Tao Xijia

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EDUCATION

The University of Hong Kong **Sep 2020 – Jun 2024**

Bachelor of Engineering in Computer Science

- Full-tuition scholarship for 4 years of undergraduate study
- Dean's Honours List of Faculty of Engineering, 2021-22

Technical Courses

- Linear algebra, probability & statistics: A+
- Computer programming I & II: A
- Calculus & ODEs: A
- Discrete mathematics: A
- Data-driven computer animation: A

Taken: NLP, Data structure & algorithms, Computer organization, OOP & Java, Artificial intelligence, Computer vision, Quantum information

Ongoing: Algorithm design and analysis, Database management systems, Computer and communication networks, Software engineering

National University of Singapore **Aug 2022 – Dec 2022**

Taking a 1-semester exchange with modules on

- computer architecture, where I designed and implemented a microprocessor with verification on an FPGA
- machine learning, where I got acquainted with mathematical concepts and computational methods behind nowadays AI technologies

TECHNICAL SKILLS

Languages: Python, C++, Java, MySQL, JavaScript, R, MATLAB

Frameworks: PyTorch, TensorFlow, OpenCV, OpenGL, Django

Platforms: Linux, WSL, Windows, Microsoft Visual Studio, AWS

Areas of interest: machine learning (ML), natural language processing (NLP), computer graphics

EXPERIENCE

Incoming ML Intern, Huawei **Jun 2023 – Sep 2023**

- Work closely with a senior mentor in a team focusing on ML research.

Research Assistant, NLP Group, HKU **Sep 2021 – Present**

- Participated in a project which aims to investigate the use of PLMs in the legal domain, under the supervision of Prof. Kong Lingpeng.
- Resulted in the paper *XLeGLEU: A Benchmark for Bilingual Legal Text Understanding*, which is currently under revision.
- Processed judgment files in Hong Kong and constructed a bilingual legal corpus from them.
- Evaluated the performance of different PLMs on our proposed tasks on the dataset.
- See the demo of the corpus and tasks here.
- Participating in a project on large language model (LLM) and knowledge distillation.

Research Intern, Department of Computer Science, HKU **Jul 2022 – Sep 2022**

- Conducted research in computer graphics under the supervision of Prof. Komura Taku.

- Investigated the application of Cauchy-Green invariants formulated ARAP energy in strand simulation.
- Reproduced the methods (for finite elements) proposed in recent SIGGRAPH papers and adjusted them to fit in the new 1-dimensional setting.

RoboMaster University AI Challenge, HerKules team **Aug 2020 – Sep 2022**

- Responsible for the development of reinforcement algorithms, which enable our robot with decision-making capacity in motion planning, shooting, etc., in a multi-agent environment.
- Led a group of four to tackle the robot detection and localization task. Our investigation covers various cutting-edge technologies in computer vision.
- Explored the use of multimodal machine learning with point cloud and infrared data.

Research Assistant, uLab, Faculty of Architecture, HKU **Jun 2022 – Aug 2022**

- Collected relevant comments from social media and websites, then conducted sentiment analysis on the comments.
- Identified themes with topic modelling and a machine learning approach.
- Helped with quality control of geospatial data collection using the QGIS software for the street locations.

Teaching Assistant, ENGG1330 Computer Programming I, HKU **Sep 2021 – Dec 2021**

- Organized tutorial sessions for 16 undergraduate CS students on Python programming syntax, data structures and algorithm design.
- Discussed the weekly tutorial problems and demonstrated them through live coding in each session.
- Provided video feedback on assignments and facilitated communication between students and the lecturer.

Research Assistant, PANDM Lab, Department of Psychology, HKU **Sep 2021 – Jan 2022**

- Assisted in a project on multi-element emotion perceptual decision-making with eye movement analysis.
- Translated theoretical models to Python programs, with eye movement data as an input and the decision made as the target; Optimized parameters accordingly.
- Migrated the lab's MATLAB codes to Python.

PROJECTS

Topological Data Analysis

- Explored approaches to data analysis via persistent homology under the supervision of Dr Pierre Clare from the College of William & Mary.
- Wrote a research report with the title *Amelioration of Clustering Algorithms Using Topological Methods*.

Full-Stack Development

- Developed an EdTech solution that can
  1. smartly process job information available on the Internet
  2. send personalized email notifications to targeted student members.
- Acquainted with web scrapers, databases, and using a remote server

Linux Game Development

- Implemented a GUI game that runs in a terminal emulator.
- Applied knowledge in C & C++ programming, data structure, dynamic memory management, etc.