

EDUCATION

- University of Cambridge** (HKU-Cambridge Joint Recruitment Scheme) (10/2021 – present)
Bachelor of Arts (Hons), Master of Engineering (Hons) in Information and Computer Engineering
- First Class Honours, Rank 36 out of 277, 13th percentile.
 - 3rd Year Project Prize, RISC-V Processor.
 - Integrated digital electronics, semiconductor engineering, systems and control, statistical signal processing, information theory and coding, machine learning, mathematical methods and optimization, risk modelling.
- University of Hong Kong** (HKU-Cambridge Joint Recruitment Scheme) (09/2019 – present)
Bachelor of Engineering, Major in Computer Engineering, Minor in Finance
- First Class Honours, Cumulative GPA of 3.93.
 - HKU Engineering Dean's Honours List (2020, 2021), HKU Foundation Entrance Scholarship, HKU EE72 HKU Chan Kam Yin Scholarship, HKU Teaching Development and Language Enhancement Grant (TDLEG) 2022.
 - Discrete mathematics, algorithms and data structures, computer organization and microprocessors, linear algebra, statistics, multivariable calculus and partial differential equations, investment and portfolio analysis.
- Sunway College** (GCE Advance Level) (02/2017 – 07/2018)
- Jeffery Cheah Entrance Scholarship, Harvard Prize Book Award, Sunway College GCE A-Level High Achiever Award.
 - Mathematics (A*), Physics (A*), Chemistry (A*), Further Mathematics (A).

WORK EXPERIENCE

- Visa Inc. Software Engineering Internship** (07/2023 – present)
Open VisaNet Tools Team
- Built and deployed a scalable Python microservice hosting Large Language Models (LLMs) equipped with internal developer documentations as its knowledge base to assist a team of 150 developers.
 - Linux, Python, Go, Java, Flask, Docker, Docker Compose, PostgreSQL, Bitbucket, JFrog Artifactory, JIRA.
- ARM Limited Part Time Undergraduate Programme** (07/2022 – 06/2023)
GPU Build systems and DevOps Software Engineer
- Wrote proprietary scripts to automate the migration of repositories between GitLab instances across 10+ teams in the GPU division and spun out commonly used Python or NPM packages to the local GitLab registry.
 - Setup hermetic build systems and test environments, CI/CD pipelines, and performed preliminary refactoring of the GPU Driver Development Kit codebase to properly expose public headers and fix build targets/dependencies.
 - Linux, Python, Poetry, Tox, JavaScript, TypeScript, NPM, C, C++, Docker, CMake, Bazel, Semantic Release, Jenkins.
- HKU Computer Science (CS) Research Internship Programme** (07/2021 – 09/2021)
Research assistant on Natural Language Processing
- SNKRFIED MY (Malaysia)** (01/2021 – 03/2021)
Software Lead
- Founded a small SaaS business that provides web-monitoring and automation tools for the sneaker community with a peak subscriber count of about 200 with a monthly revenue of approximately RM 3000.
 - Built the website and Discord bots to provide additional tools/services to customers such as automatic checkout, web scrapers to monitor 10+ eCommerce websites continuously, equipped with rotating proxies and exponential back-offs.
 - Python, JavaScript, HTML, CSS, Bootstrap, MDL, Puppeteer, Scrapy, Selenium, ExpressJS, Firebase, Firestore, GCP.

SELECTED PROJECTS AND ACHIEVEMENTS

- RISC-V Processor Design and Optimization** (05/2023 – 06/2023)
- Improved the performance of an unoptimized RV32I RISC-V processor on the Lattice iCE40 FPGA in a tiny wafer-scale 2.15×2.50 mm WLCSF package, using a completely open-source toolchain with the final design lying on the Pareto frontier.
 - Increased the upper-clock frequency limit from 6 MHz to 24 MHz by reducing critical path delays.
 - Integrated onboard digital signal processors and phase-locked-loop to reduce number of logic-levels from 49 to 16.
 - Reduced average CPI from 3.75 to 1.72 for selected binaries by replacing the baseline static branch predictor with a G-share branch predictor, resulting in a 10x reduction in execution time from ~20 to ~2 seconds.
 - Unix, C, VHDL, Verilog, SystemVerilog, Yosys, Project IceStorm, NextPNR.
- Machine Learning Control** (05/2023 – 06/2023)
- Modelled the dynamics of a cart pole system using regularised regression with Gaussian Radial Basis functions and built a non-linear controller to swing and maintain the pole upright using model predictive control principles.
 - Addressed the problem of poor gradients by using Nelder-Mead optimizer rather than common SGD methods.
 - Achieved $\sim 100 \times$ speed up in training by using Numba JIT compiler and rewriting provided library functions.
 - Python, Jupyter, Conda, NumPy, Jax, Autograd, Scikit-learn, Numba, Pandas.
- Snapshot Compressive Imaging with Score-based Generative Models** (07/2022 – 08/2022)
- Developed 3 novel algorithms for Snapshot Compressive Imaging based using score-based generative models.
 - Reconstruction of video frames from a single 2D measurement by modelling the data as a stochastic variable and performing Langevin sampling, with a score model to approximate the scores of the posterior distribution.
 - Python, NumPy, Jax, PyTorch, TensorFlow.
- National Robotics Competition Malaysia, 1st Runner Up (2014 and 2015)** (03/2014 – 03/2015)
- Built a Bluetooth-controlled rover with Lego Technic and Lego NXT that features the Rocker-Boogie suspension system.
 - Designed two 3-axis robotic arms that counterbalances each other for an even weight distribution.