Tianze Liu

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# EDUCATION

## University of Southern California Los Angeles, California

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

## Chinese University of Hong Kong, Shenzhen Shenzhen, Guangdong, China

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

### Li-Yun ScholarshipAugust 2019

# RESEARCH AND WORK EXPERIENCE (SELECTED)

## University of Southern California Los Angeles, California

### Research Assistant – the Economics Department April 2024 – Present

* Applied multiple machine/deep learning algorithms including XGboosting, Attention (Transformers), NNM etc. to predict travel time based on travel mode and distances.

## Shenzhen Research Institute of Big Data Shenzhen, Guangdong, China

### Research Assistant – Operation Research Department 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 Beijing, China

### AI Engineer Intern – AI Development Department 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
* 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 Shenzhen, Guangdong, China

### Database Engineer Intern March 2022 to May 2022

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

* Built with SQL and Python (UI) a database of bridges in the US with over 760,000 entries and 200 attributes of technical and maintenance details
* Conducted with Graphviz (for visualization) exploratory data analysis via the classification and regression tree (CART) model, K-means clustering, and principal component analysis (PCA) to identify the durability and economic efficiency of bridges in question

# ADDITIONAL INFORMATION

*Applications*: Python (Pytorch, TensorFlow, Keras), Esri ArcGIS (Pro, Script Tool), Langchain, Chatdev

*Skills:*  AIGC, Natural Language Processing, Large Language Model, Deep Learning, Multi-Modality

*Languages:*  English, Chinese, Spanish