Tommy (Xuan) Cai

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EDUCATION

Imperial College London **London, UK**

Master Engineering of Electrical and Information Engineering *Oct 2020 – Jun 2024*

- Modules (1st, 2nd & 3rd year): Embedded System, Computer Vision, Digital Electronics and Computer Architecture, Discrete Math, Software and System, Instruction Architecture and Compilers, Machine Learning
- Results: Upper-second Class

Guanghuaqidi Education **Shanghai, China**

- *A-Level* Results: A*A*A (Further Math, Math, Physics) *Jul 2019 – Jun 2020*

PROFESSIONAL EXPERIENCE

Zhejiang University (College of Control Science and Engineering) **Hangzhou, China**

Lab Internship *Jul 2021 – Sep 2021*

- Worked with postgraduate students to form SMPLM (Skinned Multi-person Linear Model) Mesh based on the essential data of human Skeleton
- Modified the calculations of matrix in the source code from NumPy on CPU to PyTorch on GPU hence gained 4 times faster running speed

Imperial College London **London, UK**

Undergraduate Research Opportunities Program *Jul 2022 – Sep 2022*

- Proposed a data Super-Resolution algorithm based on a Seq-to-Seq LSTM time-series-data forecast model and evaluated it in the real-world energy data set with 300k pieces of data (Pecan Street)
- Successfully reconstructed 300k pieces of 3-minute data to 900k pieces of 1-minute data with MAPE (mean absolute percentage error) = 0.15

C Squared Visions Limited **Southampton, UK**

Computer Vision Engineer Intern *Apr 2023 – Now*

- Assisting with the development of company's computer vision algorithms for defeat detection, recognition and tracking in images from real-world manufacturing processing
- Analyse and improve existing computer vision/deep learning algorithms

NOTABLE PROJECTS

Imperial College London **London, UK**

End-of-Year Projects *May 2021 – Jun 2021; May 2022 – Mar 2023*

- Designed a MU0-ARM dual-core CPU for 1st year final groupwork project which can perform calculations with floating-point implementation and scored 80+ eventually
- Implemented a Multi-cycle MIPS CPU by Verilog as a group project, final score 80+ (2nd year)
- Implemented a well-functioned MIPS C90 Compiler with a final grade A (2nd year)
- Implemented a functional Mars Rover with ESP32 camera, established communication network using Nios II system and UART and realized SLAM algorithm map drawing and the goal of Dynamic obstacle avoiding (2nd year final)
- Designed and established Eazy-Parking as an IoT project which realized ANPR (Automatic Number Plate recognition) with light-weighted Deep Learning Model and Smart Parking Spot Recommendation (3rd year)

EXTRA CURRICULAR ACTIVITY

Google Developer Student Clubs **London, UK**

Introduction to Machine Learning Workshops *Sep 2022 – Mar 2023*

- Created several increasingly complex machine learning systems (full blown image classifiers) using materials developed by Google AI for our society

Ivy Unify AI **London, UK**

Co-creation of Machine Learning Library *Jan 2023 – Mar 2023*

- Implemented front end functions (Bitwise not) for JAX and NumPy conversion and adopted officially

SKILLS

Language: English (fluent), Chinese (native)

Programming languages: C++, Python, Verilog

Software/Libraries: Anaconda3, Jupyter Notebook**,** MS Office, PyCharm, VS code, Quartus, MATLAB

Interest: CrossFit, jogging, sprint (national second-level athlete)