Tianze Liu

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# EDUCATION

## University of Southern California

## *Master of Science, Spatial Data Science 3.85* Expected May 2025

## Chinese University of Hong Kong, Shenzhen

### Bachelor of Science, Data Science and Big Data Technology

### Li-Yun ScholarshipAugust 2019

# KEY WORDS & APPLICATIONS

Generative AI, Prompt Engineering, Natural Language Processing, LLM, Deep Learning, Machine Learning.

Python (Torch, TensorFlow, Keras), Langchain, Chatdev, Esri ArcGIS (Pro, Script Tool)

# RECENT RESEARCH AND WORK EXPERIENCE (SELECTED)

## University of Southern California - Research Assistant of Economics April 2024 – Present

* Applied multiple machine/deep learning algorithms including **XGboosting, Attention, Mixture NN** etc. to predict travel time based on travel mode and distances and reduce the MSE to 200 on 4M data.

## Shenzhen Research Institute of Big Data - Research Assistant of Operation November 2022 to May 2023

Institute that focuses on research and applications of Big Data. Developed enhanced spatial operational algorithms.

* Implemented a variable neighborhood search sim-heuristic algorithm to solve the multi-period inventory routing problem under stochastic spatial distribution and demands in 30 minutes on small scale
* Constructed a distributed decision model based on the stochastic demands, fulfilling regular deliveries on the service level and tracking inventory with a preset standard
* Implemented a branch and bound algorithm based on the Hungarian method in combination with a simplex method for complex networks to minimize the costs of a project to build a decision model for the project managers, decreasing the time cost by around 15%

## Byte Dance-AI Engineer Intern May 2022 to June 2022

Internet tech co. that operates machine learning-enabled content platforms to developed AI algorithms

* Built an Intelligent Agent based on **LangChain**, **RAG** and **LLM** to accomplish tasks such as parsing and understanding fund announcement data, answering user questions by multi-modality and accomplished the **Prompt Engineering** based on **CO-STAR** principles.
* Implemented handwritten digits recognition with **TensorFlow**, the Sequential model in **Keras**, and a convolutional neural network based on dark-channel enhanced images
* Identified illegal messages on given websites with a **Naive Bayes** classifier achieving around 75% accuracy

## ZZNode Technology- Database Engineer Intern March 2022 to May 2022

Internet tech co. that provides database services. Managed entities in databases and conducted SQL data analysis

* -Utilize SQL for database maintenance in real-world scenarios. Write modules for managing databases using Python for efficient handling of internal requests