

# YOUXIN ZHU

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## Education

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**Southern University of Science and Technology** Sep 2021 – Present  
*Bachelor of Science (expected)*  
Data Science and Big Data Technology GPA 3.71/4

## Honours and Awards

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Third Class of the Merit Student Scholarship for exceptional performance Dec 2022  
Third Class of the Merit Student Scholarship for exceptional performance Dec 2023

## Research Interests

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Reinforcement Learning, Natural Language Process, Casual Inference

## Research Experience

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**Causal Inference and Smart City Simulation-Provincial Research Project** Shenzhen, China  
*Member of 6-person Group* Sep. 2022 - Present

- Conducted data processing, generalized linear model and utilizing the Front-Door Criterion and the Difference in Differences approach to uncover causal relationships and draw insights into factors influencing traffic dynamic
- Studied the papers on the combination of causal method into reinforcement learning and coded to achieve the application in transportation simulation, using causal inference to enhance the robustness of the reinforcement model
- Intend to train the model in the transportation simulation platform such as SUMO and make adjustment

## Publications

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• Yixuan Ding, Qianqian Wang, Zimo Qi, Liuxin Zhu, **Youxin Zhu**, Lizhuo Luo, Lili Yang, A Causal Inference Method Based on Front-Door Criterion and Difference in Differences for Analyzing Traffic Conditions, (Paper ID: ICCBDAL-2023-000174)  
Accepted by the 4th International Conference on Computer, Big Data and Artificial Intelligence (ICCBDAI 2023) on Nov.30, 2023

## Projects

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**Augmented Image Captioning** Shenzhen, China  
*Course project, supervised by Assistant Prof. Hongxin WEI at SUSTech* Dec. 2022

- Original CLIP Prefix Caption faces challenges in accurately perceiving specific objects within the images. Integrating the YOLO's precise detection ability with CLIP to enhance the caption generation performance.
- Utilized the PyTorch framework to customize training for the CLIP model, adopted the YOLO model to recognize the content of images, optimized CLIP's embedding to capture the subtle details of objects and achieved more accurate image descriptions with CLIP's outputs.

**CCF Computational Economics Competition-Bojin Quantitative Model Challenge** Shenzhen, China  
*Supervised by Assistant Prof. Peng YANG* Sep. 2023 - Nov. 2023

- Compared multiple algorithms like LSTM and CNN in the analysis of the real-time data of over 300 Chinese minute-level stocks and ultimately selected XGBoost to predict stock price movements
- Integrated predictive algorithms into strategy algorithm
- Rank 7th

**LLM Finetune** Shenzhen, China  
*Course project, supervised by Assistant Prof. Guanhua CHEN* Dec. 2023

- Finetuned TinyLlama-1B with clinical instruction data with QLoRA method
- Evaluated the finetuned LLM on MedMCQA

## Exchange Project

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### National University of Singapore (NUS) Summer Workshop

Singapore

*Supported by SUSTech*

*July 2023*

- Attended courses spanning from Cloud Computing with Big Data, Visual Computing to Robotics , and conducted project research on deep learning and robotics.
- Adopted YOLO visual algorithm to recognise and classify different kinds of images, applied the results to Arduino and Raspberry Pi, designed a multi-functional robotic vehicle capable of recognising pictures and tracing small balls, and presented it on the NUS campus.

## Technical Skills

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**Programming Languages:** Python, Java, SAS, Linux

**Professional Software:** VS code, Anaconda, Latex

**Deep Learning Framework:** Pytorch, Transformer

**Others:** Causal Discovery, Spark & Hadoop