Samuel Khoo

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Education

Imperial College London, MEng Electronic & Information Engineering (EECS)   Oct 2022 – June 2026
- Grade: Predicted First Class Honours
- **Core modules:** Performance Engineering, Computer Architecture, Software & Embedded Systems, ML & Computer Vision
- **Languages & Technologies:** Python, Java, C++, Typescript, Javascript, React, Firebase, AWS, GCP

Experience

Software Engineer Intern, *Amazon Web Services (AWS)* – London, UK   April 2025 – Sept 2025
- Working in the IAM Data Plane team, processing 30M+ browser fingerprint data points weekly for fraud detection.
- Developing and evaluating ML models using SageMaker and AutoGluon via distributed PySpark pipelines.
- Building and deploying an end-to-end MLOps pipeline using AWS CDK, automating model training, validation, and deployment. Integrating data validation, drift detection, and retraining for model performance and lifecycle management.
- Collaborating cross-functionally to productionise data workflows and enhance model performance across IAM services.

Software Engineer Intern, *Runna* – London, UK   July 2024 – Sept 2024
- Served as a Full Stack Engineer on app and engine modelling teams for a mobile application with over 1.5M+ active users.
- Led end-to-end development of calendar sync, workout feedback, and advanced run-type classification models. Oversaw rollout with feature flags, authored ADRs, and integrated Mixpanel and Statsig for analytics and experimentation.
- Built Maestro test flows, wrote unit tests, created CX bots, and managed JIRA tasks, resolving 70+ key tickets.
- Reached 65% feature adoption and engagement, driving a 20% increase in Q3 customer acquisition, exceeding targets.

Software Engineer Intern, *Sunway Group* – Kuala Lumpur, MY   July 2023 – Sept 2023
- Led development of a scalable Django-based 3D viewer portal for 15,000+ employees, integrating Autodesk Construction Cloud via data and model derivative APIs. Deployed on Google Cloud Platform with integrated Postman testing.
- Optimised performance with a 40% reduction in model loading times and implemented an intuitive tree file system.
- Enhanced UX with QR code sharing and gyroscope support. Selected for showcase in Microsoft's data centre initiative.

Projects

AcAi (AI Research Tool)   Feb 2025
- Developed AcAi, an AI tool for researchers, enabling efficient citation network analysis and knowledge graph generation.
- Integrated RAG and CoT for automated hypothesis generation and experiment planning using Semantic Scholar data.
- Built a Python backend for code execution, with Streamlit UI and NetworkX/PyVis for citation graphs and results.

SmartGrid (Energy Trading Simulation)   May 2024
- Led a team of 3 in optimising the buy, sell, and storage of energy between an energy grid and solar system. Collaborated on developing a neural network with custom ML models, tuned using integer linear programming and MPPT techniques.
- Independently developed a React.js web app and built the entire AWS infrastructure, with end-to-end API endpoints, connecting solar grid hardware via Raspberry Pis to DynamoDB, ensuring reliable and efficient data exchange.

FPGA Mario Kart   April 2024
- Led a team of 4, using Slack for collaboration, to develop a racing network hosted on Pink FPGA boards, with DE10 boards as controllers for custom cars, along with a full game system for user registration, live lap times, and positioning.
- Designed the software framework for FPGA integration with the race interface, creating over 15 AWS Lambdas.
- Developed a track system with computer vision and FPGA acceleration for car tracking, integrated with a cloud database.

C-Compiler   March 2024
- Engineered a full-featured C-Compiler, achieving a 100% pass rate across standard and over 100 custom-written test cases.
- Built the entire compilation pipeline, from lexical analysis to assembly output, all housed in a Dockerized environment.
- Integrated core C features like pointers, arrays, and various data types, along with advanced optimisations such as register allocation and dead code elimination, ensuring efficient memory management and precise type checking.

Activities & Achievements

- OPTIVER Imperial IC-Hack Trading Challenge Winner, Imperial College Algorithmic Trading Certificate
- Undergraduate Teaching Assistant for Software Systems and C++, Computer Science and Further Math Tutor
- Other Projects: **PetCare** (IoT pet tracking), **Journify** (AI-powered journaling), **ChatForm** (real-time discussion platform)