Eva Littlewood

evabrlittlewood@outlook.com | P: +44 7419 995757 | https://3idnight.github.io

EDUCATION

Imperial College London — **Sep 2024 - May 2027**

Meng in Electronic and Information Engineering

Predicted First-Class Honours, Renesas Female Award

City of London School for Girls — **Sep 2016 - Jun 2023**

A Levels: Mathematics A*, Further Mathematics A*, Physics A*, Chemistry A

Awards: Arkwright Engineering Scholarship, Dudley Gaming Design & Technology Award, Bricklayer Mathematics Award

WORK EXPERIENCE

Digital Intern (HPC Power and Video Team) at Renesas — **Jun 2024 - Sep 2024**

- Designed and implemented efficient error checking digital hardware for my team's automotive power chip compliant with ASIL-D safety standards using SystemVerilog and Cadence
- Designed and evaluated CRC polynomials using formal verification for hardware-specific collision resistance
- Improved system performance by transitioning from LUT-based to XOR-based designs, reducing memory usage and increasing scalability
- Delivered technical and non-technical presentations on CRC design to internal teams and external audiences and volunteered with "Inspiring Girls" to promote electronic engineering in local schools
- Coordinated cross-department "skill sessions" with international experts and led lab activities, including wafer IV measurements and designed and implemented 8-bit CPU in SystemVerilog when initially learning the language
- Awarded the Renesas Female Award by Renesas and UKESF sponsoring my 1st year at university

Mechanistic Interpretability Researcher at Open Philanthropy — **Jul 2023 - Sep 2023**

- Designed and programmed using Python a method to automate identifying attention heads involved in factual recall in autoregressive GPT-style transformers to isolate features such as situational awareness and deception in AI systems
- 1 of ~100 successful applicants selected to have their research funded through the Non-Trivial Fellowship from 20,000+ applications (top ~0.5%)

Hardware Engineer at iGEM — **Sep 2021 - Sep 2022**

- Developed a working prototype of a rapid diagnostic mask for tuberculosis within a team through a 4-stage process (thermal lysis, gene amplification by RPA, CRISPR detection & lateral flow assay) winning the Gold Award in an international competition
- Collaborated with various external researchers and charity organisations to verify my design and researched and understood various concepts at a post-graduate level to incorporate into my design
- Developed a 3D thermal model to simulate temperature dissipation in the lysis unit of a mask device using Python and NumPy
- Implemented iterative methods to solve the heat equation & model heat transfer, focusing on resistive heating and temperature uniformity & optimised the simulation for performance and accuracy, identifying and addressing oscillation artifacts

ACADEMIC PROJECTS

Reinforcement Learning Terrain Traversal Quadruped Robot — **Jun 2024 – Present**

- Designed an 8-phase walking gait for a quadruped robot using Python and ROS incorporating inverse kinematics to balance the body during sing-leg swings and applying trigonometric domain limiting to prevent computational errors
- Configured system settings through YAML files including servo configurations, and performed manual servo calibration using a Python-based ROS node to optimise performance
- Developed an augmented random search policy to train the robotic dog to navigate diverse terrains using ROS, Gazebo & OpenAI-Gym

Tailored Transformer Study App — **Sep 2024 - Present**

- Created a webapp using Python & GPT-style transformers that analyses exam questions, automatically generates topic tags and recommends relevant exam questions based on the user's study topics and areas of difficulty
- Designed and implemented a user database using MongoDB, enabling users to upload and store their own notes and exam papers with continuous model training based on user-submitted content to enhance personalised study recommendations
- Developed a user-friendly interface using HTML and CSS focusing on responsive design and intuitive navigation

ADDITIONAL

Programming Proficiencies: Advanced in C++, Python, PyTorch, ROS, SystemVerilog, Verilog, Gazebo; Proficient in SQL, C, HTML / CSS, JavaScript, Basic

Awards & Scholarships: Renesas Female Award, Arkwright Engineering Scholarship, Non-Trivial Fellow, 1st in Tezos x EasyA Hackathon (created a decentralised social media platform), 1st in Credit Suisse Inspire, 2nd in WSDC (international debating competition), Grade 8 Distinction in Piano, Silver in iGEM