Connor Hamilton

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Profile

Computer Science M.Eng (1st) - I recently graduated from the University of Bristol having achieved a First Class with Honours.

Barclays Internship - In the summer of 2021 I completed an 8 week software development internship at Barclays where I worked building REST API's and increasing test coverage.

Technical skills - I can program in C#, C++, Python and Java. I enjoy working across the full stack and software development lifecycle including testing and CI/CD.

Project work

Giant Inflatable Hugging Robots - Master's thesis

Link to further detail - https://github.com/hamiltonrconnor/HuggingRobots

Creating 6ft plus inflatable robots is an emerging research area. These robots are powered by bouncy castle blowers and by opening valves, pressure chambers are filled causing the robot to move. I identified a gap within the existing research and applied a user-centric approach to investigating hugging interactions with these robots.

Key project achievements:

- Feedback for the project commented that I worked in "uncharted territory" and this work could "be part of a published paper".
- Led a series of three qualitative and quantitative user research studies with 46 total participants. I then thematically analysed the data and proposed five guiding principles to designing huggable inflatable robots.
- Developed a low-cost low-pressure pneumatic joint system controlled using a custom 3D printed valves.

BirdGang - Group Games Project

Developed a 3D browser based game using the Unity game engine. Resulting in a 1st class mark and feedback that the project was "judged as outstanding by the panel entering truly professional territory".

As the lead programmer I was responsible for:

- Establishing ways of working that allowed effective group collaboration. For example, a vertical slice approach(ensuring that an individual could develop a new feature), creating an environment for open sharing of feedback and weekly sprints.
- Overseeing all of the sub-teams to ensure that systems would integrate efficiently.
- Providing "hands on" assistance and advice to individuals to debug and solve problems.

Individual technical contributions:

- Used a Boids algorithm to produce realistic flocking behaviours with additional custom behaviours such as boundary avoidance, goal targeting, and obstacle avoidance.
- Solved network performance issues by utilising local calculations and lag compensation enabling the synchronisation of hundreds of AI agents.

Experience

PhD Position, Wearables for Physiotherapy - April 2024 to March 2025

Rehabilitation devices are dominated by one-size-fits-all systems that fail to provide the level of customisation required to meet patients' needs. Working with physiotherapists, I am using flexible 3D printing to build wearable systems. This allows the creation of bespoke devices tailored to the individual needs of the clinician and patients.

Junior Software Developer, Spark Data Systems - October 2023 to March 2024

Spark Data System specialises in the maintenance and replacement of legacy systems across the insurance, hospitality and public service sectors. Key achievements from this role:

- Developed full stack browser based applications using both the modern .NET 8 Blazor framework and legacy ASP.NET WebForms.
- Built normalised T-SQL databases.
- Deployed applications with Azure Pipelines to Azure Cloud Computing Services.

Technology Developer Intern, Barclays - July 2021 to September 2021

Barclays wanted to allow users to manage subscription services on their existing app using 3rd party organisation Zuora service. I worked within the team, building an API gateway enabling integration to the Barclays micro service architecture. Two problems I solved were:

- The REST client used to work with the Zuora API did not comply with Barclays' internal standards. I solved this by adding an additional layer in the form of a Springboot API that used the Barclays standard REST client. I delivered this ahead of deadline and exceeded the expectations of my supervisor by delivering against a stretching project.
- I improved JUnit test class coverage by 21% within the existing project. Firstly, I familiarised myself with the code base using walk through and Q&A sessions with members of the team as well as generating sequence diagrams and reading through documentation. I was then able to write relevant tests to check the code worked as intended.

Technical Skills

- C# using both Unity Game Engine and the .NET 8 Blazor UI framework.
- Python e.g. audio classification with PyTorch and deep learning library that mimics learning in the brain.
- C++ using OpenCV (computer vision library) and have built my own basic graphics renderer.
- Java, including building services with the Springboot framework.
- Various cloud services including Docker, Kubernetes and AWS IaaS services.
- Use of Git, Version Control and GitHub Actions as part of a CI/CD pipeline.
- C using OpenMP and MPI to distribute, paralyse, vectorise and optimise programs for the BlueCrystal Supercomputer.
- HTML and CSS with Bootstrap and Tailwindcss frameworks.

Education

University of Canterbury - PhD in Human Computer Interaction - 2024 to Present.

University of Bristol - Computer Science M.Eng (1st) - 2019 to 2023.

Related units: Applied Deep Learning, Parallel and Distributed system, Computer Systems B (Operating Systems and Security), Image Processing and Computer Vision and Computer Graphics.