

# Zhen Zhou

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Address: Liyang County, Changzhou City, Jiangsu Province

## EDUCATION

### Wuhan University of Technology (Wuhan, Hubei)

Bachelor of Science in Information & Computing Science

09/2017-06/2021

Core courses: Comprehensive Experiment of Computer Foundation and C Programming, Mathematical Analysis, Mathematical Modeling, Ordinary Differential Equations, Data Structure & Algorithms, Design of Modeling and Numeric Simulation, Probability and Mathematics Statistic, Mathematical Model, Pattern Recognition

**Awards:** Junheng Lizhi Scholarship (2019), Outstanding Student Leader (2019), Junheng Lizhi Scholarship (2020)

Grade: 3.34/5

### University of California, Riverside (Riverside, California)

12/2019-06/2020

Courses: Automata and Formal Languages (A+), Intro to Numerical Analysis (A+), Optimization (A+), Intro Mach Learning & Data Mining (A), Decision Analysis & MGMT Science (A-)

Grade: 3.945/4

### University of Illinois, Urbana-Champaign (Champaign, Illinois)

08/2021-08/2022

Master of Statistics

Courses: Mathematical Statistics, Time Series Analysis, Statistical Data Management, Advanced Data Analysis, Statistical Learning, Computational Statistics, Data Science Foundations, Statistical Consulting

Grade: 3.89/4

## PUBLICATION

- Yi Zhao, **Zhen Zhou\***, Qilong Pan, Tianhua Zhou, "G/M/N Queuing Model-Based Research on the Parking Spaces for Primary and Secondary School", Discrete Dynamics in Nature and Society, vol. 2020, Article ID 8870862, 7 pages, 2020. <https://doi.org/10.1155/2020/8870862> (SCI, Corresponding Author)
- **Z. Zhou**, X. Zou, Y. Wang\*. A study on the method of determining the number of doctors based on fatigue and numerical fitting[J]. China Health Industry, 2020,17(13):180-183.
- (Preprint) Zou, Xitian, **Zhou, Zhen\***, Wang, Yinghua and Jiang, Liping, How the Second Child and Immigration Policies Affect the Population Structure: An Example from a City in Jiangsu in the Context of Aging. (May 1, 2020). Available at SSRN: <https://ssrn.com/abstract=3614069> or <http://dx.doi.org/10.2139/ssrn.3614069>

## INTERNSHIP

### Intern Data Analyst at Donghai Securities

07/2020-08/2020

- Used TuShare to crawl the historical data of China stocks, got the seven-day time series, divided the data set, and compressed and preprocessed the data
- Based on the three indicators of MACD, KDJ-K, and KDJ-D, tried BP neural network to learn and process the data to forecast the stock market and recommend better stock codes
- Got familiar with and learned the basics of the securities industry

### Technology Department at Zhongjing Technology Corp., Shenzhen

01/2020-09/2020

Supervisor: Bu Youjun

- Participated in insurance technology project related to IoT, I responsible for the Bluetooth module of the electric toothbrush, including connecting the data of the electric toothbrush with the wechat official account. Explored the application of sensors in electric toothbrushes, including temperature, force angle, strength. I attempt to detect and classify teeth based on paddlepaddle
- Explored the relationship between technology and business models and how to meet the demand of different stakeholders, including suppliers, outsourcers, customers and third-parties
- Internship in industrial artificial intelligence. In the projects related to smart grids, put forward my own insights into fault detection and safety assessment based on Computer Vision, searched many related documents, did some processing and analysis of data

### Intern Researcher at Jiangsu Provincial Hospital of Traditional Chinese Medicine (Liyang)

09/2018-09/2019

- Researched the medical record data of Liyang County from 2016 to 2019 and explored how to commercialize digital medical records
- Predicted the future population structure under existing conditions based on Leslie model and predicted the future population structure by using modified Leslie model with two parameters of second child policy and immigration policy added
- Completed the thesis “How the second child and immigration policies affect the population structure: an example from a city in Jiangsu in the context of aging” (Corresponding author)

## ACADEMIC RESEARCH

### Causal Inference in local traffic Flow at UIUC

12/2021-

- Ongoing research, modeling of vehicle lane change behavior in local traffic flow based on causal inference, including the construction of causal diagrams, calculation of causal effects, placebo treatments effects, etc.

### Web APP by Using shiny at UIUC

10/2021-05/2022

- For modeling a dice game, use shiny to complete the auxiliary system of the game
- Sentiment analysis of movie reviews, build a binary classification model to predict the sentiment of movie reviews, use the text2vec function to create a word list, build a DT matrix, use ridge regression for prediction, and finally build a movie recommendation based on the model using shiny 's webpage
- Participated in building an interactive web page with functions for data set display and preprocessing, also using shiny, responsible for the \data cleaning function and response variables
- Commissioned by a music industry company to build an interactive web page for data pre-processing and data prediction using shiny. As the person in charge, I completed the construction of the interactive web page framework and was also responsible for the code of the clustering plus XGBoost model

### Graduation Project at WHUT: Dynamic Real-time Vehicle Detection Based on yolo

12/2020-06/2021

Advisor: Zan Jinpeng

- Implement vehicle target detection algorithm on PaddlePaddle deep learning framework based on Yolo-v3 algorithm using vehicle data set in COCO dataset
- Optimize SORT and Deepsort algorithms on target tracking module, and propose Cross-SORT algorithm mainly for cross-level matching module
- Completed the paper "Dynamic real-time vehicle motion trajectory detection and target tracking based on yolo"

### Pattern Recognition at WHUT

09/2019-12/2019

Advisor: Prof. Wan Yuan

- Reproduced the code of various algorithms in pattern recognition
- Independently wrote codes of the face recognition based on K-L transform, handwritten digit recognition based on BP neural network and liver cancer data recognition comparing various algorithms (SVM, perceptron, neural network, and decision tree)

### the Allocation Method of Shuttle Parking Spaces Near the Junior High School Building

06/2019-12/2019

Advisor: Prof. Zhao Yi at Nanjing Forestry University

- Collected the monitoring video data near a primary school and studied its parking space arrangement
- Built a vehicle queuing model based on G/M/N, and applied MATLAB to simulate the queuing model to obtain a reasonable parking space allocation scale drop off
- Proposed an optimization model for parking spaces to assure optimal usage
- Responsible for data collection, model establishment, code implementation and so on, wrote the thesis “Research on the allocation method of parking spaces near primary and secondary schools based on G/M/N queuing model”(Corresponding author and 2rd author)

### Innovative Program at WHUT: Data Mining of Medical Records Based on PCA

01/2019-09/2019

Advisor: Zhu Huaping

- Distributed 200 questionnaires in a hospital in Jiangsu Province and analyzed the feedback; collected, examined its medical record data
- Used AHP to rank the fatigue degree of doctors in different departments, adjusted the workload variables of each department, and then utilized the fitting method to calculate the daily average number of inpatients in the future
- Employed the outcome to solve various problems in human resources, risk management and disease spectrum analysis
- Completed and published the thesis “A study on the method of determining the number of doctors based on fatigue and numerical fitting” as the first author

## LEADERSHIP ACTIVITIES

### Student Associations of Wuhan University of Technology

09/2018-09/2019

- Set up the official account of the university which was subscribed by more than 20 000 users
- Based on the official account and the Mental Health Center of Wuhan University of Technology, established the psychological group of Wuhan University of Technology to help fellow students with mental health problems
- Joined the Mental Health Association of Wuhan University of Technology and held and participated in a series of school programs such as “Psychological situation drama competition” and “Garden party” when serving as head of the communication department.

#### **ADDITIONS**

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Skills: Skilled in C++, Matlab, SQL and Python; Competent in thesis writing with Latex

Certifications: CET-4, CET-6, TOEFL (92)