Ryan Zhang

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Technical Skills

Back-End	Java (fluent), Python (fluent), Javascript, NodeJS, C/C#
Back-End Libraries	Pytesseract, PyTorch, OpenCV, Numpy, Flask, Processing, BS4
Front-End	HTML, CSS, Bootstrap
Miscellaneous	SQL, VHDL, Photoshop, Premiere Pro, Excel, MATLAB

Summary

A 2nd Year Computer Systems Engineering undergraduate student at the University of Warwick, with extensive full-stack experience. Interested in hardware and full stack software, with a particular focus on FPGA/CPU development in VHDL and applications of AI. Have experience in web and game development. Adaptable, curious, socially adept and a great team player. Looking for a challenging position to introduce me to industry, and grow and learn from an experienced team.

Education

2016 - 2018 **KS3** at **Skinners' School**

2018 - 2023 **GCSE & A-Level** at **Tonbridge School**
A-Levels: Mathematics (A*), Further Mathematics (A), Computer Science (A), Religious Studies (A)
9 GCSE's grade 9 including Mathematics, Computer Science and English Language
Involved in: School Council, Anti-Bullying Council, Online Safety Council, Learning Mentor Program, Debate Team, Programming Club, CANSAT Team

2023 - Present **BEng Computer Systems Engineering** at **University of Warwick**
Achieved 2:1 during First Year
Taking Algorithms CS260 and Semiconductor Materials and Devices ES2D6 as optional modules during Second Year
Involved in: Student Union Societies Forum Member, President of Culture Society, President of Travel Society, Debate Coordinator at Discourse Society

Work Experience

Website Volunteer at St Philips Church August 2018 - April 2019

- Responsible for regular upkeep of WordPress site such as designing and updating of event banners in Photoshop.
- Researched and implemented SEO to boost site visibility.
- Developed a "sermons" subdomain with all sermon recordings.

Tech Consultant at Offer Page October 2023 - December 2023

- Performed legal and practical feasibility tests of scraping reed.co.uk to generate job market reports for a given job title.
- Researched deploying scraper script on an Amazon Elastic Container Service, using Docker.
- Regularly communicated with client for program specifications.
- Developed a Python prototype with Selenium to summarise reed.co.uk listings using LLMs and regex.

Projects

Civilization 5 Remake (Java) with LLM-Based AI

- Independently developed a remake of the real-time strategy video game using the Processing GUI Library.
- Integrated world generation, local multiplayer, a combat system, multiple victory conditions, and a scaled-down technology tree.
- Developed a Llama 70B-based CPU to interpret and act on game states with a multi-agent architecture.

Playing Flappy Bird with a Deep Neural Network (Python)

- Developed a remake of Flappy Bird using PyGame, using PyTorch to develop the neural network.
- Learned state-space discretization and RL exploration strategies.

FPGA Projects (Verilog + Vivado Design Software)

- Stystolic-array matrix multiplier
- Hamming code (7,4) error detection and correction
- Basic calculator

Wrote Research Paper on the Future of CPUs

- Focused on heterogeneous architectures, neural networks in branch prediction, and case studies on AMD's 3D V-Cache and Intel's Foveros.
- Performed market research on optical, quantum and distributed-edge computing.

Events & Workshops

2019 & 2020	**Perse Coding Team Challenge** Chosen to represent Tonbridge both years in a national two-person team competitive programming competition.
2019 & 2020	**English Speaking Union** Public speaking captain for both years, led Tonbridge to the South-East regional final in 2020.
January 2024	**Warwick Model United Nations** Represented China in a simulated United Nations conference, researched and debated issues on the implications of technology, particularly AI ethics.
April 2024	**Intel FPGA Technical Training Programs** Completed the "Beginner Intel FPGA Designer" course, attended Verilog HDL Basics and Verilog HDL Advanced instructor-led webinars offered by Intel. Supplemented learning with other online resources.

References and Cover Letter available upon request. More details @ ryan-zhang.com