: a Study

I have designed and constructed a vehicle suitable for traversing a particular environment. The environment is Saturn's moon, Titan. The planetary rover I created has specialist qualities and is capable of all-terrain travel across the liquid, methane-rich surface of Titan. I focused on designing the rover to be believable and grounded in reality, despite it being built for a fictional world. I use this design choice whenever I conceptualise a vehicle, as I believe that if a vehicle features realistic elements it becomes relatable for the viewer. The work flow for this project included internet and personal research to draw conceptualisation in Adobe Photoshop CS6 and modelling in Autodesk 3ds Max. To texture and render, I used a combination of Adobe Photoshop, Quixel and Substance Painter.





## Rachel Anderson Stick and Stamp

Like most people, I watched early morning cartoons growing up; I just didn't stop. My project motivation was to inject some fun and creativity into video games. This project was about creating characters for a game aimed at all ages. I wanted to make something quirky and stylised that appealed to big kids as well as children. Stick and Stamp are the names of the two delivery heroes – they travel far and wide, doing whatever it takes to get your mail to you on time! I thought hard about how the two characters would complement and contrast one another and how their designs could work in a game. The non-human body shapes and cartoony style made the transfer from 2D to 3D difficult but rewarding. I wanted to push my mechanical asset skills so I also made a car for the characters to travel in. The characters were designed in Photoshop CS6, modelled in 3D Studio Max, and rendered in Unreal Development Kit.



## Rob Anson The Rhino Corporation: Robotic Mech AFV Range

The Rhino Corporation is a company that sells the latest high-tech military robotics. Its latest product is the RM AFV range. Designed with a realistic aesthetic, this project allowed me to make what I love most; mechanical art. I focused on creating giant robots, inspired by many current mechanical fighting titles such as Armoured Core, Hawken and MechWarrior. The robots were created using a modular custom parts system which allowed me to easily create different vehicle classes. These include a main battle tank, missile launcher unit, and a communications vehicle, all of which are presented in a catalogue fashion to match the idea of the Corporation selling a product. The project demonstrates the culmination of three years of learning and developing my 2D and 3D skillsets in the form of high poly, realistically textured robots. I used Adobe Photoshop CS6 for pre-production and finalised concept art. All modelling took place in Autodesk 3ds Max. Adobe Photoshop CS6 and Substance Painter were used for texturing, and the renders were created in Marmoset Toolbag 2 and Unreal Engine 4.



## Cory Bamford Seasons

Seasons is a proof of concept, built in Unity. It explores how different seasons impact the visuals of an environment, with the goal of capturing a different aesthetic for each season through post-processing and visual effects. Portals guide the player between the seasons, acting as a point of comparison, overlaying seasons on top of one another. The portals were created using a camera that resides in each season, ghosting the movements of the player and mapping them through the screen space to a portal. This project employs a script system to manage the portal creation, moving the player between seasons. It also has a custom system for trees, using vertex displacement and painting for wind simulation. Scripts were created in C#. Art assets were made with a variety of tools including 3Ds Max, Photoshop, ZBrush, NDO and Mudbox.



Luke Bryan

### Post-apocalyptic London Underground Station: Unreal Engine 4 Environment

I have created an interior model of the Camden Town London Underground platform in real-time with a slight twist. I took much my inspiration from games including Metro: Last Light and Fallout. Originally however, the idea came from my love of the intricate and complex London Underground system and how the stations have been used for shelter in the past. It's extremely rare to find games set in undergrounds, particularly in London. Because of this I felt I could put my own stamp and personality into my scene. The scene I have created tells a story and makes the viewer think about why the scene is in its current state. The idea was to make a real-time environment, incorporating current generation techniques to create a detailed environment in a post-apocalyptic setting, and to show off my current skillset. My environment is implemented in Unreal Engine 4 and to get my final result I used Autodesk 3ds Max, Mudbox, DDO, NDO, Adobe Photoshop, xNormal and Allegorithmic Substance Designer 5.



Lauren Duke

### Forgotten Abyss: a Dark Souls inspired character production

For my project, Forgotten Abyss, I have created a boss character based on the lore of the Dark Souls universe. The character could hypothetically be introduced as a fourth part of the Lost Crowns downloadable content for Dark Souls II. Production included creating an array of concept art, followed by utilising Zbrush to create a high poly model which could be taken into the game in cutscenes or promotional art. The main aim of my project was to improve my character production and learn Zbrush; prior to this I had only worked with low to high poly pipelines using Autodesk 3ds Max and Mudbox. Working within Zbrush improved my skills immeasurably and has changed how I now create models. I used Autodesk 3ds Max for the female torso low poly, Zbrush for the final model and render passes, and Adobe Photoshop for post processing and render compilation.



Joshua Flowers

### The Wild Garden

"A place so magical, that a child's imagination can run wild. A place where things come alive, that

no human would believe. This place contains the most spectacular and beautiful foliage, that a human could ever dream of. This place is The Wild Garden!"

I have produced a 3D environment that will be implemented into two game engines, demonstrating the difference in quality in each. The project has allowed me to showcase my abilities in modelling, texturing and level design. The final showreel consists of game footage from both engines, demonstrating their differences. The Wild Garden is a magical overgrown garden with hidden secrets. From dusk to dawn, the environment comes alive. The scenery adapts at night, providing the viewer with an all-round environmental experience in a realistic time setting. The garden is inspired by the chocolate box image of Victorian walled garden landscapes and includes native and exotic flora and fauna. My research focused on different plants and flowers popular in the Victorian era. I used a combination of software including Autodesk 3ds Max, Quixel DDO and NDO, Adobe Photoshop, CryEngine 3 and Unreal Engine 4.





## Ashley Francis The Burrow Kitchen

I have created The Burrow Kitchen in Unreal Engine 4, inspired by the novels and films of Harry Potter. As a fan, it was important to me that the scene was accurate. I injected a sense of life into the scene through the used and mismatched nature of the environment. Basing my environment on imagery from novels and films gave me the creative freedom to fill in unseen gaps. My project aim was to understand the fundamental elements of physically-based materials, lighting and visual narrative to produce a high level and realistic next generation scene. I used Autodesk 3ds Max and Mudbox, Adobe Photoshop, xNormal, and Quixel DDO and NDO to produce the game assets. I implemented my project in Unreal Engine 4.



## Matthew Gates Obedient Echo

Obedient Echo is an interactive experience designed for the Oculus Rift. The player takes on the role of a blind character who finds himself in a strange place. The player must use echolocation to navigate through the environment, using claps and ambient sound to provide sight. It is a slow paced, exploration experience, giving the player time to discover their surroundings in a relaxed manner. I wanted to go beyond a static environment to practice and showcase my skills as a technical artist. I made extensive use of the new blueprints systems within Unreal Engine 4 to create complex materials and shaders, as well as interactive elements and particle effects. I also used blueprints to create parameterised systems from assets to rapidly construct areas with much variation. I wanted to learn and combine a lot of new technology into the project, so I incorporated a diverse range of software. My vision was realised using Unreal Engine 4 and the Oculus Rift SDK. Assets were created using Autodesk 3ds Max, Pixologic: ZBrush, Adobe Photoshop, xNormal, Quixel, SpeedTree, Knald, and World Machine.



## Gary Gough Roy's Filling Station and Motor Repair

My project rationale was to produce an environment as a starting point and early home base for a large, open world action adventure game set in Britain in 1927. The main focus is Roy's Filling Station and Motor Repair, an auto repair business used as a front for criminal activity by World War One veterans who turn to crime after the war. The environment houses a number of pointers which indicate the history of the characters as well as features of period 1910s and 20s architecture, technologies and signage. The building reflects its true purpose as rural street-side service station but retains some elements of illicit activity. One of the focal elements is a stolen Bugatti Type 35, a championship winning Grand Prix racing car stolen by the gang. The car serves as a driveable vehicle in the game. My main sources of inspiration were the BBC's Peaky Blinders and Mafia: The City of Lost Heaven from Gathering of Developers. My inspiration for high detail vehicle modelling came from Grand Theft Auto V – Rockstar Games. I used Autodesk 3ds Max and Mudbox, Adobe Photoshop and the Epic Games Unreal Development Kit.



## Daniel Johnson Warhammer 40k Space Marines Terminator

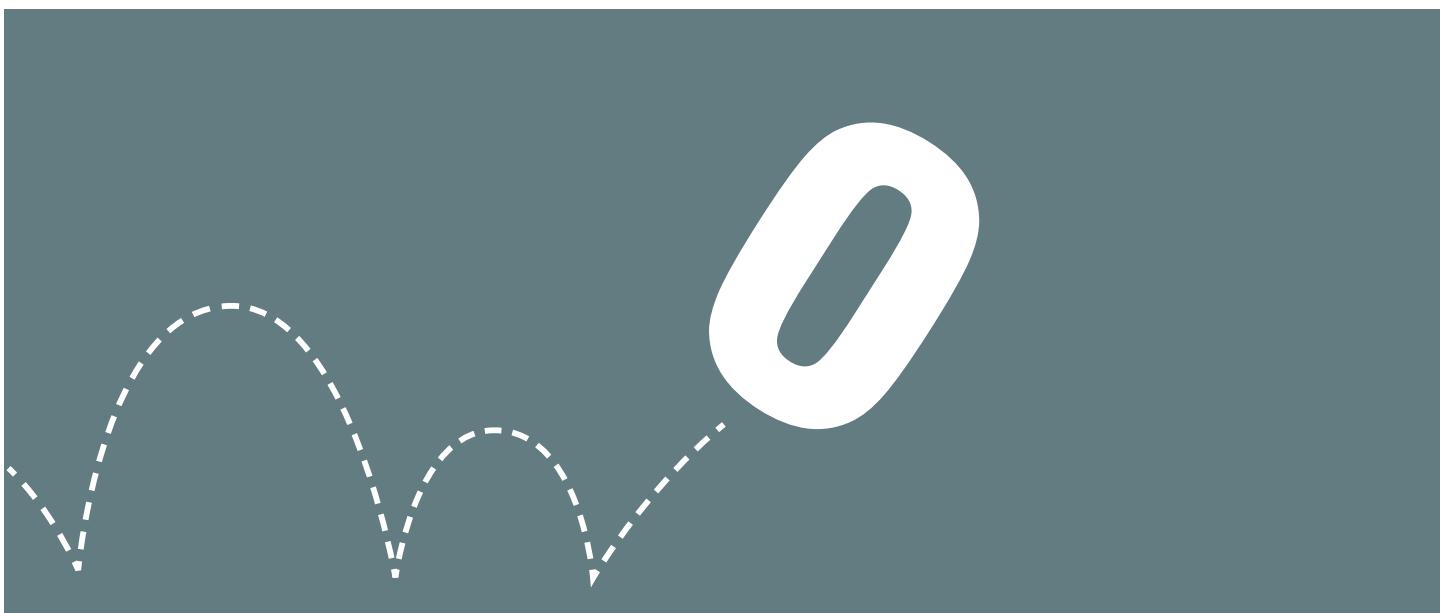
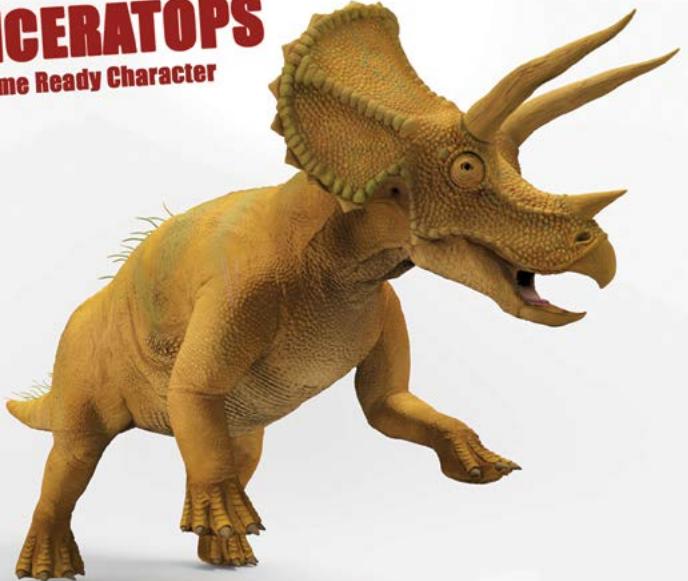
I have created a Space Marines terminator from Games Workshop's Warhammer 40,000 i.p to be used as a display piece. The 3D model was created using the actual plastic models, novels and official artwork as reference materials. I tried to stay as faithful to the reference material and lore as possible, even using similar techniques in the texture phase to those used when physically painting the models. This included dry brushing. I chose this for my project as I enjoy it and I wanted to challenge myself to create a highly detailed character model that would work well in other phases of the production pipeline. I used Autodesk 3ds Max and Mudbox, and Adobe Photoshop.



## Christopher Jones Triceratops

My goal was the creation of a game-ready dinosaur character suitable for the new generation of gaming platforms. The design and concept were established through research into triceratops fossil records and close observations of the creature's unique form and posture. I incorporated very recent research on skin colour and texture as well as the probability of bristles, which I developed in the spirit of artistic licence. I also looked to the wider natural world for inspiration, considering birds and reptiles in particular to inform the design of the underlying triceratops anatomy and muscle structure. My working pipeline used Pixologic: Zbrush for sculpting and painting and TopoGun to create the game-ready version. I paid careful consideration to edge looping and surface topology. Unwrapping was completed using a combination of Headus UV Unwrapper and Autodesk 3ds Max. I created texture maps from baking the high resolution detail of the sculpt to the game-ready mesh –mostly using the xNormal. I showcased Triceratops using the Marmoset Toolbag. I created pre-rendered images using Luxion KeyShot.

## TRICERATOPS Game Ready Character





## Ryan Lewis

### A 3D Environment of a Wood Elf Tree House, the Watch Tower of Arlasil Oaken Stone

As a 3D games artist, my project has pushed my interest in 3D foliage, especially for game engines. I created the abode of an exiled, wandering sylvan elf, overlooking the comings and goings of Mirkwood forest. My wood elf treehouse, the Watch Tower of Arlasil Oaken Stone, is inspired by Peter Jackson's take on J.R.R Tolkien's The Hobbit and The Lord of the Rings. I used the pre-visualisation and conceptual art from the film production art books as a template to model my environment assets, adding some inspiration from Warhammer wood elves. I invented the idea that the elf has sung the plants and trees into forming a platform for the tree house. I wanted this idea to reflect my research into the creation of 3D plants. The building is mainly used as an outpost on the furthest reaches of Mirkwood, to give rest to the weary and aid to the injured. To produce this scene I used Unreal Engine 4. For my environment assets, I used Autodesk Maya, Autodesk 3ds Max, Pixologic: ZBrush, SpeedTree, xNormal, Crazy Bump, Knald, Quixel DDO 2 and Adobe Photoshop.



## Michael McDonald

### Creating a Photo-realistic Character with Photogrammetry

Inspired by modern depictions of dystopian characters, I created a photo-realistic female character suitable for use in a post-apocalyptic video game. To achieve photo-like realism, I demonstrated techniques in photogrammetry and photography. This required an innovative and inventive approach in a project that featured versatility and depth. Using these techniques alongside typical modelling methods enabled me to discover an efficient, effective and industry relevant workflow. With one DSLR camera, I captured and optimised 3D and 2D scan data. I used Agisoft PhotoScan to align images, create point clouds and ultimately generate a 3D model. I refined the model using Pixologic: ZBrush and produced character texture using Autodesk Mudbox, Adobe Photoshop and Allegorithmic Bitmap2Material. I physically designed an outfit suitable for the real-life model and transferred this visualisation into 3D using MarvelousDesigner. Once the high resolution model was complete, I used ZBrush and Autodesk 3ds Max to create the game-ready topology and complete the model. I rendered in Marmoset Toolbag 2.



## Alex Merlos Vela

### Fantasy Creature: What needs to be achieved to create a Believable Creature

My project creates a believable fantasy creature inspired by the ancient Greek Mythology of the centaur. Initially based on my own concept art, the body and skeleton is rendered in 3D modelling software. I wanted to show which points are important to create a realistic creature for video games. These elements are: use of real human and animal anatomy, personality, habitat, proportions and the game itself. I rendered my creature in as much detail as possible to make a design for the next-generation graphics. I chose this project to showcase and develop my skills as a character and creature artist, from concept art to modelling (in high-poly and low-poly) and texturing. I also improved my knowledge in anatomy. To develop and texture my creature and to design the concept art I used Adobe Photoshop CS5.1, 3D sculpting and PolyPaint in Pixologic: Zbrush 4R6. For modelling, skinning and rigging I used Autodesk 3ds Max and rendered using 8monkey Labs' Marmoset Toolbag 2.02.



## Kevin Miree

### **Crivens! The Wee Free Project**

The Wee Free Project is based on the Nac Mac Feegle characters from Terry Pratchett's Discworld novels. The excellent illustrations of the franchise, created by Paul Kidby, were used as the basis for the visual style. The primary aim of this project was to put into practice a modular character workflow which would allow for multiple characters to be generated from a single base blank model. The Feegles lend themselves to this process brilliantly due to their similar proportions and uniform appearance. This project has incorporated an understanding of a high to low digital sculpting workflow, topology, anatomy, facial animation through blend shapes and rigging using the 3ds Max Biped. Character art is a passion for me and having the opportunity to pay homage to one of my favourite authors and one of my favourite artists has made this project a pleasure to work on. I hope you have as much fun viewing the final pieces as I did creating them! The following tools have been used in the process of this project: Zbrush 4r6/4r7, Photoshop CS6, Quixel, Autodesk 3ds Max, KeyShot 5, TopoGun, MarvelousDesigner 2, Adobe Premiere Pro, Marmoset and xNormal.



## Christina Myrvold

### **Lucid Dream: A Concept Art Book**

I have created an art book based on a horror and surrealism-inspired game concept. I showcase character and environment concepts from thumbnails and sketches to the finished artwork. To create the art book, I solely relied on Adobe Photoshop for drawing and Adobe InDesign for putting the book together. The game introduces Millie, a young girl who, in a dream-like state, conjures a dark and surreal world populated by odd, anthropomorphic characters. On further exploration, Millie understands that the dreamscape is of her own creation. This enables her to lucid dream and bend the world around her to her own will.



## Sary de Burgos

### **Lora**

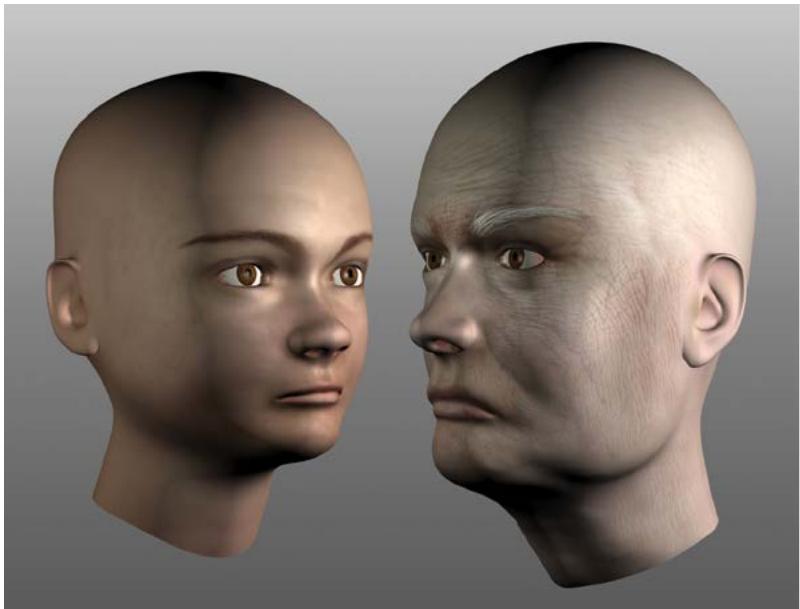
My project was to create my own believable, realistic, fictional world where a role-playing or a massively multiplayer online game could be set, and then to present it in an illustrated lore book. I believe that to be immersive and addictive, a fantasy game must be set in a world rich with lore and diverse, believable characters, gods, environments, flora, fauna, disease, technology and war. My aim was to build an entire world from scratch, reimagine the fantasy genre, reinvent the tired archetypes of elves, orcs and dwarves and create a more three dimensional world that a wider audience could identify with. To do this I used my skills in 2D and 3D art, traditional art, and a multitude of programs including Photoshop, Corel Painter, 3ds Max and Zbrush. I also relied on my interests in mythology, history, natural history, biology, palaeontology and botany to capture the believability and functionality of Lora.





## Jordan Szymczuk Digital Dystopian Diorama

I created a dystopian digital diorama inspired by the advertising campaign for Halo 3. I wanted to showcase the skills I have learned as a games artist. I focused on the three primary pathways of character, mechanical and environmental asset production, and on creating a harrowing and vivid scene of war between humans and robots. This involved producing concept art for human and robotic characters, as well as making use of real world photography and satellite images to reconstruct my hometown. I explored a Telltale Games inspired art style to challenge my artistic abilities and produce a visually distinctive diorama focused on a modular design approach. Mudbox, Photoshop and 3ds Max were used to sculpt, texture and pose several individual character meshes, which I rigged using the online Mixamo service. I also modelled several environmental assets and weapons, and produced a range of beauty shots from renders, as well as a short fly through video of the scene.



## Georgia Taylor-Elston The Ageing Process

For my project, I looked into the ageing process and its effects on the human face, creating an animation showing the process on my grandmother and myself. I wanted to develop my ability to model accurate human characters, as well as learn how to depict a diverse age range. This project was mostly a demonstration of my sculpting and texturing skills and of my ability to recreate a realistic likeness of a person based on sub-optimal reference (old family photographs) or no reference at all (predicting how I will age). Morph targets were used to animate the ageing process for my final artefact. I completed this project using Autodesk 3ds Max, Autodesk Mudbox and Adobe Photoshop.



## William Taylor-Parker The Home of Fergus Reid

I have created my own interpretation of Fergus Reid's room from the game Wolfenstein: The New Order. When creating the environment, I maintained a strong emphasis on storytelling, helping to drive the overarching narrative and bringing many little insights into the increasingly manic life of one of the remaining resistance fighters in a Nazi governed 1960s. My story focus was driven by the incentive that such visuals would allow for a more immersive gameplay experience, where the player can stop and explore the virtual environment in great depth. By choosing such a detailed environment, the number of assets and the complexity of detail within the scene helped challenge me in new ways and allowed me to hone my environment art skills. This project also allowed me to experiment with the new Unreal Engine 4 and a physically based workflow. Using this engine has been an exciting and challenging learning experience after undergoing six months of only low poly asset creation on my placement year. The other software I used to breathe life into my project includes Autodesk 3ds Max, Photoshop, Quixel nDo2, MarvelousDesigner 4 and Zbrush.



## Lawrence Williams The Knight of Lemonwood

The Knight of Lemonwood is an art book documenting my final-year project. It follows the design and construction of a character called Aairah Sand, a female knight living in the world of George R.R. Martin's 'A Song of Ice and Fire'. The book follows my design process, from initial sketches through to the final stylised model, rendered in Unreal Engine 4. The overall goal was to showcase my character design abilities and the process that I went through to achieve a final in-engine asset. During my time working at Dojo Arcade, I produced many stylised models. This character however, was a particular challenge as her design was steeped in cultural history and involved many tricky, technical challenges. Most of the design work was achieved using a mixture of traditional media and Adobe Photoshop. When I came to model the character, I took the opportunity to learn a number of new software packages. As well as Autodesk 3ds Max and Pixologic: ZBrush I utilised xNormal for map baking, MarvelousDesigner for cloth simulation and Quixel for the finishing touches. Creating a project of this kind has really helped me to stay in touch with my sketching and presentation skills, which are sometimes overlooked by digital artists.



### BA (Hons) Computer Games Design



## Marius Holstad Flames Surround Me

I believe in challenging what videogames are capable of. I believe in exploring the unfamiliar, the unknown and the strange. For all it is worth, it is the idea that interactions can be something more than just a means to an end – that they can tell a story. That is what empowers my conviction. The story I wanted to tell was one about my father and how he experienced burn-out due to stress. By bringing characters to life with algorithms, I learned how to make a game that tells a story about trust and friendship. I created the AI and interactions of my game using Unity and C#. The artwork was put together in Photoshop as a collage of photos and brought into Psykopaint to be painted over.



## Eirik Kiil The Patchy Train Robbery

For my final-year project, I built a platforming adventure level for LittleBigPlanet 3. Set on a runaway train in the American mid-west, the player is tasked with stealing a magical artefact kept in a safe at the front portion of the train. Unfortunately, the train is also under attack by a vicious rat gang, making the task even more precarious. Angry giraffes, bow-wielding rodents, a train without a conductor, a conductor without a train, a pacifist murder of crows, a cowardly chimney troll and more than a single James Bond homage all feature. But don't let me give it all away. Built on the principle of accessible fun, the level seeks to surprise players with new approaches to traversal and world building. I used the CreativMode of LittleBigPlanet 3, giving me access to BSP brushes and ready-made decorative meshes.

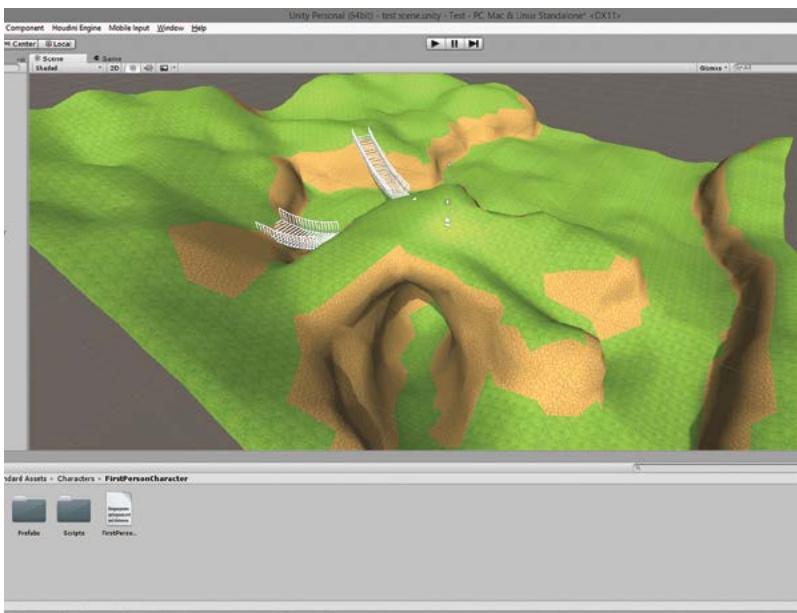




## Thomas Marron Eternal Pilgrimage



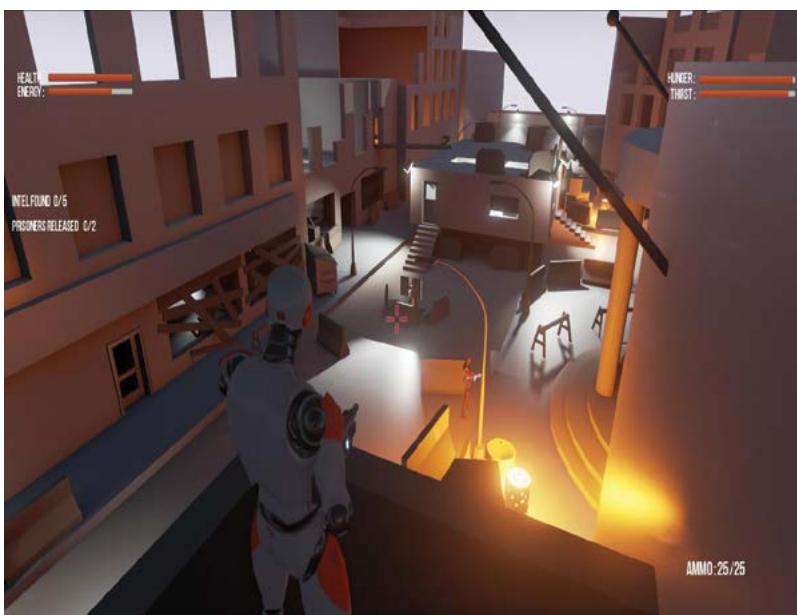
Eternal Pilgrimage is an experimental puzzle adventure game based on the concept of connection. In this game the player is tasked with bringing life and movement to an empty and lifeless galaxy. The gameplay involves connecting in-game objects to generate life within the game world. For my final-year project, I wanted to experiment with different design methods and take inspiration from areas of creativity outside of video games. Inspired by minimalism, post-modernism and other modern art movements, I wanted to create a highly polished and cohesive experience. During development, I focused on creating interesting game systems and mechanics that would make the player feel creative and expressive. The project was intended to help me develop a wide array of skills outside of just game design, allowing me to enhance my abilities in asset creation and visual scripting. The game was created in Unreal Engine 4, which I used to implement blueprints, particle systems and texture painting techniques, as well as environment composition and architectural design. The 3D assets of the game were created using ZBrush and Autodesk 3ds Max. Textures were created in Adobe Photoshop.



## Steffen Mikkelsen Fureli A Procedural Approach to Creative Freedom in Level Design



Using the node-based, procedural nature of Houdini software, I have made a landscape-generating tool for level designers. The purpose of this project was to create a tool capable of speeding up the process of generating a finished product from an initial idea. I also wanted to enable the user to make adjustments anywhere in the pipeline, causing minimal damage to the end product. The end result would include material IDs, UV coordinates and LOD.



## Max Ralli Uprising: Our Last Fight – Gameplay Prototype

This project has been designed and developed using Unreal Engine 4, to demonstrate gameplay from a games design document I created. The game is a third person, open world, action role-playing game set in a post-war, alien-occupied London. In my level, the player is tasked with exploring the immediate area for loot, supplies and intelligence while neutralising nearby enemies and releasing captured prisoners. Some of the key gameplay mechanics within the level include the player being able to spot and track enemies, and receive random loot drops from corpses. It also includes a hunger system, which the player must manage to survive. All the gameplay within the level, including the third person shooting controls, the loot and inventory system and the enemy behaviour systems, were created using Unreal Engine 4's visual scripting system, Blueprints. I have utilised Unreal Engine 4's particle system, Cascade, for effects and the Unreal Motion Graphics UI Designer tool for user interface elements. Some assets were created in Adobe Photoshop and Autodesk 3ds Max.



Jamie Robertson

### A study into Parapsychology in Horror Games – Haunted Ascension

For my final-year project, I created a horror game designed only to be co-op based. In the game the player takes the role of one of two characters who have suddenly found themselves on a spaceship with no knowledge of how they got there. They must work together to find out why they are on the spaceship and how to escape. Due to the time allocated on the project, I decided to develop it into a demo. I created an immersive game experience by using the suspense of particular problems, the fear of the unknown and the need to avoid enemies to escape, to make the demo a memorable experience for the player. To create Haunted Ascension, I used Unreal Engine 4, as I wanted to gain experience of the toolset. I also used the Mixamo Animation Pack for my characters, alongside the Top-Down Sci-Fi Pack, which I purchased from the Unreal marketplace to provide assets for the demo. I used Adobe Photoshop to edit my blog posts, menu screens and mood boards in my pre-production. I used Adobe Colour CC to create my colour scheme.



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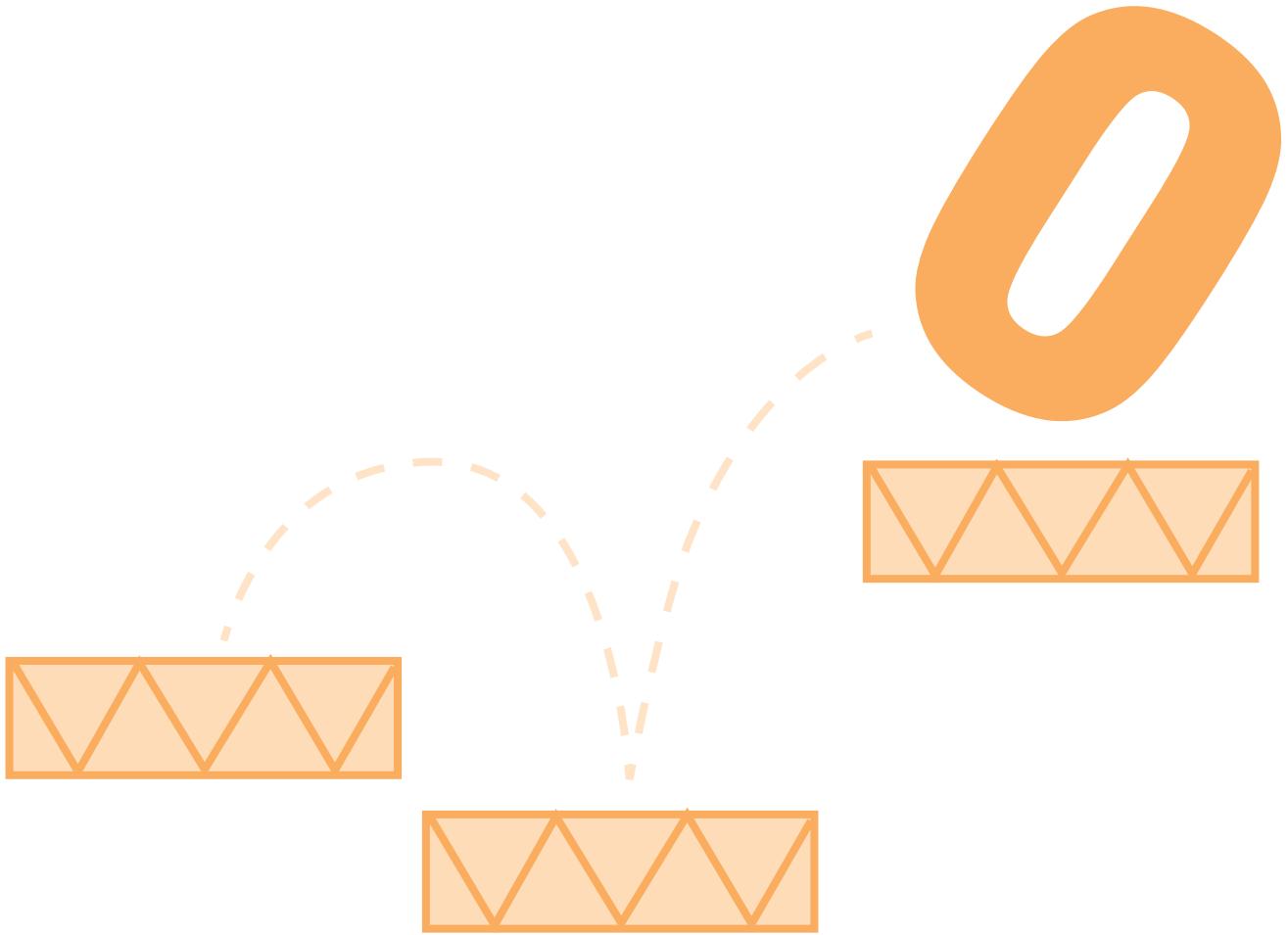
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## Games & Graphics Programming

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.

## BSc (Hons) Computer Games Programming



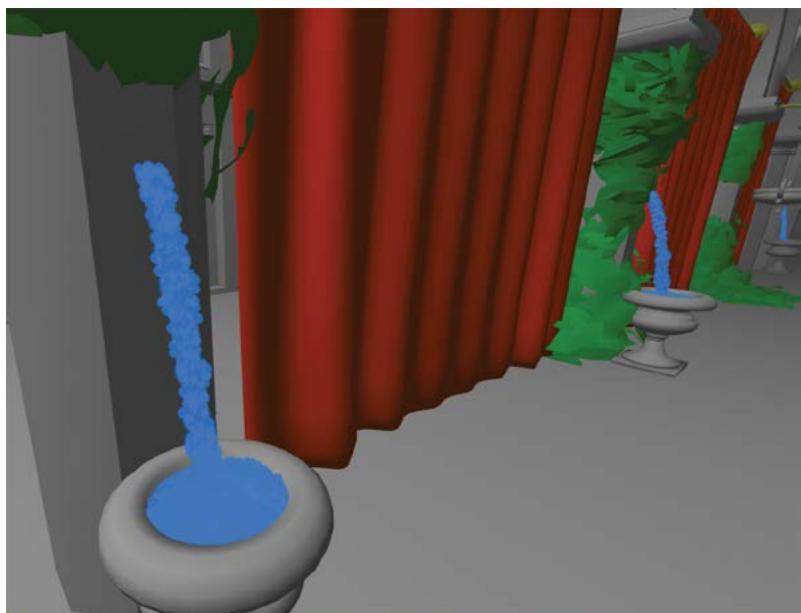
**David Biggs**  
**Using Audio to Create Gameplay**

Dynamically generating gameplay through user inputted audio is not common. My project considers user inputted audio, the wider genre and information from a survey about gameplay style to select a game type. A 2D shooter and a platformer are then created. The gameplay is dynamically affected by the playing audio. Digital signal processing techniques including Fast Fourier Transform and basic beat detection were used to create this effect. During my placement year with GlaxoSmithKline I developed software and gained knowledge of data visualisation. This project has allowed me to explore this in games. The product was developed using C# and Unity, combined with libraries including NAudio and TagLib.



**Alex Bolton**  
**Hack 'n' Slash Companion Adventure**

The games industry places an increasing emphasis on the presence of multiple characters in a single player story. These characters fight alongside the player in various combat scenarios. My game contains a large environment to explore and contains enemies that the player and their companion can fight. The project creates a reusable Artificial Intelligence (AI) behavioural system for the enemy AI and friendly AI. The behaviours are entirely detached from their parental controllers who decide which behaviours run based on a set of logical questions. For the companion, these questions involve the position of the player in accordance with the way their enemies approach them. The project was built in Unity using C# for scripting. I brought art assets together using the Unity asset store and made personal creations in Fuse and Maya.



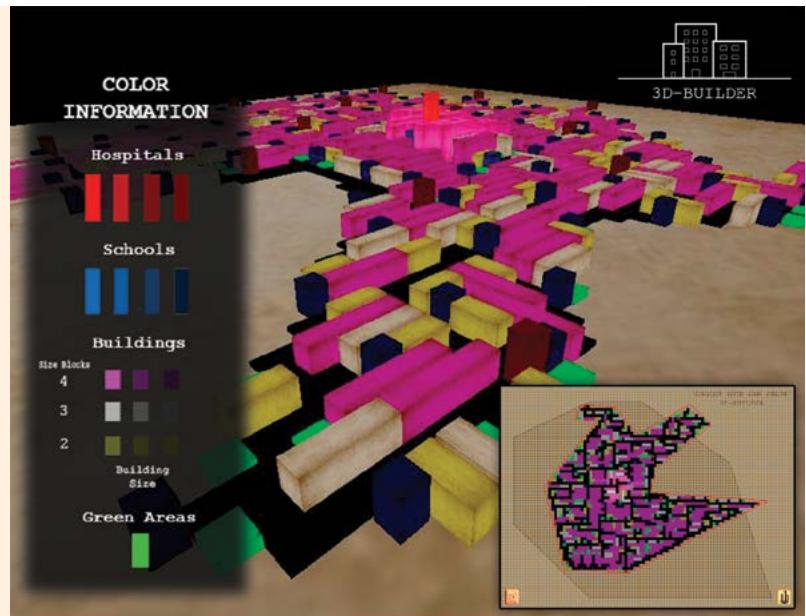
**James Byrne**  
**Real-time Fluid Simulation**

As hardware improves and becomes more powerful, the demand for better quality, more realistic graphics increases. My project is inspired by this and by research into particle systems, particularly fluid simulation. Game engines currently offering fluid simulation models are often large and accurate which is not always necessary in graphics. Frequently, computer graphics simulations are inaccurate but look as the user would expect. Based on this I created a fluid simulation fast enough to be shown in a game scene. I used Open Computing Language and Open Graphics Library to create an aesthetically pleasing water feature. Using a graphics processing unit, I had the advantage of being able to execute calculations in parallel. This is faster than using a central processing unit (CPU). The solution leaves the CPU free to be used for the game loop.



## Alvaro Canet Amat 3D-builder

My project gives the user the capability to design and build a sustainable city. The software receives input parameters from the user to define the shape of the city, the urban cores and the number of inhabitants. It then processes the data to create the city in the most appropriate way, distributing the different urban shapes and considering aspects such as the minimum distance between hospitals and schools, the amount of inhabitants near the urban cores and the different kinds of buildings in relation to population intensity. The software also creates a road network which connects with urban shapes to create the most realistic city possible. Once the city had been designed, the software has the capability to build it in 3D to show the user how the city would look in reality.



## Jayden Devile-Phoenix Optimised Voxel-based Environments

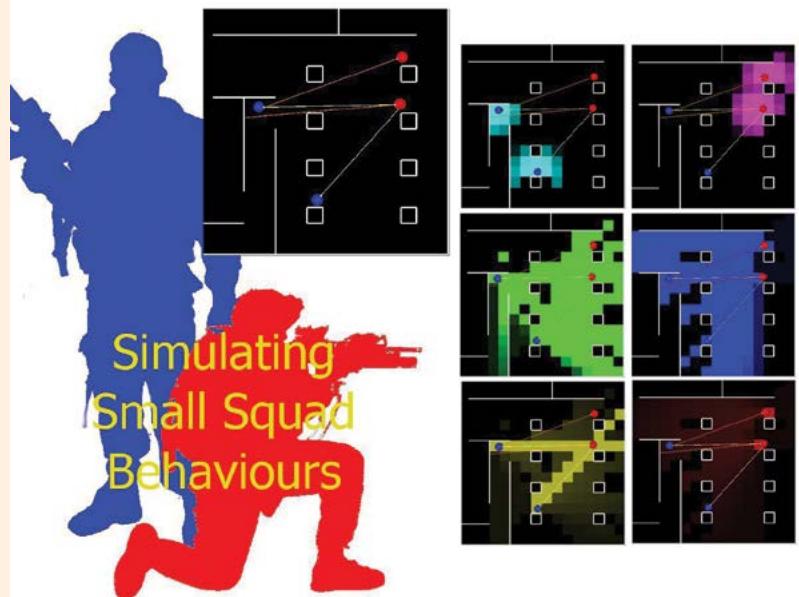
A voxel is an entity that represents a volume in space. Voxels are not a new concept, but they have become more popular as hardware has improved. Voxels are an increasingly attractive choice for game creation requiring extremely large deformable environments. My project explores an area which has not been covered in any detail throughout my studies. Having enjoyed my game engine and graphics programming modules I decided to develop a small voxel engine. My project implements huge, dynamically alterable landscapes with a focus on optimisation for scalable real-time performance. Ideally, smooth surfaces will also be implemented. The product is developed in C++ with Visual Studio 2013, Open Graphics Library and elements of my own 3D engine.

## Optimised Voxel Based Environments



## Barney Gibson Simulating Small Squad Behaviours for Stealth/ Shooter Games

After working with autonomous vehicles for my industrial placement, I decided to create something similar in a gaming setting. My project simulates believable behaviours for small teams of agents in a combat encounter as seen in a stealth or shooter game. Each team has an overarching mission to accomplish. I used influence maps on a grid patterned environment to show which cells each agent can see or threaten; these zones of influence impact the decision-making process. Agents have a horizontally layered process of three independent layers, each of which can recommend an action relating to their area of responsibility. The agent chooses the most appropriate action for each situation. The layers consist of a reactive layer which deals with changes to the local environment, a deliberative layer which makes intelligent advances towards achieving the mission goals, and a communicative layer which assists teammates if they call for help. This project was created in Unity.





## Will Hansford-White Real-time Water Simulation

Water simulation has been missing in games for some time, as the process is considered too computationally expensive, even for modern hardware. Many games try to get around water simulation by not implementing it all or by using linear, pre-generated water effects. My project is a 2D particle based fluid system that uses Smoothed Particle Hydrodynamics to represent and render water. Many optimisation techniques reduce computation time through multi-threading, a grid based system for particles and Single Instruction Multiple Data instruction sets. I learnt many of these methods through my Intel placement. My 2D system can be easily transferred to a 3D environment.



## Tom Hayton Adaptive Difficulty AI for Turn Based Combat

In turn-based and real-time strategy games, difficulty tends to be decided by the player through fixed difficulty brackets. These brackets can sometimes be too easy or hard, failing to provide the player with a close and competitive game. I have developed an AI controller for a turn-based strategy game that adapts its difficulty level based on how well the opponent plays. To achieve this I developed a move scoring algorithm that rates the quality of a turn based on unit positioning and damage dealt to the opposition units. A player's moves are scored and averaged and the AI aims to match the average score of the player. The AI also takes possible future moves into consideration when deciding on which move to make. I built the turn-based strategy game using the Simple DirectMedia Layer library. The project was developed in C++ using Visual Studio 2013.



## Chris Herbert Addictive Properties in Social Gaming versus Single Player Gaming

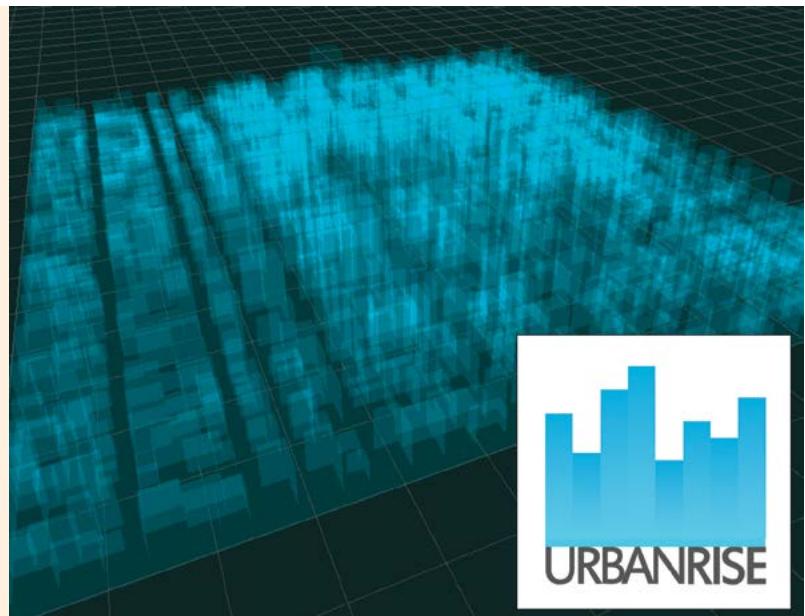
Many aspects of a game keep us coming back for more. Social games are linked to our everyday lives and rapidly become addictive. But how does social gaming compare to the addiction behind single player games? My case study considers two copies of the same game, created in Unity. It explores the aspects of each through anonymised testing of the games. I compare the data from both game versions in my study.



## Ste Jackson

### Urban Rise – Procedural Generation of a City

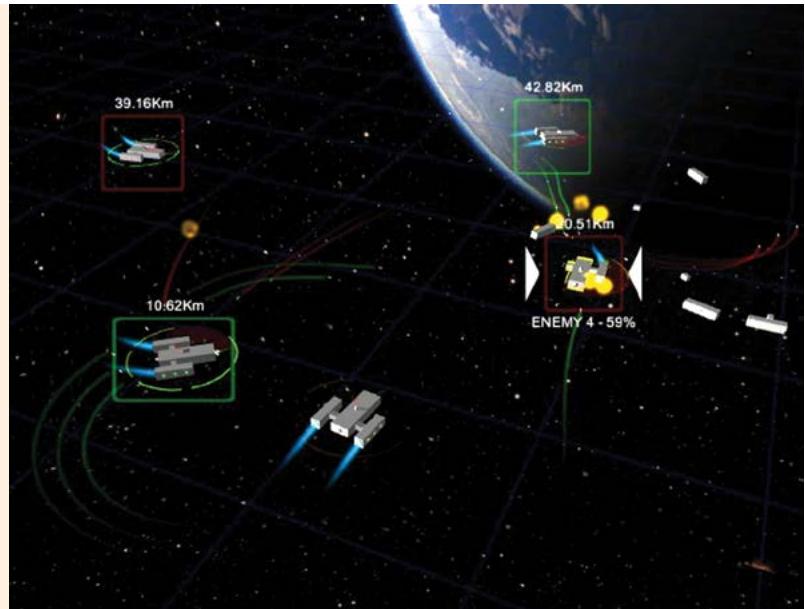
Procedural content generation (PCG) is increasingly appearing in map generation games such as Diablo III and Path of Exile and placing games such as the Left 4 Dead series. Sometimes it is used to generate items for players as exemplified through the Borderlands games. My project investigates the possibility of using PCG to create a roadmap for a city environment and procedurally generate and place buildings according to a percentage possibility for a particular building size. Generation was restricted by certain rules but also worked through random chance. The programme was created using C# in Unity.



## Nick Jackson

### STL: Slower Than Light

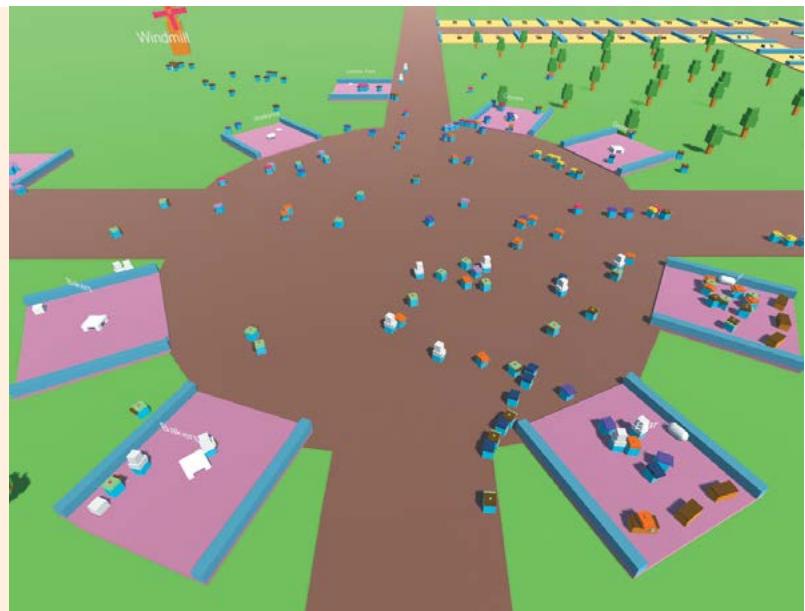
Star Citizen and Elite: Dangerous have shown that modern adaptations of classic space simulations can be successful in the current market by expanding the original concept and taking advantage of modern technology to increase the depth of the mechanics. Inspired by this, I designed and implemented a tactical spaceship game based on the classic space simulation, Star Trek: Starfleet Command. As well as modernising the original game mechanics, my game also focuses on physics-based gameplay to enhance the gaming experience. I designed the game so that the physics could be enabled and disabled at run time and assessed this against gameplay. The result of my project is a demo, produced in Unity, which shows the core gameplay features and mechanics of the game's combat component.

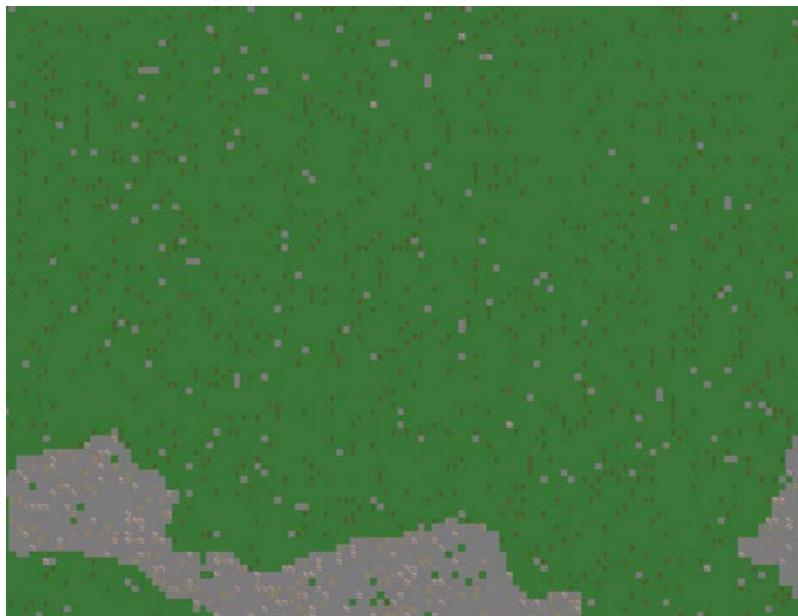


## Wesley Noble

### City-Wide AI Agent Planning Simulation

Games such as Oblivion and Skyrim have a small number of non-player characters (NPCs) in their cities. My project simulates a larger number of NPCs creating the feel of a bustling city rather than a small town or village. The project implements Goal Oriented Action Planning, enabling agents to achieve their goals, using actions available to them. Goals are informed by the role that the agent plays in the city for example, blacksmiths make tools and lumberjacks provide timber. These roles come together to create a small scale economy based on the supply and demand of goods and services. Their goals are also influenced by needs such as hunger, thirst and tiredness. The project uses Maslow's Hierarchy of Needs to decide which needs should be fulfilled at a given time. The simulation was implemented in Unity using C#; this allowed me to focus on the AI instead of visualisation codes.





## Michael Stephens Multiple uses of Path planning within AI

Path planning is a broad subject encompassing different domains of AI, including graph traversal and AI behaviour planning. Jump point search plus and hierarchical task networks are modern approaches to these areas and are demonstrated in my project through a medieval town simulation.

**GAME MAKER**

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## Edgar Tamarit Lloret 2D Game Maker

Nowadays many kinds of software create 2D games. Despite this capability, it is necessary to have previous knowledge of videogames development to create a game. The design of my application is based on creating a game step by step in an easy and intuitive way. The application allows a user with no experience in videogames to quickly create their own game. The application also allows the user to create several game levels and save and share these with other users. Games created by the user can be transferred to portable devices such as smartphones and tablets.



## Marco Vallario Real-time Rendering of Deep Water Volumes

Achieving realistic visuals and behaviours when reproducing natural phenomena in real-time is a big challenge for the interactive media industry. Water represents such a phenomenon. Many interactive applications still lack realism when simulating and rendering big water surfaces in real-time. During my placement at Sumo Digital, I developed a strong interest in computer graphics and decided to investigate the problem of reproducing natural phenomena in gaming by creating a real-time 3D demo. The demo features a realistic deep water simulation model and realistic rendering of the water surface which includes most of the visual phenomena observable in water. The simulation and rendering settings are exposed through a user interface making the framework very artist-friendly. I produced the demo using a custom 3D engine made with C++. I used OpenGL 4.0 as the rendering application programme interface.



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## Digital Media and Web

These projects are wide ranging and cover several disciplines, which 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.



**Amy Hartley**  
**Gone Fishin'**

'Gone Fishin'' is a short animated film about an inexperienced fisherman looking to collect a bounty on a mischievous fish. Will he manage to catch the unruly fish, or will the fish get the best of him? My motivation behind this project was to showcase and further develop my skills in animation, to strengthen my showreel and prepare me for the workplace. To create the short film, I researched advanced body mechanics in animation and introduced myself to the world of simulation by researching water in Autodesk Maya's Bifrost engine and Houdini. 'Gone Fishin'' was created using a variety of software. This included Autodesk Maya for producing the majority of the short, including animation and modelling, Adobe Photoshop for texturing and The Foundry's NUKE and Adobe Premiere Pro for post-production. The short was rendered in Autodesk Mental Ray.



**Jamie Ion**  
**GrubbsUp!**

GrubbsUp! is a brand new, online student cookbook, designed to make it easy for users to find a recipe which matches their ability, cost and preparation time. Users can search from the desktop or mobile website to quickly find recipes that match their chosen parameters. Users can share, comment or even add their own recipes into the community or on social media using Facebook, Twitter and Google+. Developed using a WordPress back end, with HTML, PHP, cascading style sheets, JavaScript and application program interfaces, GrubbsUp! is here for all your cooking needs.



**Sarah Warren**  
**Drawn Together**

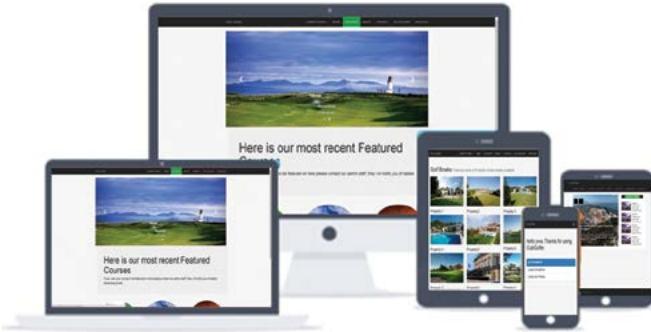
'Drawn Together' is a short animation about a girl trapped in a concentration camp dealing with loss. This storyline has varied dramatically over the past year and I hope you enjoy the final result. My motivation for this project was to concentrate on my main interest, which is animation so I researched advanced body mechanics. I used the pre-made rigs Mery, Bonnie and Morpheus as well as a cat rig, provided by my tutor, to give me more time to concentrate on the product. To make my animation look realistic I modelled, textured and lit a scene using nCloth. 'Drawn Together' was created with a variety of programs including Adobe After Effects, Adobe Photoshop, Adobe Premiere Pro, Autodesk Maya, Autodesk Mental Ray and The Foundry's NUKE.

## BA (Hons) Web and Multimedia



## Peter Akester Club Golfer

As a keen amateur golfer, I wanted to develop a site for golfers that gave them everything they needed in one place. The website offers golfers the ability to view amateur competitions within the UK plus some overseas events. The site also features a section where golfers and homeowners with holiday homes close to golf courses can publicise rental information. The website is fully responsive on tablet and mobile devices. HTML5 and cascading style sheets are the main languages used to design and build the site. JavaScript is used within the news section and, along with PHP and MySQL, provides connectivity to an SQL database. These form the backbone of the site enabling user profiles to be created. This feature required me to extend my PHP skills. I used Adobe Dreamweaver to implement the programming languages and Photoshop to create the logo.



## Matt Hatton TeamTalk – Live Match Data and Player Statistics

In this project, I created a responsive website that provides football fanatics with live data from football matches and statistics on players from the Premier League. The project focuses on ensuring that all followers of the sport have access to a constant source of live data and football news. The concept behind the website was to combine my studies with something that I am passionate about. In addition, I wanted to enhance my skills and take on a project that offered new challenges and problems to overcome. The product has been developed using various coding languages including HTML5, CSS3 and PHP, and was built on WordPress. The design phase was created using Adobe Photoshop.

RANK	PLAYERS NAME	ATTACK	DEFENCE	TOTAL
1	Eden Hazard	891	195	1,286
2	Santi Cazorla	733	24	996
3	Alexis Sanchez	944	47	850
4	Sergio Aguero	988	-54	847
5	Christian Eriksen	745	-29	796
6	José Fonte	95	617	780
7	Cesc Fabregas	528	-163	746
8	Wayne Rooney	652	-12	738
9	Raheem Sterling	622	141	710
10	Charlie Austin	993	11	673



## Nathan Hodgson Rate My Ink

For my final-year project, I wanted to see if it was possible to create a user-driven image comparison website or mobile app whereby the users would contribute their images via a register, login and upload system. To achieve this I have designed and created a website where any user can rate images, recording the wins and losses of each image in a versus format, as well as delivering an expected result in the battle. Users can register, log in and upload their own images, which will then be added to the database and returned in the voting windows. My motivation behind the project was to challenge myself more with the development side of web design, and enhance my skills in that area. To create the website I have used a variety of languages including PHP, HTML5, cascading style sheets and MySQL, as well as creating designs in Adobe Photoshop.

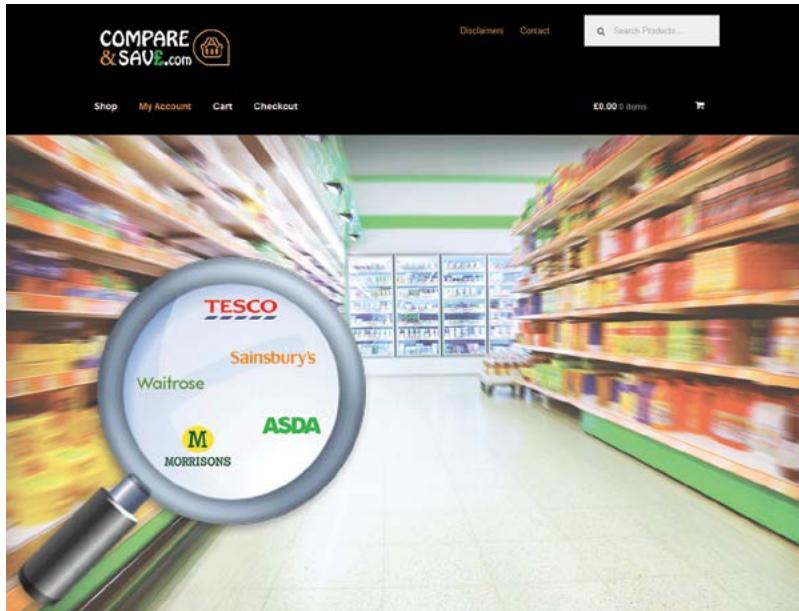
## Rate My Ink.





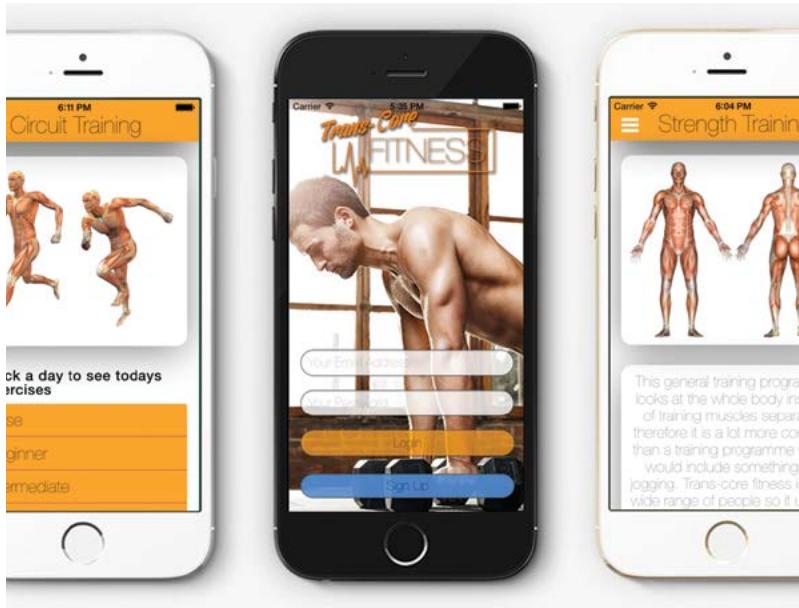
## Danielle Malcolm Learning Bytes

I have designed and implemented a responsive web-based educational tool to support the teaching of computing in senior schools. The project focuses on the underlying problem of schools failing to recognise the importance of implementing computing as a core subject. Learning Bytes is an educational tool that helps support students by producing revision material in an engaging and visual way, as well as monitoring the students' performance throughout each topic. The motivation behind the project was to learn new skills and enhance existing skills developed through my studies. The product was built using HTML5, cascading style sheets (CSS3) and PHP. It was developed on WordPress using a custom-built theme. The graphical designs for the site were made with Adobe Photoshop.



## Jack Percival Compare & Save – A New Comparison Website Concept

I have envisaged a new kind of comparison website that compares products and offers bulk purchase discounts. This is a proof-of-concept project in which users can search for everyday consumer items from local suppliers and retailers, then select the most competitive offering available. Multiple purchases of single items grant the user a level of discount proportional to the amount in the basket. Customers will be able to find the best deal possible then reap extra savings if they buy in bulk. The product is made for web using HTML5, CSS3 and jQuery and developed using WordPress. Images and designs for the site were created using Adobe Photoshop and Adobe Illustrator.



## Sam Raine Trans Core Fitness Application

Trans Core Fitness is an application that I developed for my final-year project. Following market research I found a gap for an application that offers all areas of fitness, from strength training to training for events and even a diet plan. This application encompasses all these aspects and more. It is created from PhoneGap as a hybrid app but developed for an iPhone 6 screen size. It will allow users to log in and register, log their workouts in a calendar and track their runs with GPS. Trans Core Fitness with all its functionality and fitness information will be a great addition to the market and aid users in their fitness journey.



**Sam Roberts**  
**Admitme.co.uk**

I have created a ticket comparison website that highlights the lowest prices for each event. I have used different languages and services to get access to this information, such as PHP, JavaScript and application programming interfaces. All the data for the tickets is populated in a table from the relevant sources then sorted by code commands. This website is responsive and designed to display in landscape on the mobile device for a better experience.

The screenshot shows the homepage of AdmitMe!. At the top, there's a navigation bar with links for Concert Tickets, Sports Tickets, Theatre Tickets, Festival Tickets, and Upcoming events. A search bar and a 'Go' button are also present. Below the navigation is a large banner image of a concert stage with bright lights. The main content area features several cards for different events:

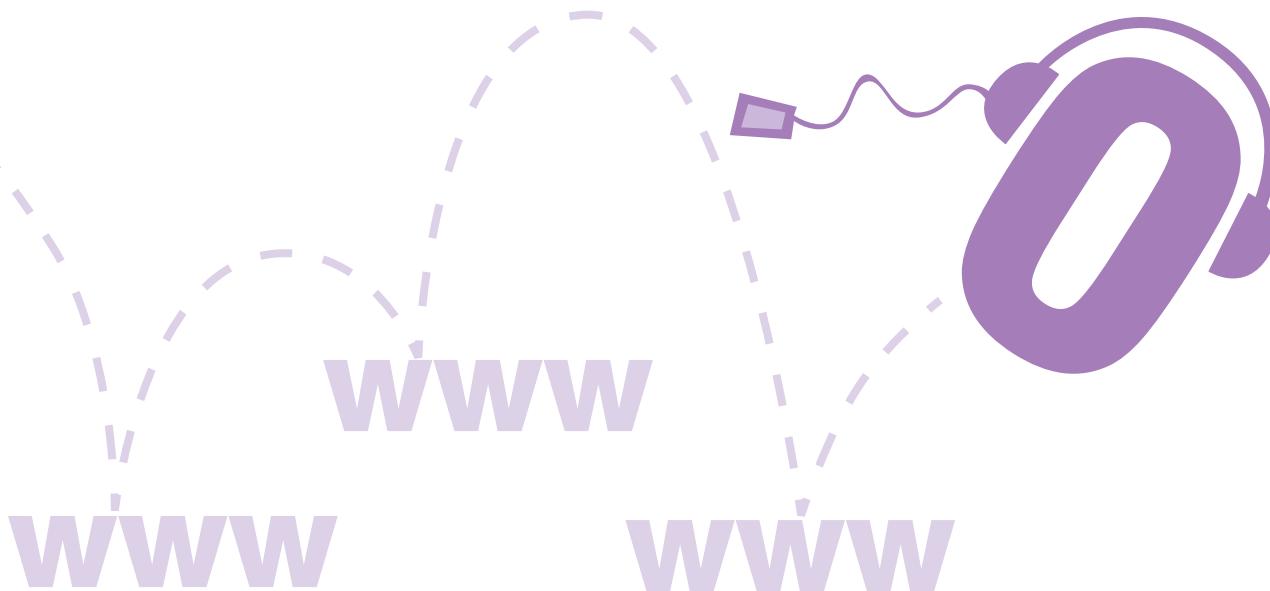
- Manchester United Tickets**: Shows a stadium at night with the text "Manchester United" on the screen. A "Compare Prices" button is below it.
- Ellie Goulding**: Shows a photo of the singer performing on stage. A "Compare Prices" button is below it.
- Electric Daisy Carnival UK**: Shows a crowd at a festival at night. A "Compare Prices" button is below it.
- Other cards visible**: Show photos of a band performing and a person singing on stage.



**Lewis Thompson**  
**Projectr – The Ultimate Project Management Tool**

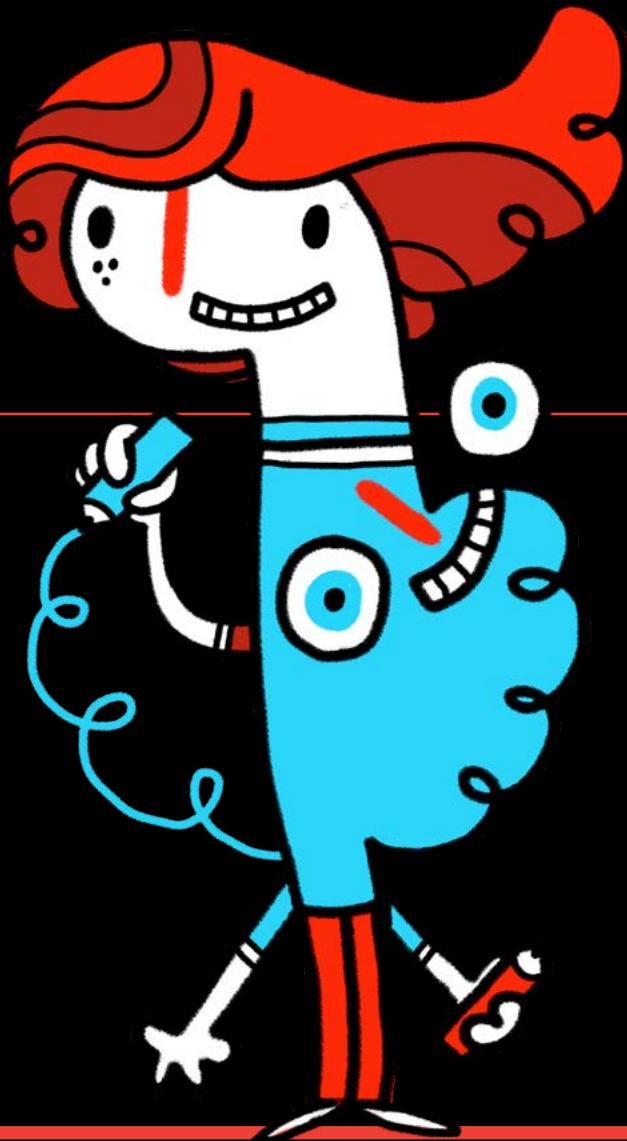
Do you ever find it hard keeping track of the endless amount of projects you have? Then when you've finished the project you can never find all the files you're looking for? Introducing Projectr – the ultimate project management tool. This application can hold all of your projects in one handy place. It can store all the files you need and even remind you when it's deadline day. More than one person working on the project? Simply add them as a team member on to the project. The application has been created using HTML5, CSS3, PHP and JavaScript and then compiled using PhoneGap so it works as an application on Android devices. It also has a responsive web app version. It first started as a Yii skeleton app. After this I used Topcoat as the user interface framework.

The screenshot displays the Projectr application across three devices: a smartphone, a desktop computer, and a server terminal. The smartphone screen shows a "Create Project" form with fields for Project Name, Project Description, Start Date, End Date, and a "Create Project" button. The desktop computer screen shows a dashboard with a calendar for March 2015, a list of active projects (Project 1 and Project 2), and a sidebar with navigation options like Home, New Project, Import, and Export. The server terminal window on the left shows a command-line interface with code related to project management, including functions for parsing JSON data and interacting with a database.



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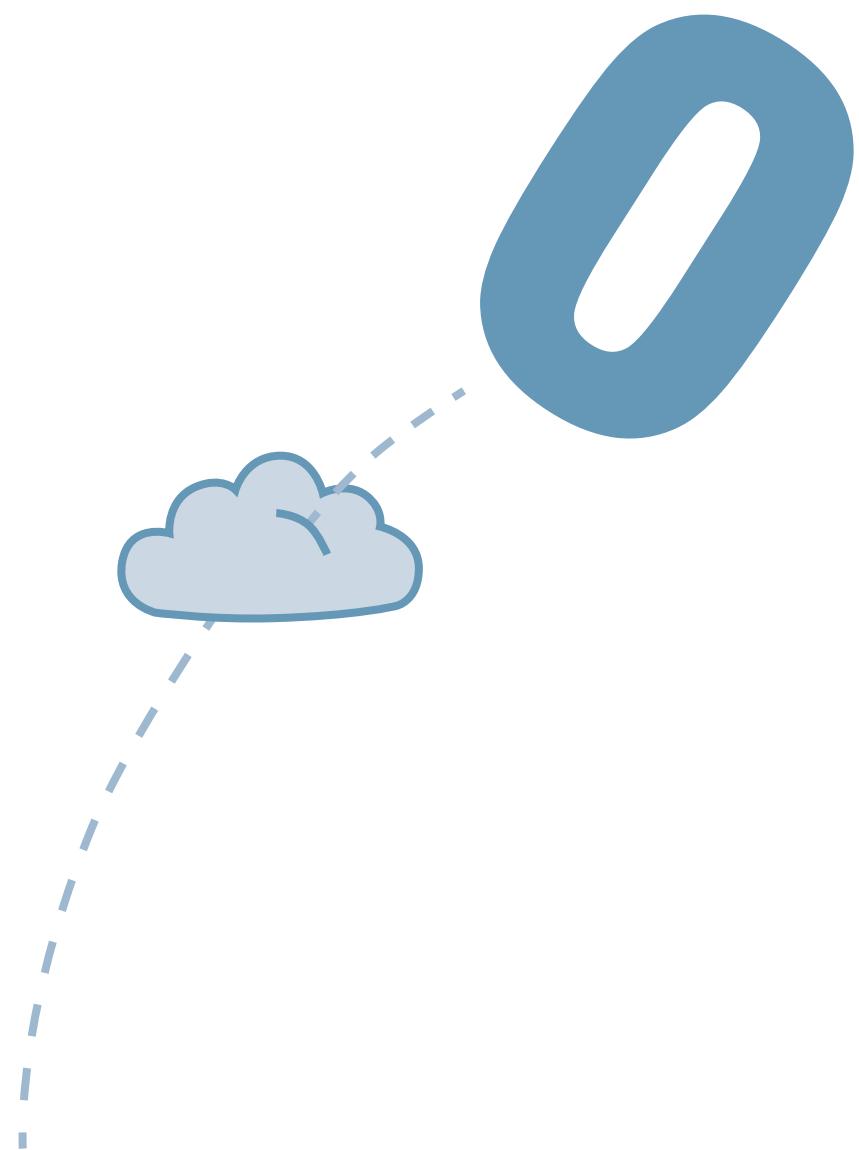


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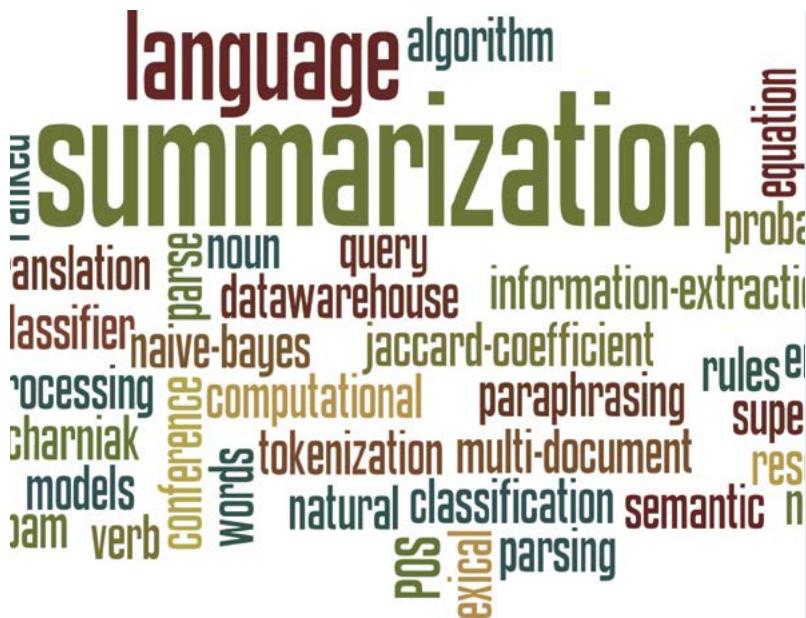
The Animex International Festival of Animation and Computer Games takes place every year at Teesside University. It is the largest festival dedicated to animation and computer games in the UK. Speakers and representatives from the global animation and games community gather for a week every year to educate,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

**Find out more:** [www.animex.net](http://www.animex.net)



## Computer Science

These diverse research and development 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.



# Ajay Ajaal

## Multi-Document Text Summarisation

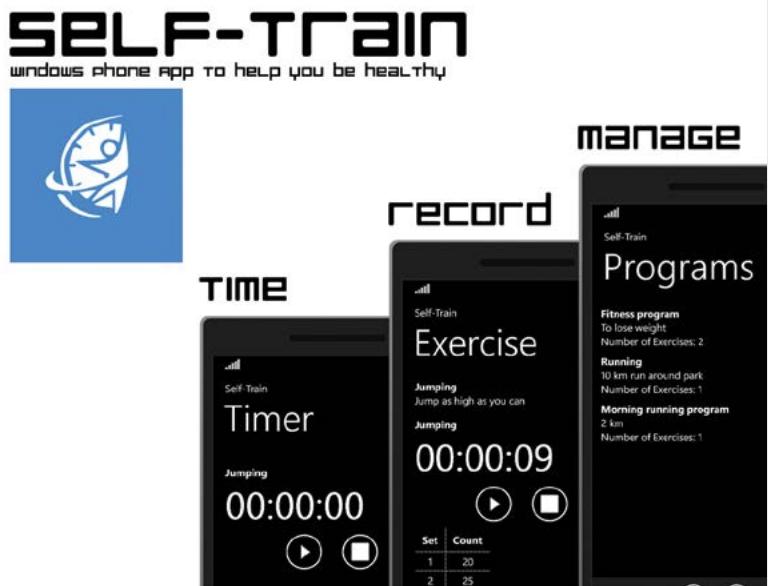
With an increasingly interconnected world, covering news has never been easier. The number of news articles produced by news organisations is growing, making keeping abreast of a single topic difficult. Through a variety of artificial intelligence techniques such as search, natural language processing, text summarisation and classification, I have developed a prototype system to solve this problem. News articles are retrieved through intelligently crawling through specific resources online and extracting any pieces of interest. The articles are then filtered for spam and a summarisation process begins. The summarisation and spam filtering techniques are heavily linked and the output is affected by the Naïve Bayes classifiers learning data. The summarised text is then run through a separate process to produce a user-friendly summarisation in the form of an image. Distribution of the end product is done through a Twitter feed to a growing audience of Twitter followers. The implementation language chosen was Python 2.7 due to the number of freely available modules and, more specifically, its scientific and machine learning modules.



# Marc Davies

## **Memory Efficient Android Launcher Application**

Smartphones are getting ever more powerful, but what about those who like their older smartphones? With this in mind, I have created a memory efficient Android launcher application. Launcher applications, as the main user interface to Android devices, try to do a lot just because they can. Whilst this is fine in top-of-the-range smart mobile devices, older generation models start to struggle because they can't cope with the amount of processes running. I have designed and developed a memory efficient launcher application from the ground up to take up minimal space and processing power so that users with older, as well as new smartphones, can operate them without them slowing down and crashing due to lots of processes running in the background. The application makes use of memory efficient coding practices and delves into Android's functionality for memory management. The launcher application is also intended to run on other devices with limited specifications such as smart watches and Android wearable devices. The launcher application is written in Java and XML using the Eclipse integrated development environment. It uses features from the Android SDK, and is designed for smartphones that run API 10 (Gingerbread) and up.



# Eduards Denisjonoks

## **Self-Train – Fitness and Health**

### **Windows Phone 8.1 App**

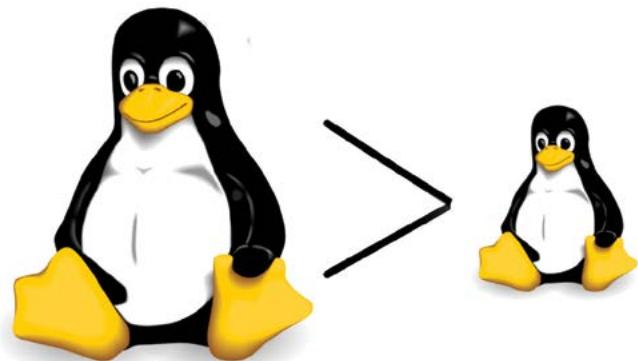
Self-Train is a Windows Phone 8 app that is made to help keep your physical training programmes well managed and informative. This application focuses on three main aspects: 1) programme management, that is the ability to manage multiple exercise programmes at the same time, 2) record exercise results and customise data recorded specifically for each exercise, and 3) a timer which can be adjusted for specific exercises and have sound notification. It is hard to find a good app doing this, especially on Windows Phones. That is why I have started this project, to produce a tool which I can use and make available to others so everyone can try to improve their training programme management. This application was developed in Visual Studio 2012 using Windows Phone SDK 8.1. It was programmed using the C#, XAML and it uses LINQ to communicate with the isolated databases in application.



Tom Ingleby

### Developing and Applying a Methodology for Reducing the Size of the Linux Kernel

The Linux kernel is almost everywhere, but in most configurations it isn't necessarily suitable for use everywhere. On some devices, limited by storage and memory constraints, proprietary OS stacks are in use. By removing features from the kernel that in certain use-cases are unnecessary, reductions in binary size are archived. These binary reductions also translate in part to lower the runtime memory footprint. Within the project, a methodology is developed along with tools to help during Linux kernel development. A reduced Linux kernel could be used in industrial and domestic applications within the growing trend towards the Internet of Things, where cheap and limited hardware usage is high.



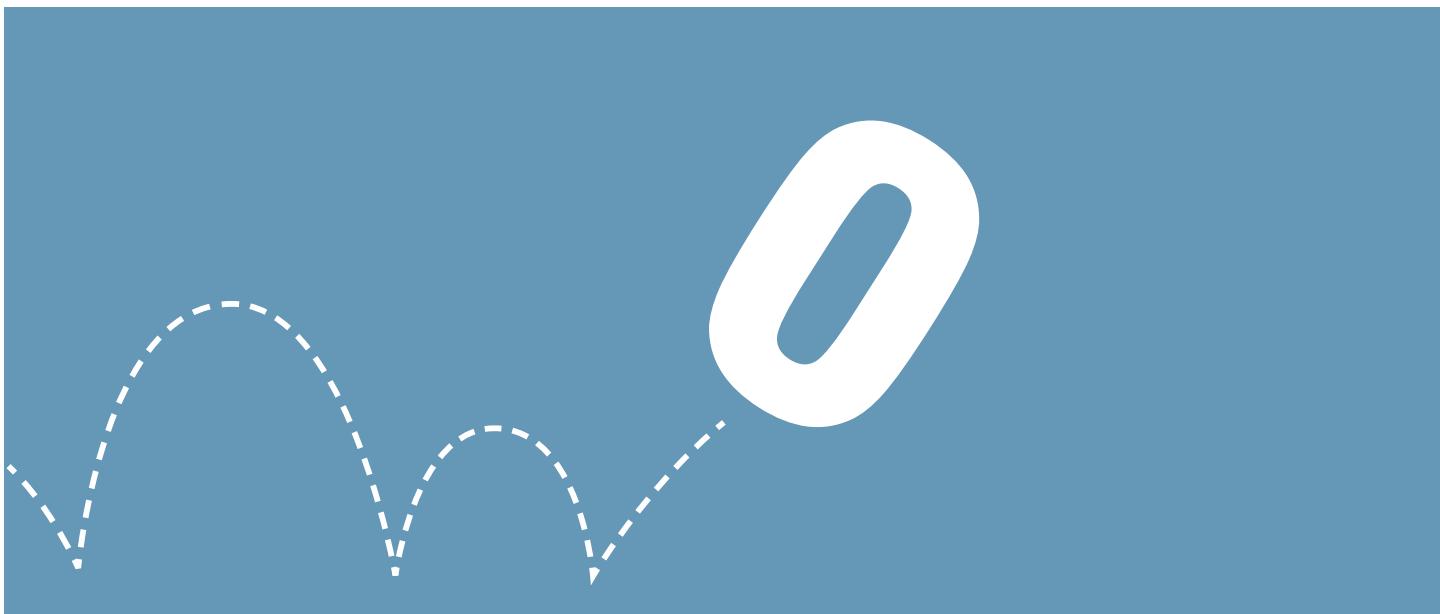
## Linux Tinification



Jennifer Kirtley

### Mr Homefix

My project is a live project called Workorders for a company called Mr Homefix. Workorders is a C# desktop application that is used to manage the workload and accounts of the maintenance and repair company Mr Homefix. I chose this project as I wanted to work with a live client to give me experience, preparing me for life after university. I also wanted to improve my C# and database skills. For this application, I have used SQL server to store data and Visual Studio to create the application in C#. I have implemented this in the Model View ViewModel (MVVM) framework and have used unit testing.





## Purosesu

### Business Process Management



**Adam Mellor**  
**Purosesu: Business Process Management**

My project is a live project called Purosesu, for Argent & Waugh, where I spent some of my time on placement. Purosesu is a workflow management system that allows businesses to store formal processes and request them on a web front end. Purosesu will then work processes with tasks, both in parallel and sequence, and make decisions based on data gathered from users. I chose to do this project as I wanted to improve my skills in service-based web architectures and to work with a company on a live project based on a real need. For Purosesu, I have used SQL Server to store workflow designs; MongoDB to store implementations of workflows; C#, model-view-controller and web application program interfaces for the web-based service architecture and model-view-controller, HTML, Razor, cascading style sheets and JavaScript for the front end.



**Alex Piazza**  
**Chronos**

My project came about as the result of working for Argent & Waugh for the duration of my placement year. At the end of the year, they offered me the opportunity to choose from a selection of ideas they wanted creating. Chronos is a lightweight, mobile-friendly web application that allows users to store data associated with tasks and time spent on work for a project and display the data in an intuitive and functional way. The predominant function of the system is to provide managers and project supervisors with an easy way to aggregate employee work hours to create invoices and project reports. It also analyses the data to provide business insights into a more efficient way of organising a project. It is built using ASP.NET MVC 5 in C# with Entity framework and Web API 2.



**Jaimini Solanki**  
**Risk-Free Stock Trading**

I developed a stock trading web application which used a historical stock data feed provided by Yahoo Finance. This web application allows users to fictitiously invest in shares and stocks using a set amount of funds provided to the user after successful registration. Users are then able to log in and browse available learning materials to increase their knowledge of the stocks and shares. Users can also browse stocks of interest and invest in singles or multiples of that specific stock. The user can see a record of their activity including the stocks they've invested in. Much of the motivation to develop this web application came from my placement year with Thomson Reuters. I used the Thomson Reuters Eikon platform on a daily basis and became interested in how stock trading applications function. Hence, I wanted to explore this further and challenge myself whilst developing this web application. It has been built using Microsoft Visual Studio 2013 and Microsoft SQL Server 2012. I have used the Microsoft ASP.NET model-view-controller architecture to develop this application, SQL and C# to program the functionality and JavaScript, HTML 5 and cascading style sheets to design and program the web front end of the application.



## Mark Williamson

### Prototyping an On-board Vehicle Video Processing Unit to Provide Warnings and Recommendations

For my project I decided to create an application used within a vehicle to process a video feed and analyse it for potential issues in as close to real time as possible. The application itself uses a webcam attached to a laptop, which would be mounted in the vehicle's window to provide a video feed to process on the laptop, and a GPS receiver to provide co-ordinates of the vehicle to retrieve its current speed. The main aim of the project was to experiment with different algorithms to find the most efficient way of detecting features such as license plates and red traffic lights whilst keeping the technology used to a minimum so the project would be as low cost as possible. The programme was written in C# and implemented the AForge.NET framework for image processing.



## Owen Wright

### M.O.S.E.S: Memories on Screen Every Second

M.O.S.E.S is a mobile application that allows users to create their own digital scrapbook and design personalised memories on their Android mobile device. M.O.S.E.S provides the user with a blank canvas and an easy-to-use toolbox, which gives the ability to import images, draw, write text and share their creations across social networks. M.O.S.E.S is designed with simplicity in mind, allowing anyone to create a personal scrapbook with ease. My inspiration for this project came from the growing use of social networks and their emphasis on images, videos and music. I wanted to create an application that allows users to collate this media in a more personalised way and share it amongst their peers. I wanted to improve my skills in software design and development and gain experience in developing applications for mobile platforms. I used the Android software development kit with the Android Studio integrated development environment to create the core application and SQLite for data storage. Social network integration is handled with the SocialAuth library that allows for authentication, profile creation and sharing within multiple networks.



## BSc (Hons) Computing



## Chris Bibby

### File Blocks – Desktop Data Deduplication

For my final-year project, I have designed and created File Blocks, a file storage application. File Blocks uses my own implementation of block level data deduplication when storing files, ensuring that only a single instance of a file is ever stored – this can vastly reduce the amount of space required for file storage. The application was developed in the Netbeans integrated development environment using the Java programming language. JavaFX was used to create the graphical user interface. File Blocks also makes use of the H2 embedded database system, ORMLite object relational mapper and Apache Commons libraries. File Blocks has been designed to ensure that it is platform independent, allowing it to be used on the Windows, Linux and OSX platforms.

**File Set**

File Set	Size (MB)	Timestamp	Notes
Initial Snapshot	22	Tue Mar 10 13:19:30 GMT 2015	
Snapshot Test	27	Tue Mar 10 14:01:30 GMT 2015	Additional data added
Further Updates	28	Fri Mar 13 10:26:52 GMT 2015	Minor changes to some files

**About File Blocks**

**FILE BLOCKS**  
<http://www.fileblocks.uk/>

File Blocks 1.0 (build date: march 13 2015)  
 Copyright © 2014-2015 Chris Bibby  
 Created for Final Year Project, BSc Computing, Teesside University, UK

**Third-party Libraries:**

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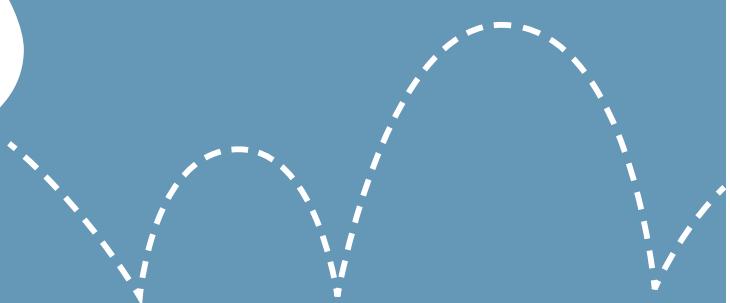
**Marc Bush**  
**Orion Home Server**

My final-year project is a small program that provides an easy way of accessing and managing a remote computer such as a home server. Accessed through a web interface, Orion Home Server shows statistics about the computer – like storage space, internet connection, uptime and temperature – and has management functions like viewing and installing important updates, or identifying which files in specific folders have been added recently. The goal is to make setting up, running and maintaining a home server as easy as possible, for novices and professionals alike. Mobile and desktop apps can also be developed to access the server rather than relying solely on a web interface. The program was written in C#, uses ASP.NET for the web interface and was developed in Visual Studio 2013.



**Nathan Day**  
**Electronic Web Application Generator (EWAG)**

Ever find yourself continuously reusing the same piece of code, having to find the original piece of work to copy, paste and modify? This problem exists throughout the IT industry, and doesn't need to. The solution I have developed is simple at heart but could be potentially revolutionary, saving companies a lot of time and money. Using PHP and the Yii model-view-controller framework, along with JavaScript, jQuery and AJAX, I have developed a prototype content management system that could be shipped to a new client with only adjustments to the cascading style sheets. The user is prompted through a series of installation steps that ultimately set up a bespoke web application tailored to their requirements. Future developments need only to be added into the Modules list, allowing future customers to use the same functionality without any further work.





## Cedric Fok New Generation of In-flight Entertainment System

Nexdia is a next generation in-flight entertainment solution specifically designed for low-cost carriers and regional aircraft. Nexdia can provide streaming videos in high-definition on demand through the hybrid gigabit network backbone with redundancy design. Nexdia is designed with the on-board server incorporating all solid-state drives and mini-ITX main board, offering excellent reliability and flexibility in a compact, lightweight form factor. The user interface has the ability to mix and match based on the brand image and marketing plan. The project demonstrates the skillset I developed during my studies. This includes web-based user interface, network design, hardware implementation, graphic design and digital visual effect creation. I used Adobe Photoshop and After Effects to create the graphic and visual effects for the user interface. It was completed with HTML5 and cascading style sheets. The network structure was implemented with load balancing routers, a CAT6 twisted pair cable, mini-ITX server, wireless access point and pocket size node.

**NEXd!a)))**  
IN-FLIGHT ENTERTAINMENT SYSTEM

ENTERTAINMENT

SALE INFORMATION

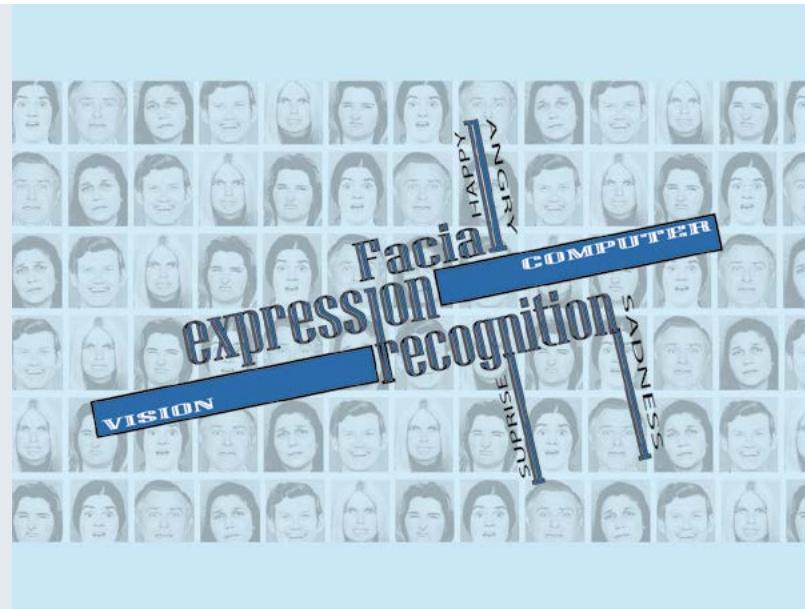
ENTERTAINMENT

NETWORK IMPLEMENTATION + HTML5 + CSS + AFTER EFFECT



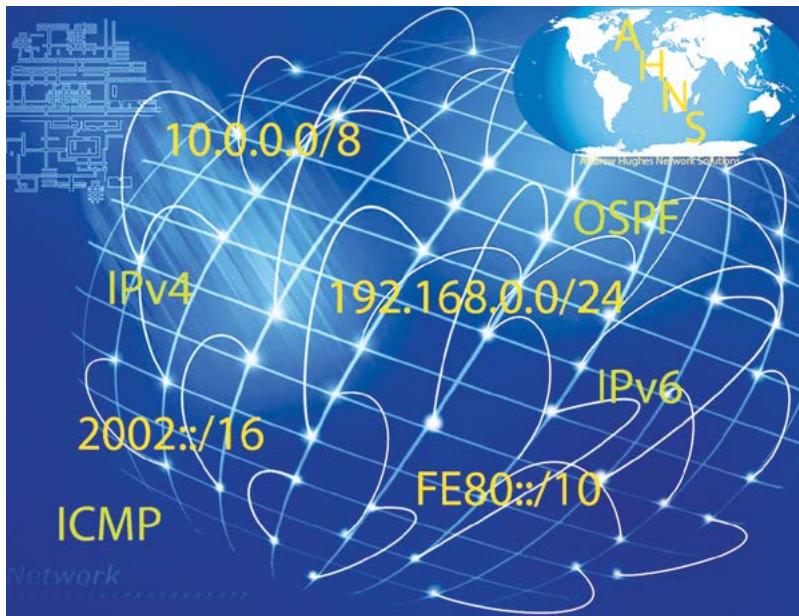
## Nathan Goodall Computer Recognition of Facial Expression

For my project, I have created an application that recognises the facial expressions of a person who comes into the field of view of a camera. The application has real-time outputs, and tracks the variations in different facial expressions that occur and displays them in the graphical user interface. The application detects a face coming into the field of view, with applied grey-scale and utilising the Haar feature-based cascade, applies a Gabor filter and produces a wavelet by utilising edge detection from the given frame. After a wavelet has been created, the data is used with a support vector machine (SVM) algorithm using associated learning algorithms that analyse data and recognise patterns. An already trained dataset of facial patterns is then used to find the corresponding expression to that being expressed. The application was built in Visual Studio 2013 utilising the Emgu CV application program interface in the C# programming language.



## Andrew Hayes Comparing Responsive Front-End Frameworks

There are many different front-end frameworks available on the internet. The problem that many front-end developers have is how to choose the correct one. I have researched and developed four test websites using a front-end framework for each, comparing and testing each one. Through this research, I have been able to identify the benefits of front-end frameworks and now have a mature perspective on the future of website development, especially surrounding responsive websites and the power of cascading style sheet pre-processors (Sass and LESS). The four frameworks that I have used and tested are Twitter Bootstrap, Zurb Foundation, Gumby Framework and Semantic-UI. To evaluate these frameworks I have delved into a number of different technologies including RubyGems, Node.js, Bower, Gulp, Sass and Compass, LESS and JavaScript. The objective of this project was for me to experience the power of front-end frameworks and gain a greater understanding of technologies that are future proof.



## Andy Hughes IPv6 – Migration Versus Integration into a Pre-Existing Network

Internet Protocol version 4 address exhaustion is an issue that organisations of all sizes will face in the coming years. Internet Protocol version 6 (IPv6) standards were published in 1998 by the Institute of Electrical and Electronics Engineers and, despite being the future of the Internet Protocol stack, adoption of IPv6 has been slow. I conducted research into migrating and integrating to/with IPv6 in a pre-existing network environment, focusing on inter-site communication over a simulated ISP connection. I created a migration scenario for a fictional organisation (where IPv6 protocols are used) and two integration scenarios, Dual Stack and 6to4 tunnelling. The models were created in Riverbed Modeler, the academic version of OPNet Modeler. The project was created to assess the impact of IPv6 on existing network infrastructures.



## Danny Lambert-Clarke ABLE Services

For my project, I decided to do something that is close to my heart. ABLE Services is an activity centre for adults with mental or physical disabilities or dementia. After volunteering at ABLE Services for nearly a year I did some research on how well known these sorts of services are. My research showed that these services are not that well known to the public – so I decided to make a website for ABLE Services to help promote their services more widely. The site includes interviews with some of the people involved with or using the services, a contact form to allow users to ask questions to ABLE Services, a locate page where the user can input their address and get directions to the service, a brief history of how ABLE Services came to be.

## Sammy Okello Teesside University StudyBuddy

My project is a website that allows students at Teesside University to find it easier to make friends. Making new friends is something that is known to be difficult for many students, especially foreign students with different cultural backgrounds, social barriers and an unfamiliar language. This website application particularly caters for students on the same courses, helping them find it much easier to establish and maintain meaningful friendships by using their shared experiences of the courses they are studying.



## Ell Robertson Database-Driven Website for a Dance School

I decided to create a database-driven website for my mum's ballet school. She never felt the need to advertise on the internet but her pupil numbers are now falling and something needed to be done. The website has two main areas. The first is purely for advertisement purposes to build an internet identity for the business. The other side is a teacher-only section where my client can securely store and manage all the important data for her business. Here she can manage her pupil, class, location and teacher data dynamically. My client wanted to create a brand identity and solid internet presence and the website was designed to fit that purpose. The tools used to create this database-driven site were HTML, cascading style sheets, PHP and MySQL, which were all coded using Notepad++.

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**Welcome to Jill Thomas School of Ballet**

Welcome to Jill Thomas School of Ballet. My school specialises in the teaching of classical ballet where the Royal Academy of Dance syllabi is taught from Pre-Primary - Grade 8. The complete new syllabi is also taught from Pre-Primary - Grade 5. It aims to engage every pupil with the creative choreography and beautiful music making each lesson fun whilst learning a great skill.

Freedom of movement, use of space, co-ordination, expressiveness, and musicality are all important to interest the modern child of today. Every pupil is encouraged to work towards the RAD examination scheme where they can achieve certificates and medals to be proud of. However pupils can attend lessons purely for pleasure whilst learning valuable life skills and making new friends.

Created By Ellott Robertson



## Glyn Spencer Job Sheet Tracker

As I am particularly interested in system design and database development, I decided to create a secure, responsive web application for my current employer – a local plumbing and heating firm. The application will be used within the main showroom to store customer details, book engineer appointments and assign job sheets to engineers. Additional features include adding materials used on each job to the assigned job sheet, updating job status, and linking invoices to specific jobs. The application can be accessed by company engineers on their mobile device whilst out on the job. Engineers are able to view and update their job sheets, which will provide real time updates across the application. The application was built in Visual Basic (VB.NET) within Visual Studio 2010 and has a Microsoft SQL back end. The front end was designed using HTML and cascading style sheets.

## Job Sheet Tracker

[Logout](#) [staffone](#)

- [Staff Home](#)
- [Job Sheets](#)
- [Create Job Sheet](#)
- [View Job Sheets](#)
- [Diaries](#)
- [View Diaries](#)
- [Customers](#)
- [Add New Customer](#)
- [View Customers](#)
- [View Properties](#)
- [Landlords & Agents](#)
- [View All Landlords](#)
- [Add Private Landlord](#)
- [Add Letting Agent](#)
- [Invoices](#)

### Job Sheet

Date : 03/03/2015 Time : 10:00AM Duration : 00:00:00

**Client Details**

Carol's Candles Ltd  
Skelton Drive, Ainstable  
01642 842344 (Work)

**Job Details**

**Plumbing**  
Leak under the kitchen sink

**Edit**

**Materials (include all fittings and consumables)**

Description	Price
Washer	£1.30

Monday, March 2 2015  
Address : 11 Ainsdale Close  
Time : 8:00AM (2 Hours)  
551 Laburnum Road  
Redcar TS11 8DX

Hello Andrew  
Select a Date  
8:00AM (2 Hours)  
551 Laburnum Road  
Redcar TS11 8DX



## Ness Wilson Amateur Theatre Acts Worldwide

I created a website for Amateur Theatre Acts that focused mainly on a ticket management system, buying and selling tickets to members of the public. This took the form of a SQL back-end database linked into a C# ASP.NET web application, which presents the information for people to book to attend an event. The web application was also designed to allow members to register an account and log into a profile where they could advertise their acts and events. The booking system was created to allow visitors to add tickets to a shopping cart along with other items, such as merchandise. The software used was Visual Studio 2013 in C# language, an SQL database and also HTML and cascading style sheets. I used Photoshop to design the logo. This project was aimed to showcase some of the skills I have learnt from my time at University.

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**Home Page**



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Facebook Updates for our new website  
Comments on Facebook Post - Sat 28th Mar 2015 - This Just  
Check out amateurtheatreacts.co.uk for lots more Amateur Theatre Acts  
Contact us for more information



**Darren Winter**  
**SG Planner**

SG Planner is an Apple iOS-based application for the maritime sector. SG Planner is designed to solve the problem of inaccuracies and misunderstandings between the clients and manufacturers of maritime navigational safety products – these results in wastage, delays and customer frustration. The solution is intended to communicate essential information from the client to head office including client details, the products required, 360-degree photography of the vessel and exact measurements of the windows. The app is supported by a promotional website I made using Adobe Dreamweaver.



**Po Ki Wong**  
**Movie: Paradise & Pleasure**

I have created a movie website that provides a platform for users to share opinions and play a movie trivia game. The site is designed to be available to everyone via his or her mobile phone. The website has a login system for admin and members. After login, members can use a shopping cart to buy DVDs and original books of movies. Moreover, the website uses GPS to locate movies in nearby cinemas. The skills I have developed through this project are cascading style sheets, HTML, database and design skills. I used Microsoft SQL, Adobe Photoshop, Dreamweaver and Flash, and Notepad++ to build my website.



**Ki Ki Yu**  
**Creating a Korean Variety Show Guide**

I have created a website about popular variety shows in Korea. The website provides details about K-POP variety shows to the users along with discussion forums. It also provides an online shop selling K-POP merchandise. The website has a popularity chart that allows users to vote for their favourite shows. One of my motivations for doing this project was to develop my computing skills in the areas of database systems and web applications, and to take on the challenge of building an online shop. I used Adobe Dreamweaver and Notepad ++ to build my website and SQL Server to create the database.



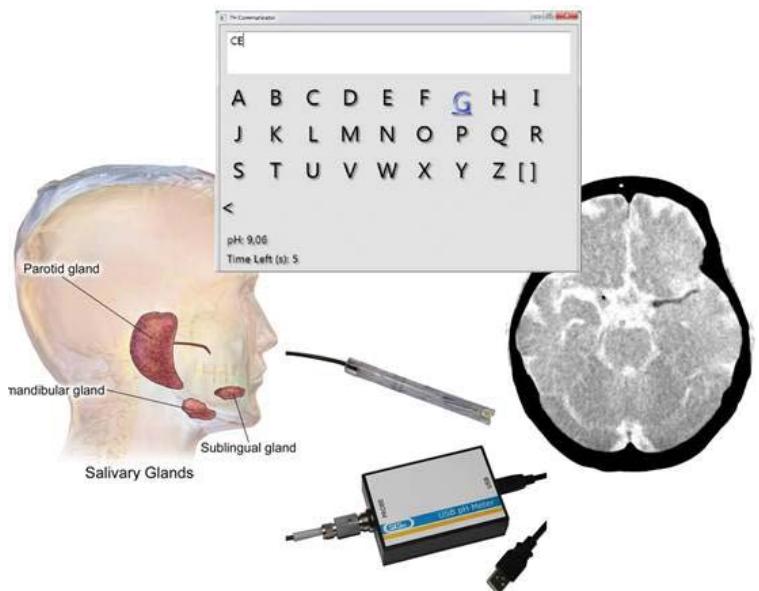
**Keorapetse Seboko -  
Botho University, Botswana  
Mail Delivery Notification  
System for Botswana Post**

In Botswana, postal services are carried out by Botswana Post. These services can be accessed through postal offices in every district in Botswana. Every time Botswana Post clients have mail, they need to visit the postal office and check for mail in the postal box. People often take a long time to find out that they have mail that needs to be collected because there is no mechanism to alert them of a delivery. As a result some very important mail is received very late, affecting the postal service's efficiency. It is likely that the introduction of this notification system at the postal service department will improve service delivery and reduce delays.



**Peter Roudensky -  
Prague College, Czech Republic  
A Novel Biofeedback Channel  
for Communication with  
Paralysed Patients Based on  
Salivary PH**

Patients suffering from devastating neurodegenerative diseases such as motor neuron diseases progressively lose control over all muscles under voluntary control, leaving their intellect intact. In late stages, fully conscious patients have no motor activity left and no means of communication with the outside world, being literally trapped in their own body. So far, there has only been an experimental brain-computer interface technique, trying to register patients' brain activity – the results are inconclusive. Based on surveys, the majority of patients do wish to live on life-support systems as long as they can communicate with their loved ones. This was a goal of my project – to provide these patients with a novel means of communication to improve their quality of life. I have developed a system that uses voluntarily (mentally) induced changes in salivary pH serving as feedback to my system allowing a basic way of communication.



**BSc (Hons) Information and Communication Technologies**



**Katherine le Fevre  
A Dynamic Database-  
Driven ITIL Service  
Catalogue**

This project was influenced by my placement year at Drax Power Ltd. During the placement, I spent a lot of time working on service delivery, putting processes together to improve the IT service using the ITIL framework. While there, I saw the difficulties of not having a service catalogue. I decided to create a service catalogue with a modern twist by integrating it into a database-driven and responsive web application. This allows it to be fully accessible to all users through a range of devices, including tablets and mobile devices, which are being used more and more by end users. The project allowed me to further my knowledge of the ITIL framework, as well as giving me the chance to challenge myself and utilise other skills I've learned in my time at University such as HTML, cascading style sheets, PHP and MySQL.

**A Dynamic Service Catalogue**



**Chris Manson**

**SportCheck – A Sport Centre Comparison Website**

For my final-year project, I developed the knowledge that I gained in my second year and addressed the problem that I identified with the current sport centre booking systems. I developed an online application that allows users to find all of the sport centres in their local area and book out a specific sport or class. The website contains all of the useful information that users need to find their closest sport centre and start playing their chosen sport. SportCheck allows users to register to the website so that they can keep track of their bookings and add notes to say what they liked or disliked about their experience. To develop the system I used Visual Studio 2013 using dynamic data and in the language C#. I used MySQL to develop the back-end database.



**Ross Simpson**

**Unite | Health and Wellbeing, Unified**

Unite is a secure and private portal for health and social care staff to be able to access patient records, contact colleagues and find out information on any medication they wish. The need for such an application became clear after researching the benefits of more fluent communications within a workplace, with the research suggesting that patient care could be improved all around. I designed and developed Unite as a web-based application on Visual Studio 2013 and connected it to a back-end SQL Server database. I chose this software to develop my project artefact, to challenge myself and to improve my skills using ASP.NET and C#.NET alongside showcasing what I can do in HTML5 and CSS3. All digital graphics on Unite were created using Adobe Photoshop and I made use of HTML and cascading style sheets to make the application visually pleasing to the end user.



**Alex Hearne**

**Scouting Community Worldwide**

Scouting Community Worldwide, SCWW, is a prototype web application that I have developed for the scouting community, allowing users to discuss scouting matters. The web application also stores all the relevant information that users need to know about the Scouting movement, from information about badges to learning about the Scouting structure. I decided to include a discussion forum because, apart from Scouting groups on Facebook, there were very few web applications that offered this feature. This supported the main purpose of the website, which was to make the Scouting community stronger. The web application was developed in Visual Studio, using C#. The back-end database was created through the SQL Server Management Studio.

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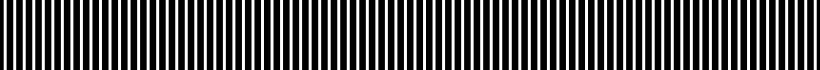
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## Internship allows business to explore touchscreen technology

A unique internship scheme has helped a marketing agency position itself at the forefront of cutting-edge touchscreen technology.

Gateshead-based Daykin & Storey employed James Leftley as a software developer as part of a Teesside University Knowledge Exchange Internship. James spent ten months developing new programmes and researching different ways to maximise touchscreen technology to help the company's clients make the most of the emerging technology.

Peter Daykin, Director at Daykin & Storey, said: 'Thanks to the internship we now have a basis of code that our developers can use to

develop new programs for touchscreens. We also have a working prototype to take to our clients and together that forms a springboard to get into new markets. We will be talking to touchscreen manufacturers and restaurant owners about how they see value in it.'

James added: 'This was a fairly unique opportunity for me to work with this cutting edge technology. The internship has also helped me to develop my project management and presentation skills.'



James Leftley, Joao Ferreira, academic supervisor at Teesside University and Peter Daykin

## Games technology helps North-East company promote its product

Tomlinson Hall came to Teesside University to find a way to show potential applicants how the components of the Liquivac pump were able to perform a wide range of operations in different industry sectors.



Colin Simpson, Dave Cockburn and Samantha Davidson

Dave Cockburn, a senior lecturer in games art in the School of Computing used the original drawings to make a 3D digital model of the pump, which he then animated. He worked in conjunction with Horizonworks, who were developing a new brand and marketing materials to relaunch Liquivac.

Dave said: 'We were able to converge art and engineering to show off the pump and use the animation as a marketing tool. One of the biggest technical challenges was the way in which we showed fluid flowing through the pump, the accuracy of the animation is paramount.'

'I've been able to use this as a lecture tool when teaching students, which will give

them transferable skills to be used in a variety of work environments.'

The animation is now being used on a new website for Liquivac and has also received favourable feedback after Liquivac was launched in the Middle East on a market visit to the United Arab Emirates.

Colin Simpson, Business Development Director at Tomlinson Hall, said: 'It has been a real pleasure to work with Dave, who has helped to bring the Liquivac pump to life and demonstrate its capabilities to prospective customers across the globe. The collaboration between Tomlinson Hall, Teesside University and Horizonworks has produced such fantastic results.'



## 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 2015 and over the last ten years. We would particularly like to give our heartfelt thanks to all our sponsors of the event and the ExpoTees Awards. We are very grateful for the support and dedication given by our School of Computing management team, Academic Enterprise, staff at the Darlington campus and the Department of External Relations.

Every final-year undergraduate student is guided through his or her 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**  
**T: 01642 342639**  
**E: [j.e.noble@tees.ac.uk](mailto:j.e.noble@tees.ac.uk)**

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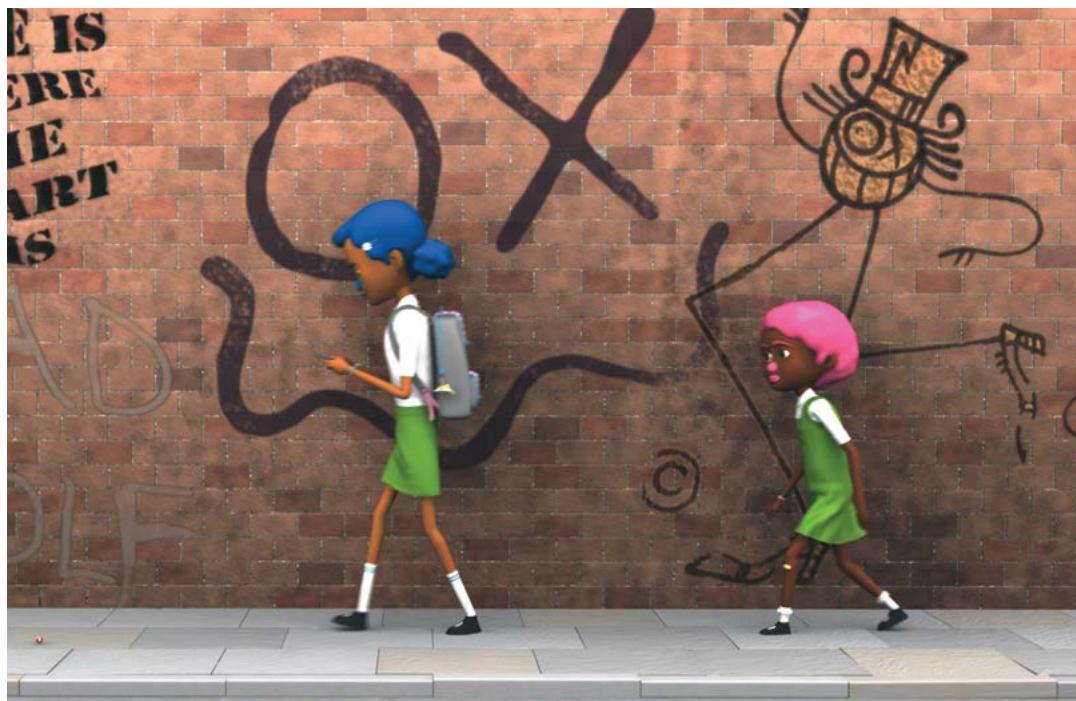
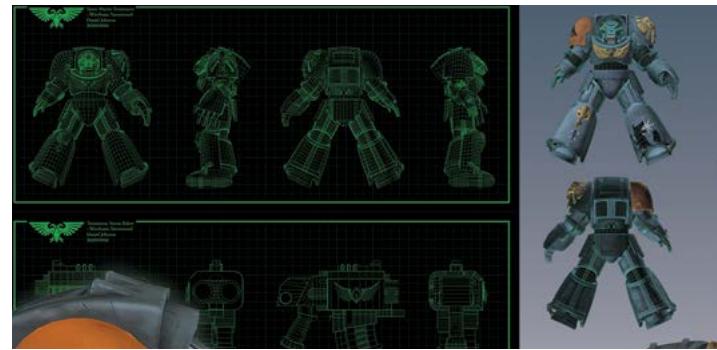
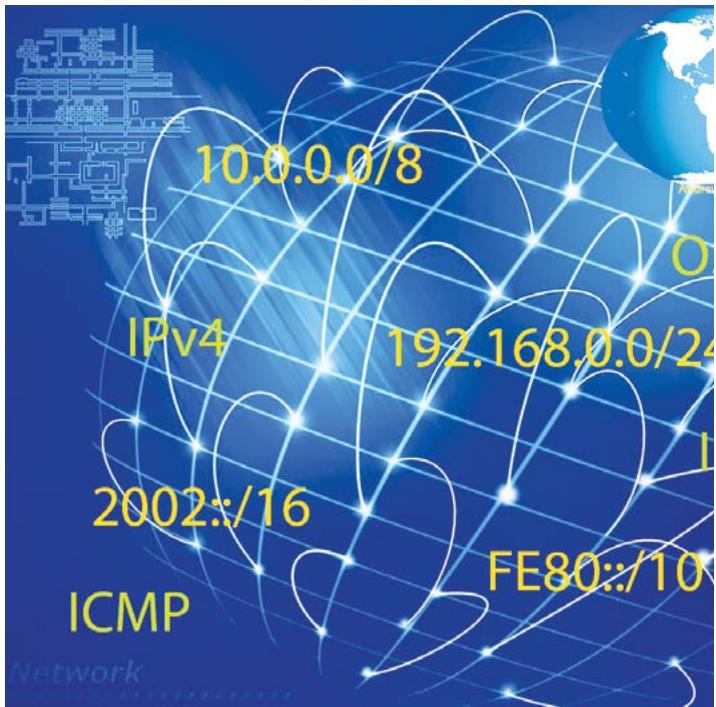


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