Wenbo YAN

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EDUCATION

The University of Sydney Jun 2020 - Jun 2021

Master of Data Science Sydney

- Machine Learning and Data Mining
- Advanced Machine Learning
- Predictive Analytics
- Visual Analytics
- Data Analysis in the Social Sciences

The University of Sydney Feb 2020 - Jun 2020

Graduate Certificate of Data science Sydney

- WAM: 75.5 (Distinction)
- Introduction to Statistics
- Principles of Data Science
- Database Management System
- Algorithms

Shandong Jiaotong University Sep 2014 - Jul 2018

Traffic Engineering Bachelor Jinan

- GPA: Top 10%
- Relevant Coursework: Traffic system analysis, Traffic Geo-information System, Traffic Plan, Probability Theory and Mathematical Statistics

RESEARCH EXPERIENCE

Federated Learning for anomaly detection Feb 2021 - Jun 2021

University of Sydney Supervised by Dr. Basem Basem Suleiman and Dr.Ali Anaissi

- In this project, we propose a new anomaly detection approach to apply for the real smart building dataset which can protect data privacy on the basis of keeping the equally model performance.
- I am mainly responsible for implementing the Federated learning experiments parameter tunning and the writing of Experiments and Discussion sections.
- The project finally produced a conference paper which has already been submitted to the ICONIP2021 as the third author.

Analysing Sydney public transport network based on GTFS data Apr 2020 - Aug 2020

University of Sydney Supervised by Dr.Emily Moylan Sydney

[Evaluating Public transport performance based on GTFS real-time data during Covid-19 time]

- Using Python to manipulate specified GTFS real-time data which include bus delay, bus vehicle position.
- Combining Sydney school information data to evaluate how the school re-opening impacts the public transport performance based on OLS and ANOVA method.
- The research has produced a paper as the first author (mainly responsible for data analysis and model analysis), which has accepted by the TRR.

- Received *Sydney Transport Infrastructure Research Program Scholarship* ($2500)

Smart curb based on Raspberry Pi May 2019 - Oct 2019

Tsinghua University School of Architecture ,Supervised by Dr. LONG YING Beijing

[Smart curb to detect human flow and Parking violation detection]

With the development of 5G and the Internet of things technology, smart cities are increasingly emphasizing the smart of urban infrastructure. On this basis, we have designed a kind of smart curb that can realize the functions of human flow technology, Vehicle road coordination, and intelligent lighting. Smart curb is based on Raspberry PI ZERO and is equipped with ultrasonic sensors and night-vision cameras that can detect and take pictures of people and traffic within a certain range. In addition, the outer shell of the smart curb adopts 3D printing technology, which can better adapt to the outer shell of hardware.

Traffic big data analysis Oct 2017 - Jul 2018

Shandong Jiaotong University Institute of Intelligent Transportation Jinan

[Using Deep Learning Approach (LSTM) to Predict Traffic Flow]

During my research, I implement a Deep learning approach on traffic flow prediction, compared with the traditional prediction model, this model is more accurate.

This paper proposes a short-term traffic flow prediction model based on deep learning, the Long Short Term Memory (LSTM) as a prediction model. After normalization of the data, put it into the LSTM model for prediction. In this paper, the data of a highway in San Jose, California from February to April 2018 for a total of three months were selected for example analysis and compared with the traditional ARIMA prediction model. An example shows that the model prediction error proposed in this paper is 5.84% lower than the ARIMA model, and the model effect is excellent.

Publication

Basem Suleiman, Ali Anaissi, **Wenbo Yan**, Sophie Zou and Ling Nga Meric Tong(2021). A Federated Learning Anomaly Detection Approach for IoT Smart Home Environments. The 28th International Conference on Neural Information Processing (ICONIP2021) (Submitted)

Yan, Yao, Chen, Rayaprolu & Moylan (2021). Impacts of School Reopening on Variations in Local Bus Performance in Sydney. Accepted for presentation at the 100th Transportation Research Board Annual Meeting 2021.(**Speaker**) Accepted by Transportation Research Record. (Published)

Tian Li, Peng Jing, Linchao Li, Dazhi Sun *, **Wenbo Yan**(2019) *Revealing the varying impact of urban built environment on online car-hailing travel in spatio-temporal dimension: an exploratory analysis in Chengdu, China*. **Sustainability**(SCI&SSCI) (Published)

PROFESSIONAL EXPERIENCE

China Academy of Urban Planning and Design-Alibaba UrbanX Lab Jun 2020 - Sep 2020

Data analysis intern Online

- Collect and clean the urban development index data of three major urban regions in China, visualize the index and use K-means clustering algorithms to reveal the clustering result of three major urban regions.
- Use Python to crawl Gaode traffic condition data and store data into Tencent Cloud, using QGIS to do the spatial visualization.

Beijing Didi Infinity Technology and Development Co.,Ltd Feb 2018 - Apr 2018

Assistant transportation engineer ,City transportation Department Jinan

- Manage Traffic Data Visualization Platform.
- Assist algorithm engineer to implement adaptive traffic signal based on trajectory data.

- Assist traffic engineer to build traffic state diagnosis system.

VOLUNTEER EXPERIENCE

Myh2o May 2019 - Sep 2019

Data analysis volunteer Beijing

- During the volunteer in Myh2o, I was responsible for semantic analysis of water quality survey data, such as emotional polarity analysis, and used word segmentation technology to select adjectives and used Tableau to make map visualization.

Institute of planning and design in Jinan Nov 2016 - Dec 2016

Part Time Traffic Surveyor Jinan

- Traffic Volume and Resident Travel Survey

HONORS & AWARDS

Sydney Transport Infrastructure Research Program Scholarship ($2500) 2020

The Second Prize Scholarship in Shandong Jiaotong University 2015-2017

Provincial Mathematical Model Contest second prize 2016

MISCELLANEOUS

- **Skills:** Python, Arcgis/Qgis, R,SQL, Tableau
- **Interests:** Table tennis, basketball, Science Fiction