Zhen Yuen Chong
linkedin.com/in/zhen-yuen | zhenyuen.github.io | github.com/zhenyuen | chongzhenyuen@gmail.com | +447907497185

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.
- 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, HKU Foundation Entrance Scholarship, HKU EE72 Chan Kam Yin Scholarship.
- Discrete mathematics, algorithms and data structures, computer organization and microprocessors, linear algebra, statistics, multivariable calculus and partial differential equations, investments 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 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.
- Wrote a concurrent workspace retrieval and parser command-line tool with Go.
- 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 – 06/2021)**

- Co-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 & RESEARCH

Snapshot Compressive Imaging with Score-based Generative Models **(07/2022 – 10/2022)**

- 10th IEEE International Conference on Data Science and Advanced Analytics (DSAA 2023), accepted, pending publication.
- Awarded the HKU Teaching Development and Language Enhancement Grant (TDLEG) 2022.
- Designed 3 novel algorithms for Snapshot Compressive Imaging by modelling the data as a stochastic variable and performing Langevin sampling, with a score model to approximate the scores of the posteriori distribution.
- Python, NumPy, Jax, PyTorch, TensorFlow.

RISC-V Processor Design and Optimization **(05/2023 – 06/2023)**

- Awarded the Cambridge Engineering Tripos 3rd Year Project Prize.
- 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 WLCSP 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 ~100 × speed up in training by using Numba JIT compiler and rewriting provided library functions.
- Python, Jupyter, Conda, NumPy, Jax, Autograd, Scikit-learn, Numba, Pandas.

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.