

1 Profile

I am a graduate from Aberystwyth University with a First Class Honours B.Sc in Computer Science and Artificial Intelligence. For my dissertation I researched the performance of existing machine learning techniques for the prediction of phenotypes from genotypes in plants. I have learned a proficiency in Java through extensive use during my education and I have experience developing commercial programs in Python and C++ in a professional environment. Through prior work and education I have acquired a strong and robust experience with source control processes and agile methodologies in the workplace.

2 Education

2.1 Aberystwyth University 2020 – 2024

- Computer Science and Artificial Intelligence, B.Sc First Class Honours

2.2 Ivybridge Community College 6th Form 2017 – 2019

- A-Levels in Computer Science (*B*), Geography (*C*), and Physics (*E*)

3 Employment

Software Engineer – Intern, RTX August 2022 – August 2023

- Collaborated remotely and in-person with a cross-functional team of engineers to develop a diverse range of commercial products.
- Managed three core back-end services written in C++ and containerized with Docker, ensuring their reliability and up-to-date functionality for their utilisation by multiple products.
- Developed REST API functions for web applications built with HTML, JavaScript, and EmberJS.
- Co-developed features for experimental software with the IRAD department, showcasing solutions to internal customers.
- Utilized Python and shell scripting to refine and expand core processes.
- Expanded my debugging and problem solving skills while working with third-party open-source libraries causing critical errors in core pipelines.
- Designed and implemented a data-processing algorithm in Python for aiding in the generation of digital elevation models (DEMs).
- Designed and developed new UI elements for an experimental drone imagery viewing program using Python.
- Wrote detailed and communicative documentation for back-end services, facilitating knowledge transfer for future developers and users.
- Investigated, designed, prototyped, and implemented a new feature and API hook for one of the backend services.
- Collaborated with the product owner to debug and investigate performance problems in existing code.
- Optimized a existing code to improve efficiency for the newly implemented feature to reduce request time from 20 seconds to under half a second per request, ensuring significant performance improvements.
- Conducted in-depth debugging and testing to validate code changes and ensure robustness and efficiency of back-end services.

Community Tester, Offworld Industries July 2021 – August 2024

- Worked alongside developers and community testers to identify bugs and weaknesses in test builds.
- Improved communication skills by relaying bugs and feedback to the community and the development team.
- Expanded my ability to present and discuss technical concepts to a wide range of audiences.

- Worked independently and in a two person team to develop a file parsing algorithm.
- Learned from experienced developers.
- Realised my interest in software engineering as a career.

4 Skills and Achievements

4.1 Technical Skills

Python

- 10 years of experience creating both professional and scientific programs.
- Developed genetic analysis programs for evaluating DNA samples collected from cattle rumen.
- Developed a suite of machine learning models and auxiliary files for the prediction of phenotypes from genotypes in plants as part of my dissertation work.
- Extensive professional experience in processing aerial images, creating tiled images, digital elevation models (DEMs), and stereo images.
- Helped develop machine learning models to detect changes to aerial images.
- Developed a pipeline for the pre-processing of open-source elevation data for the creation of DEMs.

C++

- Professional experience in modern C++ for backend service development and maintenance.
- Worked on fast, efficient, containerised services providing high-demand processes in data-rich environments.
- Led efforts to update legacy services, improve codebase, and unify build and deployment pipelines.
- Designed and integrated a new feature for a backend API used in a new product development.
- Enhanced system performance by reducing response times from 20 seconds to less than 1 second.
- Awarded 75% (First) for C++ coursework at university.

Go

- Self-taught Go during final year of university by converting old Python and C projects into Go.
- Used Go to complement expertise in C/C++ and explored industry applications.

Java

- Proficient in Java, primarily learned through university education.
- Worked as the Project Lead in a group project to develop a digital board game for a client in Java.
- Achieved high grades in Java-based modules, including 86% (First) in object-oriented programming and 73% (First) in algorithm design.

Web Development

- Designed and developed a personal website using NextJS and Typescript.
- Experience working on legacy websites using Javascript and EmberJS.
- Experience with modern frameworks like NextJS and React.

UNIX Systems

- Lived on MacOS and Linux since being sat in front of a Mac II to learn the alphabet on.

Docker

- Extensive experience in containerisation and Docker development.
- Developed and updated Docker containers for backend services and testing-and-development environments at RTX.
- Designed and developed Docker containers to develop, test, and evaluate machine learning models during my dissertation.

Backend and API Development

- Developed and maintained core backend services used by multiple products at RTX.
- Designed and implemented backend API features to support new product functionality, with a focus on efficiency and speed.
- Achieved significant performance improvements in image processing, reducing response times by over 95%.

Git and Version Control

- Proficient in Git and with GitHub, GitLab, and BitBucket for project hosting and management.
- Skilled and considerate with version control practices for personal, educational, and professional projects.
- Nominated as Product Manager for a group project due to Git expertise.

RESTful Services

- Developed RESTful hooks for mock testing in a RTX project.
- Collaborated with a colleague to design, implement, and test new features and APIs.

4.2 Communication and Professional Skills

Remote Agile Development

- Worked remotely within an Agile team during industrial placement at RTX, improving time management and project planning.
- Participated in daily Scrum stand-up meetings to enhance communication and team collaboration.
- Independently developed an agile rulebook to manage my dissertation project.
- Created a robust process using KanBan boards and sprint planning to guide my dissertation.

Communication

- Strong written and verbal communication skills, developed through academic and professional experiences.
- Wrote and defended my dissertation: “An Investigation of Current Machine Learning Techniques for Predicting Plant Phenotypes from Genotypes”, earning a high First Class 81%.
- Skilled in explaining complex technical concepts and biological research clearly for diverse audiences.

5 Interests

I love discovering; during the 2021 summer I spent 2 weeks cycling 750km through northern France taking as many back roads and talking to whoever could understand my limited French. I took a similar trip in 2022, instead cycling through the Netherlands and into Belgium. I've have a keen interest in modern tech innovations and their implications. I have also become interested in biotechnology and how we, as computer scientists and software developers, can help inform views on biological processes. My dissertation paper, as well as others, are available upon request.

References

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