

# Ben Wainwright

A portfolio spanning

- ◆ human-centred design
- ◆ technology
- ◆ entrepreneurship and leadership
- ◆ charity and more...





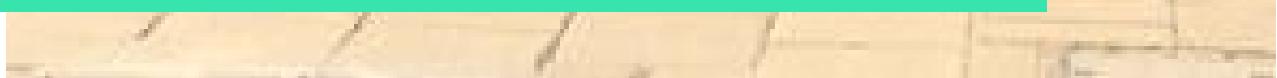
# Domino's

2016 - 2017

As a senior instore worker, I often found myself working alone in the front of the store or leading a team of others.

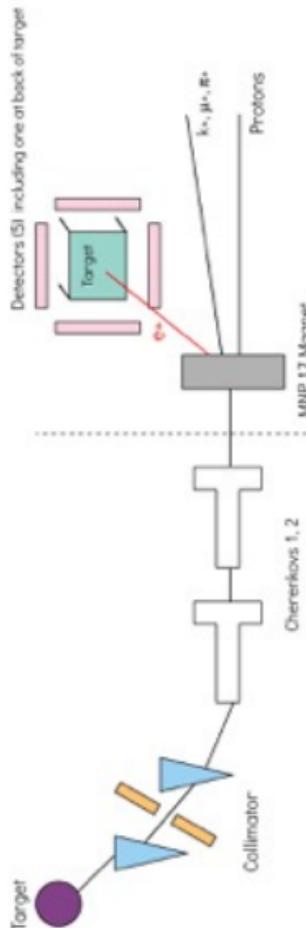
When it was quiet, I would train new employees on different roles within the store. And when it was busy, I'd delegate roles whilst being in the middle of the rush myself.

I learnt a lot about my work ethic, the importance of preparation, customer service and how to make a great pizza.



# Beamline for Schools

2017



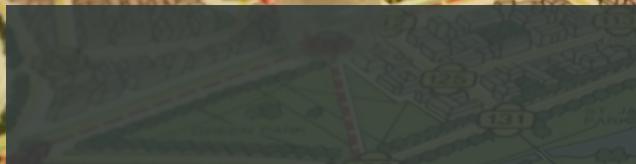
T.9 Beamline      Experimental Area

In our team of sixth form students, we were shortlisted in the top 20 globally in a competition designing an experiment to be run at CERN. The winning team got to travel to CERN to conduct their experiment, we got some t-shirts...

Our experiment looked to 'investigate the conservation of orbital angular momentum in electron-positron annihilation.' That probably doesn't mean much to you. We believed the results of the experiment could provide a novel method or non-destructively identifying the elements within an object - this could help archaeologists, for example, put a date to the relics they've found.

This was my first dive into deep research, understanding quantum physics beyond the academic curriculum. To be shortlisted globally, provided a great confidence boost - showing that large aspirations can be achievable.





# Programming

2017 - 2018

## 01 Imperative - C

I learnt how C works at the physical level, exploring how it interacts with assembly language and hardware.

## 03 Functional - Haskell

I experienced viewing programming through the lens of functional programming. I learnt the concept of recursion, but first I had to understand recursion...

## 02 Object Oriented - Java

I worked in a pair, developing my skillset in reading someone else's code and then adding functionality to that. I learnt a lot about different design patterns.

## 04 Python

I taught myself Python and have continued to use it for many applications - from web hosting, to cyber security, to data science and visualisation.



# WeCycle

2017



wecycle

bin there, done that!

## Improving recycling at the University of Bristol

In my first group project studying innovation, our interdisciplinary team of six were tasked with improving recycling at the university. We followed a human centred design process conducting interviews with a variety of stakeholders before creating our concept. The idea, wecycle, was a student led recycling service - flats in university halls of residence pay a subscription fee to have their bins collected and sorted.

### Team

I learnt the importance of team dynamics and accountability. It was also my first experience of working interdisciplinary.

### Presenting

Public speaking was an area I wanted to develop and university - this was the first of many that I'd take part in.

### Viewpoints

I came to appreciate the value of understanding the views and priorities of a variety of stakeholders.



# Tour Guides

2018



## An inclusive tour for the University of Bristol

In this university project, our interdisciplinary team were tasked with creating a tour of Bristol. We decided to focus on increasing the accessibility of open day tours of the university.



### Inclusive & Accessible

The first step for our team was to define what we mean by accessibility. We looked at physical disabilities as well as neurodivergence.

### Bodystorming

To help me understand the challenges faced by people with mobility difficulties, I attempted to navigate Bristol whilst being pushed in an office chair. Though this wasn't a direct comparison, it did help me experience some of the challenges.

### Inclusive Design

This project opened my eyes to the range of requirements and considerations needed to ensure that everyone can benefit from products and services.





# Breathe -Breath Again

2018

This project focused on increasing environmentally friendly transportation in Bristol. We started by mapping the most common modes of transport around several locations and surveying 97 residents. After collating the research, we created several concepts that were analysed using SWOT analysis.

The outcome was a festival, transforming the city centre into a car-free zone, whilst showcasing more environmentally friendly ways to travel.

The obvious thing I learnt in this project is to check spelling! My other big takeaway was working with a distracted team. I learnt the importance of accountability and setting expectations up front.





# Gromits Unleashed 2

2018

I was part of the team that created the 2 Oceans Gromits as [part of the 67 sculpture trail.

These were the only two sculptures to be linked - both thematically and through video streaming. The periscope on each sculpture featured a camera with the video feed displayed inside the porthole of the other one.

I learnt a lot of DIY skills, from working with fibreglass to creating a wooden frame. Everything I did on this project pushed my comfort zone.

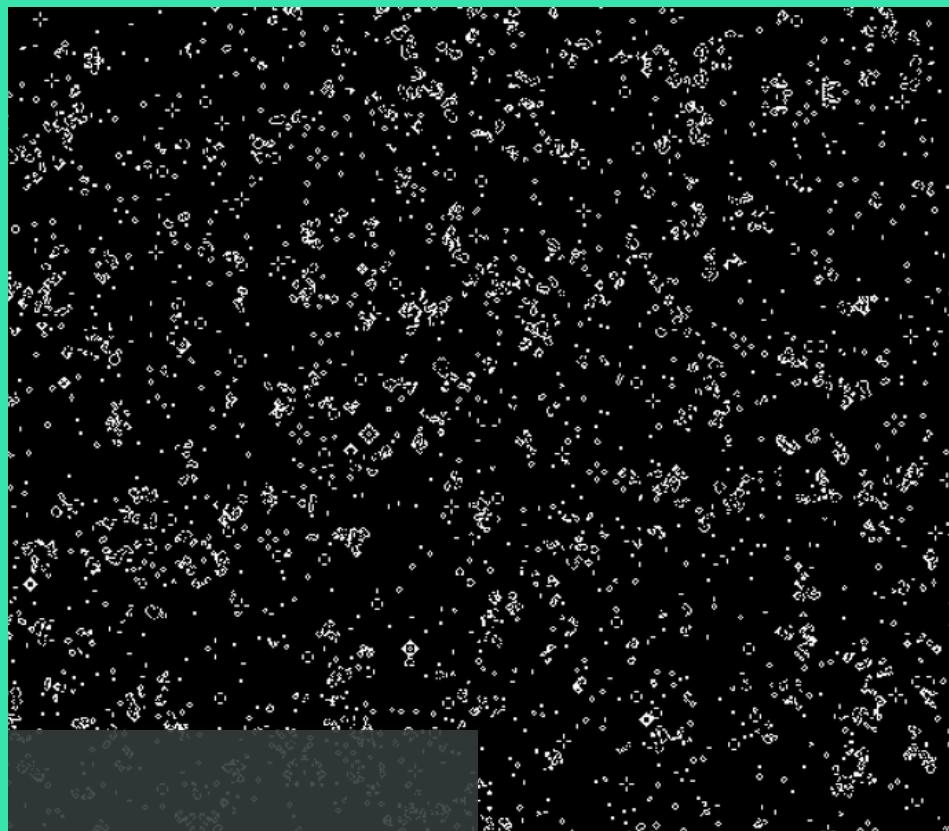
I developed my attention to detail as Aardman were strict on their design guidelines for certain aspects of the process.

It was an incredible feeling to see the sculptures out in the world being enjoyed by the public.



# Concurrent Computing

2018 - 2019



## CONCURRENT

I learnt the concepts and practicalities of developing concurrent code i.e. code that does multiple things at once.

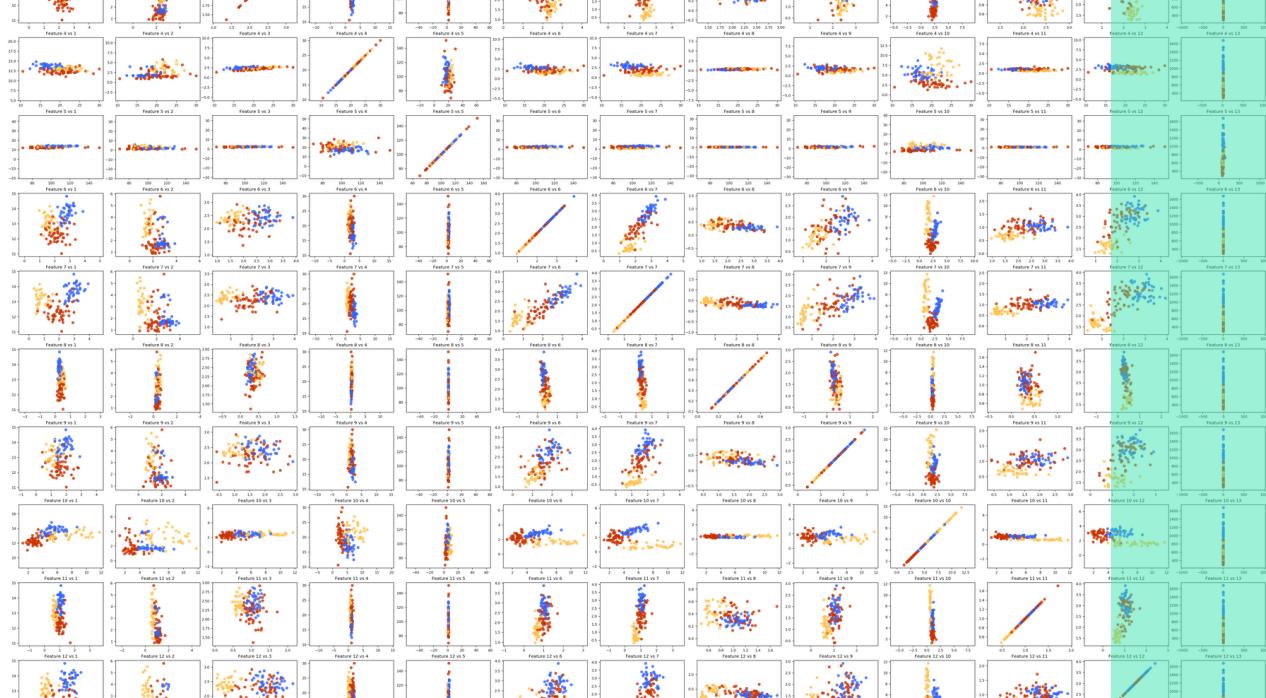
## GAME OF LIFE

My first project was to implement Conway's Game of Life efficiently on a physical hardware board with limited computational resources.

## KERNEL

My second project was to implement a kernel (the core element of an operating system) with pre-emptive multitasking and scheduling.





# Machine Learning

2018 - 2019

An introduction to machine learning mathematics and implementation.



## Signal Reconstruction

The first project consisted of reconstructing a signal from a series of data points. This involved using a hand crafted least squares regression algorithm.



## Classification

This project was a ground up build of a wine classification program. It involved feature selection, naïve Bayes, k-nearest neighbours and principal component analysis.



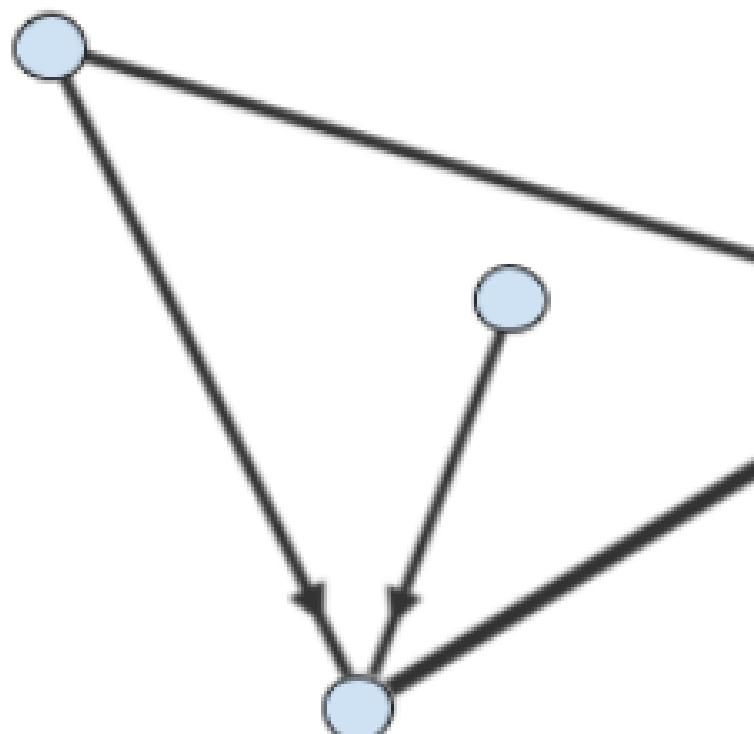
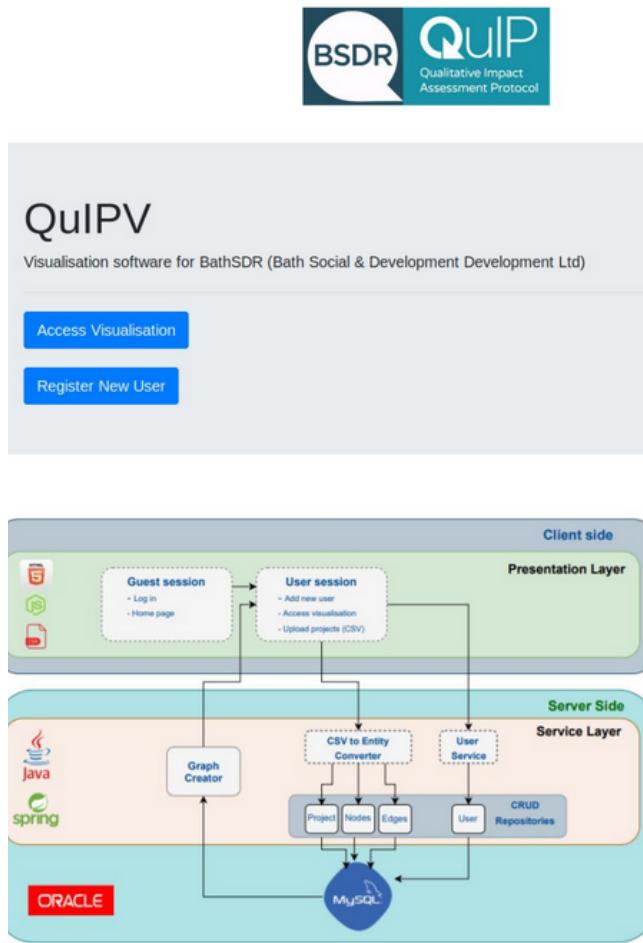
# Software Product Engineering

2018 - 2019

## A client project with BSDR

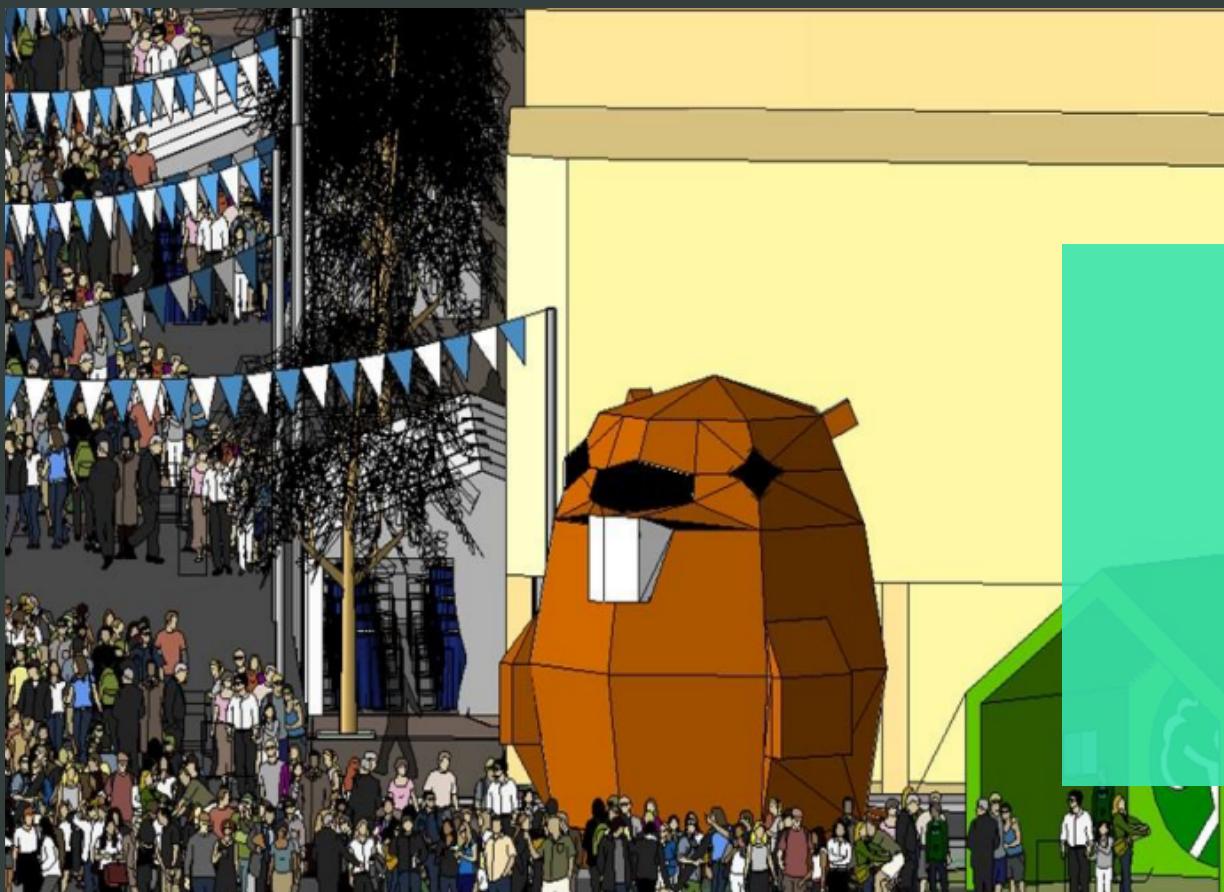
In a team of computer scientists, we created a software application for BSDR. I used my experience in human-centred design to lead on the requirements gathering from the client. We produced a web application that the client was pleased with.

However, there was conflict after the project as the client asked for small bug fixes whilst some members of the team did not want to complete extra work for free. I'm regretful of the way this project ended, but I learnt the value of regularly reviewing expectations which may change throughout a project.



# Environment Agency

2018



The Environment Agency tasked our interdisciplinary team with improving how the public engages with flood protection. We spoke to members of different communities around Bristol as well as flood protection professionals. We found a strong cognitive dissonance between the perceived risk of flooding compared to action.

After testing several concepts, we converged on the idea of greater public presence of the environment agency. We delivered a proposal for direct interaction with the public at events, alongside a campaign promoting flood protection.



# Civil Service

2019

This project aimed to take steps towards increasing the number of Online Service Providers who take design considerations to ensure children can use their platforms safely.

We didn't have ethical approval to speak directly to families, and so we solely spoke with online service providers. Our final solution included a design toolkit and certification system that allowed companies to display their commitment to child safety online.

As the domain expert in our team, I was able to develop my communication skills vastly during this project. Throughout the project, I translated technological concepts into accessible language for my team. I helped them to understand technical requirements for our solution, whilst they challenged me to view new viewpoints that I had not previously considered.

From working with psychologists, I began to develop a great interest in behavioural psychology that influences much of my current work.

	<input checked="" type="checkbox"/> Self assessed compliance with legal regulation
	<input checked="" type="checkbox"/> Transparency <input checked="" type="checkbox"/> Reduced data sharing <input checked="" type="checkbox"/> No nudge techniques
	<input checked="" type="checkbox"/> Data minimisation <input checked="" type="checkbox"/> Little customer profiling
	<input checked="" type="checkbox"/> Parental controls available <input checked="" type="checkbox"/> Enforced community standard
	<input checked="" type="checkbox"/> Online Tools to protect children <input checked="" type="checkbox"/> Data protection impact assessment (DPIA)



# BAE Systems Applied Intelligence

2019



## Operation Cyber

"The Operational Cyber business area works with the R&D and low-level aspects of Cyber Security. Our world-class experts work with customers to discover and assess vulnerabilities in systems so that they may be better secured, and we provide adversarial assurance internally and externally to make sure that systems can withstand state-of-the-art threats."

- BAE Systems Website

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## Intern Project

Alongside my main role in Operational Cyber, I worked in a team of interns on another project. We were tasked with creating a business proposition for a company that aimed to solve the widespread problem of IoT security.

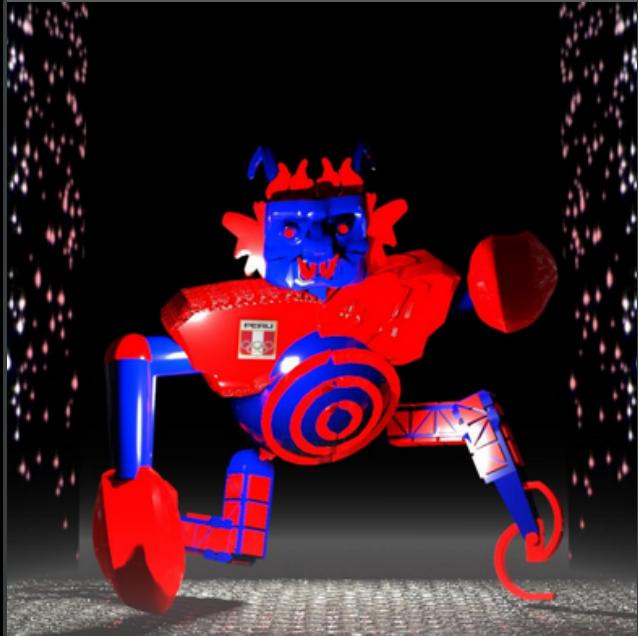
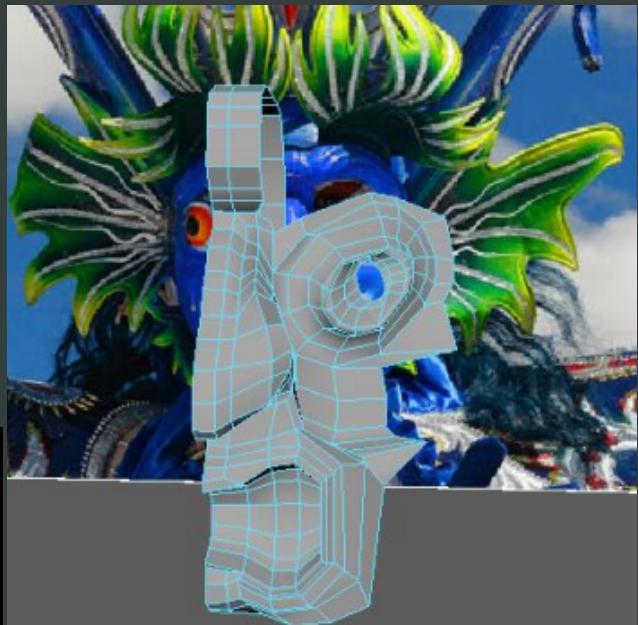
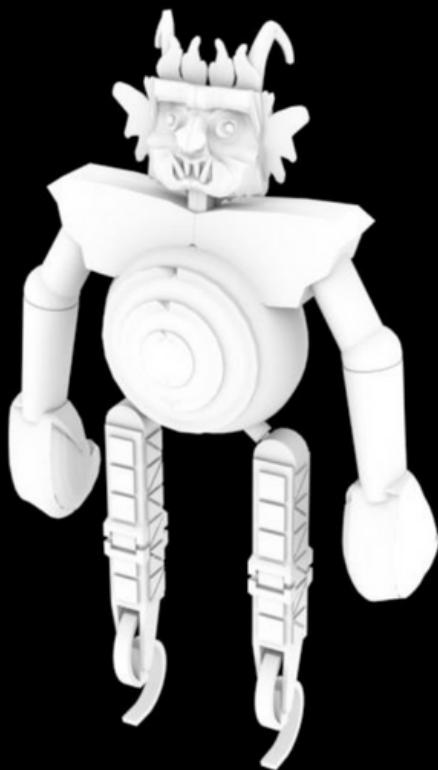
I leveraged my skills in human-centred design to push for a solution that took into account consumer buying habits and the fast-to-market slow-to-patch business model of most IoT companies.



# Character & Set Design

2019

I designed a robot for a fictional film that would represent Peru in the robot Olympics. This was completed using the Autodesk Maya application - following the entire designing, rigging and lighting pipeline.

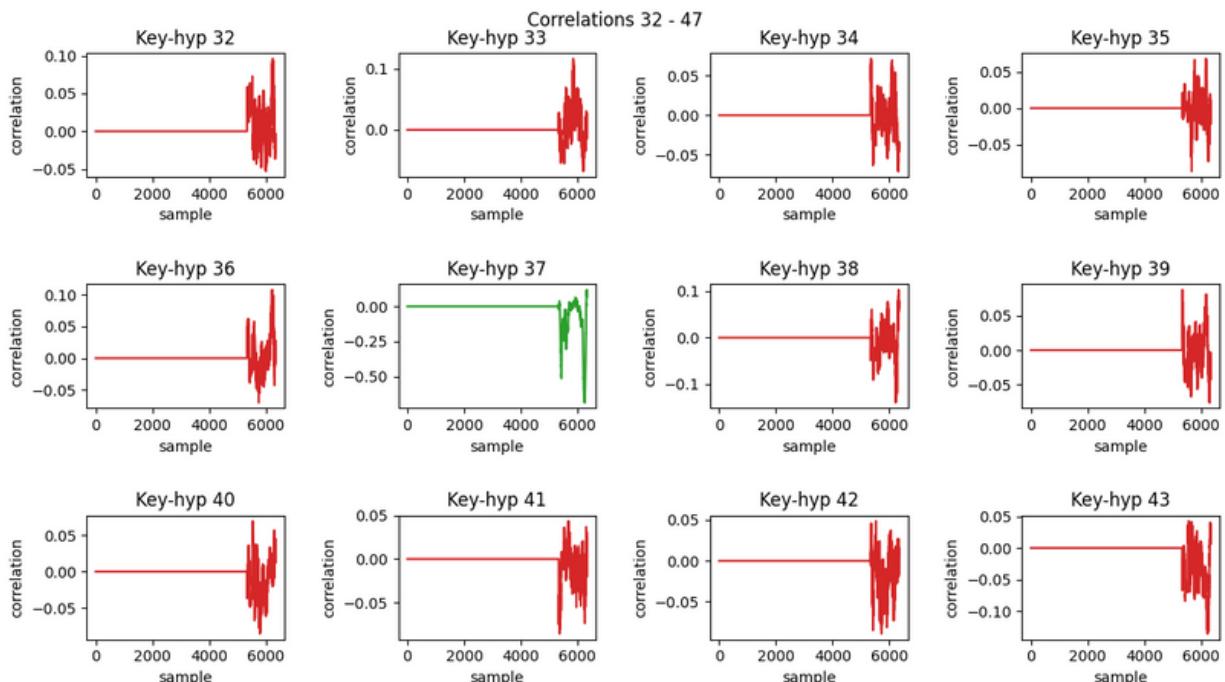


# Applied Cryptography

2020

An implementation in C of the cryptographic algorithm AES-128 in ECB mode. This was subsequently followed by a Differential Power Analysis attack on the function, taking advantage of elements of the implementation designed for efficiency.

Finally, the implementation of defences against a DPA attack.

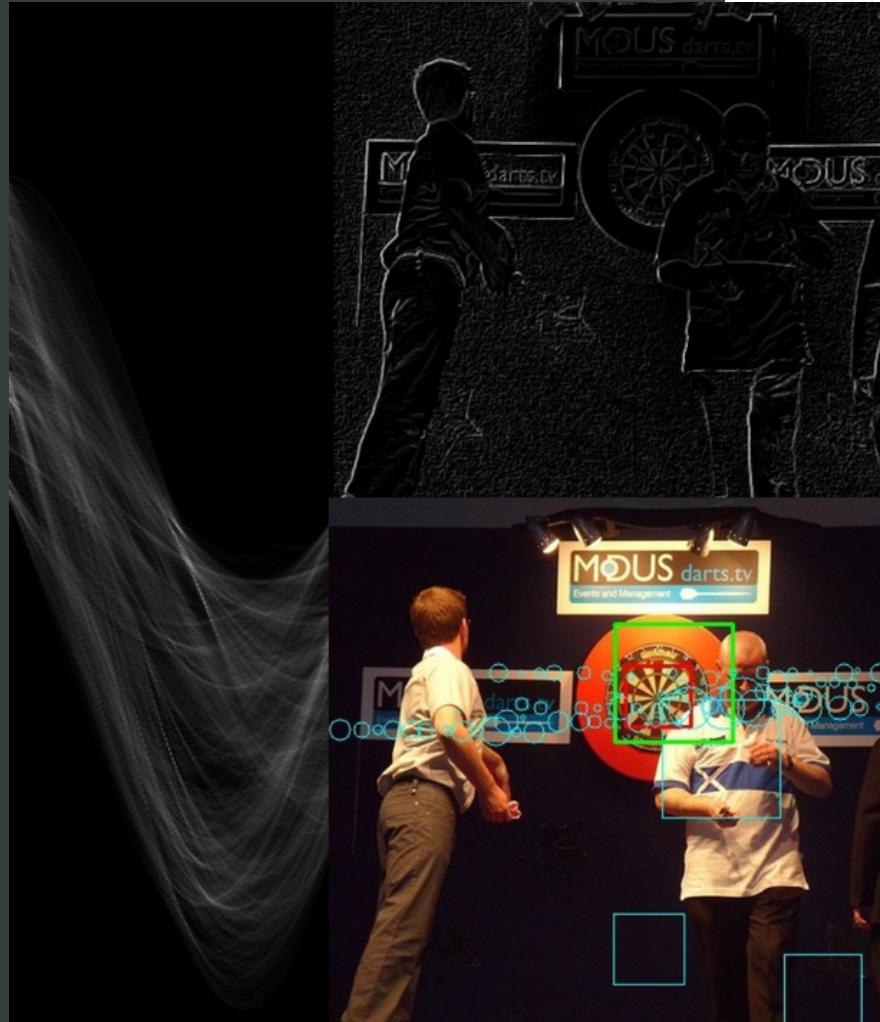


# Image Processing & Computer Vision

2020

I explored the basics of object detection in a selection of images.

This involved using Haar-like features and the Ada Boost algorithm to detect faces and dartboards in a series of images. The next stage was to add a Viola-Jones detector into the mix to improve the system. The results were then evaluated, with respect to the inner working of each algorithm.



# Kayote

2019 - 2020

## A Cyber Risk Analysis Consultancy & Platform

This was a project that I pitched the idea for, before forming a team with two others who were interested. Our aim was to improve cyber security in SMEs, who often lack domain expertise.

After a several months of researching into the problem, we came up with a solution. Our concept was a cyber risk analysis consultancy and platform. It would be sold to cyber insurers, used by SMEs and support the NCSC Cyber Essentials certification.

The deliverables for this project were a full design report, alongside a business plan for Kayote.

From this project, I learnt the importance of market validation and finding the right market. I learnt how to develop a go-to-market and growth strategy. And I learnt that team is everything when it comes to starting a business.

## Reducing ‘human error’ in a digital world

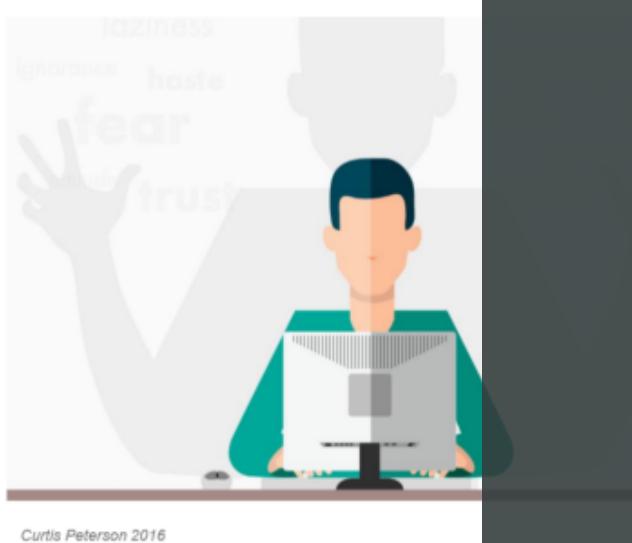
### The cyber security risk faced by organisations is not a technology problem but instead a people problem

Cyber security is often seen as something that can be solved by good technology, but that is not the case and industry is starting to realise this. With IBM reporting that 95% of breaches are caused by ‘human error’ we can see that this is a problem about people.

I want to explore how we can utilise human insights to uncover how an organisation’s culture as well as individual behaviours affect their safety online.

#### PEOPLE IMPACTED

A business may cease to exist following a cyber attack or at least lose money, reputation and trust. Customers may have personal data such as their address or financial information stolen without their knowledge.



Curtis Peterson 2016



# PAVE

2020 - 2021

I worked as lead developer to creating a web application that visualises referrals between healthcare services. This project was born out of the Bristol Wellbeing Datajam 2020, where we came joint first.

After, I made several improvements and pivots to the application - increasing it's sophistication.

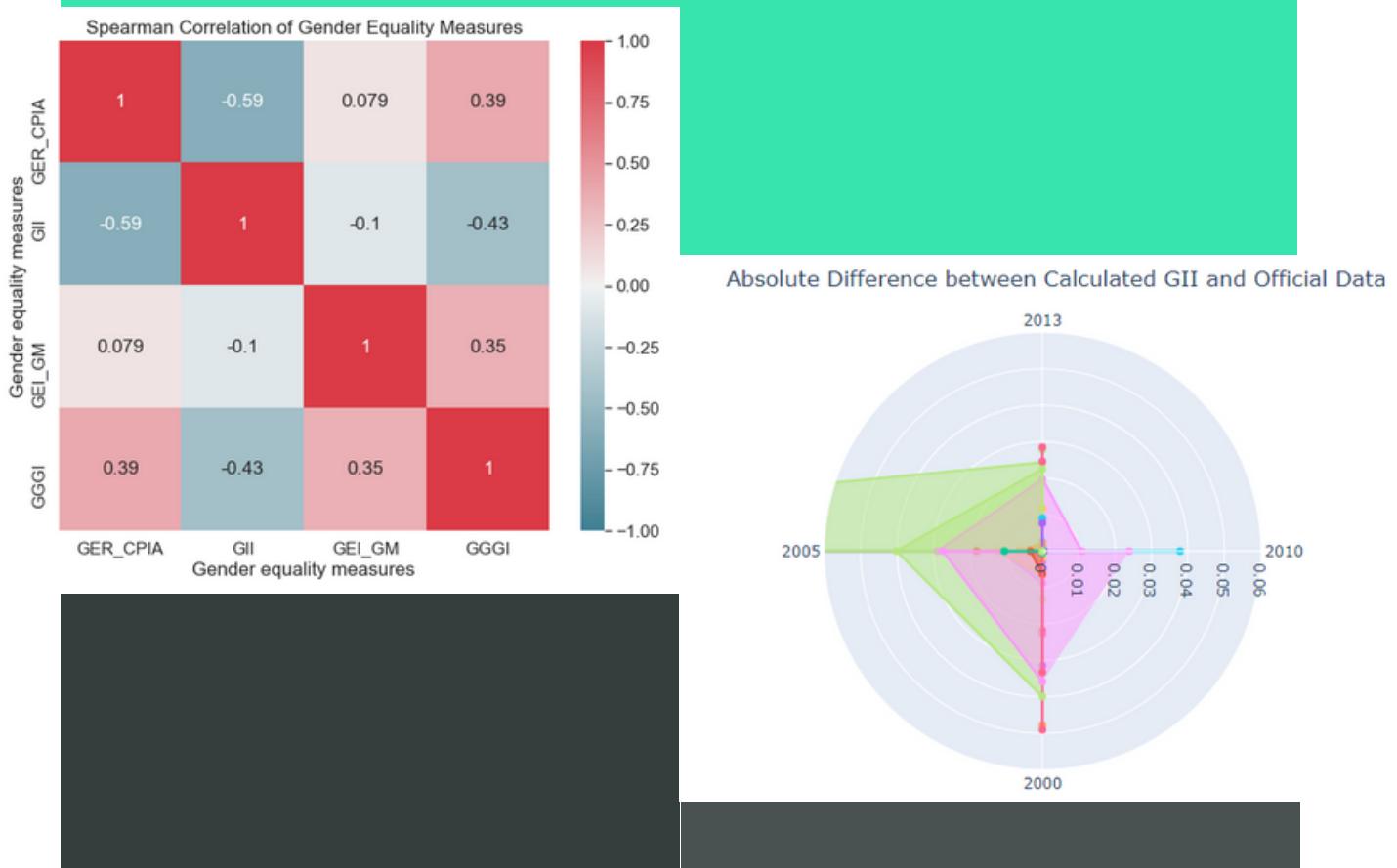


# Applied Data Science

2021

Working in a team, we conducted research into gender equality using UNICEF data.

I investigated the correlation between different existing measures of gender equality and was surprised to find very little correlation between them. A country may have low gender equality by one measure and high gender equality by another!



# Alternative Circle

2021

The emergence of digital lending in Kenya: How Alternative Circle's SHIKA app teaches the value of responsible innovation for financial technologies.

This was a case study conducted with Kevin Mutiso, Chairman of the Board for the Digital Lenders Association of Kenya & Alternative Circle founder.

I interviewed Kevin on multiple occasions, investigating how innovation is practiced in digital lending startups in Kenya. It is a sector with astronomical potential but critical challenges and, due to the COVID pandemic, it was a sector in need of resurgence.

Digital money has been around in Kenya since 2007, and the use of mobile money is much higher than in the UK (80% vs 50%). Historically, access to loans has been conducted through microfinance institutions - though there are many barriers to entry for such institutions.

In 2015, digital lenders began to emerge - widening financial inclusion through lowering the barriers for access to loans. This allowed many small businesses to raise working capital helping them to grow. However, digital lending was not regulated and so rogue traders began to enter the market. Coupled with mass fraud and later the pandemic, the sector nearly went out of existence.

This is why my case study comes in, just as the Central Bank of Kenya was in the process of creating regulation allowing digital lenders to operate. I used SHIKA app as an example to highlight achievements and lessons to be learnt. Now, with new regulations in place, digital lending in Kenya is experiencing its renaissance.





# UK Cyber 9/12 Strategy Challenge

2021 - ongoing

Cyber 9/12 brings together teams of students to compete in advising government on how to respond to an (fictional) ongoing, escalating cyber attack with international ramifications.

In 2021, I competed and my team finished third. Since then, I have volunteered on the competition - leading on social media and competitor outreach. In 2022, I led on the website revamp and the creation of a diversity and inclusion framework.



# Square Peg

2021 - ongoing

I work as a freelance data analyst,  
engineer and visualisation specialist.

The work focuses on challenges  
perceptions of children who are  
persistently absent from school.

Persistently absent children in Autumn 2021

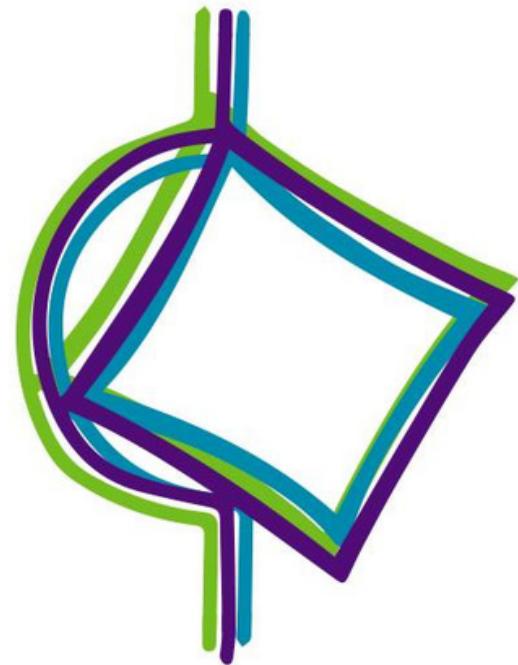
**1,670,000**

Children missing 50% or more of school

**98,000**

Rise in EHCPs for SEMH since 2018/19

**30%**



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# VIVE

2020 - ongoing



We all know how important it is to exercise and train our bodies - but what about our minds?

We teach the skill of visualisation, helping people retrain their brain to change the way they think, feel and act. From improving mental and physical health, to better work or academic performance, to learning new skills - visualisation is a neuro-scientifically based practice that can be applied to any area of life.

Going beyond meditation and mindfulness, visualisation involves creating images, environments and feelings in your mind before they have happened - actively rewiring the brain. Elite athletes and sports psychologists have used this technique for decades, helping them achieve extraordinary performance and success.

Through our bespoke workshops, live events and app, we are one of the first companies in the UK to bring this undiscovered, elite winning strategy to the masses - making it accessible to everyone.





# Charity & Challenges

2018 5km Tough Mudder  
2018 Leeds 10km  
2019 Leeds 10km  
2019 Bristol Half Marathon  
2020 Charity Stair Climb  
2022 15km Tough Mudder



2019 Dementia Friends Champion





# Socio-Technologist



LinkedIn

<https://www.linkedin.com/in/ben-wainwright-innovation/>



Website

<https://ben-wainwright-innovation.github.io/>