Guo **Yang**

Great Court Mail Room, Trinity College, Cambridge
(+44) 7835 925072 | gy261@cam.ac.uk | GuoYang

Education

Trinity College, University of Cambridge Oct. 2021 – June 2024
BA & MENG | Grade: Class II Division I (Year 2) | Ranking 112/319
Year 1 and 2 relevant modules

- Information Engineering covering linear systems and control, signal and data analysis, communications.
- Mathematical methods covering vector calculus, linear algebra, probability.
- Electrical Engineering covering linear circuits and devices, electrical machines, electromagnetic fields and waves, physical principles of electronics, digital circuits and information processing.
- Elective modules: Electrical engineering covering micro and nano-electronic devices; Information engineering covering computer vision, deep learning and Q-learning.

Coursework

- Integrated electrical project where a team of students are required to build a robot to demonstrate the collection, detection and delivery of blocks to a high degree of precision in a structured environment. I constructed the navigation algorithm based on line follower sensors and PID control theory, and designed the object detection algorithm based on low-precision distance sensors and anomaly detection algorithm. My team won 3rd place among all teams in final competition.

The University of Hong Kong Sept. 2019 - Jul. 2021
BENG (Computer Engineering) | Major CGPA 3.96 / 4.30 | CPGA 3.88 / 4.30
Relevant courses

- Senior Design Project (Final Year Project): Fully Quantized Training on Transformers (A+)
- Calculus and ordinary differential equations (A+)
- Linear algebra, probability and statistics (A+)
- Computer networks (A+)
- Electric circuit theory (A+)
- Discrete mathematics (A)
- Multivariable calculus and partial differential equations (A)
- Signals and linear systems (A)
- Computer programming I (A-)
- Programming technologies (A-)
- Technical English for Electrical and Electronic Engineering (A)

Awards & Programmes

- Dean's Honours List (2019-2020)
- Dean's Honours List (2020-2021)
- HKU-Cambridge Joint Recruitment Scheme (2019-2024)

Experience

Summer Interns

[In progress] Research Assistant, Department of CST, The University of Cambridge Jun. 2022 – Oct. 2022

Collaborated with researchers from the University of Cambridge and Microsoft Research (US) to investigate the feasibility of fully quantized training on transformers:

- Implemented Fixed-Point and Microsoft Floating Point (MSFP) Quantization on the transformers.
- Implemented Stashing: different levels of quantization for forward pass and backward pass.
- Tested models on Cambridge University High Performance Computer (HPC). The fully quantized models achieved good results, the transformer model matches the SOTA results on some MT tasks when quantized to 4-bit MSFP and has low loss when quantized to 4-bit + 2-bit Stashing MSFP.
- Implemented Dynamic Stashing; Implemented quantized fine-tuning on RoBERTa models.
- To do: test and tune the models on other seq2seq tasks; implement fully quantized training on other transformer-based models; paper writing.

Supervisor: Dr. Aaron Zhao, Dr. Daniel Lo, Prof. Robert Mullins

Research Assistant, Department of EEE, The University of Hong Kong Jun. 2021 – Sept 2021

Used Deep Learning method to solve Natural Language Processing tasks:

- Developed web crawler to scrape 10K+ Tweets, Facebook posts and Google search results.
- Analysed and processed data; Used pre-trained BERT to perform sentiment analysis on the data.

Supervisor: Prof. Edith C.H. Ngai

Research Assistant, Department of CS, The University of Hong Kong Jun. 2020 – Sept. 2020

Learnt the use of Deep Learning method to solve Image Segmentation tasks:

- Constructed a Deep Learning model based on U-net to do retinal vessel segmentation.
- Added histogram matching function to pre-process data, gave a moderate accuracy rate increase.

Supervisor: Dr. Zhiming Cui, Prof. Wenping Wang

Challenges & Projects

Citadel Europe Datathon Competition Mar. 2022

- Performed data engineering: cleaned the data, transformed some data to make them easier to use.
- Made hypothesis about the correlation between the data and did statistical tests to justify them.
- Used some machine learning methods (SVM, Auto Regression, Moving Average etc.) to predict the time-series trend of the data.

[In progress] Embedded Facial Detection Device Based on Lightweight Neural Network Aug. 2022

- Funded by Cambridge University Engineering Department
- Expected to complete the project by Dec. 2022

Team Leader, International Mathematical Modelling Challenge 2017 - 2018

Led team to construct a mathematical model to evaluate the best hospital in a region:

- Assigned different jobs to each team member to increase the efficiency of teamwork.
- Used Analytic Hierarchy Process and Relative Importance Scale to quantify factors of influence
- Defended our thesis with a clear, logical presentation, and won Finalist Award at last.

Extra-curricular

- Activities: Invited speaker on HKU virtual day, Student coordinator of HKU-Cambridge scheme
- Interests: Science-fiction (Interstellar), Japanese Culture (basic user of Japanese), Table tennis

Referees

Professor Hugh Hunt, hemh1@eng.cam.ac.uk, Trinity College, University of Cambridge
Professor Edmund Y. Lam, elam@eee.hku.hk, The University of Hong Kong