

# LU Dongzhuyuan

Harmonia college, 2001 Longxiang Road, Longgang District, Shenzhen, Guangdong, China

Tel: 8615587197601 | Email: 119010216@link.cuhk.edu.cn

Website: <https://tim-lu-cuhksz.github.io/>

## EDUCATION

---

**The Chinese University of Hong Kong, Shenzhen**

*September 2019 – July 2023*

*B.Eng., Electronic Information Engineering, Stream: Computer Engineering*

**CGPA:** 3.628/4, **MGPA:** 3.668/4

**Degree/Diploma:** *B.Eng. with Honours, First Class*

**Honors & Awards:** *Dean's List Award of AY2021-22 and AY2020-21*

## LANGUAGE & COMPUTER SKILLS

---

- Chinese (native), IELTS (7), GRE (323)
- C/C++ (proficient), Python (proficient), Java (familiar), Matlab (familiar), MySQL (basic), Verilog (basic), Latex (familiar)

## PROFESSIONAL EXPERIENCE

---

**The Chinese University of Hong Kong, Shenzhen**

*September - December 2022*

*Student Help Room Preceptor, School of Science and Engineering*

- Provide academic assistance by offering extra Q&A sessions to undergraduate students enrolling in *MAT3007 Optimization*

**KUKA Robotics (China), Midea Group**

*May - July 2022*

*Software Development Intern, Department of Logistic Automation*

- Collaboratively developed the Pacecat lidar interface (specifically, ros2-based publisher node and subscriber node to process the lidar data) of the 600ic-ul Autonomous Mobile Robot (AMR)
- Designed basic high-level robot task diagrams based on Kuka Studio and Kuka RCS system and conducted tests including auto-charging, auto-lifting of the shelves, and auto-navigation
- Performed basic smoke testing for the navigation software on the AMR (Released version: 1.7.0)

## PROJECT EXPERIENCE

---

**Comparative Anime Recommendation System Exploration with DualTaste Recommender**

*January - May 2023*

- Perform meticulous data pre-processing techniques (*Adaboost* algorithm combined with Support Vector Regressor) on the dataset to fill in the unknown fields
- Verify the performance of two collaborative-filtering methods: Alternating Least Squares (ALS) and Neural Collaborative Filtering (NCF)
- Propose a novel content-based method (DualTaste Anime Recommender-DTAR), in which the user's specific preference and the general trends (calculated via Bayesian rating) are taken into consideration. We devise a special weight parameter to aggregate the two components together
- *Adaboost.SVR* is applied to address the cold-start problem and attains relatively good performance
- By applying Borda-count voting method, we combine the results of the three algorithms (ALS, NCF, DTAR) into a hybrid answer

**Self-Supervised Federated Learning on Non-iid Data (Pytorch)**

*September - December 2022*

*Final Year Project, Supervised by Professor Xiaoying Tang*

- Apply contrastive self-supervised learning technique including SimCLR, BYOL, and SimSiam to perform image classification task on CIFAR-10 and CIFAR-100 in a federated-learning setting with Dirichlet sampling
- Conduct experiments on personalized self-supervised federated learning method by introducing an additional  $l_2$  loss function to each client with a regularizer to minimize the distance between the global model and local model

### **Database Management System Implementation (Java)**

*October - December 2022*

- Collaboratively implemented a miniature relational database management system (DBMS) that stores tables of data, where a table consists of some number of labeled columns of information
- Our system uses very restricted dialect of Structured Query Language (SQL) and accepts a sequence of commands from the standard input in the terminal for data insertion and extraction. The functionalities we support include create, load, insert, select from multiple tables with conditions, order by columns, case insensitivity, syntax and syntactic errors recognition, etc.

### **Simplified Virtual Memory and File System (C/C++)**

*September - December 2021*

- Implemented a virtual memory system including an inverted page table and least recently used (LRU) page replacement algorithm. CPU physical memory and disk storage were simulated by CUDA GPU shared memory and global memory respectively
- Built a file system via contiguous allocation including a volume control block, a single-root directory, and a file control block. Constructed a device (n-th prime number calculator) under /dev with file operations (e.g., ioctl that changes device configurations) implemented in kernel module

### **MIPS Assembler and 5-Pipelined CPU**

*January - May 2021*

- Built up a 5-pipelined CPU that interprets machine code, performs arithmetic operations, and stores and loads data in Verilog in the main memory. The CPU mainly consists of an arithmetic logic unit (ALU), a control unit and a main memory
- Devised a virtual MIPS instruction set architecture (ISA) assembler and simulator which “translate” assembly language into machine codes and execute them in C

## **ACTIVITIES**

---

### **Lizard Park, The Chinese University of Hong Kong, Shenzhen**

- Volunteered in Daily Management Department (weekly flower watering and weeds clearing) in Lizard Park which is a campus community garden aiming to enhance relationship between people and the living creatures (plants & animals)
- Lizard Park won the *gold medal* in the growth project category of the 5th Shenzhen Nanshan District Student Social Innovation Project Competition.