Zhen Yuen Chong

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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.
- Digital circuits, statistical signal processing, information theory, machine learning, mathematical methods and optimization.

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 architecture, 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. **(07/2023 – present)**
Software Developer Intern, Open VisaNet Tools
- Built a scalable chatbot microservice connected to internal developer documentations as its knowledge base using Llama v2 and the LangChain framework to assist a team of 150 developers.
- Implemented a YAML configuration merger and concurrent workspace retrieval command-line tool in Go with Goroutines.
- Linux, Python, Go, Java, Flask, Docker, Docker Compose, PostgreSQL, SQLite.

ARM Limited **(07/2022 – 06/2023)**
Software Engineering Intern, GPU Build systems and DevOps
- Performed preliminary refactoring of the GPU Driver Development Kit codebase in C/C++.
- Setup hermetic build systems, test environments and CI/CD pipelines.
- 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.
- Linux, Python, Poetry, Tox, JavaScript, TypeScript, NPM, C, C++, Docker, CMake, Bazel, Jenkins.

Department of Computer Science (CS), The University of Hong Kong **(07/2021 – 09/2021)**
Research Assistant, Natural Language Processing

SNKRFIED MY (Malaysia) **(01/2021 – 06/2021)**
Co-founder, Software Lead
- 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)**
- Accepted by the 10th IEEE International Conference on Data Science and Advanced Analytics (DSAA 2023).
- 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, Scikit-learn, Conda, Jupyter.

RISC-V Processor Design and Optimization **(05/2023 – 06/2023)**
- Awarded the Cambridge Engineering Tripos 3rd Year Project Prize.
- Improved the performance (10x reduction in execution time for selected binaries) of an unoptimized RV32I RISC-V processor on the Lattice iCE40 FPGA, using a completely open-source toolchain with the final design lying on the Pareto frontier.
- Reducing critical path delays to increase upper-clock frequency limit from 6 MHz to 24 MHz.
- Reduced average CPI from 3.75 to 1.72 by replacing the default static branch predictor with a custom G-share branch predictor.
- 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.
- 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.

National Robotics Competition Malaysia, 1st Runner Up (2014 and 2015) **(03/2014 – 03/2015)**
- Built an exploration rover equipped with the Rocker-Boogie suspension system and two counter-balancing 3-axis robotic arms.