

# Shuze Liu

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## EDUCATION

### Sun Yat-Sen University (Guangzhou, China)

09/2020-06/2024

Major: Software Engineering

Degree: Bachelor of Engineering

Relevant Coursework: Mathematical Analysis, Computer Programming, Principles of Computer Organization, Data Structures and Algorithms, Principles of Operating Systems, Artificial Intelligence, Signals and Systems, Java and Object-oriented Design, Computer Graphics, Computer Networks, Principles of Database Systems, Cloud Computing Technology

### Santa Clara University (Santa Clara, CA)

09/2024-Present

Major: Computer Science and Engineering

Degree: Master of Science (expected in July 2026)

Relevant Coursework: Artificial Intelligence, Network Technology

## SKILLS & LANGUAGES

Computer Skills: Proficient in C++, C, JAVA, Python; Basic application of MySQL, Objective-c

Languages: Chinese (native); English (fluent)

## PUBLICATION

**Analysis of Path Planning of UAV in Short-distance Logistics Application**, Shijia Guo<sup>†</sup>, Xuan Li<sup>†</sup> and Shuze Liu<sup>†</sup>, CONF-MSS 2023 06/2023

## RESEARCH

**Network measurement reconstruction method based on deep neural network** (*Bachelor Thesis, Supervisor: Prof. Yi XIE*) Guangzhou, China

*Independent Research*

05/2023-06/2024

- Conducted research on reconstructing missing network traffic measurements using deep neural networks (DNN).
- Built simulation environment with OMNeT++, generated random and real-world traffic datasets, and preprocessed pcap files for model input.
- Implemented and trained models in PyTorch, using ReLU activation and SmoothL1Loss, achieving high reconstruction accuracy at optimal learning rate (0.001).
- Compared against tensor-completion methods, showing DNN's advantage in modeling nonlinear traffic relationships.

### Automated Garbage Classification with CNN and ResNet34

Santa Clara, CA

*Team Member*

05/2025-06/2025

- Designed and implemented deep learning models (custom 7-layer CNN, ResNet34) for six-category garbage classification on the TrashNet dataset (2,500+ images).
- CNN reached 64.7% test accuracy with fast convergence but clear overfitting, while ResNet34 achieved 75.8% test accuracy with stable loss curves and stronger generalization.
- Confusion matrix analysis showed ResNet34 reduced misclassification in most classes (e.g., paper and cardboard).

### Study UAV Path Planning Using MATLAB (*Supervisor: Peng Lu, HKU*)

Online

*Team Member*

01/2023-02/2023

- Explored some algorithms for UAV path planning, including the A\* algorithm, genetic algorithm, and bionic algorithm
- Simulated the drone controller through MATLAB and Simulink
- Conducted the simulation of a variety of UAV path planning algorithms in MATLAB and completed the publication of the paper

### Asynchronous Federated Learning Research (*Ongoing, Supervisor: Xiao Li*)

Santa Clara, CA

*Independent Research*

09/2025-present

- Reproduced the FedLC (asynchronous federated learning with local collaboration) algorithm from existing literature, designed for edge computing environments.
- Extending the original two-tier design into a three-tier hierarchical architecture (client-server-meta server) to

enhance scalability and mitigate communication delays. Additionally, improving the experimental framework with visualization tools and EMNIST evaluation.

- Ongoing work focuses on implementing the extended architecture in code and conducting experiments on non-IID benchmarks.

## PROJECTS

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### Using MySQL and Java to Implement the Library Management System

Guangzhou, China

*Independent Project*

12/2022-01/2023

- Used Powerdesigner to design the conceptual, logical, and physical structures for your database
- Employed MySQL to implement the database according to the designed structure and used Java to write programs to operate the database

### Configuring the Network Topology on the Cisco Packet Tracer

Guangzhou, China

*Independent Project*

12/2022-01/2023

- Configured the dynamic routing protocol for the routers in the topology
- Responsible for configuring the virtual LAN for the devices in the topology

### Developing Chat Applications Using Java

Guangzhou, China

*Independent Project*

09/2022-01/2023

- Realized multithreading, TCP/UDP communication through Java
- Designed UI to process the database at the same time

## ACTIVITIES

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Serving as the Organizer of the General Affairs Department, School of Computer Science, responsible for the communication between departments, arranging internal activities, and financial work 10/2020-07/2022

Serving as a member of East Campus Radio Station, Sun Yat-sen University, participated in the activities of the radio station and shot promotional videos 10/2020-07/2021