ExpoTees 2022

Showcasing the next generation of digital expertise

School of Computing, Engineering & Digital Technologies

tees.ac.uk/expotees

EXPO TEES

2022

Teesside University

Welcome

to ExpoTees 2022

I am delighted that ExpoTees 2022 is our 17th annual exhibition of our students' work. Once again we are proud to showcase some truly excellent projects from areas including computer science, data science, cyber security, programming, computer games art, computer games design, visual effects, computer animation and digital arts. I am sure you will agree that 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 the industry-ready skills world-leading organisations demand.

The quality of work is testimony to the resilience and dedication of staff and students who have overcome the challenges of studying during the global pandemic. We are delighted to be able to bring back ExpoTees as a face-to-face event and meet you in person after two years online. 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.

Professor Chrisina Jayne
Dean
School of Computing, Engineering & Digital Technologies

Friends of ExpoTees

We welcome you back to ExpoTees this year with our first physical running of the event since 2019. ExpoTees has always been an event for the students made possible and enhanced by the support of our sponsors and visitors.

Each year, there are many returning faces as well as new local start-ups, new friends, partners and student cohorts to meet.

If you are interested in being part of this fantastic event to support your recruitment in the future, we would love to hear from you:

T: **01642 342608**
E: **scedt-events@tees.ac.uk**
W: **tees.ac.uk/exposeries**

Contents

What is ExpoTees 2022?

On display is a selection of some of the finest examples of work produced by our final year students, representing the full spectrum of subjects taught within the School of Computing, Engineering & Digital Technologies – animation and visual effects, games design and concept art, web and computer science, engineering and programming.

Our students undertake an in-depth exploration of a chosen subject area and demonstrate their ability to research and practice-as-research, analyse, synthesise and creatively apply what they have studied. The project is often in an area they have gained an interest in, either through a work placement or through their studies, with many projects working with or having impact in the local community. Some student projects have external clients and require project managing to industry standard. These innovative research, design and development projects make up an exciting and diverse showcase. We are proud to say that our graduates achieve great success in industry – and sometimes even fame.

Animation, visual effects, games and concept art

Animation, visual effects, games, concept art, creative and technically challenging projects in the areas of 2D, 3D games, games programming, animation and visual effects, concept art, real and fantastical character modelling and texturing, innovative game designs, complex and highly detailed game environments.

Computing and engineering

Computing and engineering students demonstrate technically and academically demanding work, ranging from real-time visualisation of complex systems to innovative web applications, advanced networking solutions to novel applications of artificial intelligence and robotics. Games programming students are also exhibiting, as their particular skillset is also highly desirable outside of the games studios.

ExpoTees London 2022

It's been almost two years since we were last in the UK's capital city as part of ExpoTees London, so when the decision for Teesside University to 'get back in the room' was announced late 2021, we couldn't wait to re-establish our partnerships with the hosts of the last ExpoTees London event – Framestore.

This London architectural landmark seemed the perfect choice for the 2022 event. The expansive balcony area on the fifth floor overlooking central London is the ideal place for the Covid anxious amongst us to shake off the shackles imposed by the pandemic and to get down to business once again. More importantly for the UK creative community to come together to discuss and plan how to move forward, during what for many, are still unchartered waters.

Building on the inspiring *Morphogenetic* exhibition of Teesside University honorary graduate Andy Lomas back in 2019, this year's ExpoTees London event hopes to stimulate a lively debate as to the direction of travel for the animation and games industry post pandemic. Together with the usual graduate showreel, networking and alumni reunion activity, ExpoTees London will be hosting a panel discussion on virtual production.

With so many studios around the world having to adapt their workflows to meet the challenges presented by the pandemic, real-time computer graphics technologies have in recent months become a very attractive and financially viable way with which to support storytelling techniques. Never have the film, games, animation and VFX industries been more aligned. With the virtual production processes leveraging advances in game-engine technology to create environments that now interact with the live-action, not only does this new way of working allow filmmakers to make real-time decisions on set, it also allows the games artist to contribute to an industry that was not previously an option.

Blocking and framing decisions are today being explored in virtual locations using virtual reality headsets and virtual cameras. Fully immersed actors in virtual sets are being created with state-of-the-art LED volumetric stages.

The importance placed on the term 'virtual production' has either come about as a consequence of us being able to do more from home or alternatively as an inevitable consequence of us all wanting to tell stories in a more efficient, affordable and reliable way.

This together with many other questions that are part of working in the animation, VFX and games industry, we hope to explore at ExpoTees London, and we hope you can make it.

> An exceptionally rare opportunity to meet such talented members of industry in a prestigious setting.

Christian Maund
2019 ExpoTees exhibitor
BA (Hons) Games Development

EXPO TEES
2022
LONDON

> Training is at the core of what we do.

We don't expect everyone to be the finished article and we hope that everyone wants to start a career of lifelong learning, because every show has its challenges and it's only through continual learning that you are able to meet those challenges.

Amy Smith
Head of Talent, Framestore

> I came to ExpoTees London to look for animators.

We have a lot of projects coming into the studio and we need more hands on deck. I had great support when I was a student at Teesside University and although I've picked up knowledge along the way, Teesside provided me with the basic foundations.

Jerome Rodgers Blake
Teesside University alumni, Animator at Creative Assembly Games

Society for Animation Studies (SAS) Conference
26 June - 3 July

International animation conference comes to Teesside

Global experts in animation are due to converge on Teesside University from across the world this summer to share their knowledge.

The 33rd Society for Animation Studies (SAS) Conference will bring together around 200 international delegates, including animation scholars and practitioners, to share and present their research.

Held at a different international location each year, the SAS Conference has only taken place in the UK a handful of times and Teesside University is one of just a few UK universities to have been chosen to host the prestigious event.

The SAS Conference will be hosted from 26 June - 3 July, building on Teesside University's international reputation for animation and further enhancing relationships already cultivated through the University's own Animex event.

Animex, which marked its 21st year in 2020, is an annual celebration of animation, games and visual effects which attracts the cream of the animation and gaming worlds to Teesside. Over the years, Animex has attracted guests such as Nancy Cartwright, the voice of Bart Simpson, and visual effects legend Ray Harryhausen. More recently, Animex has brought to Teesside experts who have worked on a plethora of blockbuster movies

and shows from the *Lord of the Rings* trilogy to the *Star Wars* and *Jurassic Park* films, *Toy Story* and *Game of Thrones*. Big games industry names have included *Grand Theft Auto* creators Rockstar Games, to Blizzard Entertainment who are behind *World of Warcraft*, to *Assassin's Creed* creators Ubisoft.

SAS Conference delegates will also be able to enjoy elements of the University's Animex Fringe, including expert talks, screenings, exhibitions and other events as part of the SAS Conference programme. The theme this year for the SAS Conference is 'animation unlocked', which will examine how the pandemic has caused everyone to stop, isolate and innovate, as the world gradually continues to reanimate.

Conference proposals are currently being reviewed from animation scholars across the globe on a variety of subjects, from cultural reflections and identity to philosophy in animation, to exploring innovative practices and experimental approaches.

Katherine O'Connor, Senior Lecturer in Computer Animation in the University's School of Computing, Engineering & Digital Technologies, said: "Hosting this conference

will enhance the academic reputation of our already world leading animation and games courses. It's a prestigious international event, hosted each year by a specially selected university, with locations in recent years including America and Singapore. It will bring, pandemic permitting, a number of international animation academics to Teesside from other universities across the globe which will also help to provide a real boost to the local economy.

"We're proud to be teaming up with Animex to incorporate a range of Animex Fringe events into the SAS Conference programme to showcase the calibre and vast range of animation greats we continue to work with."

Professor Chrisina Jayne, Dean of the University's School of Computing, Engineering & Digital Technologies, said: "We are delighted that Teesside University has been selected to host the SAS Conference. Hosting this event will build on the fantastic reputation for animation which the University has already established, not only through its courses, facilities and successful graduates to the international links already created through Animex."

Regional RTS awards success for talented Teesside animators

Talented Teesside University animators have been recognised in a student category of the regional Royal Television Society awards.

The students mingled with professional news teams, production crews and well-known stars from television and film to celebrate the region's media and creative industries at the Royal Television Society (RTS) North East and Borders awards.

A film by Teesside University students called *Sleep Paralysis* won the student animation category of the awards, announced in Gateshead. *Sleep Paralysis*, a short film on the experience of sleep paralysis, was created by Arran Bull, Matt Layfield, Hollis Irving and Remy Turner-Broadhead. The film will now be considered for the national RTS awards, due to take place this summer.

The students all worked on the film while completing their final year of the BA (Hons) 2D Animation and Stop Motion in the University's School of Computing & Digital Technologies. Arran is now completing the MA 2D Animation

and Stop Motion and Remy is completing the MA Concept Art.

Arran said: "It's very surreal to win this recognition and it was great to achieve the award for all our hard work. Going to the awards ceremony was a really fun experience, as was accepting the award with my teammates, who are also my friends."

He added: "My degree and currently my MA have helped me learn and refine my skills as an animator, as a director and as a team player. It's also helping me learn about the industry so I can be prepared for when I get a job.

"I'm currently developing an animated TV pilot, as most of the MA modules are working towards that one project at different stages of development and production. This will allow me to graduate with a pilot I can pitch to networks and streaming services."

Arran also worked with Hollis and Matt on a student project during the pandemic to create a music video for Belfast musician Owen Lamont, who approached the University's animation department earlier this year, seeking help to create an animated video to accompany his track *Nobody*.

As the student team started work on the project, they were impacted by the lockdown restrictions caused by the COVID-19 pandemic. The music video has since gone on to gain success with screenings at international festivals.

Two other Teesside University student films were also shortlisted in the animation category of the RTS NETB Awards. They were *Wanted*, an animated Western style film, by Reece Tilley, Harry Willis, Callum Hall, Josh Smith, along with *Tethered*, a final year project by Matt Layfield.

Animation & Visual Effects

The following examples of work help to showcase why Teesside University is recognised so highly with regards to its animation and visual effects courses. The projects below are chosen by and fully realised by the students themselves, giving them the freedom to focus on a wide range of skills and helping them to specialise in whichever area they feel most suited to and wish to focus their career ambitions around. This freedom and independence allows them to be prepared to make the jump into their chosen field and industry as effortlessly as possible.

Students from these courses have gone on to work and thrive in such companies as Framestore, Double Negative, Moving Picture Company, Cinesite, Pixar, DreamWorks and Industrial Light & Magic. Others have been successful in their fields while also setting up their own companies and studios both in the North East and throughout the UK. We happily welcome them back to ExpoTees as industry guests and look forward to this current cohort being yet another future generation of industry returning guests in the near future.

Teesside University is ranked in the top 15 list of international animation schools (*Animation Career Review 2021* – tees.ac.uk/source). Our students enjoy using dedicated facilities that are provided for animation and visual effects, with access to a traditional animation studio that combines cutting-edge technology with wet room facilities, as well as access to our world class AVFX studio. We also have a motion capture studio right next door, where our students can find some of the best motion capture equipment available in the UK.

Our animation and visual effects courses:

Undergraduate

- BA (Hons) 2D Animation and Stop Motion
- BA (Hons) Animation
- BA (Hons) Visual Effects

Postgraduate

- MA (Hons) 2D Animation and Stop Motion
- MA (Hons) Animation
- MA Visual Effects

BA (Hons) 2D Animation and Stop Motion

Dovontae Cole
Fantasy Environment Art

Art portfolio displaying a number of interesting environments as well as interior and prop designs to showcase the development of my artwork and creativity. The artwork will show my capability to draw in a number of styles to highlight my adaptability and have a focus on composition and interesting imagery.

Cole Cowling
Super Insured

A 2D animated short film about a worn-down supervillain just wanting to move on in life. Animated in Clip Studio and inspired by a deep need for caffeine.
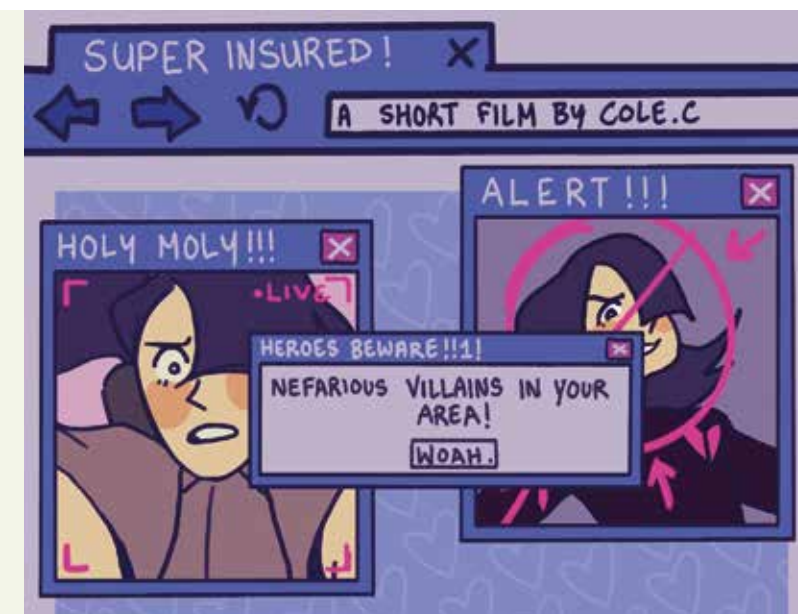
Hassan Hussain
2D Animation and Concept Art Showcase

2D animation and concept art are my primary skills and passions. I'll be showcasing a variety of different 2D animated projects I've worked on as well as concept art for both backgrounds and characters, maybe even props too.

Rabiul Islam
Ruination

Short clip of animation including dynamic motions and lip sync. I will exhibit the polished section of my final year project. I've developed skills in creating fluid animation, presenting emotion and lip syncing. In addition to that I've learnt how to clean up and lighting effects. The animation will be a character looking into a mirror and turning when she sees someone else in the background, the next shot will be a character running at the camera slashing bullets which causes sparks to light up the room.

Sam Mahon
2D and Stop motion Animator

The video URL I have given is an example of one of the animations I have animated and was in charge of directing. I hope it will be appreciated for the massive amount of work me and my team went through to finish it. This particular animation was one of the hardest to make. As a director I had work closely with all of my team to make sure that everything got done and was to a higher standard than we had ever tried before, using each one of my team members unique set of skills to the fullest to make a great animation.

Alexandru Modreanu
Kat

This is a short animatic about a hyper tomcat that causes troubles everywhere he goes. It's always the mother's job to look out for her children, but how will she deal with them when they misbehave? The short animatic video will showcase my skills through the entire pre-production process. The story is based on my real-life experience back in high school.

Ellie Vong
Yokai District - Character Concepts

My work focuses on character design and concepts for animation and games. Using Photoshop and a traditional approach to design, the 'Yokai District' project mainly looks at designing new sets of characters for an imaginary fighting game drawing influence from Skullgirls and Streetfighter. I enjoy creating unique character designs which exaggerate their overall silhouette and playing with different fashion influences.

Abby Walker
The Girl on the Moon

Stella (the goddess of the stars) crashes into the moon and meets Luna (the goddess of the moon). The two spend time together and eventually fall in love but soon discover that they can't be together. Made in Toon Boom Harmony and Clip Studio Paint.

Josh Bainbridge
Ragiev - The Scourge of Bandle City

Welcome to the League of Legends champion spotlight, featuring Ragiev - The Scourge of Bandle City. The mischievous young dragon belongs to the 'evil' wizard Veigar, who similarly, tries his very best to be evil but really isn't all too scary. Diving into a fight and drawing attention to himself while he wreaks havoc, Ragiev is sure to make an explosive entry to the Rift. Ragiev is a premade rig sourced online that I've hand animated from the ground up in Autodesk's Maya with LoL in mind. It features four abilities, a group of emotes and the core game mechanics that are set up in the Unreal Engine, using its particle system and animation trees to present a playable character.

BA (Hons) Computer Animation

Zoe Bricklebank
Giving Character To Motion Capture

This exhibition is pieces of my final year project work where I motion-captured five characters, ten moves each, and cleaned up one of them based on an existing canon of a music video and a short film from a band that I listen to. I've developed skills in motion capture directing, motion capture clean up and rigging for mocap.

Jake Gray
The Motion Capture Pipeline and Facial Capture Technologies

I have chosen to submit my final year project work that hopefully features a live demonstration of LiveLink with a custom rigged character. I'll also showcase a reel of the same character that has been rigged and had motion capture animation applied.

Rhienne Clayphan
Jurassic Park: Site B

Based on Trespasser – The Lost World: Jurassic Park and influenced by games in the Survival Horror genre such Resident Evil and System Shock 2, Jurassic Park: Site B is my exploration of how a survival horror with dinosaurs would be built with a modern game engine, and what mechanics it could feature. The end animation, created with the use of Maya 2022 and Unreal Engine 4.26.2, acts as a proof of concept, a display of how gameplay could be in an such a game.

With sparse weaponry, limited ammo and dinosaurs who want to live as much as the player does, if the idea were to be attempted, it would make for an interesting experience. Less about all-out fighting, and more about strategic choices. For instance, a shotgun stops being a weapon, and more of a tool, able to give a brief reprieve, if it is used correctly.

All the animations featured in the scene are designed with video game development in mind, able to be sequenced in and blended between each other, making them perfect for use in video games. This project let me expand beyond just animation, letting me look at game design too.

Alexander Haynes
Working Title: Exploration of Mammalian Animality

I intend to produce an animation of a mammal, replicating to some extent, a scene from an existing film, where a mammal is talking or singing, but perhaps incorporating a different mammal and a different dialogue or song, using lip-synching to match the vocal performance to facial movements. If I have time, I might also include a second animation, to include a different mammal, such as a horse doing dressage movements. I intend to use hand-key animation for the movements, for which I will need to find a pre-existing rig, with controls for various parts of the body. Finding a suitable "rig", will, to some extent, determine the type of mammal, which I may substitute for the original. The "rig" will need to have sufficient controls in the facial area, to enable me to replicate facial movements sufficiently to synchronise the mouth and lips to the vocal performance. I am thinking in terms of an animation clip lasting around 20 seconds.

BA (Hons) Computer Character Animation

Lucas George
The River Roars

An adaptation of the opening chapters of Kathryn Lasky's Wolves of the Beyond: Lone Wolf. The piece itself is akin to a 3D painting, the scene consists of a wolf pup at the mercy of a tumultuous river. The character was created utilising traditional methods, whereas the environment was procedurally generated through the utilization of Blender's Geometry Nodes system. The goal behind the piece was to capture the essence of such a profound scene, that had made such an impact during my own development.
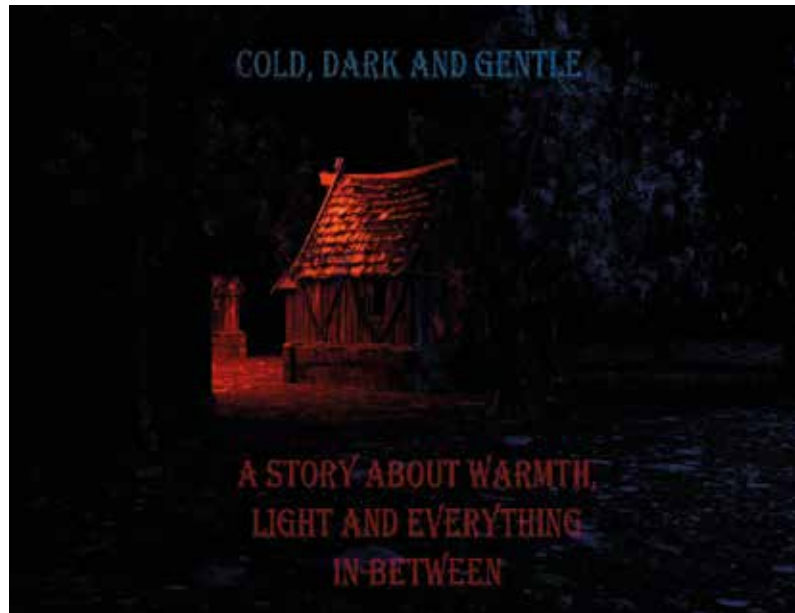
Piggy Pastiu
Cold, Dark and Gentle

An animated short combining classic cinematographic storytelling techniques with personal style. Since this is an individual production, the range of skills used vary. Some of the areas that will be used throughout development will be 3D animation, 2D animation, LLD techniques, a little bit of basic texturing as well as sound design and basic compositing. The aim of this project is to further develop my directorial as well as industry-related skills, aiming to achieve a high-quality end product that is visually interesting and offers a compelling story.

Dania Poulsen
3D Diorama

My aim in this project was to create a beautifully lit night-time diorama scene with lots of detail. I have combined my passion for 3D modelling and sculpting with my home country, the Faroe Islands, with its small-town culture. The scene consists of a house, pond, waterfall, boat and various other assets. I have taken the project through from concept art and previsualisation to a final turntable render and beauty shots. I used Maya and ZBrush for modelling and textured in Substance Painter. I have learned various new techniques, such as how to keep the model low-poly in Maya while keeping all the details from ZBrush, and how to create stylized textures by developing my own painted texture pattern.

Marcus Yap
Soup for the Soul

My work will be a short film, roughly a minute long, about a character taking shelter in a ramen store and having a bowl of noodles. The soup is so good that the character hallucinates that they are somewhere else. The main focus of the short film is the character animation.

BA (Hons) Visual Effects

Luke Docherty
Environment Modelling: Post-Apocalyptic Hotel Room

My project is an 3D environment modelling project, in which I produced a realistic, abandoned hotel room, accurate to reference. My reasoning for undertaking this project was to showcase the diversity of my skillset and furthering it while also primarily focusing on modelling and texturing. The scene was taken into Unreal Engine for lighting and effects to develop an understanding of game engines as well as their use within virtual productions. Incorporating Unreal Engine allows the viewer to fully explore my environment while also pushing my skillset even further as each asset must hold up at any distance and angle. As for my texturing, I aimed to add key, small elements of story and a realistic grounding to my scene, through carefully thought-out damage and wear.

Uma Mannan
Abstract & Reality

My project is inspired by the Christmas advertisements by Christian Dior that are released every year. I have created a sequence which could be a potential promotional video for a business, blog or project. I used Houdini FX to model and animate the flowers and created a variety of particle simulations. These all revolve around the perfume bottle. I have developed a model of a flower which could be customized by a Houdini user to change its shape, size and number of petals. I have constructed it into a Houdini Digital Asset which could be accessible to other users once it has been uploaded. I have worked on Vex coding to randomize the growth of the flower and Vellum framework for the falloff of the flowers. The flowers grow and finally fall off to reveal the brand and the label of the perfume. This project helped me to develop key skills that I would not have learnt before if I had not created this project. I have expanded my knowledge in Houdini to a great extent. I have learnt various techniques which include VEX coding, modelling, animating and rendering within Houdini.

Cameron Robertson
'Red Reign' - Short film Hybrid Virtual Production

I will be exhibiting "Red Reign" - a sequence from a horror/sci-fi short film which explores the use of a hybrid virtual production pipeline (with an entirely CG environment), Houdini FX Simulation as well as CG Body replacement. The clip is short in length but has been taken from a screenplay I've been writing for the last two years. Red Reign is a project I've been wanting to develop since being at Teesside University, and I believe it is an ideal project to present for ExpoTees as it showcases my CG generalist skills - modelling, texturing, lighting, FX, rendering and compositing, as well as my practical onset producing skills. This project has allowed me to develop skills I wasn't too proficient in, such as FX and rigging, as well as develop workflows for the new and emerging virtual production technology.

Emily Cowling
Row Boats

This is the development work for my ongoing biographical stop motion and 2D animation about how my grandad was shot in the Malayan Emergency, told through his son's eyes.

This includes some experiments I did in 2D animation, animation tests and visuals of my stop motion puppets and set. All my 2D animation work is hand inked and scanned into Toon Boom Harmony to create a parallax animation.

BA (Hons) Visual Effects

Jamie Smith
Environment Modelling: Garage Workshop

I have chosen to exhibit a 3D modelling project of a Garage Workshop environment. With this project, I intend to showcase my modelling, texturing and lighting skills by creating a realistic, atmospheric environment that will be able to be viewed in a real-time render using Unreal Engine. Rendering in real-time has tasked me with finding ways to save resources in my scene to ensure a smooth framerate, while keeping high visual fidelity.

Annie Glass
The fears of man

I'm showing a 2D short animatic for an upcoming animated film I'm currently working on. character design assets and supporting concept art, along with samples of related animated work.

MA 2D Animation and Stop Motion

Arran Bull
Arran Bull Productions

On a dual monitor PC set-up, I will be showcasing my animation showreel on one screen. On the other is a DVD style menu created on PowerPoint where people can choose specific animated short films, animatics and showreels to watch. This is to showcase my skills as a 2D animator, storyboard artist, editor and director. I will also be bringing my iPad to display my illustration and concept artwork.

Spandana Kuppula
All about the hair

Concept art, assets and animatic of the upcoming 2D animation short film "all about the hair" and samples of other work.

Mía Moran
2D Animation Portfolio Showcase - Mia Olivia Moran

I am presenting a showreel of various portfolio pieces I have developed over the semester. This includes a variety of work ranging from 2D animation clips from my final film, pixel art animation pieces, and concept art and preproduction work developed in preparation for my film.

Amy Robson
Within The Wind

Animatic for an upcoming self-produced 2D animated short film, titled 'Within The Wind'. Drawn in Photoshop with the use of artboards and edited together within Premier Pro. Along with the film's supporting concept art of the characters, environments and props, all drawn within Photoshop.

Gopika Vinay
The Sacred Grove

Environment works, concept art, assets and 2D animatic of the upcoming 2D animated short film - 'The Sacred Grove' and samples of other animated works.

MA Animation

Ishan Sushil Kulkarni
3D Modelling and Animation

I am planning to showcase my 3D modelled works and some of my 3D animation work. I have primarily used Autodesk Maya for 3D animation and hard surface modelling. I have used ZBrush for organic modelling/sculpting. I have used the polypaint feature of ZBrush to texture on my sculpts. I have tried to get the grasp of Substance Painter to texture some of the 3D models. I do some sketching and digital art as well. For digital art, I use Clip Studio Paint and Photoshop to achieve the best possible result. Over a period of time, I have improved my expertise of Character sculpting in ZBrush, 3D character and creature animation in Maya. I was able to improve gradually by studying some human anatomy, gesture drawing, studying facial expressions and analysing various acting shots.

Sireethon Srinuallaong
Character Animation Showreel

My showreel contains various small animation shots that represent my skills in body mechanics, acting, facial animation and dialogue. It shows both stylized and realistic movement. For realistic facial animation, I used the attractive shot from the movie I found to make an amazing animation. To show my ability to animate body mechanic, I included two styles of dancing animation. One of them is heavily based on dancing, another one is dancing while interacting with the moving box.

Yusheng Zhuo
Animation Demo Reel

I have created a demo reel of my animation works focusing on strong facial expressions and body languages. This includes a stylised facial animation with lip sync, some realistic animations, two creature animations and a two-man fighting scene. Including two ten-second scenes from the film Shining and the film Hitchcock with two different styles of animation, and the first scene of animation work for my group project. I've done the whole scene through layout, blocking and animation. The animation was done in Maya 2022. I have gained skills in animation principles and techniques to help produce believable motion and personality, reinforced by the study of acting theory that I undertook. Also with my researching of micro-expressions I can enhance facial animations.

MA Visual Effects

Óskar Agnarsson
Expanding a Scene with Blender

A single video that shows Blender's ability to quickly create assets that can be used alongside live-action footage. This showcases a workflow that allows an artist, in a pinch and with limited time, to create a 3D scene in Blender that can be used as background for live-action footage, with assets such as buildings, cars and crowd-sim pedestrians. Blender's wide array of free plugins are used to facilitate this. For this project I used fSpy to quickly create 3D models of environments and Shoebox to create photo-realistic textures.

John Murphy
Houdini FX Animation

The work I am showing is a collection of VFX shots in which I have tried to recreate and simulate various effects from real-world reference, as well as shots from a War of the Worlds inspired short film that I have been working on for a group project. This includes effects using Pyro, RBD and Particle Systems. The landslide is a piece I am particularly proud of, as it showcases the integration into real footage as well as just the simulation. My focus for this has been to develop my skills and speed in different workflows and styles. I mainly work in Houdini however most of my projects include work from Maya, Substance as well as Nuke.

Titilope Amusan
Realistic ocean

I have produced a realistic ocean environment that was designed inside FX Houdini and rendered in Redshift 3D. Displaying my abilities in VFX, I am showcasing a mixture of skills in terrain gen, flip and crowd simulation.

Key techniques I learned include terrain generation and modification, terrain texturing using COP network, ocean flip sim, white water sim, crowd sim - birds, texture map baking/UDIMs, proxy files for instancing in Redshift – grass, generation of displacement maps for ocean render in Redshift, AOVS including cryptomatte render pass and compositing in Nuke.

Reece Tilley
VFX Compositing

The work I am showcasing in this exhibit highlights the key skills of VFX and compositing I have learnt throughout my time at university. I wish to further develop on my skills as a compositor in both my MA project and future projects in industry. I will be demonstrating the integration of 2D and 3D tracked CG elements that I have textured and blended seamlessly with live action footage. As well as fully CG projects with simulations which are mainly pyro and particle effects. I will also be showing off my environment building skills with the use of matte painted backgrounds along with my rotoscoping and understanding of the use of colour grading and lighting all whilst keeping to the professional industry pipelines.

Deacon Biggins
Effects Animation

For my exhibition, I have selected a series of visual effects shots to showcase my skills in effects animation. The shots I have chosen each show my ability to use the appropriate workflows within Houdini to create a shot, this includes Rigid Body Dynamics, Vellum and Pyro workflows. Using these tools to match reference footage not only improved my technical abilities within Houdini, but also my adaptability with the software. Throughout working on these projects, I often needed to explore how the nodes worked under the surface, gaining an understanding of how these nodes worked better helped me to edit them to create a specific effect.

Scholars supported on path to careers in games design

A career in computer games design beckons for the first recipients of a new scholarship created by a leading games development studio in partnership with Teesside University.

The Creative Assembly Legacy Scholarship has been awarded to Daniel Gething and Rebecca Arachchiae, both first year BA (Hons) Computer Games Design students. Daniel and Rebecca will receive mentorship and £9,000 financial support each during their degree.

Daniel, 31, from Horden, County Durham, said: "Gaming provided an escape and became a coping mechanism for me when I was younger, as I suffered from depression for a time. My grandad also really inspired me.

"I lived with my grandparents when I was growing up and my grandad is really interested in computer games, and it's something we still do together. He even went to college to do a computing course when he retired from his job as an electrician."

As a mature student, Daniel had an unconventional route to the degree, having gone from job to job after previously studying sports science course at college and working as an IT apprentice.

He said: "The time is now right. I have the maturity now to completely focus on my studies. I am really looking forward to building relationships with the mentors and having someone to provide guidance and offer a glimpse of working in the industry through the scholarship.

"The games design course at Teesside is perfect for me, as it allows me to focus on the specific areas of the computer games industry that I want to work in."

Rebecca, 18, from Gateshead, also has a passion for games design and applied for the degree to help achieve her ambition to work in the industry.

She said: "I have been interested in games design since I was a teenager. I not only enjoy playing video games, but I have always been fascinated by bringing ideas together to create something amazing.

"I am interested in the different areas of games design, which the course at Teesside covers, and also because of the links the University has to the industry."

She added: "I took part in a games school event when I was a teenager, which provided a good grounding in basic knowledge before I went on to college to study games design.

"The scholarship will definitely help me to pursue my educational and career goals and pursue my passion for games design. I am really interested in creating costumes for games characters also learning how to create assets for games. My ultimate career aim is to work for one of the major well-known games companies."

Siobhan Fenton, Associate Dean (Enterprise and Business Engagement) in the University's School of Computing, Engineering & Digital Technologies, said: "It is fantastic for the University to be able to work alongside Creative Assembly in helping to break down barriers to the games industry and create more opportunities for our students and graduates.

"The Creative Assembly Legacy Scholarship, which has been offered for the first time, will help to make a significant difference to young people's lives. The financial support and mentorship will make a huge difference to them.

"Daniel and Rebecca are deserving first recipients and we predict great careers for them in the games design industry."

Emma Smith, Head of Talent at Creative Assembly, said: "We are delighted to see the first year of recipients of our scholarship and we hope that this support, alongside mentorship from our experienced developers, will see Daniel and Rebecca go on to have lasting and successful careers.

"The global games industry is growing and within the UK it employs around 27,000 individuals, yet we continue to struggle to find talent with the necessary skills.

"Through our scholarship we aim to remove some of the existing barriers to education, increase diversity within our rich industry and see more passionate students reach their potential. I can't wait to see what Daniel and Rebecca achieve in the future."

Creative Assembly is involved in shaping the curriculum and degree programmes to ensure students are learning the requisite skills for a successful career in the industry, providing student access to mentors and guest lectures and expanding opportunities for disadvantaged people to work in the games industry.
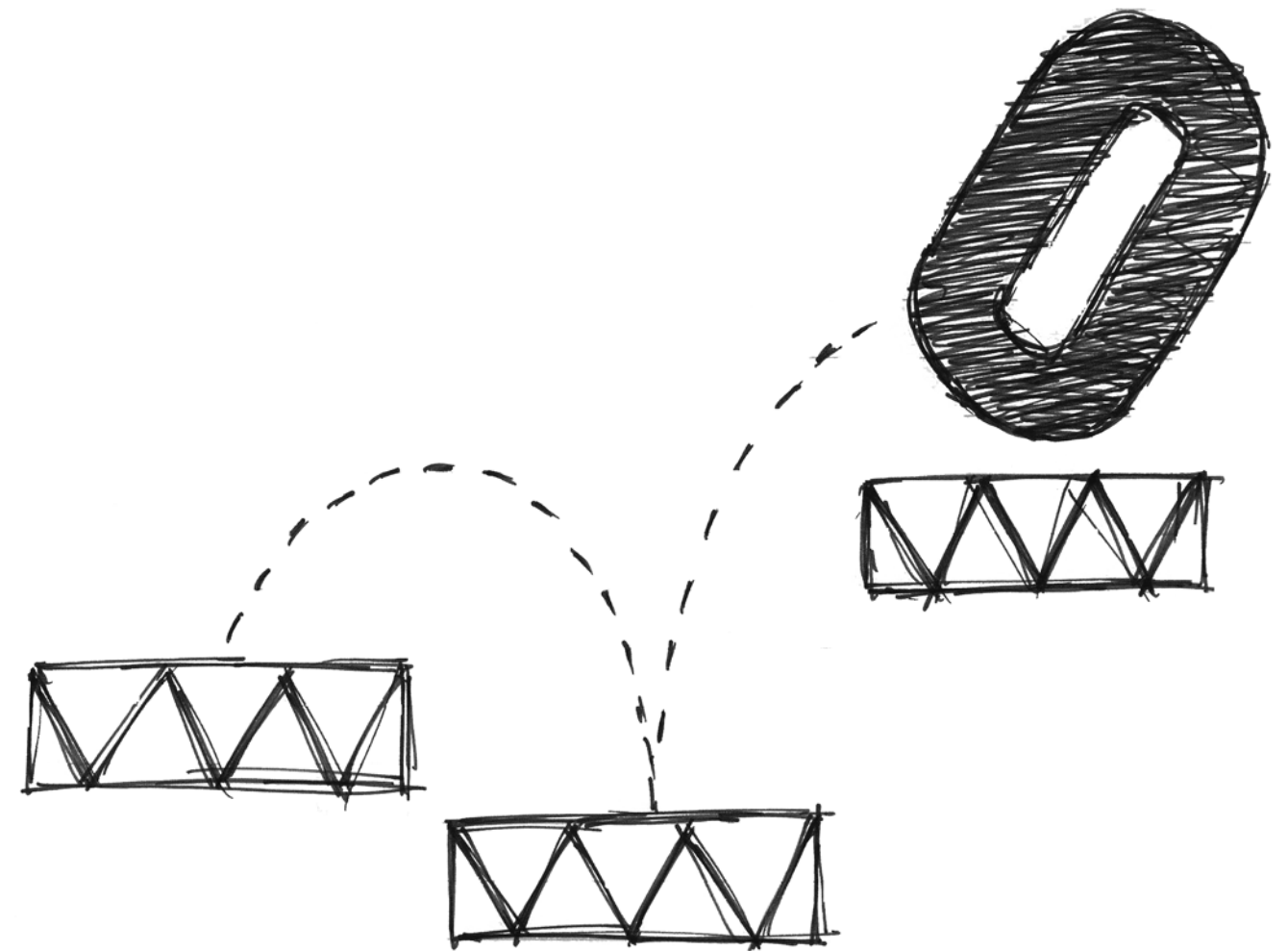
Games & Concept Art

Games and concept art courses at Teesside University have always enjoyed a sterling reputation and with the continuing growth in the North East of budding new independent studios, games and concept art students have many opportunities to become part of this vibrant industry in the area. Our courses cover all aspects of games development. Our students can choose from courses designed for careers in computer games art, games design, games programming and concept art.
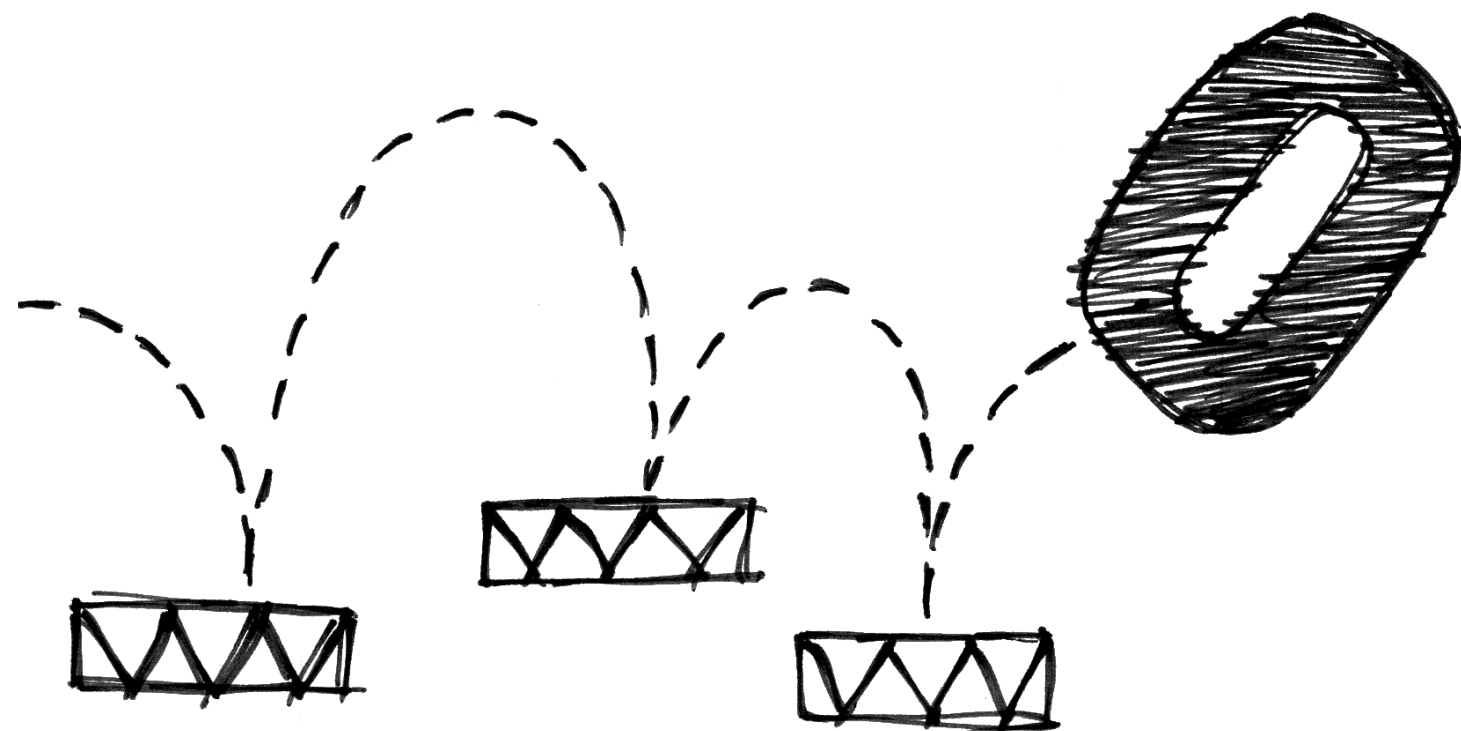
Our students have access to dedicated art, games and programming studios, all providing a fantastic learning experience using state-of-the-art facilities. Students also gain real-world experience of the game development process by working in teams to produce playable game demos within a studio environment. The continued support from local companies and larger more established studios helps provide our students with an even greater opportunity to grow and learn their skillsets alongside experienced veterans of their field.

Our games and concept art courses include:

Undergraduate

- BA (Hons) Concept Art
- BA (Hons) Computer Games Art
- BA (Hons) Computer Games Design
- BSc (Hons) Computer Games Programming
- BSc (Hons) Indie Games Development
- BSc (Hons) Technical Games Programming

Postgraduate

- MComp (Hons) Computer Games Design
- MComp (Hons) Computer Games Programming
- MA 3D Games Art
- MA Concept Art
- MA Games Design

BA (Hons) Concept Art

Liam Anderson
Rise of the Rot King

Rise of the Rot King is an asymmetric pvp card game that challenges a team of adventurers to fight through the Rot King's hordes. With each room they defeat, the adventurers get to build a unique deck full of different move sets and synergies. Though they'd best lookout, the Rot King has every opportunity to learn and evolve their defences and create the perfect army to destroy them. This project has been a chance for me to be involved on all ends of a game's production, from mechanics to aesthetics. I particularly enjoyed the rapid-fire pre-production stage that let me experiment with all sorts of different visual themes and styles.

Arthur Candeland
Dethroned

Dethroned is a metroidvania game concept of a small angel exploring a gothic overgrown world to uncover while the other angels have been corrupted. While working on it I developed my skills involving character art, creature design, concept art, pixel art and level design.

While working on this project I have worked on my character design skills creating skilled pixel art and design concepts of the hero and villain of the game, working through many iterations to create the best designs with the style I was aiming for.

I worked heavily incorporating my designs into a realistic game setting, making 2d pixel art sprites and textures from my designs, thinking how they would interact with the world perspective and how the player would approach them.

When working through the design process I was thinking about how the enemies and world reflected each other to create a compelling world that would be enjoyable to explore with consistent themes.

Jamie Cavender
Ensin

For this project I have chosen to produce 2D storyboards for an original animated, adult, action/thriller TV show. The project will follow the adventures of Lady Eris Ensin, the heir to a noble family of vampire hunters. Vampire sightings across he British Isles have been appearing with increasing frequency and in larger numbers. Eris has been sent to investigate a probable cause for this phenomenon. I have created two storyboards for this exhibition. A slower paced board showing character interaction, and a more movement/action focused board. I have also created a few model sheets featuring creatures, characters and a prop.
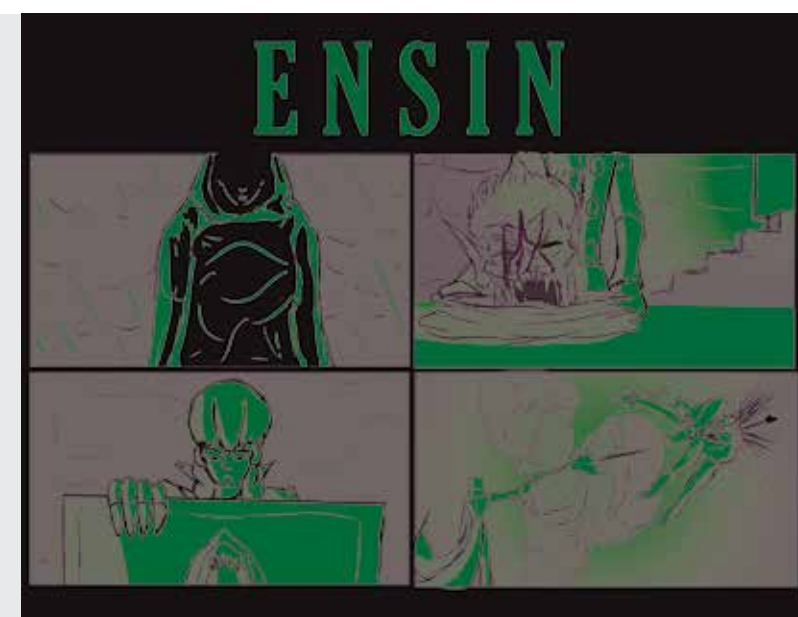
Nathalie Chan
Polaris Index:
The Dipper's Guide

I am showing character designs for an indie game with a card game gameplay system, proceeded throughout a storyline, including splash art on the side of seven in-depth character designs. The Polaris has been missing for half a decade. A traveller on his journey to the north pleaded you, a meteor, to gain his wish of the Polaris' reappearance. As a meteor, you needed to gain wishes of a mortal to rebore as a new star in the galaxy before your short lifespan comes to an end. Taking on the task, you will have to persuade the stars of the dipper for guidance, looking for the missing star by completing tasks to satisfy the noble stars. You risk your own life by battling them to earn recognition from the mighty stars before everything comes to an end.

Zac Coils
LeChat Turning Tides

In my project 'LeChat Turning Tides' I have created concept art and illustrations for a digital graphic novel, based on a franchise I have been working on for the past few years alongside a client. The story follows the origin of the character LeChat, who is found in previous novels. This project includes developments of props, characters and creatures, all found within the novel. All my designs throughout this project share a visual iconography to ensure cohesiveness when used in the novel. This is especially important due to the diversity of the characters found in the book. To aid me with my artwork I used a range of techniques such as 2D painting, 3D modelling, photobashing and traditional drawing. Having come originally from a fine art background, these combined methods helped me continue my development as a concept artist as well as push myself further in visual storytelling.
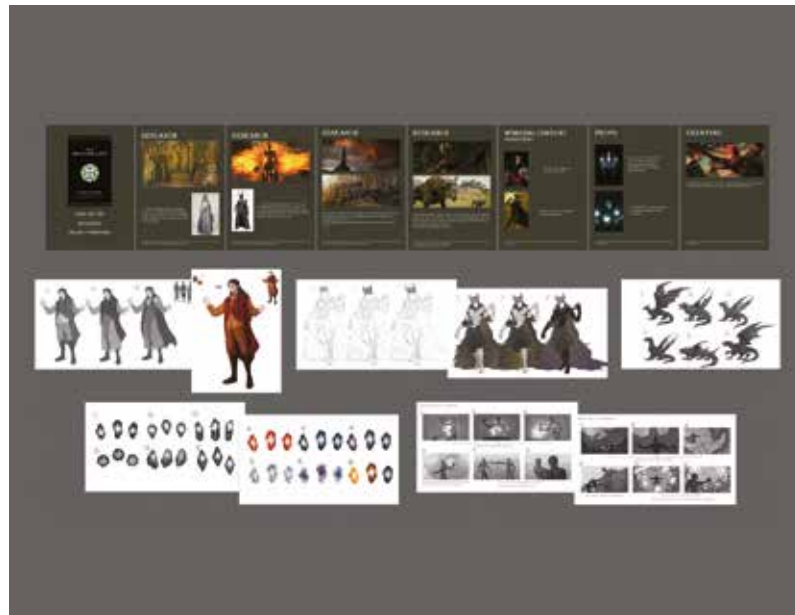
Jie You Choo
The Glorious of Middle-earth

It is a project of Tolkien's series. The stories happened before The Hobbit and The Lord of The Rings. I will produce a whole concept art portfolio with my digital skills, which is digital painting in Photoshop.

Natalie Cunnane
Labyrinth:
As The World Falls Down

50 years after The Goblin King was defeated, the kingdom is in shambles and now the magic is fading from The Labyrinth itself. It is up to a gang of misfit goblins to find out how to save their home. My project is a spin-off of the cult classic 'Labyrinth'. I designed five goblins, redesigned The Goblin King and drew key moments for this story. The process of each design will be laid out and show the steps leading to the final iterations.


Aysha-Leigh Clarke
### Dead in the Dawn

My final year project is a Star Wars role-playing game based on characters i've created over the past ten years. The story follows Druxri Ror'jhan, a Sith Lord who suffers betrayal, heartbreak and turmoil as she navigates her way through the turbulent times of The Old Republic. She is joined by Jorir'rang Krota, a Mandalorian set on living up to the ideals and expectations of his creed and Aldux Dene, a timid, gentle ex-Sith Acolyte who joins the Republic and must confront his past to experience his future. This course introduced me to 3D modelling and developing character art, both of which I have used in this project. This course also allowed me to improve my knowledge of anatomy and drawing skills, and my ability to render artwork more professionally. During a previous project we were advised to contact current industry artists, one of whom, having seen my work online, has been giving me support and advice on how to develop as an artist. I have always wanted to bring these characters to life and this course has given me the skills to implement this narrative in my career.

James Garner
Dead or Alive: Tale of a
Bounty Hunter

My project shows concept art for a western American story, where a bounty hunter tracks down a cult leader protected by a town of religious zealots. I wanted to create a sense of anonymity and tension around the characters and settings within the project. This meant researching heavily into some strange elements of religious traditions as well as the more morose ceremonial aspects. Because of this, creating a unique visual iconography surrounding the cult was key. Developing the iconography then allowed me to seamlessly weave the cultists and their idealism into the narrative of the story. To aid my process I used many different techniques and software such as 3D modelling, photobashing, marvelous designer, substance painter, blender and many more. The focus was to create not only a collection of industry standard concept art but also to demonstrate my ability to iterate and design for production. Ultimately this culminated into a printed art book showcasing all the design work I had completed during my time working on the project.
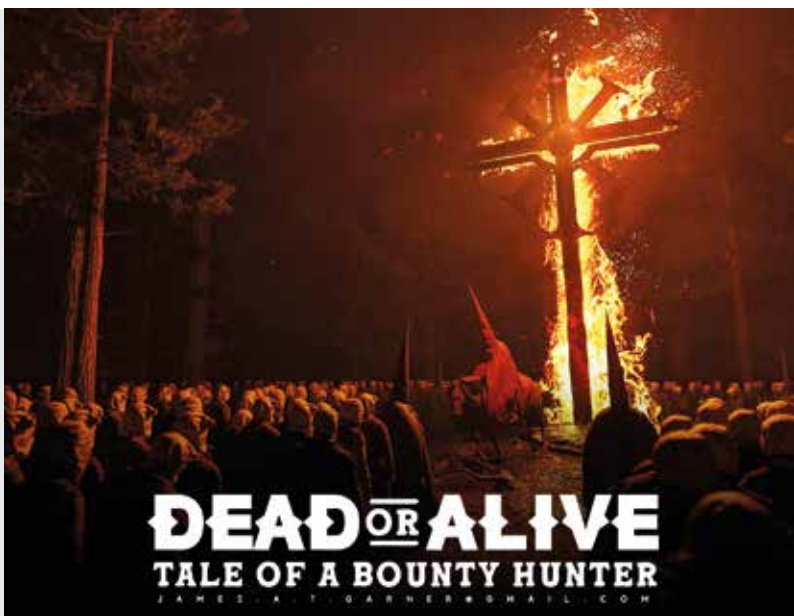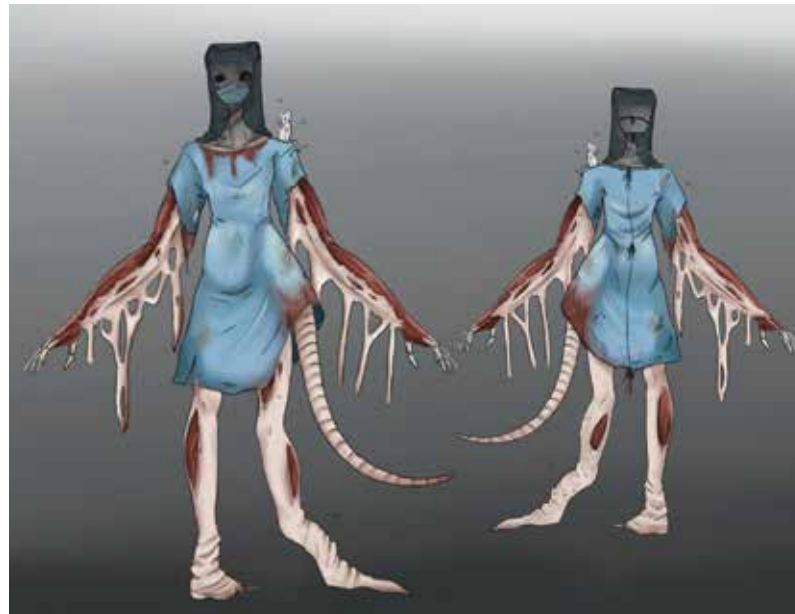
Karis Goldsbrough
Cleansing Rains

I have chosen to exhibit my final year project, which is concept art for a game idea which would be a classic JRPG style game based around the four horsemen of the apocalypse. Here I will get to show my character design skills. I focused mainly on the four character designs in my project but also get to showcase some creature design for enemies as well as the four horsemen, horses and prop designs for the characters. I will also show my rendering skills I have learned as I will have drawn what would be screenshots if the game were to be created in detail.

Steffi Hewitt
The Seeker- A metroidvania style game

For my final project I decided to create work to fit into a metroidvania style game. The game was loosely based off Scottish and border folklore and was influenced by games such as 'Ori and the Will of the Wisps', 'Hollow Knight' and 'Rayman: Legends'. For this project I used Procreate, Photoshop, ZBrush and Substance 3D. I aimed to develop mainly my character and creature designs, with an emphasis on working to improve my storytelling within my pieces. I wanted this project to showcase a painterly style and quirky elements.

Mary Kirkman
The Outer Ring - Character Design

Within this project I've explored and developed upon ideas influenced by the visual styles of the 1970s in order to produce a series of concepts, ranging from characters to weaponry, that fit within a unique single-player action-adventure RPG setting. My concepts were mostly influenced by the stylistic concept art of Sergey Kolsov as well as the overall visual design and bold use of colour featured within "Deathloop", both heavily inspiring me to experiment with bolder colours and explore a new unfamiliar style within this project, especially with my character designs. Because of this I chose to rely primarily on Adobe Photoshop as it had allowed me to confidently develop my work in a more shapely manner. This project has helped me to broaden my adaptability by giving me the opportunity to explore a different art style and has encouraged me to think creatively within my production process with the use of alternate techniques.

Rebekah Mun Kong Mun
A-Wall &MIA: The New Editions to Apex Legends

For my final year project, I have designed two new characters for a fan addition to Respawn Entertainment's Apex Legend's roster of legends that prominently feature my Malaysian heritage. I wanted to pay homage to my home country while showcasing diverse body types and presentations, and bringing an exciting twist that has yet to make its way into the current roster.

Here are two siblings: A-Wall and MIA who used to work for the IMC before retiring to the wrestling ring. But when the Apex Games started to steal their spotlight, they made a point to get invited to the games at any cost.

Over the course of this project, I have learnt much about integrating aspects of conflicting genres and still make them work. For example, A-Wall was designed as a wrestler with prior military experience who needed to forgo her champion title in the ring for the champion title of Apex Legend.

Jing Wen Ng
Valor Voyage

Valor Voyage is an unstoppable team of sky pirates. For this project, fun and energetic are the main themes, so I aim to create wackier characters that are fun to draw and explore. I also want to feature lots of clouds, hence the sky pirate theme. Each of these characters are based on things we see in the sky (sun, cloud, star, rainbow, moon).

Harry Reeves
The Plodalongs - Children's Picture Book

I have created an original children's picture book concept called 'The Plodalongs'. Over my university career, I discovered a passion for children's illustration and decided to focus mainly on this area, applying it to my final year project and other modules. I have produced character designs, illustrations, and a book cover. This project allowed me to combine two things that I enjoy, drawing and writing, to bring to life an original story idea that I have wanted to execute for a long time. It also allowed me to dive deeper into Photoshop and apply skills old and new to my project, refining my drawing techniques and style along the way. Being able to do thorough research, sketching and iteration work for my own illustration tasks really helped motivate me to create the best product possible for my final university project. My aim for this project was to add more stylised, illustrative work to my portfolio to show my passion for illustration. The Plodalongs has the potential to be the start of a children's book serial, exploring the lives of many different animals for children to enjoy.

Marlo Thompson
Celesattire

Clesesattire is a concept project developed to be an open world, scavenger, business simulator. The main character works towards developing a new and mystical robe in celebration of the lunar year in this fictional country. A comfortable project made to be a relaxing game feel that someone would be able to lose themselves in for hours.

It is a primarily 2D project, with use of 3D modelling to aid in visualisation and development of environments. The project itself has a focus on character and fashion design with a key element in gameplay being clothes making, material gathering and free range in customisation options. I felt this sort of challenge was perfect for showing my overall development in concept art in general, as well as an opportunity to further improve my studies.

Anne Tolfrey
**The Guardians
of the Magic Realms**

I will be exhibiting a concept art portfolio detailing a Dungeons and Dragons campaign I have been running for nearly two years. The designs cover a wide variety of subjects from characters to environments and more. This project has honed my art style down to fine details and there is a common artistic style throughout. My design process will be shown in detail from mood boards to finished design. I will also have a physical art book for people to look through.

Kantarat Ulhaka
New Pangaea

My project consists of stylized town environments that exist in a fantastical prehistoric setting aimed at the video game industry. Each town has been inspired by different worldwide cultures, such as a tropical floating town inspired by Southeast Asian culture, a classic old English inspired fantasy town, and a town of crafters inspired by Scandinavian culture. I focused on creating believable and functional town environments that can convey their narrative through visual design and showcase the interactions between man and dinosaur in this setting. To create the work, I explored various ideas for each civilization before utilizing Blender to create 3D blockouts. I then used these blockouts as a base to paint the finished concepts in Photoshop.

Erin Vasey-Cooper
The Alchemist

For the work I have chosen to exhibit, I will be displaying my project I have called The Alchemist. I have made concept art for this project which will be an open world RPG game. The work I will be exhibiting will show my strengths in character design and creativity, as well as my development in prop design and environment design. This will be an exhibit which delves into my passion for concept art and imagination. Join our young protagonist Fayth as she takes on quests to become the best alchemist in the whole world.

Sam Yates
Witch Hunt at Tartarus IV

Character, weapon and environment designs for a sci-fi shooter with magic elements.

MA Concept Art

Adrian Birkeland
**Concept Art: Storytelling
through Prop and Environment
design**

Artifacter is a project focused on world building for the non-action portions of an entertainment product.

The warm welcoming location we know the hero of the journey risks losing, or never returning to if the narrative threat is not resolved. The safe streets, unfamiliar decorations, and signs we do not fully understand, the local foods and adventurers passing by. It also features the visuals for a resource based magic system that can facilitate fantasy versions of modern machinery or crafting. It's my hope this captures a touch of that Saturday morning cartoon feel, those adventures captivated my childhood imagination.

For this project I used only Photoshop and Blender. In Blender I learned how to use Stylized HDRIs to bridge the gap between render and painted artwork. However, the key skill I learned during this project was how to draw efficiently for visual communication and storytelling. Relaxing while sketching and allowing shape design to communicate ideas, rather than trying to draw every grain of rice, or indeed doing a 3D render/simulation of the rice. Blender solves any number of complicated issues, but if it can be sketched out fast and clearly enough, I much prefer that.

Emily Bland
Concept Art Portfolio

I am a creative designer specialising in concept development for film and television and an experienced visual artist in interior and exterior environments, characters, props and graphics. Studying concept art has helped me to develop high-quality work ready for industry. I have enjoyed visualising a wide range of briefs including a reimagination of Assassin's creed in Morocco, including a character based around traditional berber woman's culture with a hidden blade variation based on their jewellery and a Moroccan street the character can climb. I have also created horror characters based on moths and an ultra-modern lounge and bar for the extremely wealthy. I enjoy working with others, and developing my skills in Photoshop, Blender and Vectorworks. These were invaluable skills to have when working on ITV's No Return as an assistant art director. After finishing university I am hoping to find a role within visual development or concept art.

James Parkin
Stylised Concept Art Portfolio

I have chosen to exhibit a collection of stylised designs aimed towards a younger and more inclusive audience. Throughout my masters, I have been developing a more exaggerated style that would be suitable for work in the games industry; creating characters with strong shape language that visually communicates their personalities and role, and fantastical environments based in a world of overgrowing cacti. Inspired by studios such as Toys for Bob, Rare and Playtonic, I have used processes that I have researched from artists who have previously worked at these companies to create my concept art.

Practice Based Research for the Visual Artist - Final Concept Design - Chaos Ogre

Liam Davey
Concept Artist

I am a conceptual artist with extensive experience in character, creature, weapon and in-game asset design. Throughout my time in university I have advanced my understanding of the fundamentals of art and design to a professional level. I am very dedicated to finishing a project whenever I start one and love to work within a team. I am extremely capable when it comes to designing for games. The work I have chosen to exhibit is a selection of my concept designs mostly inspired by, and emulating the designs produced from Creative Assembly.

Lily Searle
Concept Art Portfolio

I am a concept art generalist but I excel at rendering detailed and realistic fantasy illustrations. I have put forward some of the best work from my portfolio so far that demonstrated my current capabilities. As well as my work being socially conscious, I ensure I collect the relevant resources to make my work ethically sound. I am proficient in a multitude of professional programmes such as Photoshop, Maya, Blender, Premiere Pro, After Effects and Zbrush. As a fast learner of new programs, I am flexible and can adjust to any new patterns of work. Whilst also showing dedication and passion by pursuing and becoming the role of Course Representative for three years on the concept art course. With experience working in the industry with Ai Solve and Wild In Art, with my work contributing to charity projects.

Jennifer Knight
Best of the 20s

This exhibition demonstrates some of my best work to date. I've worked on moving away from final renders in favour of generations of a high quantity of quality designs through line work as well as brush work. I enjoyed most of all, researching particular themes, genres, time periods and past events in order to push my design work to be as informed as possible.

Andrew Sheppard
Concept Art Portfolio

A collection of my concept design/concept art work. Demonstrating my design capabilities and my understanding of drawing fundamentals which I have developed over the duration of the course.

Lucas Simpson
Art Portfolio

Here is the work I have completed up to my second semester of my postgraduate concept art course. I have focused on making interesting designs with an animated style. I have developed a range of skills throughout my studies, mainly the character design process which I had never done before university like thumbnails and iterations. I'm also pushing my anatomy skills and learning to further develop existing skills I had such as composition, storytelling and environment design.


Christian Whittam
Concept Art Portfolio

The work I have chosen is a range of concept art work that I have produced throughout the first and second semesters of my postgraduate course. Primarily focusing on character design with animation in mind. I have developed a variety of skills throughout producing this work such as learning how to properly thumbnail to generate a large range of initial ideas quickly as well as iterating effectively to find the most interesting design. I also learned a lot about exaggeration as well as anatomy whilst producing this work which is critical for character design.

Sam Webster
Concept Artist

Creative problem solving through design has always been a passion for me. Concept art gives me the perfect opportunity to make those passions into a career. I am hard working, a team player and have confident communication skills. I am keen to learn and ready to adapt to meet the requirement of any project I am a part of. During my time at university I helped found the Digital Art Society. I facilitated presentations from industry professionals, ran critique groups and organised reference gathering trips. I was both a course and School representative, leading a team to help improve the learning experiences of students and supporting effective communication and course improvement with tutors and the Dean. I have a first class degree (with honours) in concept art from Teesside University, this has helped me become a well-rounded and efficient artist with a hardworking and driven mindset. During my course I learnt how to use Photoshop, ZBrush, Blender, Maya, Substance Painter and Daz.

BA (Hons) Computer Games Art
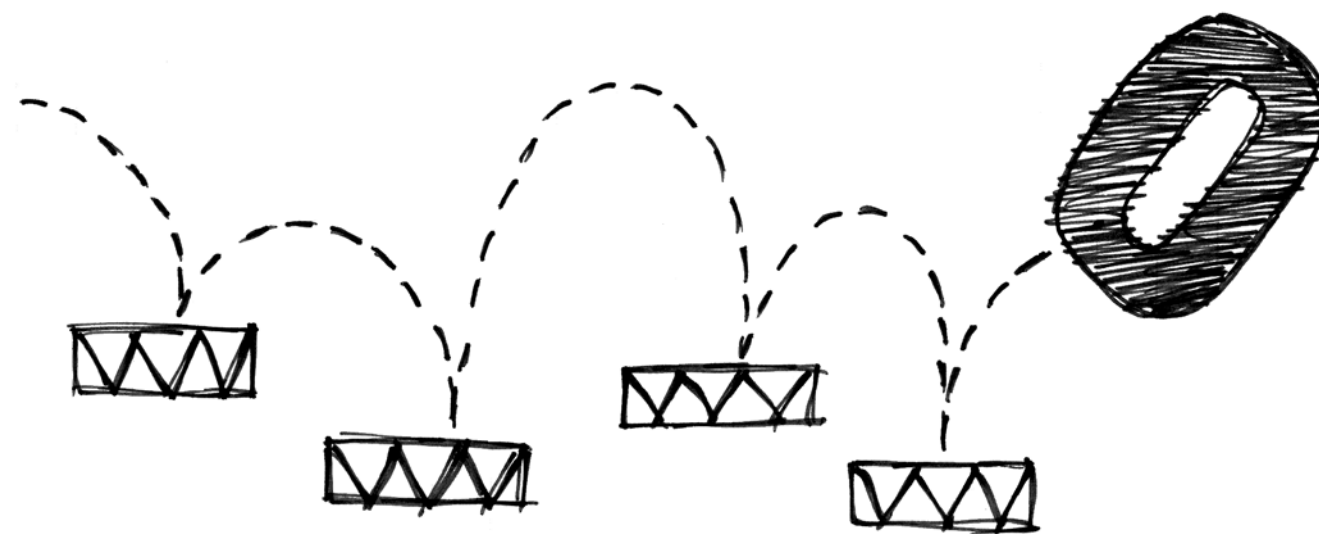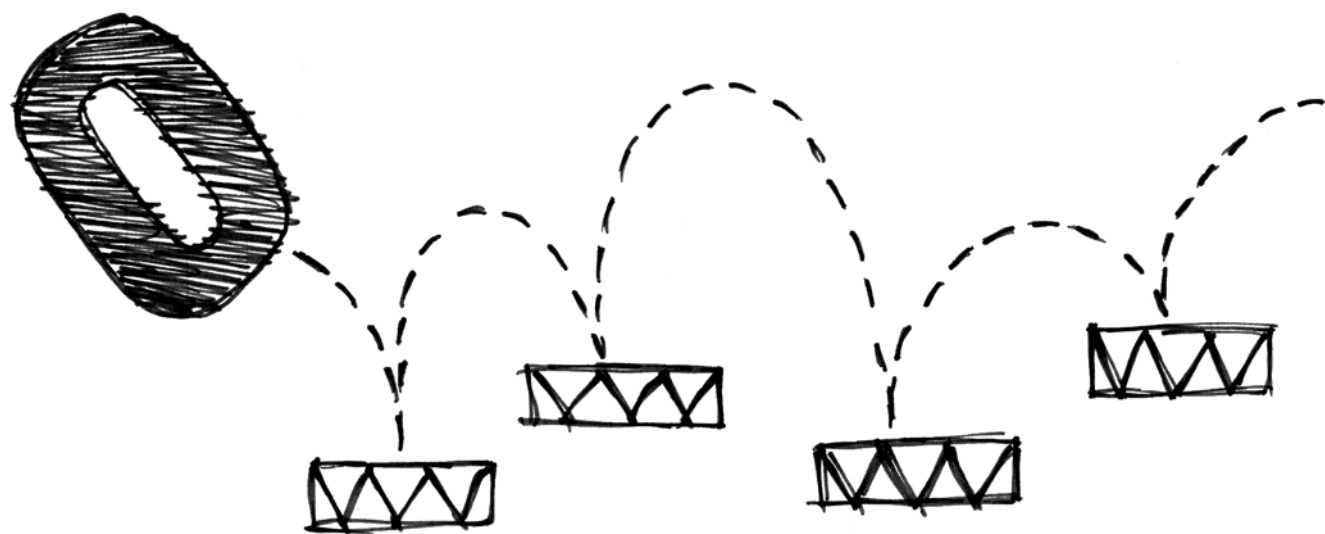
Aya Al-Bayati
Haunted Victorian Library

This project is set in a Victorian manor, mainly focusing on the library area. Elements of horror are incorporated in the overall atmosphere by using lighting. The art style is realistic focusing on the architecture of the manor. This project was chosen because over the past few years I discovered that I enjoyed working on interior environments. Secondly, I have been inspired by Resident Evil Village level of quality, and choosing to do a Victorian manor environment incorporates well with the theme of horror, which allowed me to develop my researching, modelling, sculpting, material creating and lighting skills further.

Charlie Campbell
Rapture - A Destiny 2 Inspired Environment

I have chosen to show my Destiny 2 inspired environment. The environment is a small research site deep in the oceans of Titan, a moon that orbits Saturn. The environment is a photorealistic environment set in the far future after an event called the collapse, in which the research site was abandoned. The skills developed whilst producing the environment primarily focus on optimisation of workflows and utilising efficient pipelines to create environment art. Other skills include advanced material work, weighted normals/mid poly and lighting.
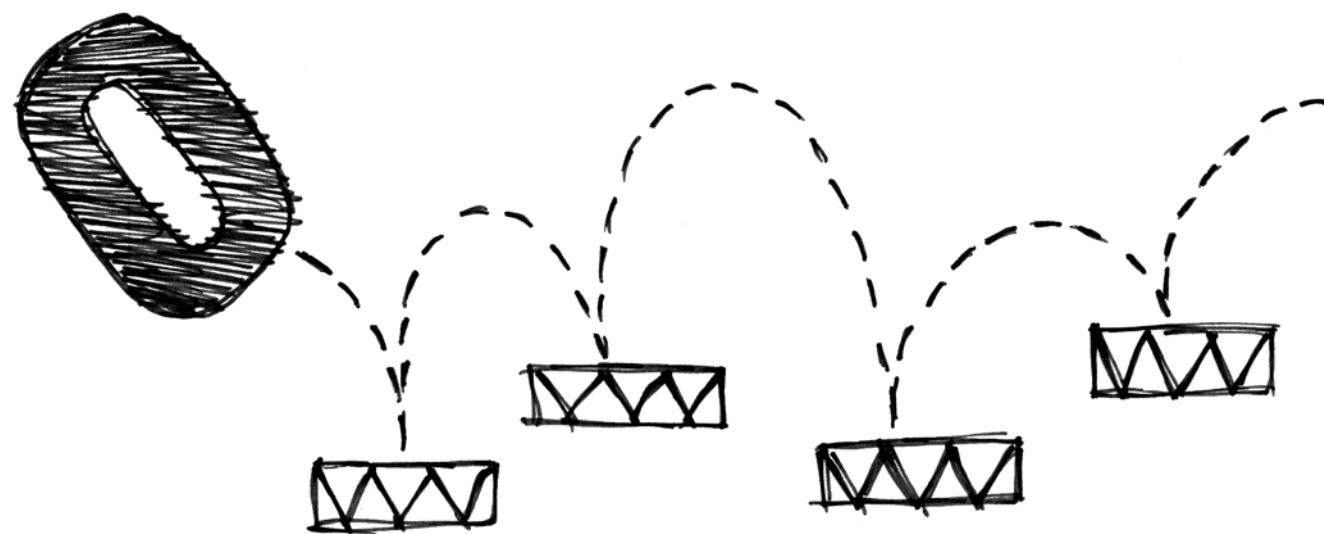
Curtis Campbell
Welcome to the Frontier. A Titanfall 2 inspired Environment

This is a small-scale environment containing a building and a small outer area, based on the Game Titanfall 2. The building itself is an abandoned storage building for a lost colony, including heavy-duty and smaller storage containers and small workstations used for repair and maintenance. The building has begun to fall into disrepair, with the air within full of dust and dirt beginning to gather around the once used workstations.

For a visual style reference, I am using the Titanfall 1 and 2 Multiplayer map Colony as, like my environment is a settlement on an undeveloped Planet and both would use similar architecture and components, like settlements did in our world. As well as this I used the single-player mission Effect and Cause for what an abandoned area would look like in Titanfall 2.

Shane Campbell
Shane Campbell FYP Project Sam's Entertainment and Rental

This project is a small-scale environment playspace set in the 1980s-1990s based on the first game in the Five Nights at Freddy's series, that has been constructed and rendered in Unreal Engine 4 with assets made in Maya and textured in Substance Painter, and with some textures made using Substance Designer. The environment will act as an extension of the restaurant that the game is set in and as such will look similar and have similar lighting. During this project I have improved my skills in modelling and creating UVs in Maya, creating textures in substance painter and Designer and I have also learned a new way to light environments in unreal Engine 4.

Michael Chambers
Creating a Dragonborn - Character Sculpting

I have designed and sculpted a game ready Dragonborn character based on the lore of Dungeons and Dragons, a tabletop role playing game. I have increased my understanding of character sculpting workflows and techniques, as well as come out of my comfort zone to develop concept art for the project to get the best results possible.

Rachael Cowan
Dead by Daylight: Stabs and Stitches

Inspired by the IP Dead by Daylight, I intend to exhibit 3D models created by me and working in Unreal Engine. My work is intended to be a small DLC-like expansion for the IP. By presenting this not only am I showing off my interest in horror games and character modelling but also my knowledge on the subject. In presenting my artefact I intend to display my use and knowledge with ZBrush, Maya, Marvelous Designer, Photoshop and Unreal Engine's cloth simulation to bring my IP inspired character/characters to life. I will also take this opportunity to show my new knowledge of hair cards and getting animations to work in Unreal Engine and potentially make some new contacts in the industry.

Rhys Hartles
The Hart's Hill

The main showcase is a fantasy tavern environment, which you will be able to walk around in and explore. The main explorable area will be the interior of the tavern, with points of interest being Vignettes like the bar, private booths, a quest board, a raging hearth and the kitchen etc. I wanted the tavern to feel warm and inviting, a place where all manner of folk could get together. For this project I have looked to generally improve my HP/LP workflow by integrating ZBrush into my process, allowing me to create better quality HP assets. The main benefit of this new addition is the improvement in asset quality, as my assets now have more character interest and to them. Also, in this project I have looked to expand my understanding of Unreal Engine, as to make best use of my assets in an interactable setting.


Radomír Fifik
Reimagining of Tonya - From mobile to Unreal Engine 5

For this project I aimed to recreate a character called Tonya from a mobile game Hundred Souls and present it in Unreal Engine 5. My main focus is on creating the character as realistic as possible by using some of the new and more advanced workflows in order to achieve the highest fidelity.

Clayton Jones
Student Digital Artist

Efficient, composed and relentless, these are the words people would use to describe me when it comes to working. I have a great understanding of the CGI pipeline process and have an ambitious eye for attention to detail. My skillset ranges across 14 different programs which deals with both 2D and 3D services. I have studied both games design and games art at a further educational level for five years and scored top grades within the modules. Throughout my academic years my peers have looked up to me for my confidence, self-reliance and my ambition to learn. I have studied continuously for the past five years to further advance my expertise and widen my knowledge of the digital world. I am now looking to branch my own network across the games and film industry to become a well and profound digital freelance artist. As a person I would describe myself as approachable, dedicated and open minded. I have great ambitions and goals that I am looking forward to completing in my future.
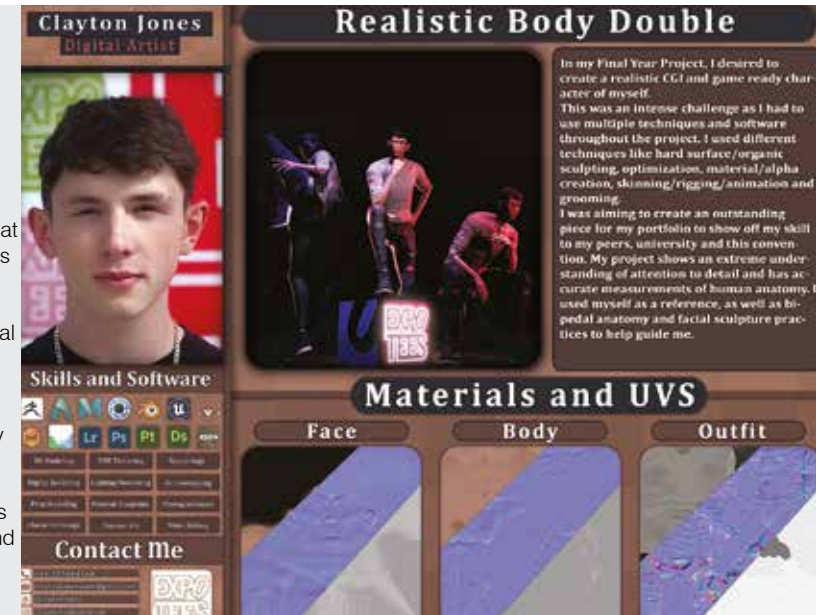
Miles Harris
Games Art

I will use my final major project called Transmute: the concept and theme is taking inspiration of films like - ghost in the shell, matrix, IRobot, Chappie, etc.

Damian Kalinski
The Last Wish

Highly inspired by the game "Assassin Creed Valhalla."

For my final year project I decided to create a realistic Viking 3D character based on a concept art provided by an artist whose pseudonym on Artstation is "AK."

As a huge fan of all sorts of mythology and folklore, my main ambition was to challenge myself to create a character that would look very close to the base concept art keeping the feel of Nordic English vibe as well as try to achieve or at least get close the industry standard quality.

Jordan Kirkwood
Creature Art

I have created a highly detailed and game ready Toothless model which is fully rigged and posable with the aim to improve my creature sculpting and to get used to using higher detailing methods with surface noise and mask deformation. I enjoy the creative freedom of an organic creature and all the variations they can have including all possible hard surface accessories. I always find the final outcome very enjoyable to use for small game projects.

Logan Renner
Noteville and More

I'm showcasing my final year project as well as some other work I've done over the years. It demonstrates my skills with Maya, concept art, Substance Painter/Designer and Unreal Engine.

Kieran Liddell
Ubisoft fan art

I will be exhibiting Ubisoft's "Assassins Creed" but as my own version called "Assassins Creed: Napoleon". I will have it set during the Napoleonic war following a group of siblings thrust into war and finding the Assassins brotherhood. I will be making some concept art of the character in full and some illustrations of these characters in their habitat.

Jacob Robinson
A lone cowboy named Harrison

I would like to show off my final year project. He is a magical cowboy dwarf set on a micro environment that I want to use to show off all the skills to professionals that I have learnt at my time at Teesside University as a character artist. The way I'm going to present is by using a rendered scene to show off my work by using the unreal engine to create a micro scene that I could show the character off. The skills I have used in this model are ZBrush for the sculpting, Maya for the small environment that he will be placed on, as well as the skinning and posing of the character, and I also used Unreal to create the rendered scene as well as the particle effects that will come off the character.

Francisco Mendes
岳菱歌: The Concubine

For my games art project, I will aim to create a 3D environment with the addition of a playable character within the newly updated game engine, Unreal Engine 5. To illustrate my artistical skill and ambition, I will be showcasing photorealistic materials and lighting in addition to fully optimised 3D assets/scans. Although the scope is fairly immense for a single artist, the aim for this project is to focus on my overall quality and efficiency as an environment artist. Furthermore, optimisation and techniques within the industry-standard pipeline shall also be considered. The chosen theme of this project is Imperial China during the Tang Dynasty (唐朝). The golden age of Imperial China due to its reform and cultural advancements which lay the foundations for policies which is still observed in China today. From the architectural beauty to the breath-taking mountains - I decided on this theme as I want to bring immersion to one of most critical parts of history in China since it has not been portrayed correctly in western media.

Jaime Rodriguez De Molina
Digital creation of a realistic shapeshifting creature
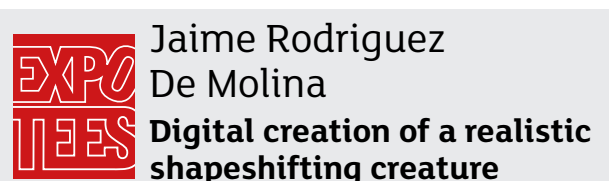
This exhibition will show multiple renders of the workflows necessary to create a realistic shapeshifting creature for videogames or film. The goal of this exhibition is to inspire new passionate artist and developers to create their own stories through videogames or film. There will be multiple videos of the creation process and a posed creature with an idle animation morphing from one form to another in real-time in a game engine. Attendees will have the opportunity to inform themselves about the videogame and film world and ask me questions about videogame development in Spanish, English and maybe French.

Kacper Szwacki
UE4 Car Configurator

A game-ready Mazda MX5 model, customisable in engine with various switchable parts and colour options. The goal of producing this was to develop my abilities to model vehicles that are modern game ready, as well as learning some UE4 blueprinting functionality and how to bring art and design elements together into one functional piece.

Reece Dore
Project Armour - An arcade tank game

Project Armour is a high speed arcade tank game based in WW2. Taking inspiration from existing titles such as World of Tanks, it aims to provide high octane gameplay and control of the more famous war machines that were crewed in the time. The levels will allow for vast open tank combat allowing for long range engagement to short range engagements in sand dunes, abandoned industry and a desert oasis. The player will take control on either American or German vehicles allowing for varying combat playstyles from the slow and steady to the glass cannon.

Marta Velartova
Modular Character

I will be showcasing a level created in Unreal Engine 4 in which there is an option to change the outfits of a character. I grew curious about character modularity and its possible use in game development and decided to build my project around that curiosity.

I have sculpted the female character from a poly sphere in Zbrush. I paid a lot of attention to human anatomy and tried to make it as realistic as I could.

The Retopology and UV sets were both created in Maya. I needed to decide where I will be making the cuts in my mesh and sort the UVs accordingly. To make the texturing seamless I worked with UDIMS in Substance Painter to be able to paint across texture sets with ease.

For the clothes, I used Marvelous Designer for its cloth simulation perks.

Joseph Harker
Shrink 'n Grow

Shrink 'n Grow is a game design project. This project is a puzzle-based game where the player must solve the puzzles using their main weapon to shrink or grow objects and items in the level to complete the challenges. This game is aimed at people who love to play puzzle games and want to have a challenge when playing a puzzle game. This project has kept to the side of my work for the past three years at university, but for my final year project, I can make the project and present it to people who would enjoy it. While developing this game I have been improving my skills and the skills that have improved are level design, ai Behaviour trees, Ui design, combat Blueprint scripting, and Lighting.

BA (Hons) Computer Games Design

Harry Beale
Platform Pursuit

The work I have chosen is from my final year project, Platform pursuit. It's a third-person platforming game based in a simulated environment to test your skills with a new mechanised movement system to shape the future of space travel. The main goal is to use the movement system to navigate through each environment as fast as you can with the altered conditions of each map. With each map being slightly altered for a different experience with altered gravity levels, slightly different level mechanics and external environment.

The main skill I am aiming to develop during the development of this project is my User Experience and User Interface design as that's my focus for the industry, such as camera movement, making it look for industry professional, diegetic UI as well as animated. I plan to make a game that is the most accessible as I can to a wider audience, by implementing colour blind features, as well as custom key, binds for people who struggle with the controls of the game with subtitles for people who are deaf.

Paul Harper
Dungeon of Omens

Dungeon of Omen's is a fun, fast action dungeon crawler that takes inspiration from classic games like the Diablo series and the more modern Minecraft Dungeons. The game will have the player fill the boots of a noble hero descending into the dark depths of ruins, long forgotten in search of glory and treasure. This will involve the player hacking and slashing their way past hordes of enemies searching for loot to grow stronger and dive deeper into the unknown to slay evil. Dungeon of Omen's will have serval playable levels each with their own theme and design that the player can experience. While hacking their way deeper into each dungeon, the player will find better loot and weapons to help them fight the seamlessly endless hordes of evil that fill the dungeons. Within the project I intend to show off my progress and capabilities as a level designer as I aim to create several gameplay mechanics that work alongside my projects levels to create a fun and engaging dungeon crawler with mechanics such as AI systems, combat mechanics and intractable loot that the player can find and use within game.

Jay Hope
Realms of Rituals

I am submitting a single player tank game focused mainly on map exploration with built in puzzles to progress throughout the level. The game will be created in Unreal Engine 4 and will consist of having the player completing tougher and tougher puzzles as the game progresses, with new mechanics been added every few puzzles to keep the game exciting and give the player multiple ways to complete the levels. This project will allow me to showcase my skills in level design, as well as mechanic design, which is what I am aiming to go into within the games industry.

Justin Hy
Forgotten Ghost Last Samurai

The work I have chosen to exhibit is my final year project, which is a demo concept, namely, to known Forgotten Ghost Last Samurai. You the player, play as a mercenary, named Ghost. Ghost is the last samurai. You were sent to a risky one-way mission, unfortunately as ghost completed mission. A sudden knocked out effect was used on you. A few years later, as you wake up, you hear a voice trying to guide. Do you remember who you are? Do you remember anything at all? You must seek to restore the Ghost memory and find out what happened. The skills that I have learnt while producing the work is feeling more confident and passionate towards making this game demo. For instance, problem solving the programming errors that I have ran into, playing, testing, getting a better feel of the game and direction I want to take it.


Chi Kwok
Regna(I)Nt

Setting
The game is set in the far future. Technology has massively advanced, politics are non-existent. Everyone in the world is guided by a Super Artificial Intelligence computer maintaining order the way the AI sees fit. Society dislikes the lack of freedom humanity has. A resistance army has been developed and wants to change the way the world is being controlled. Although the AI was built to be all-knowing, the AI cannot predict human instincts and behaviour. You will be playing as one of the resistance members to shut down the AI for the better or for worse.
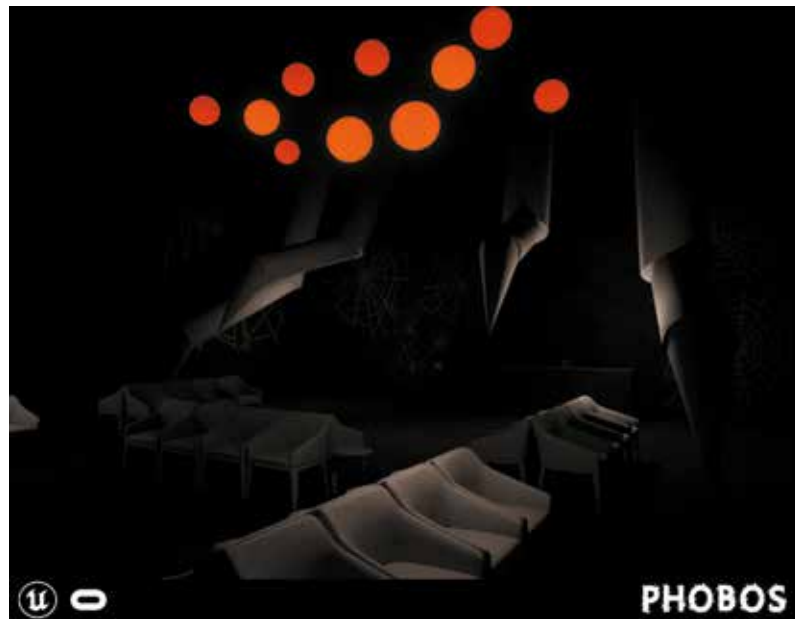
Game Focus
I have taken inspiration from other titles such as Dark Souls (From Software, 2011). My main focus was to develop my skills on AI behaviour. For my Final Year Project, I have developed 4 AI enemies, each with their own unique behaviour and purpose. With this focus, it also comes with ways to think how this AI work around its surroundings and how it relates to player's controls such as blocking/staggering.

Kathryn Law
Beach Party Bonanza

This four-player minigame series takes you through five short and fun beach themed games in a free-play, pick as you go style. Each game is designed to be enjoyed by all ages with a simplified control system and blocky, cartoonish art style. During this project, my focus is mainly upon the gameplay design and making games that are accessible and enjoyable to a wide audience. I am honing a wide range of skills from coding, designing and art to bring this project to life.

Harry Love
Neon Rider

Neon rider will be a rhythm-based game like Geometry Dash and Beat Saber, however in its own little way. There will be one game mode where it is a pre-determined level based around a certain beat/song that the player will have to get through and then there will be a second game mode where it's purely an endless runner where the player will just need to go for the highest score. The Games Art style will be an 80s synthwave style focusing on the pink/blue neon lights around the level.

Matthew Moody
The Woorley Cousins: actions have consequences

This is a text based narrative game made in Twine. It focuses on two cousins' journey through their family's drug enterprise. This is part one of an episodic story. Currently, this is not done because this is my final year project but it involves lots of thought in planning and writing a narrative and also will have some UI design involved to make it look more visually pleasing, which when completed will have developed my skills with mainly narrative design.
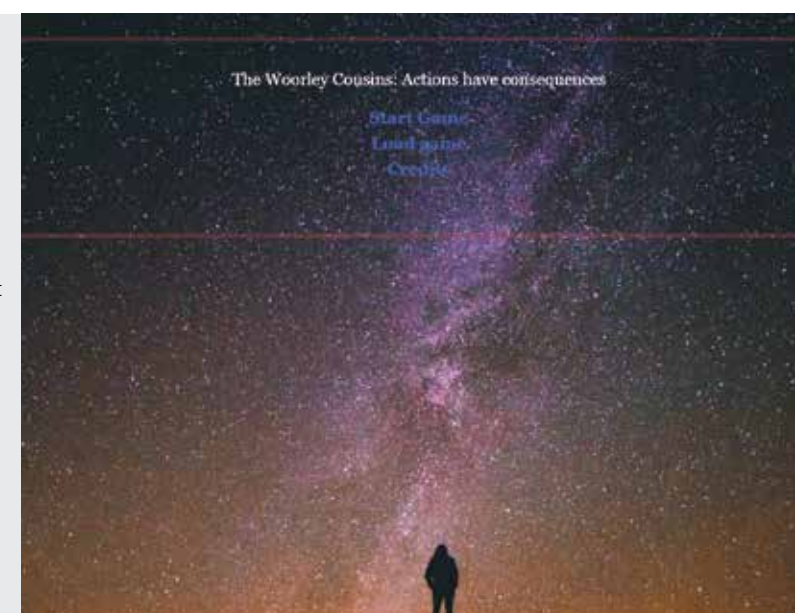
Martyna Paweloszek
Phobos

Phobos is a demo virtual reality horror game focused on forcing the player to face phobias in order to progress. Over the course of this project, I have developed my level design skills to cater to the horror genre, as well as learn and adapt to any complications that come with design in virtual reality.

Callum Shields
Level design

I will be showing off my level design with a Rainbow six siege map that is based on a casino map, and show off how I can understand how the game works and creating a completive and flowing map, that could be in game already.

Michael Storr
Title??

I want to show a range of my work from those modules which I feel best demonstrate my industry skillset and which have all received first-class marks. These modules include Game Development, Game Interface Design, Game Prototyping, Game Production and Project Management, and Game Asset Creation. I have built upon my work for the Industry Portfolio Development module and utilised it to shape my current portfolio. My finalised portfolio will showcase my practical skills by emphasising the three group modules that I have acted as lead on (or as world director for), which include Game Development, Journeyman and Beta Arcade. Finally, I will use my Final Major Project to highlight my skills both as a level designer and a UX designer, with a view to working in these areas in industry. To this end, I want to display a range of my skillset in both these specialist roles from the beginning of pre-production to post-production, involving key areas such as market research, floor plans, gameplay design, design iteration to the production of the final product and its successful results.

Cameron Wren
Final Year Project - Six Feet Under

'Six Feet Under' is a game akin to the 'Star Wars' games and 'Prototype' where the player is put in control of a supervillain wreaking havoc on a city in the last ditch attempts to save themselves. The prototype itself takes place within a factory where specialist machines are being made that can block the villain's power. Using your powers of telekinesis and advanced combat skills, you need to destroy the machines and take care of anyone standing in your way. Overall, working on this project has allowed me to develop upon a numerous amount of my skills as a games designer. I have been able to conduct research into areas that I was not comfortable with before, such as AI and animations, whilst also improving upon areas that I have done well in before such as narrative design, level design, time management and using blueprints within Unreal Engine 4.

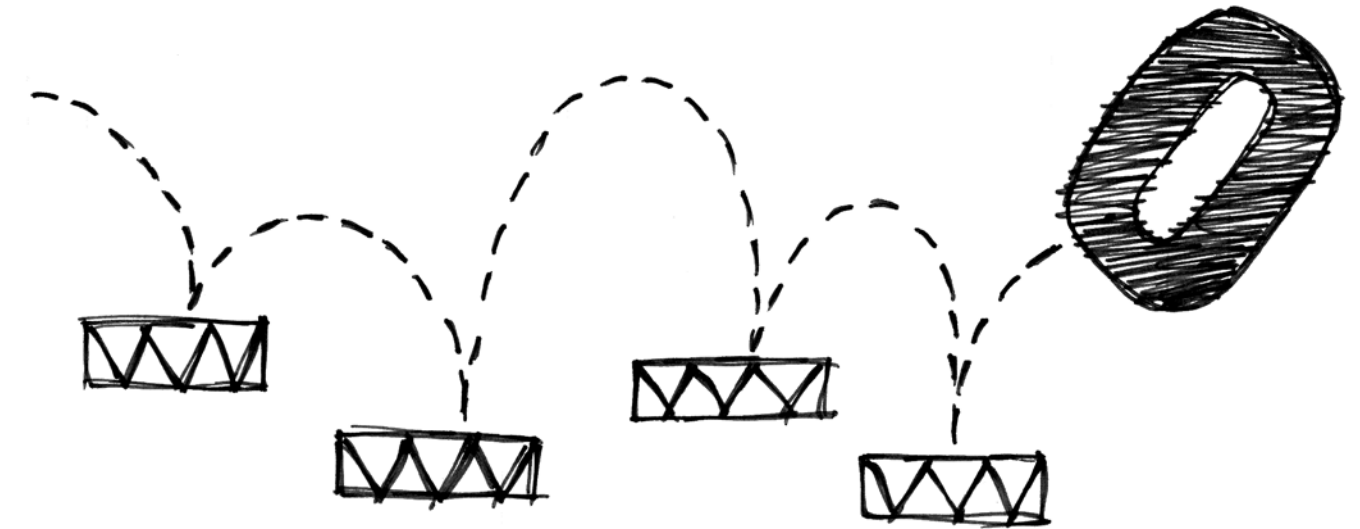**BA (Hons) Indie Games Development**

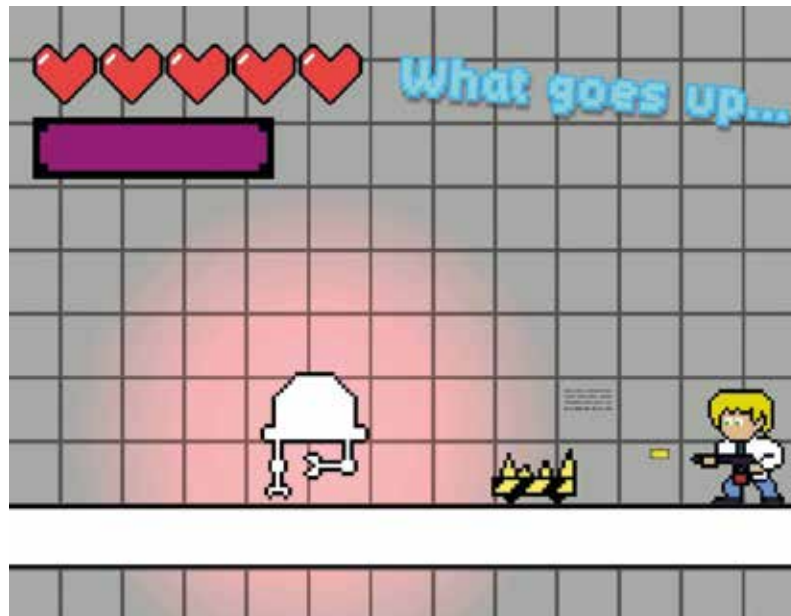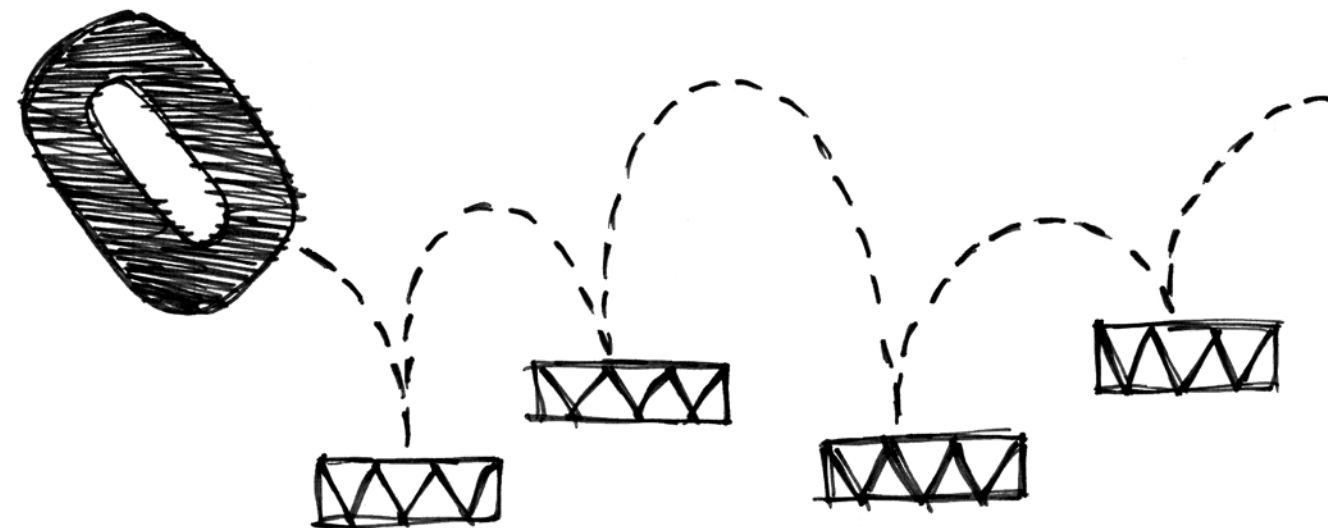
Gabriel Aldridge
Gabriel's Auditory Playground

This is a game without visuals, completely reliant on everything but sight. Play through multiple minigames using anything but your eyes. Classic games such as shooters, flight-sims and more have been redesigned to be played with zero graphics. This game is tailored for the visually impaired but can also be enjoyed by those who aren't.

Jake Mcpartlin
How do we make games feel good?

I have used Unity to build a 2D platformer, then using a variety of research including books, GDC talks, research papers and my own knowledge to implement features that make the game feel better, more engaging and fair to play.

Keenan Simpson
The Long Road Back + Upcoming Indie Title Preview: Retrowave '84

As seen on 3D Realms' Realms Deep 2021 showcase, The Long Road Back, my first full length indie game will be shown in all its horror and suspense filled glory. Containing zero third party assets outside of the voice acting of the narrator and Cutscene artwork, The Long Road back is an intense solo developed horror/throwback FPS, where the player is challenged to use their scarce ammo wisely. Also shown is never before seen content of my next upcoming major title - Retrowave '84, a new hyper stylish FPS based on an old prototype I made. Both these enhanced my skills across the board, with a key focus on level design and game design. Retrowave '84 is also my final year project and my greatest product yet. Portfolio link: keenansimpson1998.wixsite.com/ks98

BSc (Hons) Computer Games Programming

Jordan Peart
Diegetic user interface

For my exhibit I am showcasing the work I have done for my final year project module. For the project, titled 'Project Immersion', I have created a diegetic user interface, taking inspiration from games such as Dead Space and Fallout 4. It was built with the intention of being used within a first-person sci-fi adventure game. As such, I made a small playable environment to show off the user interface and how it interacts with the surrounding world. Throughout the project I have gained increased knowledge and experience in a variety of software, namely: Unreal Engine 4, Adobe Photoshop and Adobe XD. My main improvement would be in using blueprints in Unreal Engine 4. Furthermore, while I had experience in designing user interfaces from prior modules, I did not however, have knowledge on creating diegetic UI. This became a big research point of mine, as looking into how it was going to be achieved was vital to the project's success.
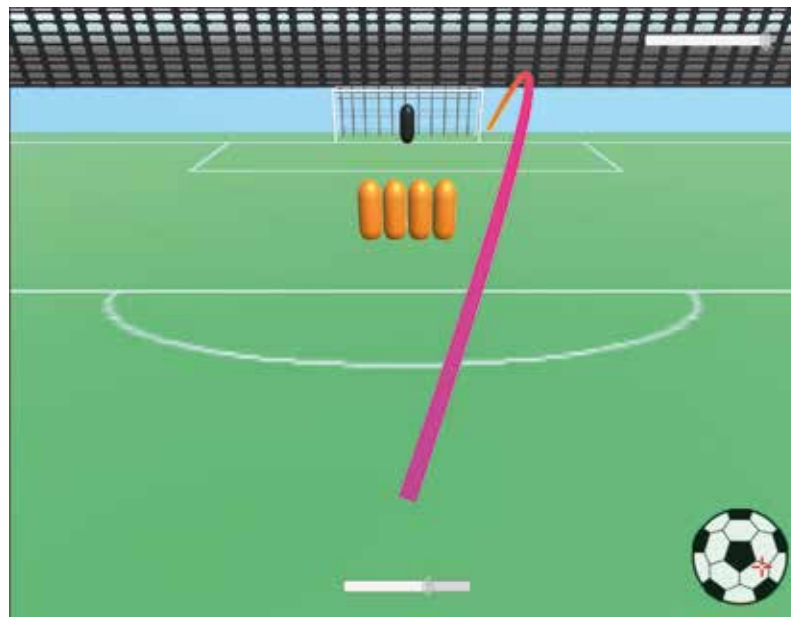

Matt Bargate
AI Director

I'm choosing to show my final year project which involves an AI director (much like the one seen in Left 4 Dead) to control the game flow and tension of an interactive horror game. I will have to learn about concepts such as fuzzy pattern matching and I will have to apply them, but I can hopefully also demonstrate my competence in creating a good feeling and playing player controller as well as an optimised final product. These are areas in which I don't think are touched upon enough for such projects so I will hopefully have its performance and stability to show off as a key demonstration of an acceptable attention to detail when developing the project. Some side endeavours could also be demonstrated like my hobby for 3D modelling and lighting too as well as interest in how to make an immersive game but they will not be the main focus.
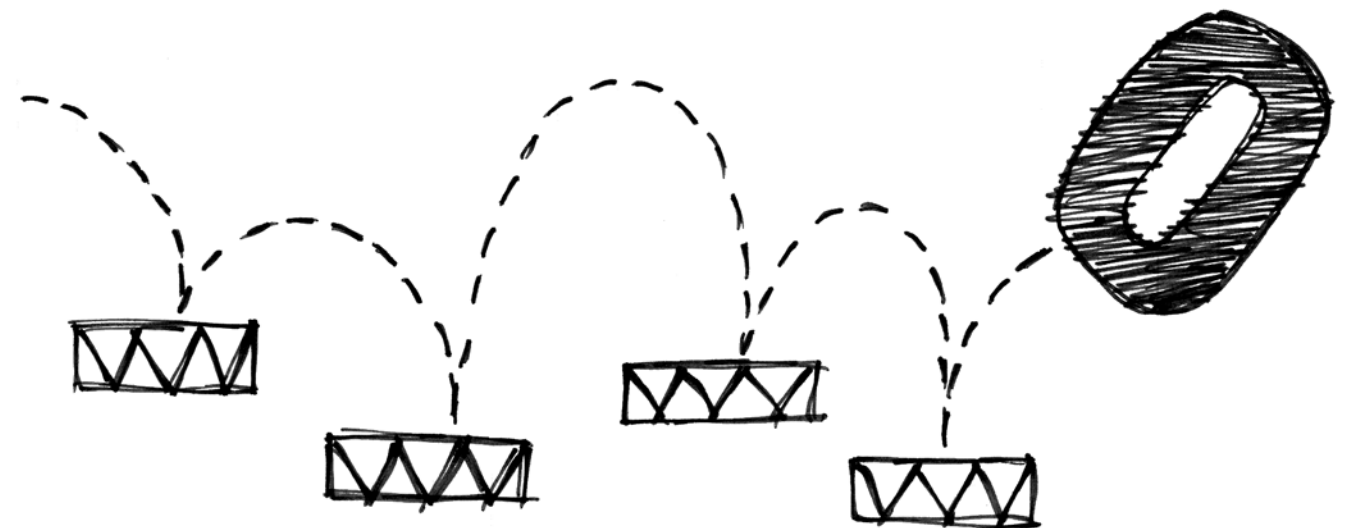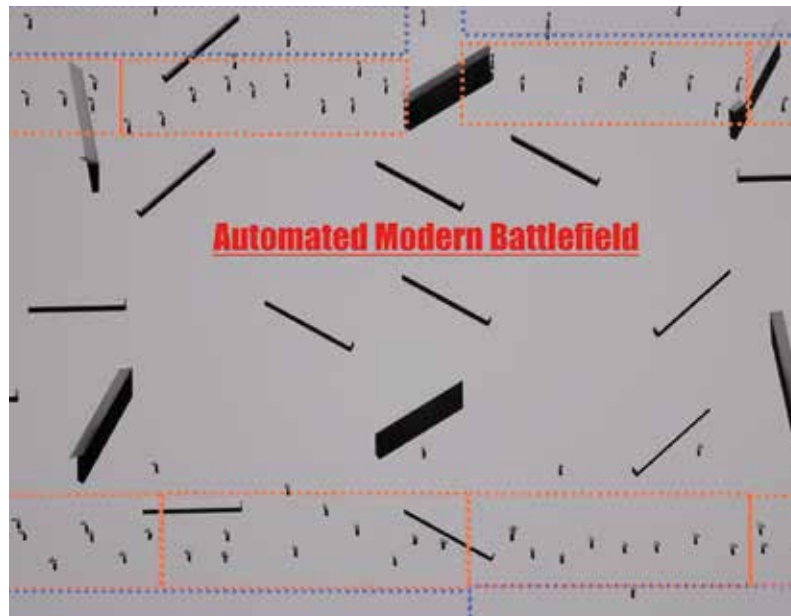
Samuel Deadman
Automated Modern Battlefield

With a goal to create a battlefield that looks as if tactics and realistic decisions are taking place without any directly coded tactics. With the teams structured to allow passing up and down of information and orders. Every soldier's decisions are based upon their local surroundings and any instructions given to them still allows for realistic local decisions, with the instruction guiding their actions. The game is based in Unreal Game engine and used a system that should allow for it to be used in other games easily, so large battles can be setup without much setup time, while still having the individual soldiers realistically interact with the terrain, and the player if needed. The games split into two distance sections, the squad level behaviours, which controls how one to ten soldiers' interaction with other groups of soldiers, controlled by a hierarchy which is the second part. This hierarchy will control the zones in which the squads under in command can operate, and potentially a high level will decide where it can operate, leading to a command structure which scales with its troop's numbers.

Rohit Lalwani
Procedural Generation of Traversable Planets

The work on display is a tool made for Unity Game Engine that allows the users of it to easily generate complete planet-wide landscapes procedurally. This tool helped me develop skills in creative problem solving, writing robust and highly readable code, and runtime mesh generation and modifications.

Naseem Haque
Bend It Like Magnus: Free Kick Simulation Using the Magnus Effect

My project is a free kick simulator where the flight of the ball is influenced by the Magnus force in a real-time environment. The Magnus force is a lift force that affects the trajectory of a spinning ball and allows footballers to curve their shots in the air. My goal for this project was to implement a realistic physics simulation to demonstrate the Magnus effect in the context of a football game. Players are able to aim their shot and choose exactly where they want to connect with the ball when they take their strike, giving them control over the rotation rate of the ball. I developed my project in C# using Unity.

Lauren Morrell
Games Programming Project: How to create a realistic stealth game without a combat system using AI

I am currently making my Games Programming Project which will be a stealth game with running and hiding mechanics. This project will improve my AI skills and allow me to make a few puzzles. The enemies will be alerted to the player's presence by sound and then use their eyes to further pinpoint the player in the direction the noise was heard from. It is much harder to be heard if the player is crouching and there will be objects like lockers that will help the player escape. There will also be a few puzzles/tasks to complete while avoiding the enemies in order to escape the area.


Rebecca Kirby
SurvivalVR

SurvivalVR has been developed for the Oculus Quest 2 using Unity. The objective of this game is to survive after being stranded on an island, to do this you need to keep your character's needs, such as hunger and thirst, fulfilled. The most useful feature in completing this objective will be the crafting table, where both controllers and hand tracking can be used. At this table you will need to use the materials gathered to create tools and weapons that will help you survive longer.
The weapons are useful in hunting the animals found around the island for food, and the tools can be used to help gather both water and more materials for crafting better items. This project has taught me a lot about developing for VR devices, I have learnt about locomotion and I have learnt about designing and developing GUIs for VR games.

Rodrigo Roldan-Romero
### Real-time Fluid Simulation in UE4 using PCISPH and SPH methods

This project investigates the implementation and optimisation of fluid simulations in Unreal Engine using the PCISPH and SPH method for films and games. These methods are governed by the Navier-Stokes equation. The solver simulates viscous and non-viscous fluids and makes them visually realistic. The fluid solver is entirely written in C++.
For optimisation, parallel programming methods such as threads have been used. For collision detection, the SPH algorithm deals with particle-to-particle collision. For particle to non-particle collision, a separate collision detection algorithm has been implemented. For the neighbour search stage, spatial hashing algorithm has been used.

Keywords:

PCISPH - Predictive-Corrective Incompressible Smoothed Particle Hydrodynamics.

SPH - Smoothed Particle Hydrodynamics.
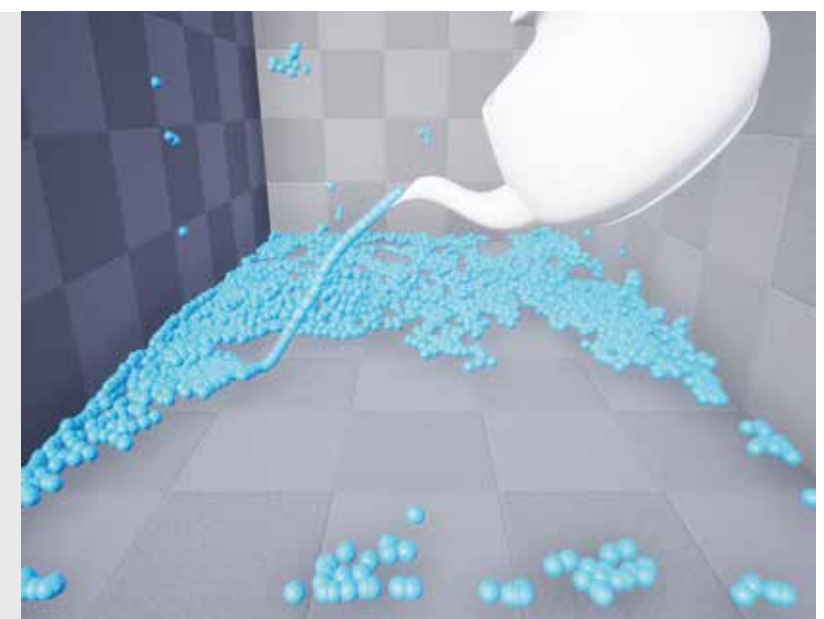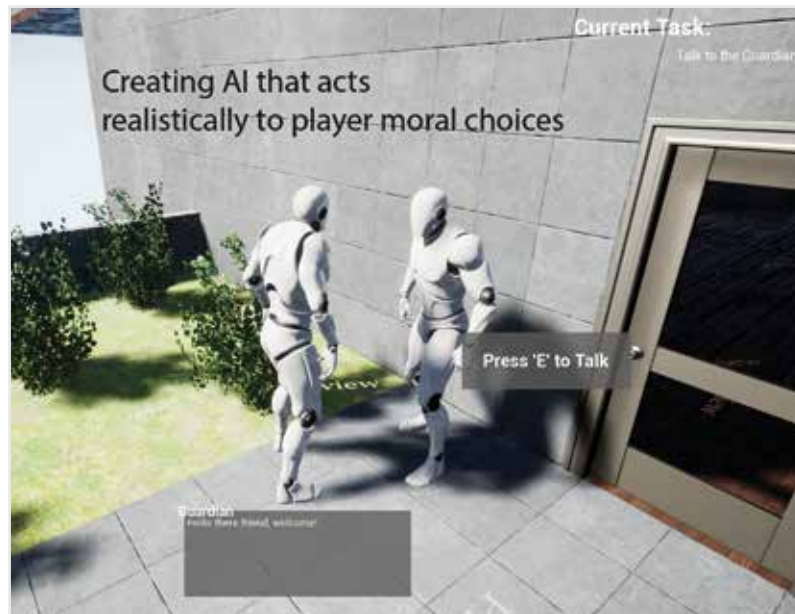
Sara Rushmer
Creating AI that acts realistically to the players moral choices

The idea for this project stems from my love of AI and RPG games, with a feeling that something with the AI is lacking when it comes to making choices based on how the player acts. My goals for this project are to create an AI using behaviour trees that will react realistically to player moral choices. I will be using the unreal game engine and will develop more on my visual scripting for this project. The finished project should have four small levels and at least two AI that will confront you based on the players choices.

BA (Hons) Technical Games Development

Emily Burns
Our Path Unbeaten

Set in a desolate city in the far future, 'Our Path Unbeaten' is a 2D "collect-athon" platformer in the vein of classics such as Super Mario 64 and Banjo-Kazooie where the player can swap between two gameplay styles: in-vehicle action-platformer and on-foot puzzle-platformer. These two styles are mashed together in open-ended levels each with multiple exits each with their own challenges and obstacles. Working on the project has helped further my skills in level design and technical design, and has taught me many new aspects of and given me a new appreciation for the Unity engine and its C# framework.

Josh Callus
Final Year Project - Slip Slidin' Away

'Slip Slidin' Away' is a local-multiplayer game, belonging to the Racing and Party Game genres, where 2-4 participants can race against their friends and family down the frozen slopes, designed specifically for a wide range of audiences to make it the ideal game for multiple family generations to play together, whether it's somebody's first or final time holding a controller. The main research topic of this project is looking into the accessibility of party games, particularly when it comes to age-accessibility, in order to create a product that many can enjoy, whatever their gaming experience. For this project, I've been developing my game mechanic prototyping skills alongside training myself to work with accessibility in mind when it comes to making a game easy to pick up and play for a multitude of ages. I've also been working with the UE4 Landscape tools for the first time, to increase my understanding of the feature in preparation for going into the industry. As a Technical Designer, I've also been using this project as a way of developing my ability to compose game design documents, in addition to construction script actors that make the process of development and iteration much more efficient.


Lucy Cartwright
The Endless Abyss

I have created a top down, twin stick shooter set in a floating mass of rock in an endless red space-like void. It is a project that showcases a complete gameplay loop, including a variety of enemies/obstacles to impede the player's progress, alongside a set of power-ups randomly generated so that each run will be a slightly different experience. With a boss containing telegraphed teleports for movement to round it off, this project is a showcase of what I've learned up to this point, regarding enemy actors. UI features and UI animation, harnessing random values for item generation, and the base combat mechanics of this genre of game.
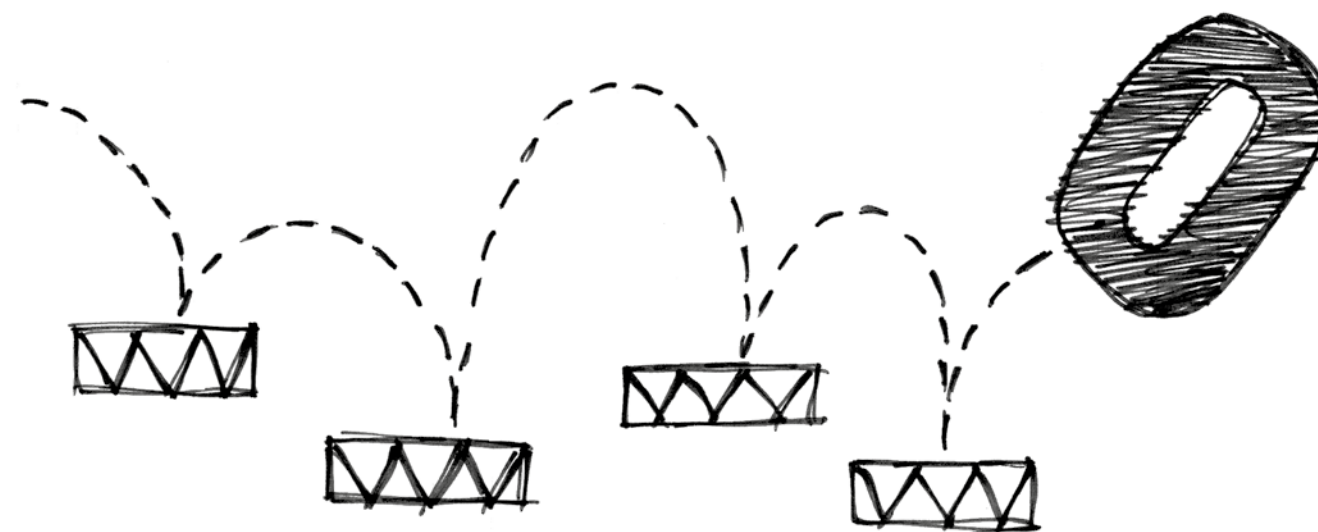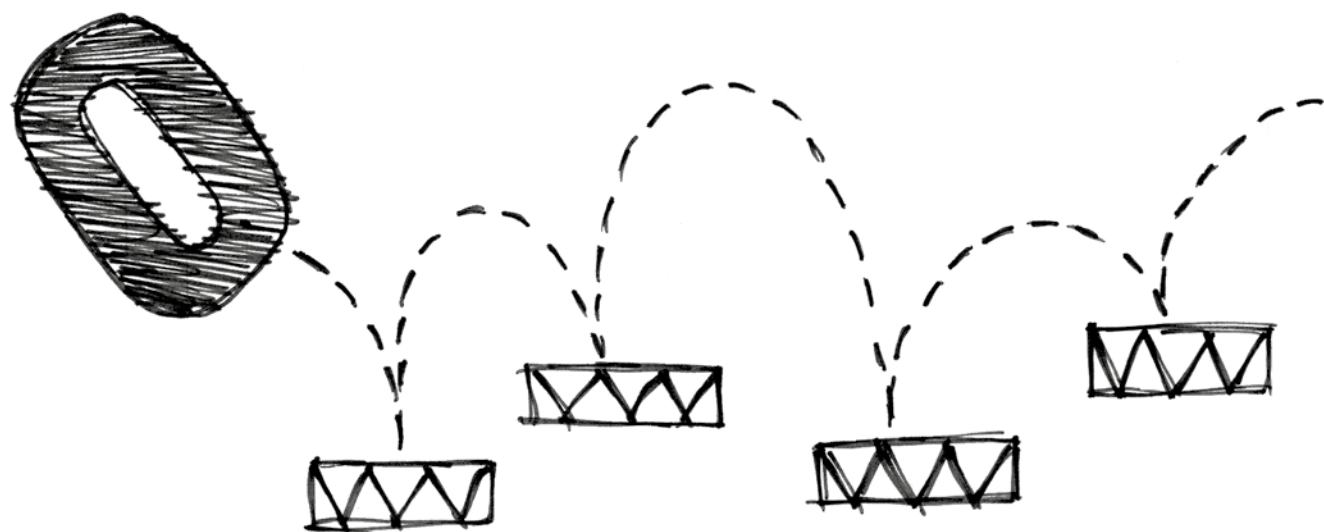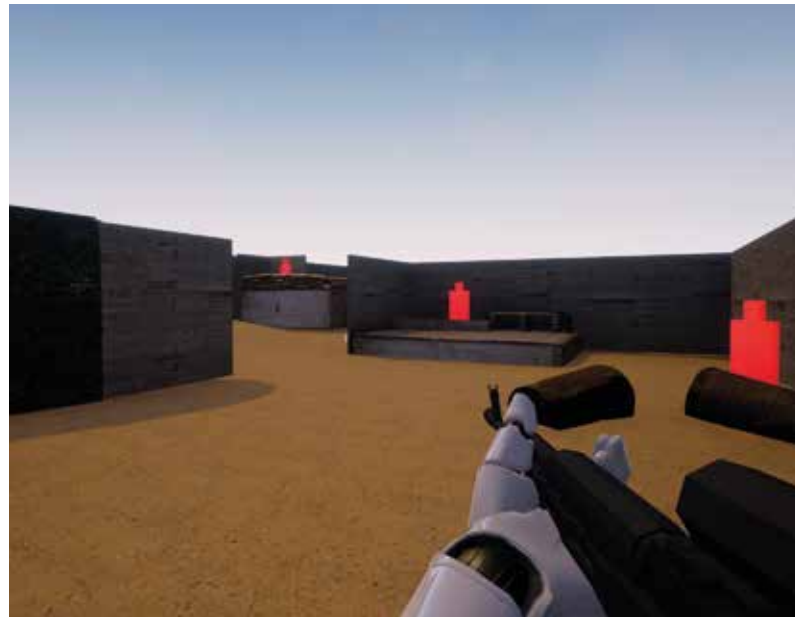
Ian Goodliffe
First Blood

'First Blood' is a single player FPS game set in a desert camp environment. Within this camp, the player is able to use a selection of weapons and go through a timed course that saves their best times. The game is targeted towards older audiences due to the game's violent themes. My focus for this project has been around creating systems that are easily editable to allow for faster iterations, whilst also allowing the game to have a feel that would allow for competitivity. The main mechanic that showcases this is the weapon system which stores all of the weapon's stats, such as fire rate, reload speed and the respective mesh, alongside any other variables, allowing for changes to be made instantly. During this project I have been looking into multiple tools such as landscapes, foliage brushes and save games to increase the speed of my workflow, the enjoyability and peplayability of the game.

Tyrese Lewis
Mechanized

Set in an experimental laboratory, mechanized bots are assembled and pitted against each other in an attempt to create the perfect killing machines to unleash on the enemies of a secret benefactor...

Mechanized Warfare was my first attempt at creating a semi-tactical real time strategy demo, utilising random generation to create different scenarios and gameplay loops to keep the player guessing. During the creation of my project, I've developed a series of critical thinking, AI and random generation skills in UE4. But most importantly creating Mechanized Warfare has certainly been the biggest challenge at university and the most fun I've had developing a game demo.
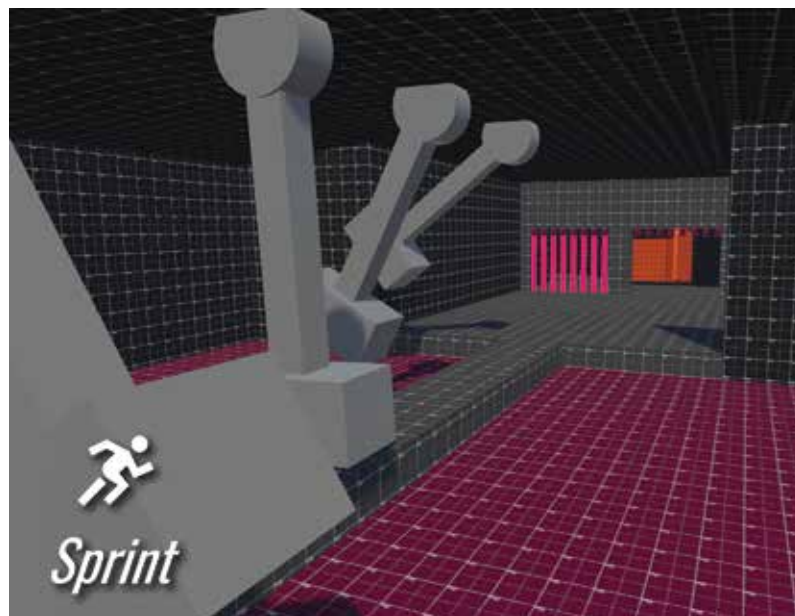
Brandon Thompson
Sprint - First person parkour speedrunning game

I have created a 3D first-person parkour styled game. In this project, the player must use different mechanics, such as sliding, or a grapple hook, to gain speed and speed-run to the end of the level, but the player must be careful too, as there will be dangerous obstacles that can slow or kill the player. Each level is timed with the fastest time being stored as a personal best, giving players the opportunity to play again to get a new personal best. There is no backstory in the game, and it has very little in terms of art, this is because this project aims to focus on the design and development of the player mechanics, and any mechanics that may interact with the main player in any way.

Hannah Blachford
Sister of the Deep

I have chosen to exhibit my Search for a Star entry Sister of the Deep. This project was created over the space of 70 hours. The software I used for this project include Marvelous Designer, Maya, ZBrush, Substance Designer, Substance Painter, Photoshop, and Unreal Engine. The biggest skills I developed when making the model was in Marvelous Designer with layering the garments as well as the process of exporting from Marvelous into ZBrush. My hard surface skills were also developed further in ZBrush when creating the gloves and modeling the mask, using the TrimDynamic brush and slice tools to create the sharp edges. Instead of making the model with only unique materials, I made use of tileable textures and material layers in Unreal Engine so I could make use of the textures for another project if I needed them rather than creating from scratch.


Huan Chen
Alien battlefield

Alien battlefield is a next-generation game-ready environment piece largely inspired by Alien: Isolation, Halo Infinite and Star citizen. This scene is a large sci-fi spacecraft, including a corridor and control room. My project showcases my abilities as a 3D artist, incorporating organic and hard surface modelling, technical art, animation, 3D optimization and a strong understanding of lighting, material creation, and composition. I am focused on core optimization techniques such as asset reuse, texture and asset tilling, weighted normal, advanced instanced materials, decals etc. I have created a series of optimized modular assets both structural and set dressing based that are efficient in their utilization of polygons, texture, materials and rendering in the Unreal 4 engine. I used 3DS Max, Substance Designer, Substance Painter, Quixel Mixer, Photoshop, UE4, Marvelous Designer and more.

Brittany Mcassey
Oni Hunter

My project is a real time character, based on an illustration by the artist JunYeong Shin. I took this flat illustration and used it as an inspiration for transforming the character into 3D, so that I could showcase my skills in organic sculpting, some hard surface for her armour pieces and then finally texturing across the various materials her outfit is comprised of. ZBrush was used for the sculpting of mostly the whole character, including her outfit, utilising both the base sculpting tools and ZModeler for the more hard surface elements. For the retopology and the UVs I used Maya and for texturing her and the outfit Substance Painter was the program of choice, within which I hand painted the more complex patterns on some of her clothing and then built the materials over those. The model was then setup and rendered within Marmoset Toolbag.

MA Games Design
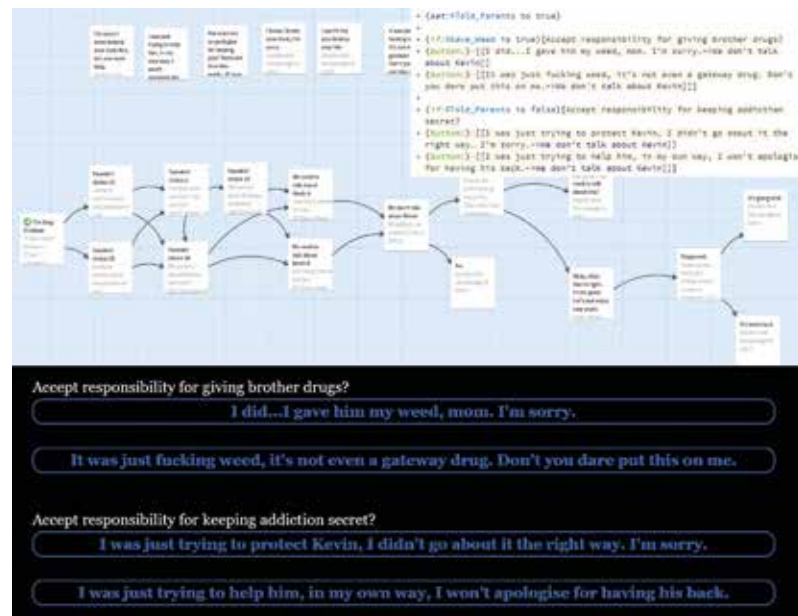
Martyn Bell
Morality Systems: The effects and implications different moral frameworks have on player choice and consequence

I have chosen to present my master's project at Expo, which comprises of a close reading of the morality systems in Fallout 3 and Dragon Age: Origins. I then apply my findings of these morality systems into a singular gameplay experience, in the form of a branching, text based narrative adventure. The text-based adventure surrounds the trials and tribulations of a family's experience with drug addiction, and a cancer diagnosis, exploring the moral complexity and consequences of the players choices surrounding the issues presented. This project has developed my skills in narrative design and choice/consequence systems, including the fundamentals behind the mathematics governing the systems in the background of these processes. Additionally, it has developed my ability to analyse and learn from existing games and apply their systems into a new framework, in the hopes of critiquing and improving on existing designs and carving out space to approach the design morality systems from a new perspective, and account for the deeper implications and oversights present in current systems.

Thomas Blekkan
Mimi & Bobo

This is my last undergraduate project. It is a third person physics-based puzzle game where you play as two different characters with different strengths and weaknesses. The game is designed around having a single player and a Co-op mode to play with friends. With the exception of the sound effects and music, everything is self-made in the project, from the simple art with rigs and animations, to the level and puzzle design. The game consists of a tutorial level and a full normal level. This project helped me learn more about blueprint communication, physics simulation, having several playable characters in the same project and gave me first-hand experience on being part of the entire development process from idea creation to finished product.

Kieran Frank
OFFWORLD - Balancing a First Person Shooter

My game OFFWORLD is a wave based shooter which I decided to create during my masters as a way to challenge myself in my technical skills and designing gameplay systems which keep the player engaged, as an Unreal developer. I decided to make the game replayable and can be played for short periods as well as long periods of time. It was fun learning how to balance the player and enemies and the other systems that I have in the game which makes it work over a long stretch of time whilst playing.


Lee Griffith
Kick Man

Kick Man is the vertical slice of an old school shooter based around the core mechanics of your only weapons being your feet. Kick your way to victory in a quick romp through hell, fighting hordes of demons and worshippers alike. Inspired by multiple shooters, ranging from Quake, to Doom, to Duke Nukem; Kick Man was created to develop my skills at level design and balancing, mechanic design and implementation, and the creation of varying enemy types within a game created from scratch, save for the art assets.

Daniel Jones
Blackrock - The Elder Scrolls V: Skyrim Mod

This project is a small-scale expansion the The Elder Scrolls V: Skyrim set on the island of Blackrock. My aim was to make the project feel as though, with some additional polish, it could become official content for the game. I have done my best to fit narrative content with existing Elder Scrolls lore and not to divert from the original game's design philosophy. The project contains around ten NPCs with scheduled routines and 161 lines of dialogue. It was my intention for this project to showcase and develop my understanding of narrative and quest design as well as my ability to use a prebuilt game engine and design structure to create new content.
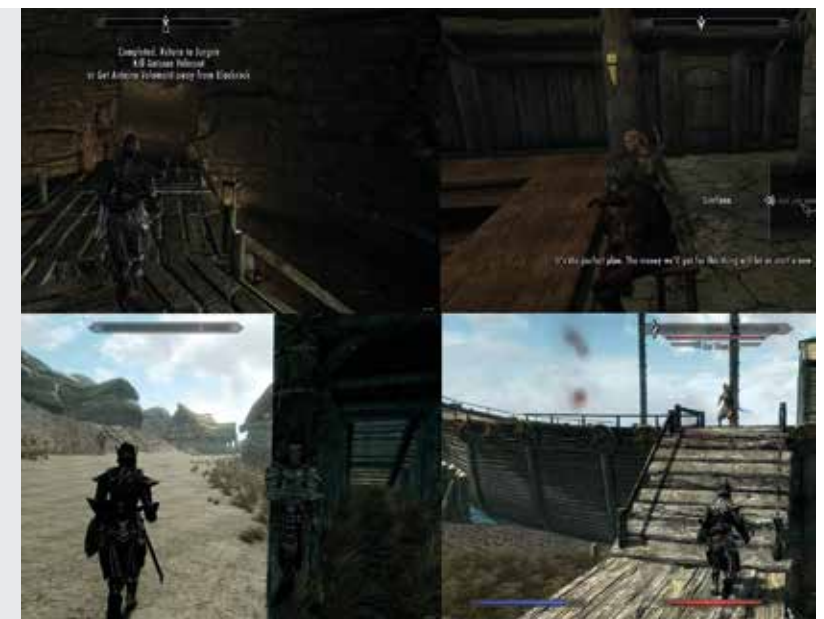

William Kane
Xtreme Skate & Gunboi - 2D & 3D Platformer Prototypes

Xtreme Skate is a 2.5D, retro themed skating game akin to OlliOlli. The player performs tricks and combos to rack up a high score and score multiplier while making sure to stick the landing or risk losing their score or even crashing, all accompanied by adrenaline-pumping music and neon, vibrant aesthetics.

I tasked myself with a building a complicated control scheme in UE4 and a design challenge of recreating OlliOlli's mechanics while adding my own little twists and unique mechanics where I could. The project has challenged my skills in engine and allowed me to really push my design knowledge beyond simple concepts to a stage of polish and game feel akin to a published game. As a masters student, my main point of proficiency I am aiming to achieve is professional, publishable polish and quality to enhance my prototypes, and help me understand what is expected for a shipped game.
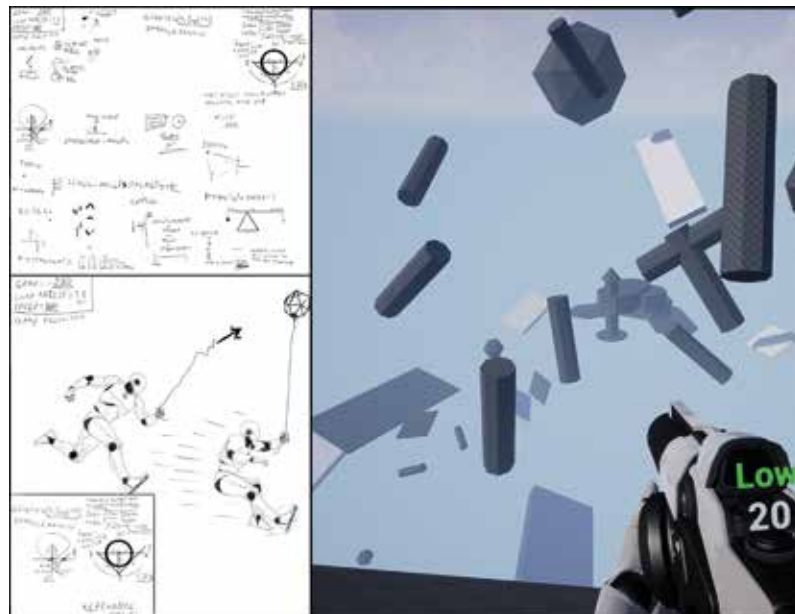
Storm Karlsen
Gamefeel Exploration

Gamefeel is a difficult, yet incredibly important, aspect to define with each game that is created. I have developed a grappling game with heavy emphasis on Gamefeel whilst traversing.

Jack Murrell
Malevolence: Path of Fire (MA)

Malevolence: Path of Fire is a third person horror themed RPG that is inspired by games such as InFamous and Resident Evil 3: Nemesis. You play as Rane, a female protagonist that possesses supernatural abilities - primarily the creation and manipulation of fire but also other "magicks". Rane is looking for answers, which means she must venture into areas she thought she would never revisit. In doing so, she finds a lot more than she expected and is challenged past her limits. With my previous experience in story writing and games design, I decided that an RPG would be a fitting project for my master's module. I used atomics in Unreal Engine and Excel to guarantee the game was balanced. I utilised research and implementation at the master's level to ensure the game felt and played as it should. The development of this project proves and showcases my knowledge regarding artificial intelligence, player mechanics, level design and animations in Unreal Engine to name a select few.


Aaron Mcgee
Umbral Mitigation

This top-down survival horror game challenges the player to use light as a resource to fend off the darkness and the creatures within. With the dark dealing damage to the player and safe respites a dwindling commodity, the player must cast their own projectile light to illuminate the world and traverse through it using the fading zones they create. The game focuses heavily on progression, with the darkness becoming less of a threat as the player develops their power while the enemies take the spotlight. Iterative mechanical design was a large focus during this project, achieved through the use of scalable atomics, as such was the level design for with an environmentally transformative game; key milestones, the use of space and flow inducing navigation were all important factors that would complement the core mechanics. The game was created with Unreal Engine 4 and displays my abilities in Mechanic/Level Design, AI and VFX.

Matthew Pyrah
Aerial Loggers

"Aerial Loggers" is a 3D endless runner created in the Unity Engine using C#. The player takes control of a drone equipped with a dual chainsaw endlessly flying down a forest clearing, chopping trees along the way without contacting the trees head-on or the many non-chainsaw friendly obstacles along the path. Wood collected from said chopped trees can either be dropped off at a regular depot, in turn receiving cash used as score and can purchase unlocks (upgrades and skins) or held onto with increasing deposited value but at risk losing entirely if the drone crashes. During the production, I developed my skills on coding systems and algorithms that collect and reuse already spawned assets to lessen the load on the CPU and further my game design skills with a gameplay loop that incentivises risky play with greater rewards.

MComp (Hons) Computer Games Design
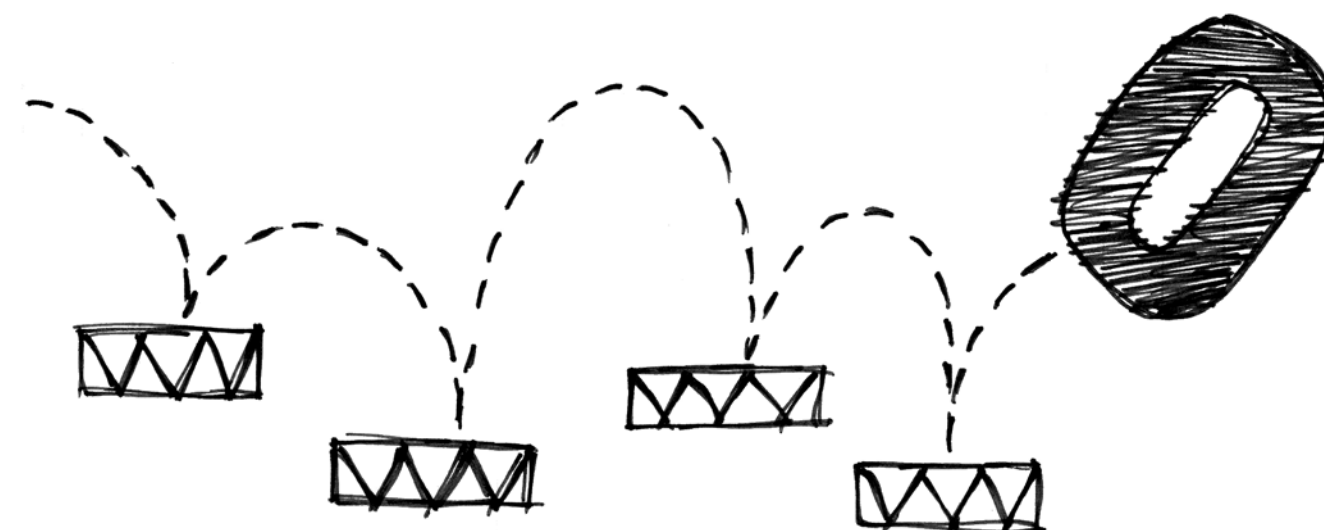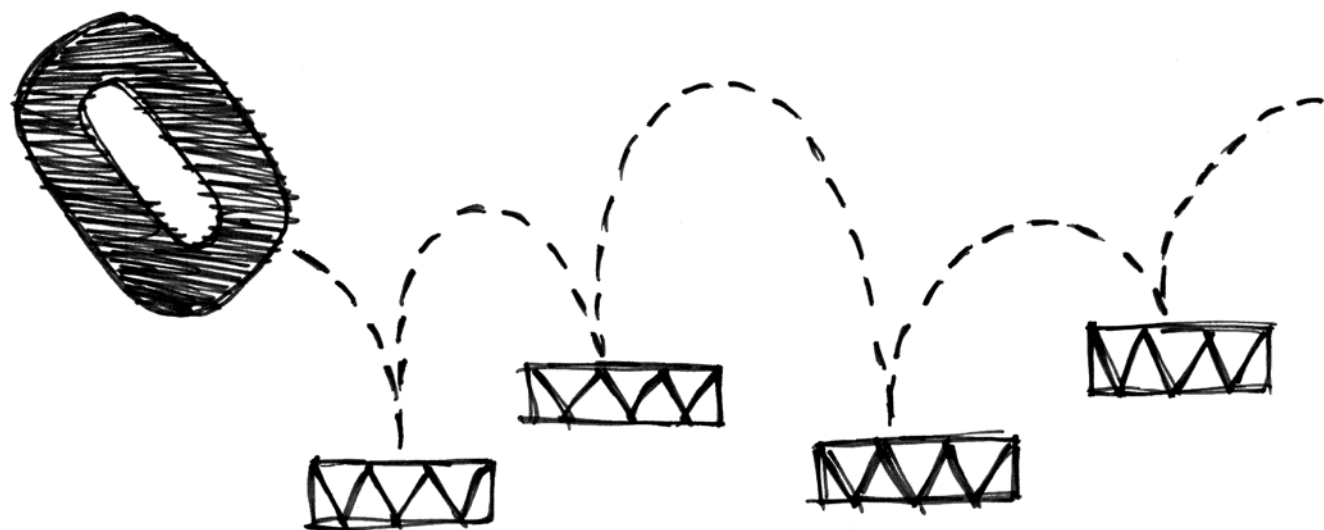

Ryan Mountford
Bard Bash!

Bard Bash is a musical 2D RPG made in Unreal Engine 4. In Bard Bash you take on the role of a bard where you will play magical musical melodies in rhythm-based sequences. The game features multiple instruments and each instrument has a selection of songs of varying difficulty they can play. In this game you will perform in front of crowds of people and will be scored on your skill.

Following usual RPG tropes, you will be in a medieval fantasy world with multiple intelligent races and magic. You will be able to explore this world using an overworld. The overworld will take you to other areas to perform and more NPCs to talk to.

Kat Murthwaite
After-School Bakery Club

I have chosen to exhibit my final year project. This is a 2D pixel RPG created in Unreal Engine 4 that follows the story of Mia after she moves to a rustic old town in the middle of nowhere to get away from city life. Once Mia moves into town, she soon realizes that the forest surrounding her cabin leads to another realm, one that is inhabited by ghosts, and it is up to her and her cat to search the town and the people within to find the reason why the ghosts aren't leaving. This work is a narrative focused project that will take world building to the next level, everything within the world before you are exactly where it is supposed to be, and nothing is there without reason. Exploration and communication within the residents are vital to unlocking the full story, especially when the resident's peace is in your hands. After-School Bakery Club will commonly show the theme of death and grief, partially educating those on the realities of such taboo subjects such as addiction and abuse.
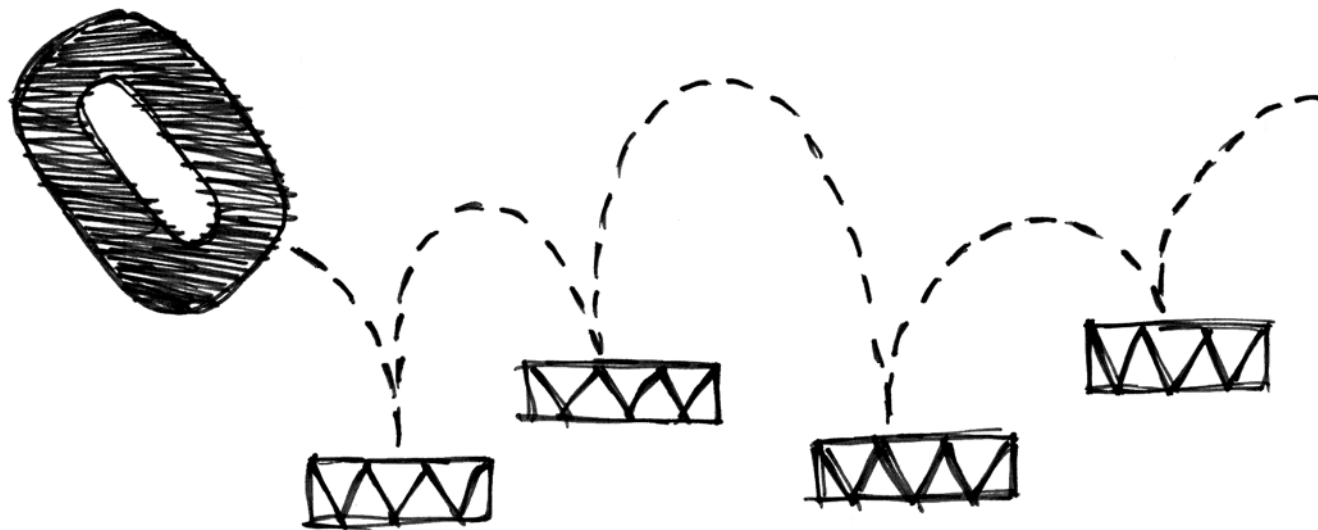

Jordan Robinson
Shotgun Heist

Shotgun Heist is a 2.5D side-scrolling run and gun game with some platforming elements. In this single player experience, the player must fight their way through masses of police forces to escape the bank and reach their getaway vehicle with the stolen cash. This game features a handful of mechanics and various levels, however the main focus was creating an enjoyable user experience.

MComp (Hons) Computer Games Programming

Alan Bednarski
Voxel procedural cave generation system

This piece of work was made in Unity and it's a system that can procedurally generate a cave system using voxels with a playable prototype of a game to showcase to use of the systems in games. The skills I have developed while making this project have been mainly to do with how to make a noise algorithm such as Perlin, Simplex noise and some others. The other skill I developed was a better understanding of how to make a larger system more maintainable and scalable, as well as modular enough to be used in multiple cases mostly related to using this system in games.
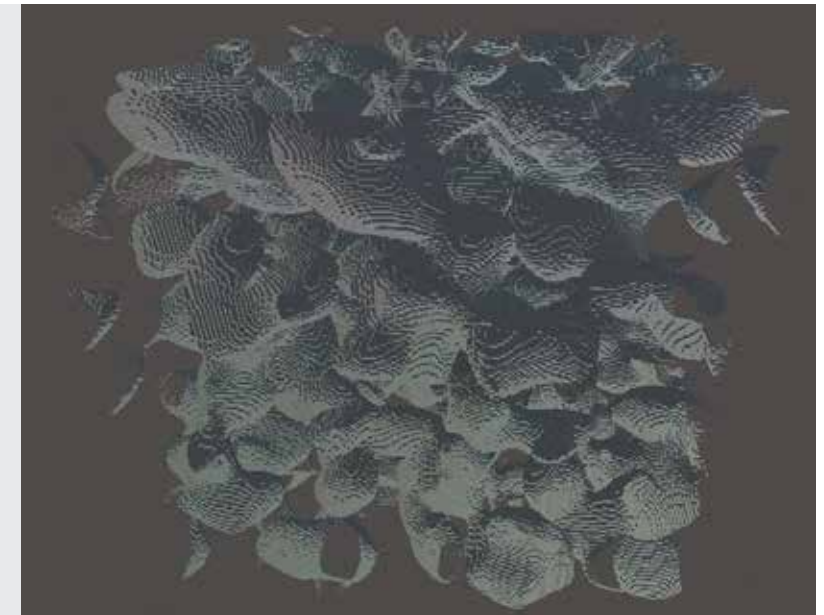
Sean Nichols
Momentum-based Melee Combat

Momentum-based melee combat, click and drag to swing weapon, hit weak spots with sharp side of sword when striking weak spots to deal damage to enemies, force applied when swinging equates to damage to the specific body part hit, status effects such as bleeds, fractures and decapitations depending on how hard enemy is hit. I developed skills in simulating physics - weapon drag will change depending on the mass of the weapon, higher mass + higher velocity of weapon results in more damage. C# Programming in Unity - becoming more proficient using the Unity engine to create varied game systems and mechanics such as the aforementioned momentum-based melee combat and various status effects affecting the enemy when hit by different weapons, or when hit in different body parts. Game development and design process within Unity - understanding the design process when creating a game, planning out how to efficiently develop a game, creating well thought out game mechanics and systems that fit together well without feeling out of place/unnecessary within the game.

Teesside hosts national cyber challenge for codebreaking schoolgirls

Codebreaking school girls completed a series of cyber challenges at the regional final of a national competition hosted by Teesside University.

The girls put their cyber security knowledge to the test at the North East of England final of the 2022 CyberFirst Girls Competition, run by the National Cyber Security Centre (NCSC), a part of GCHQ.

Working in their school teams, the girls cracked a series of tests set through the competition, which aims to encourage more girls to explore cyber security and improve gender diversity within the subject.

The winners, from Valley Gardens Middle School in Whitley Bay, used their digital skills to complete the cyber related puzzles covering topics from networking and AI to cryptography and logic in a bid to score the most points and be named CyberFirst champions.

Now in its sixth year, the CyberFirst Girls Competition aims to inspire girls to pursue interests in technology and consider a career in cyber security, a field where women are still under-represented in the UK.

The 2022 competition had a new format aimed at encouraging more entrants from every part

of the UK, with 7,000 girls from hundreds of schools taking part in the qualifying round. Finalists from ten schools competed in the regional event hosted by Teesside University. Chris Ensor, NCSC Deputy Director for Cyber Growth, said: "Congratulations to all the girls who took part in this year's final of the CyberFirst Girls Competition in the North East – and a special well done to Valley Gardens Middle School for their success on the day.

"The UK's growing cyber security industry needs more female representation so it's great to see thousands of girls nationwide taking part in the contest, many for the first time.

"I thank Teesside University and teachers for their work helping us uncover new cyber talent and I hope for many of the girls this will be just the start of their interest in this area."

Professor Chrisina Jayne, Dean of Teesside University's School of Computing, Engineering & Digital Technologies, said: "We are honoured to have been chosen to host this national competition, which will help to inspire more

girls to consider pursuing a future career in cyber security."

This year's competition involved finals being held across the UK, with some taking place virtually and others in person. Teams who competed in the home nation and regional finals scored highest in the online qualifying round in December. The winners received laptops as part of their prize, along with an invitation to a celebration event later in the year.

The North East finalists were from Our Lady and St Bede, Stockton; Burnside College, Wallsend; Carmel College, Darlington; Durham Johnston Comprehensive School; George Stephenson High School, Killingworth; Monkseaton Middle School, Whitley Bay; Sedgefield Community College; Southmoor Academy, Sunderland; St Bede's Catholic Comprehensive School and Sixth Form College, Lanchester; and Valley Gardens Middle School, Whitley Bay.

Building AI capability across the region

An award from a prestigious scientific institute is to help Teesside University drive greater collaboration between academia and industry in the use of artificial intelligence (AI).

I've emailed comms to check if they have the other image

The University has been successful in applying for funding from the Alan Turing Institute, the national institute for data science and artificial intelligence.

The Turing Network Development Award will enable Teesside University to organise regional and national scientific and outreach events aimed at promoting the use of AI and developing communities of practice among AI users sharing knowledge and best practice. The awards are made to UK universities with proven research excellence and a track record of translation in data science, AI, or a related field whose research and innovation would be significantly enhanced through active involvement with the Turing Institute's network. Teesside University's project will be led by Dr Claudio Angione and Professor The Anh Han who are both leading academics in the field of AI and together head up Teesside University's Centre for Digital Innovation.

The expertise within the Centre for Digital Innovation will be key to developing the AI network and will build upon its established role helping to address the growing demand for AI and how it can be used to tackle economic, societal and contemporary technological challenges.

The first stage of the network development project will see a mapping of different areas of AI expertise at Teesside University and its various research centres. It is then hoped that an academic conference can be organised, as well as symposium involving industrial partners from across the UK.

It is hoped these events will be able to demonstrate the impact that has resulted from the use of AI as well encouraging further collaboration.

We want this network to act as a bridge between scientists and stakeholders from industry, clinicians and patient organisations.

Dr Angione said: "Our AI research with industry partners has already made tremendous impact, and this award will enable us to explore further collaborative work with stakeholders across the region.

"We believe that AI is still underused in several applications and there is still a gap between academic research and its use in industry.

"Therefore, we want this network to act as a bridge between scientists and stakeholders from industry, clinicians and patient organisations."

The announcement of the Turing Network Development Award comes as Teesside

University hosts its Research Week to celebrate past, present and future research excellence at the University.

The week features a series of workshops, talks, presentations and networking opportunities for the whole of the University's research community – from postgraduate research students to professors.

It also features insight from external speakers from Research England and UK Research and Innovation (UKRI) and provides a platform to launch the University's new 2022-2027 Research Strategy – Recovery, Regeneration, Renewal.

The strategy positions Teesside as an industry-engaged University with a reputation for high quality, applied research that makes a difference to individuals, organisations and society.

It will drive forward both business and social innovation and will invest in, and deliver, research in sustainable engineering, advanced computing, and bioscience that addresses the challenges facing industry today. Research focused on industrial regeneration will be matched by work on health and socio-cultural innovation and recovery.

Funded by

Department for Education

U **Teesside University**

Together with business

SKILLS BOOTCAMPS

58% Students gain employment upon completion of a Skills Bootcamp

If you are unemployed or self-employed and looking to work in tech, then you should consider completing a Skills Bootcamp with Teesside University.

We delivered our three bootcamps twice in 2021 to a selected group of 60 students, with 60% attending an interview and of those over 58% gaining employment within 2 months upon completion

Our 16 week bootcamps are a great way to retrain or upskill to gain the knowledge and skills you need to find employment in a number of specialisms. They take place twice a week and in the early evening with support from both academics and Students Ambassadors to help you succeed.

We also provide Employability sessions helping you with your CV Design, the Application Process, Presentation Skills and vital Job Searches.

Our Skills Bootcamps are in:

• Data Analytics and Visualisation: from Advanced Excel to PowerBI

• Machine Learning and AI for Business Solutions

• UI/UX Design for Games

Employed people are also welcome to join one of our Skills Bootcamp to help them to upskill and use these skills within a new role within their current employer*

If you would like to complete a Skills Bootcamp, why not apply today at Skills Bootcamps | Business | Teesside University or Email a member of the team to find out more **skillsbootcamp@tees.ac.uk**

Find out more online:
tees.ac.uk/skillsbootcamp

Contact us:
skillsbootcamp@tees.ac.uk

SKILLS FOR LIFE

institute of CODING

Computing

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, ICT, and data science. 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. Many of our BSc programmes are reviewed and accredited by the British Computer Society.
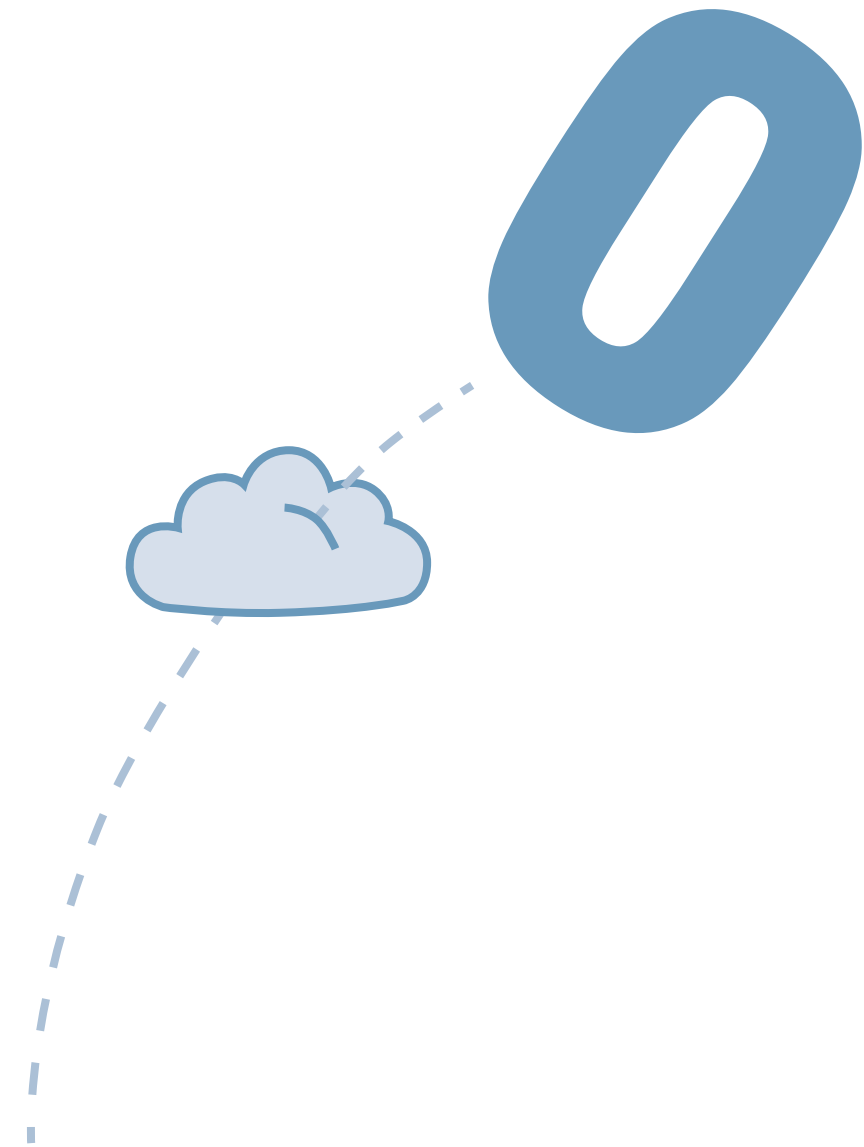
Students are supported by outstanding facilities, including a wide range of web, networking and programming studios and dedicated laboratories running industry-standard software. The School maintains close links with industry, with academics actively involved in consultancy. The high quality of computing and web courses at Teesside has been recognised by a national review undertaken by the Higher Education Funding Council for England. A report by the British Computer Society highlighted 'the positive approach to course delivery, innovation and student support'.

Our computing courses include:

Undergraduate

- BSc (Hons) Artificial Intelligence
- BSc (Hons) Business Technology
- BSc (Hons) Computer and Digital Forensics
- BSc (Hons) Computing
- BSc (Hons) Computing with Education
- BSc (Hons) Computer Science
- BSc (Hons) Cyber Security and Networks
- BSc (Hons) Cyber Security Management
- Digital and Technology Solutions Professional (Cyber Security Analyst) Degree Apprenticeship
- Digital and Technology Solutions Professional (Software Engineer) Degree Apprenticeship
- BSc (Hons) Information Technology
- BSc (Hons) Software Engineering

Postgraduate

- MSc Applied Artificial Intelligence
- MSc Applied Data Science
- MSc Artificial Intelligence
- MSc Artificial Intelligence with Data Analytics
- MSc Computer Science
- MSc Computing
- MSc Cyber security
- MSc Cyber Security (Online)
- MSc Data Science
- MSc Digital Forensics and Cyber Investigation
- Digital and Technology Solutions (Degree Apprenticeship)
- MSc Financial Technology
- MSc IT Project Management

BSc (Hons) Computing

Kevin Carter
NHS Aware

I have chosen to exhibit my final year project which is aimed at the NHS. When you visit a doctors' surgery you see signs saying zero tolerance to abuse. I tried looking for statistics for this and could not find any. This app will allow incidents to be recorded, and from that, statistics to be gathered. Not only that, it will give all surgery's running the app pre warning if a patient has abused staff at a different surgery, alerting them to possible issues and then hopefully avoiding problems. As a lot of the posters regarding this issue say, there is no excuse, we are here to help, not to be hurt.
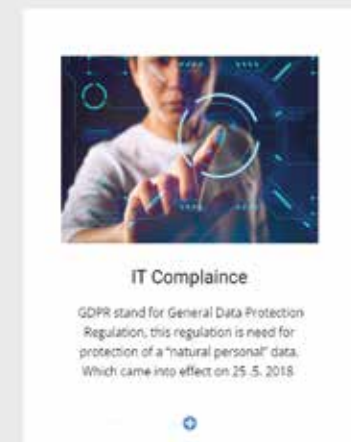
BSc (Hons) Cybersecurity and Networks

Blessing Osawaru
Data Protection in electronic data collection

My Project shows how risk assessment can be carried out for an IT company, from the auditing to mapping. It talks about data, how to secure it and how to write a professional IT compliance policy. And what rules and regulation applied to business organisation and how this can be done using GDPR. Throughout the process I have learnt to design and implement data using database software tools. I have learned not only how to write and conduct privacy impact assessment but also familiarised myself with the UK and EU legislation concerning data protection.

IT Complaince

GDPR stand for General Data Protection Regulation, this regulation is need for protection of a "natural personal" data. Which came into effect on 25.5.2018

MSc Applied Artificial Intelligence

Karen Kaur
Premajit Singh
Explainable Artificial Intelligence in Bias Mitigation

Artificial Intelligence (AI) is considered 'explainable' when it not only provides an accurate solution but also produces human-understandable reasoning behind the outcome. AI model results can be biased because of the training data. This can result in difficulty for users to trust the decisions made by the trained models from both an ethical and legal perspective. Explainable AI (XAI) intends to shed light through reasoning of non-interpretable AI of the black-box nature. This project focuses on research skills and the development of an Explainable AI algorithm to promote algorithmic fairness through the development of meta-algorithms which work with the existing machine learning models to identify the generation of bias based on training data. The project reaches across critical thinking and decision making to create a novel way to produce the relationship between the input and output data to identify training data entries which may be potentially influencing the inaccurate or biased outcomes. This project looks across datasets mainly within the financial industry but has the flexibility of reaching across to decision making systems in a range of other industries.

Explainable Artificial Intelligence in Bias Mitigation

Catherine Vaughan-Jackson
Comparing Djikstra's algorithm and Q-learning in a maze-like environment

An in-depth analysis comparing the use of Djikstras algorithm and Q-learning methods to solve a maze-like environment, specifically in a dangerous environment with no environment pre-mapping ability, such as a room in a burning building. For this project, I built a simple user-friendly tkinter module that can be manipulated to replicate a change in scale of a room and an interface where a user can create 'obstacles' by selecting cells. Both algorithms can then be individually run in the user-defined environment producing a visual representation highlighting the 'optimum' path to the exit.

For this project, I started with no prior coding experience and by the end of the module finished with a thorough understanding of how both algorithmic processes work and how they can be implemented successfully using Python.

MSc Applied Data Science

Le Minh Thao Doan
AI-based model for diagnostic and prognostic prediction of severity of COVID-19 patients

I have designed a deep learning model to improve the clinical decision and management of this disease by identifying the severe COVID-19 cases and assessing the mortality risks of COVID-19 patients based on multiple data modalities such as clinical information and radiological data.

Godspower Wodi
A Graphical User Interface for analysing UK police data and Covid19 using python

This is a graphical user interface written entirely with python using tkinter library that pulls data from UK police website as well as Covid19 data to answer user queries across both police activities and Covid19 infection across the UK.

MSc Computer Science

Md Ishan Arefin Hossain
IoT based Health Monitoring System with Edge Intelligence

Continuously monitoring the health of elderly people and people with chronic diseases are of significant importance, although it is expensive and sometimes quite impossible to monitor the health of these kinds of patients manually. IoT based Health Monitoring system will provide a scope to monitor patients' health from various sensor data and by analyzing the data via the application of edge intelligence through the devices like Raspberry Pi and provide the analysis result and notification via central IoT based framework. The proposed system will be cost-effective as most of the analysis will be happening at the edge and will be efficient because the system will be able to provide personalized predictions and urgent notifications regarding the patient's health.
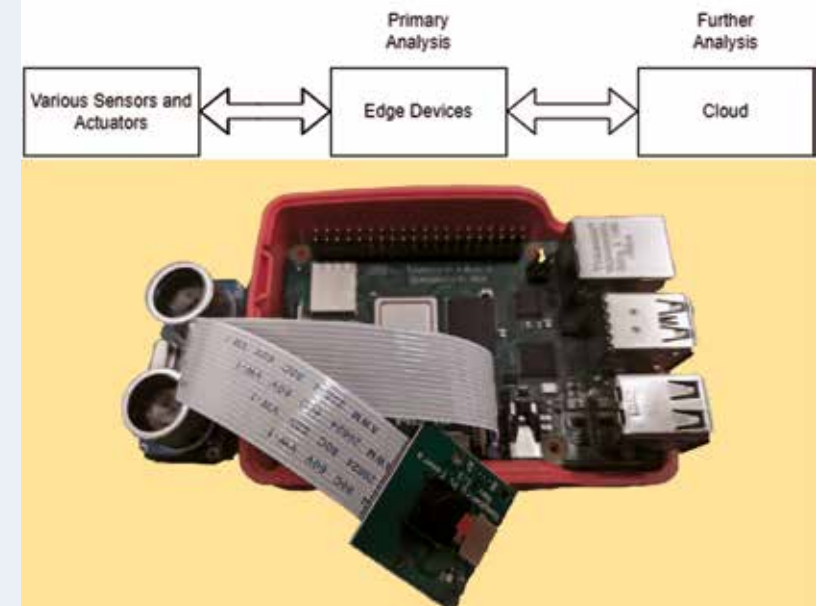
MSc Cybersecurity

Richard Peter Jackson
The development of an information/cybersecurity education, training and awareness programme

The development of an information/cybersecurity education, training and awareness programme that utilises interactive game-based learning to enhance the learning process. The goal of this project was to develop and prototype an effective Security Education, Training and Awareness (SETA) program or framework that implements an interactive learning process, using interactive scenarios, and game-based methods as a means to educate and assess the content being delivered to the recipients. The idea behind this is that by making the process interactive and turning it into more of a game like experience then this should make the learning process more interesting and increase the intake of knowledge. For this project I needed to develop my skill in relation to User experience, Training methods, game mechanics that can enhance the learning experience, gamification as well as effective designing, implementing and testing, as well as effective data collection and evaluation.

MSc Data Science

Aniket Sharad Bhosale
Analysing Economical aspects of the countries and Stock market with Power - BI and Machine Learning

The GDP growth of the country assists in having a stable income, Government finance, reduce poverty rates, public and private sector development and productive capacity. Moreover, comparing the GDP of countries illustrates the information of minimum economy a country should possess for the sustainability. The reflection of this data in the form of charts and graphs by the power BI tool is benefitted to study the growth balance. The data has been used to project, influence of rising trade markets on GDP and accompanying business cycle, which includes exchange rate, over the recent years. The forex-reserves is sorted to predict the strength of the economy and calculate the Human Development Index, while population concern affecting the GDP per capita is correlated. This report helps to analyse and study the influence of global market factors in the stability of the country's GDP and how a country can overcome the arising crisis by maintaining the balance of GDP and the related factors. Eventually, the pivotal usage of Power BI tool is illustrating, formulating of collected data.

PhD Computer Science

EXPO TEES
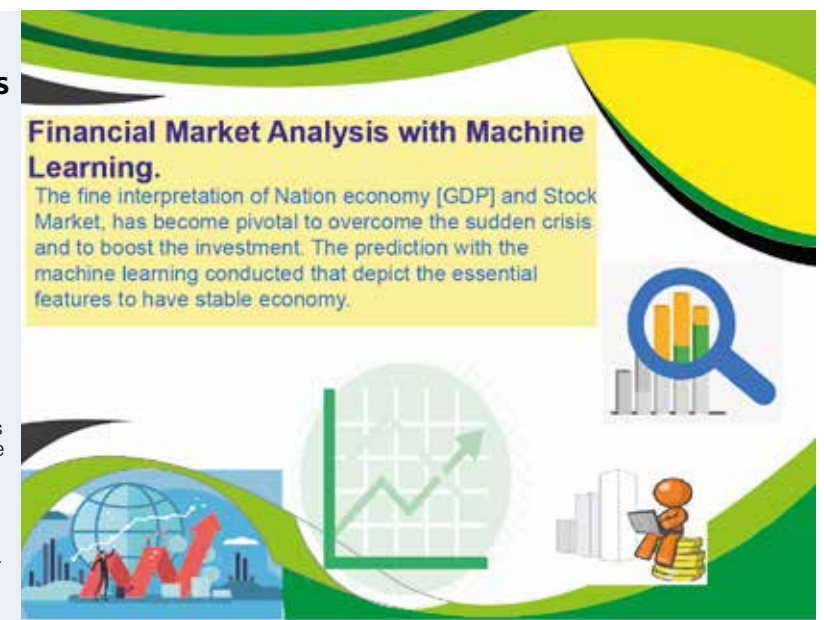
Digital Diagnosis of Hand, Foot, and Mouth Disease Using Hybrid Deep Neural Networks

Deep Neural Networks to disgnose Hand, Foot, and Mouth Disease using images and clinical data

Verma, S, Razzaque, MA, Sangtongdee, U, Arpnikanondt, C, Tassaneetrithep, B & Hossain, A 2021, 'Digital Diagnosis of Hand, Foot, and Mouth Disease Using Hybrid Deep Neural Networks', IEEE Access, vol. 9, 9, pp. 143481-143494. https://doi.org/10.1109/ACCESS.2021.3120199

Suraj Verma

Digital Diagnosis of Hand, Foot and Mouth Disease Using Hybrid Deep Neural Networks

Hand, Foot and Mouth Disease (HFMD) is a highly contagious paediatric disease showing up symptoms like fever, diarrhoea, oral ulcers and rashes on the hands and foot, and even in the mouth. HFMD's diagnosis is very challenging as its lesion pattern may appear quite similar to other skin diseases such as herpangina, aseptic meningitis and poliomyelitis. Therefore, clinical symptoms are essential besides skin lesion's pattern and position for precise diagnose of this disease. A deep learning based HFMD detection system can play a significant role in the digital diagnosis of this disease. Various machine learning models designed to diagnose this disease however, these models are limited to the image classification problem. The diagnosis of similar appearing skin diseases using the image classification approach may result in misclassification or misdiagnosis of the disease. Parallel integration of clinical symptoms and images can improve disease diagnosis and classification performance. This project has proposed a novel Hybrid Deep Neural Networks integrating Multi-Layer Perceptron (MLP) network and Convolutional Neural Network into a single framework for the diagnosis of HFMD using the integrated features from clinical and image data. This novel approach uses images and clinical symptoms to diagnose this disease with an accuracy of 99-100%.

TEESSIDE UNIVERSITY

Teesside University works in collaboration to commission a chemical recycling demonstration plant

A leading safety products and services company has committed seed funding to a start-up company, Stuff4Life, to enable it to develop a demonstration chemical recycling plant in collaboration with Teesside University.

The project, being funded by UK safety products company Arco, aims to prove the viability of a circular economy for recycled workwear.

With a limited product lifetime and little to no infrastructure for recycling and manufacturing in the UK, workwear has a high social and environmental impact.

Nearly 90% of the 33m workwear garments supplied annually end up in landfills or are incinerated. Many of these items are made from polyester, a plastic-based fabric and industry staple that uses an estimated 342m barrels of oil every year to make.

Acro has committed seed funding to partner with start-up company Stuff4Life to support the research and development of a closed-loop, circular economy solution for polyester workwear. The funding will enable Stuff4Life to commission a chemical recycling demonstration plant in collaboration with Teesside University, bringing onboard its academic experts, world-leading research capabilities and state-of-the-art facilities.

The plant will recover the base compound terephthalic acid (TPA), used in the production of polyester fabric; from recycled workwear. The recovered TPA will then be reincorporated into various manufacturing processes, with the goal being to manufacture new polyester to deliver a "PPE for Life" opportunity in the UK.

As part of the trial phase, Arco and Stuff4Life will collect, shred and transport up to six tonnes of end-of-line polyester and polyester mix garments. The garments will then be recycled using chemical processes. Several batches of garments with different levels of polyester content will be put through the process and the results analysed, including the TPA quality.

If the initiative is successful, Arco and Stuff4Life will be able to support a circular economy for workwear. This would see the TPA created through the chemical recycling activity sold back into the virgin polyester manufacturing process, with volumes externally audited and validated.

Successfully recycling polyester and establishing an onshore UK supply chain would reduce the industry's dependency on fossil fuels and find value in waste. It will also significantly reduce pollution from the manufacturing process as recycled polyester uses 59% less energy compared to virgin polyester. If successful, this will significantly help tackle the world's climate crisis.

Dr David Hughes, Associate Professor in Teesside University's School of Computing, Engineering & Digital Technologies, said: "Polymers no doubt have a hugely important role in the future of energy, resources, food, health and infrastructure. However, we need to decouple from a use and dispose economy to a circular, sustainable one. This project builds on Teesside's 20 years of experience in research into environmental and sustainable engineering technologies. We are hugely proud to be working with Stuff4life and Arco to make a real difference to the future of polymer sustainability."

David Evison, Managing Director at Arco,

said: "As a fifth-generation family business, Arco has always put corporate and social responsibility at the heart of the organisation. Our involvement with Stuff4Life and Teesside University is an opportunity to make a real difference to the environmental and social impacts of workwear and to use our scale and product development capabilities to drive an effective circular economy, supporting local regeneration and ensuring we protect more people and the planet."

John Twitchen, Director of Stuff4Life, comments: "The humble hi-vis is an essential item for everyone working in hazardous environments, from mending roads and collecting bins to saving people at sea or up mountains. The impact of polyester as a linear make-use-dispose garment is significant, but by recycling it those impacts can be substantially reduced whilst keeping all the performance benefits from using synthetic fibres. We're excited to be working on such an important project with the country's leading safety company."

The project forms part of Teesside University's research strategy, a key focus of which is forging a smarter, greener industrial economy through the design of novel and disruptive technologies, processes and business models to deliver green and sustainable growth, increasing productivity and prosperity.
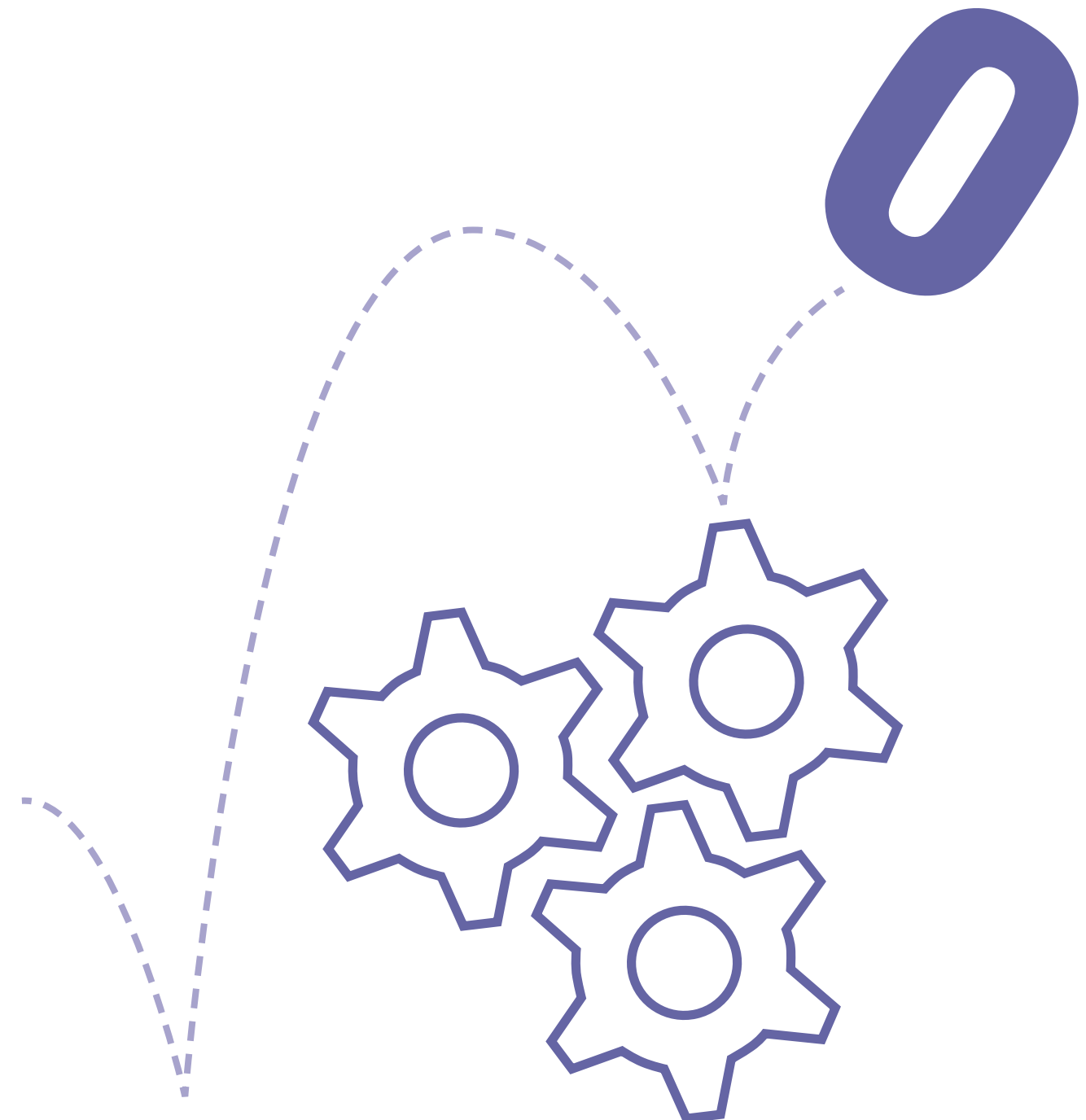
Engineering

The work done by our students in the multitude of fields surrounding engineering are a great insight into both the work of the University and the local area. The North East of England hosts major international automotive, aerospace, engineering design, manufacturing and civil engineering industries, as well as a growing number of companies involved in renewable energy. Teesside is also a major international centre for the chemical and process industries, and home to some of the most advanced pharmaceutical and biotechnology companies in the world.
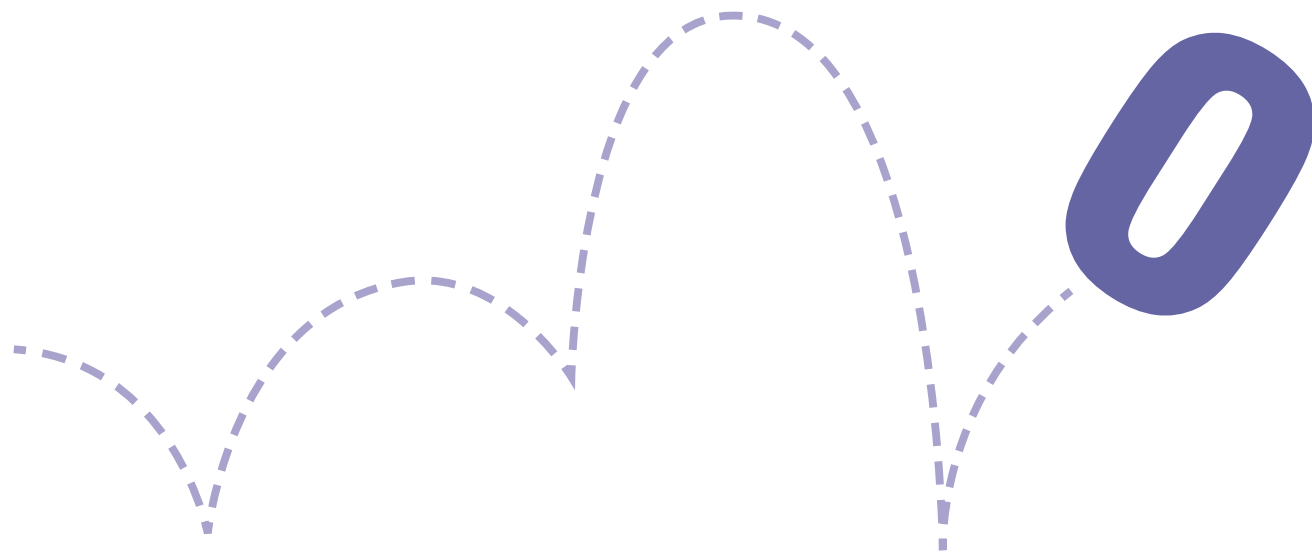
These combined features and opportunities means we have an ever growing list of research projects, collaborations and examples of advanced practice. The projects shown here are the first Engineering projects shown at an ExpoTees physical event as we look to grow and diversify ExpoTees each year with more fields of study available to be showcased.

Our computing courses include:

Undergraduate

- BSc (Hons) Construction Management
- BEng / MEng (Hons) Aerospace Engineering
- BEng / MEng (Hons) Chemical Engineering
- BEng / MEng (Hons) Civil Engineering
- Civil Engineer Degree Apprenticeship
- Control/Technical Support Engineer
- BEng (Hons) Automation and Digital Engineering
- BEng / MEng (Hons) Electrical and Electronic Engineering
- Electrical/Electronic Technical Support Engineer Degree Apprenticeship
- Embedded Electronic Systems Design and Development Engineer
- BEng / MEng (Hons) Instrumentation and Control Engineering
- Manufacturing Engineer Degree Apprenticeship
- BEng / MEng (Hons) Mechanical Engineering
- Product Design and Development Engineer

Postgraduate

- MSc Aerospace Engineering
- MSc Chemical Engineering
- MSc Civil and Structural Engineering
- MSc Electrical Power and Energy Systems
- MSc Instrumentation and Control Engineering
- MSc Mechanical Engineering
- MSc Oil and Gas Management
- MSc Petroleum Engineering
- MSc Project Management
- MSc Sustainable Energy and Clean Technology
- MSc Sustainable Engineering Systems

Top-Up Courses

- BEng Tech (Hons) Civil Engineering (Top-up)
- BEng Tech (Hons) Electrical and Electronic Engineering (Top-up)
- BEng Tech (Hons) Mechanical Engineering (Top-up)

BEng (Hons) Aerospace Engineering

Anthony Gallagher
An Experiment To Improve The Aerodynamic Characteristics Of A Wing Using Inverted Vortex Generators

The aim of this study is to find out if the addition of different shaped indented vortex generators to aerofoils can replace a conventional vortex generator and therefore increase the lift and stability of the aircraft without increasing drag. The study will discuss the change in lift and drag characteristics and discover the best placement and distribution of divots across the aerofoil. It will also test the change of pressure, lift and drag within a wind tunnel and CFD simulation. It will also cover delaying the separation of flow over an aerofoil to improve the manoeuvrability of an aircraft. Any improvements found will apply to a multitude of applications such as in military aircraft, helicopter rotor blades and wind turbine blades. Theoretical data collected in this study can be backed up by practical data gathered in a wind tunnel.
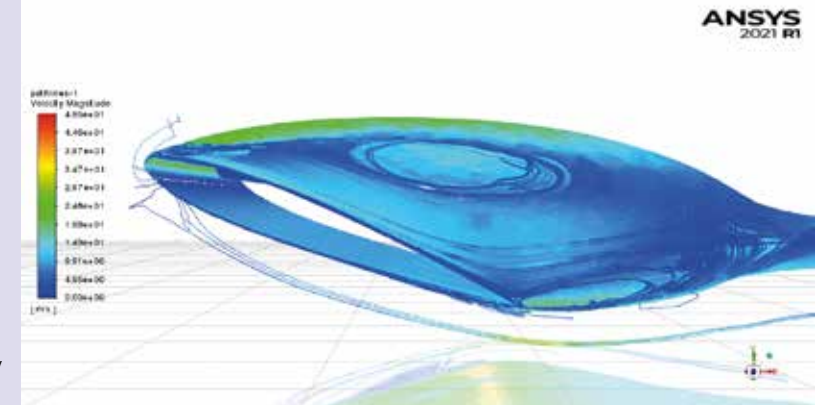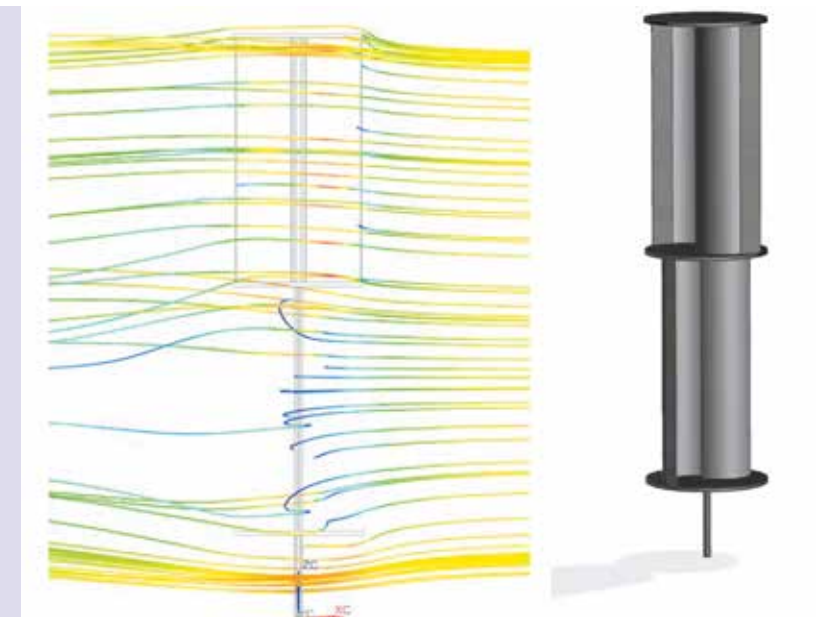

BEng (Hons) Mechanical Engineering

Matthew Allison
Wind Turbine: Investigation into the Use of Fibre Sail

The motivation for a wind turbine stems from the curiosity of a dragonfly wing performance when in flight. An attempt has been made through biomimicry to adopt the dragonfly wind with use of a fibre nylon sail to harness the power of the wind.

The Design of a Savonius wind turbine (Vertical axis) 3D model using Siemens NX12 software has been researched for the sail application, this includes structural and fluid finite element analysis with animation. The wind turbine has fibre sails to harness wind power to convert to usable energy for off grid locations and for undeveloped regions. The investigation also draws comparison of wind turbine produced energy against regions of the world that it would be most applicable.
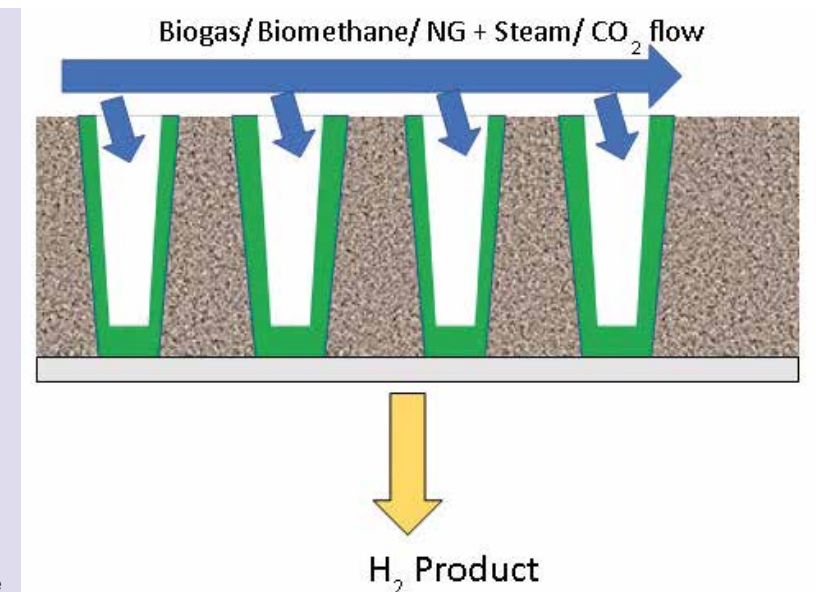

MEng (Hons) Chemical Engineering

Joshua Brennan
Palladium Membrane Hydrogen Reactor

This project is the research and development of a porous steel plate membrane reactor, for the reformation of methane into hydrogen and (captured) CO_2, making "blue" hydrogen. Traditionally, this reaction involves many stages and high temperatures in order to produce usable hydrogen and is therefore only viable on a large scale. In conjunction with the Teesside University Hydrogen Innovation Project, this project aims to use palladium's ability to selectively filter hydrogen to reduce both the number of stages and the temperature of operation by filtering hydrogen directly out of the reaction chamber through a palladium membrane, massively increasing the economic viability of small hydrogen reactors for small to medium enterprises.

This exhibit demonstrates the use of research and experiment design, Sol-gel catalyst synthesis and application, palladium deposition, heat treatment and calcination techniques and characterisation techniques such as SEM and XRD.

The exhibit outlines the goals of the research, the progress made so far and the upcoming work in the project.

Biogas/Biomethane/ NG + Steam/ CO_2 flow

H_2 Product

ANIMEX

TEESSIDE UNIVERSITY
Alumni
ASSOCIATION

CREATIVE
ASSEMBLY™

EPIC
GAMES

FOUNDRY.

FRAMESTORE

Visualsoft

Unity®

STUDENT
LIFE

mulk

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 2022 and past events. We would particularly like to give our heartfelt thanks to our sponsors. We are very grateful for the support and dedication given by our School of Computing, Engineering & Digital Technologies Senior Executive Team, Department of Academic Enterprise, the Department of Student Recruitment and Marketing, and Student Futures for their help preparing the students for ExpoTees and beyond. Every final year student is guided through his or her project with the support of a project supervisor. We would like to express our gratitude to 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 us
T: **01642 342631**
E: **scedt-events@tees.ac.uk**

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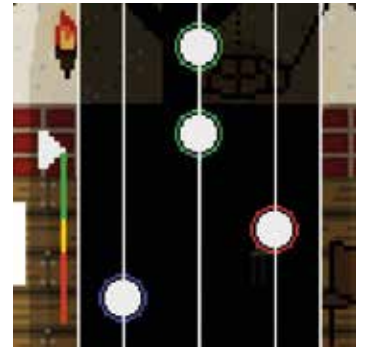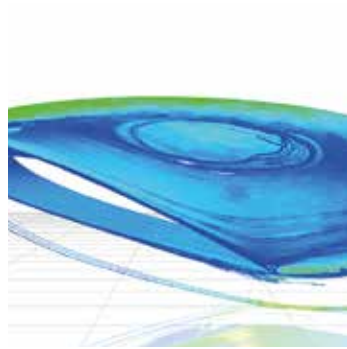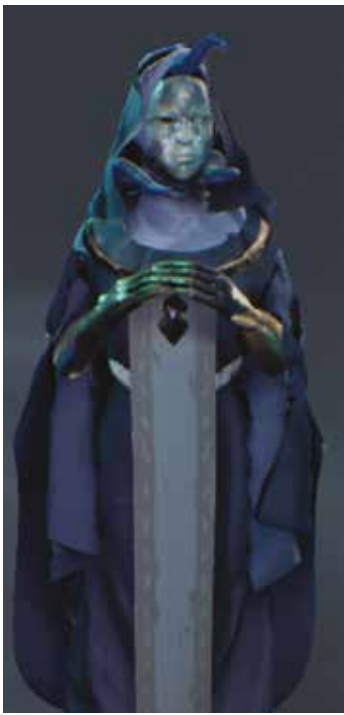
Sponsorship

ExpoTees is enriched by the support given to us by our event partners and sponsors. If you are interested in being part of this fantastic event in the future, please contact Joanne Marwood:
T: **01642 342608** E: **scedt-sponsorship@tees.ac.uk**