Boyou Chen

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EDUCATION

University College London (UCL); Master of Science in Transport and City Planning *London, United Kingdom; Sep.2022-Sep.2023*

- ✧ Current GPA: 68.85% (Upper Merit)
- ✧ Core modules: Foundations of Spatial Data Science; Transport and Well-Being; Transport Planning and the City; Sustainable Urban Development: Key Themes; Transport Planning Analysis; Transport Consultancy Study

Chang'an University (CHD); Bachelor of Engineering in Transportation Engineering *Xi'an, China; Aug.2018-Jun.2022*

- ✧ Overall GPA: 87.01/100
- ✧ Core courses: Traffic Survey and Data Analysis; Urban Public Transportation; Transportation Stations, Ports and Terminals; Introduction of Urban Rail Transit; Materials in Road Construction; Surveying; Transportation Economics
- ✧ Scholarship: CHD Outstanding Graduate Scholarship, May 2022; CHD 2nd Class Scholarship, Nov.2021 and Nov.2020

RESEARCH EXPERIENCE

Graduation Project: City Group Green Transportation System Analysis Toolbox Development *Dec.2021-Jun.2022*

- ✧ Studied the existing transport carbon emissions measurement methods based on three models and completed an adaptive design of urban agglomeration multimodal transportation system
- ✧ Rebuilt the evaluation index of green transportation system in urban agglomeration based on DPSIR model, obtained 5 modules and 19 indexes to analyze annual change of relationship between carbon emissions and other indicators in Yangtze River Delta urban agglomeration
- ✧ Developed a toolbox based on Matlab to visualize data, analyze urban carbon emissions, and DPSIR data vertical and horizontal analysis
- ✧ **Result:** City Group Green Transportation System Analysis Toolbox V1.0

BJTU Key Laboratory of Transport Industry of Big Data Application Technologies for Comprehensive Transport *Jun.2019-Dec.2021*

Research on Monitoring and Warning Technology of Distracted Driving Behavior Considering Traffic Flow (supervised by Yuting Zhang)

- ✧ Conducted a driving simulation experiment by studying 45 drivers' behavior data when approaching signalized intersections
- ✧ Studied the impact of distraction on driving behavior, concluded that distracted drivers needed longer braking response time, resulting in shortened braking operation, lower pedal pressure and worse steering wheel stability
- ✧ Built an innovative recognition model of distracted driving based on BiLSTM model and tested the model by selecting 6 characteristic behavior indexes, proving that BiLSTM model generated a 92.6% accuracy and better recall rate, providing basis and guidance for the optimal design of driver distraction warning system at intersections
- ✧ **Publication:** Zhang, Y., **Chen, B.**, Zhang, S., Yan, X. and Li, X. (2022). Recognition Model of Distracted Drivers When Approaching Signalized Intersections, *Journal of Transportation Systems Engineering and Information Technology*, 22(1), pp.217-224. (DOI: 10.16097/j.cnki.1009-6744.2022.01.023)
- ✧ **Award:** The Third Prize in National Innovation and Entrepreneurship Training Program for College Students
- ✧ **Affiliated with:** National Natural Science Foundation of China (71901036); National Key Research and Development Program of China(2019YFE0108000); National Innovation and Entrepreneurship Training Program for College Students(S202010710019)

Study of the Application of Construction Waste in Subgrade Engineering *Jun.2019-Jun.2021*

- ✧ Took Xi'an and Suiping as examples, investigated the status quo of construction waste processing and disposal, recycling methods
- ✧ Proposed strategies of waste recycling, such as landscaping, environmentally friendly bricks, recycled aggregate using roadbed backfilling to build green road constructio and sustainable development
- ✧ **Publication:** Zhu, X., **Chen, B.** and Shang, Z. (2020). Research on the Application of Construction Waste Recycling Treatment, *Henan Building Materials*, (10), p.95.
- ✧ **Award:** The Second Prize in Provincial Innovation and Entrepreneurship Training Program for College Students (S201910710017)

Further Optimization Scheme of non-Newtonian Fluid Deceleration Strip *Dec.2019-Dec.2020*

Supported by the Fundamental Research Funds for the Central Universities (300102219801); guided by Prof. Yixin Chen

- ✧ Investigated current deceleration strip types including spike, hump, cement and road concave groove deceleration strip, analyzed the shortcomings and impact on drivers' experience and damage of vehicles and chassis
- ✧ Studied the mechanism and principles of new intelligent non-Newtonian fluid deceleration strip filled by pseudoplastic fluid, learned the traits of pseudoplastic fluid under different driving speed conditions, and found the limits of non-uniform standard for fluid
- ✧ Proposed an algorithm for producing non-Newtonian fluid deceleration strip, making it applicable widely
- ✧ Used raw cement slurry as the filling material, built power law fluid constitutive equation model, studied the relationship between the height of non-Newtonian fluid deceleration strip, the ambient temperature and speed
- ✧ Concluded that there's a positive correlation between the vertical height of the speed belt and the critical speed of vehicle and a negative correlation between the support force for the vehicle at low speed, giving practical suggestions for using appropriate cement raw slurry filling amount to ensure the comfort of deceleration and deceleration effect
- ✧ **Publication:**

1. **Chen, B.**, Chen, Y. and Zhang, S. (2021). Further Optimization Scheme of Non-Newtonian Fluid Deceleration Strip, *Journal of Computer*

and Digital Engineering, 49(7), pp.1290-1295. (DOI: 10.3969/j.issn.1672-9722.2021.07.003)

2. **Chen, B.**, Zhu, X. and Shang, Z. (2019). Finite Element Analysis of non-Newtonian Fluid Deceleration Strip based on ANSYS, *Science and Technology Innovation Herald*, 16(34), pp.87-88.

Road Construction Section Speed Control and Safety Information Feedback Platform *Jun.2019-Jun.2021*

Approved by the National Innovation and Entrepreneurship Training Program for College Students (201910710017)

- ✧ Surveyed current problems of road safety protection, such as nonstandard road signs in construction area, poor road conditions, and village roads, passive speed limit and information feedback, and lack of portable and effective traffic control devices
- ✧ Designed an integrated safety control system that can slow down vehicles and provide feedback of road conditions and speed info actively, realizing speed deceleration, speed detection, data collection, and information feedback

Research on Adaptive Control of Left Turn by Lane based on Secondary Development of Traffic Simulation Software *Jun.2019-Dec.2020*

Approved by the Provincial Innovation and Entrepreneurship Training Program for College Students(S201910710038)

- ✧ Proposed a two-level optimization model to optimize the delay and emission problems and proposed a cooperative control strategy of the main pre-signal, established a scheme analysis to calculate the left turn delay based on the queuing and departure situation of the left-turn lane
- ✧ Built an optimization model based on particle subgroup algorithm, took the cycle time, green signal ratio and pre-signal setting as variables
- ✧ Applied AIMSUM to simulate and analyze environmentally friendly left-turn's advantage in term of delay and emission and explored the rationality of using left-turn reverse variable lane based on VBA and Python programming and Matlab modeling

Development of WeChat Applet of Alleviating Procrastination *Jun.2019-Dec.2020*

Approved by the National Innovation and Entrepreneurship Training Program for College Students(201910710185X)

- ✧ Analyzed the two groups (college students and office workers) having the highest frequency of use of WeChat and the possibilities of procrastination, designed a WeChat applet to help them overcome procrastination and improve study and work efficiency
- ✧ Completed technical issues including UI design, realizing connection between WeChat groups and applet, punch in reward management, data monitoring and processing, generating embedded list, setting privacy protection, applet promotion and chain structure
- ✧ Software Copyright: Punch in Reward Management Software V1.0, 2021SR0805000, Jun. 1, 2021

Research on Road Condition Optimization of Signal Timing Based on Big Data *Jun.2018-Jun.2021*

Approved by the National Innovation and Entrepreneurship Training Program for College Students (201810710008)

- ✧ Collected road traffic information based on traffic big data and analyzed roads in Xi'an having similar road conditions
- ✧ Processed the traffic information, calculated the signal timing, conducted AIMSUM simulation and verified the simulation result
- ✧ Obtained the road signal timing scheme for a certain road condition to alleviate traffic pressure and reduce traffic accidents

INTERNSHIP EXPERIENCE

Shaanxi Automobile Holding Group Co. Ltd (Shaanqi Group) *Jul.2021-Aug.2021*

- ✧ Visited the automobile manufacturing workshops, automatic research and development offices
- ✧ Gained overall understanding of automotive assembly processes

Shaanxi Road and Bridge Group *Feb.2021-Mar.2021*

- ✧ Visited the road and bridge construction sites
- ✧ Practiced to draft construction management files in the professional manner

HONORS & COMPETITION AWARDS

First Prize in 2020 China Undergraduate Mathematical Contest in Modelling, Shaanxi Chapter *Oct.2020*

First Prize in 2019 China Undergraduate Mathematical Contest in Modelling, Shaanxi Chapter *Oct.2019*

Successful Participant Award in 2020 Mathematical Contest in Modeling *Apr.2020*

Second Prize in 16th National College Student Transportation Technology Competition Selection of CHD *Jul.2021*

Second Prize in CHD 12nd 'Challenge Cup' Extracurricular Academic Science and Technology Works Competition *Apr.2021*

President, College Students Science and Technology Innovation and Entrepreneurship Association, College of Transportation Engineering, Chang 'an University; 2021 CHD Outstanding Student Association; CHD Excellent Individual *Aug.2020-Jul.2021*

Third Prize in China Construction Fist Division Company Cup 11th Bridge Structure Design Competition *Apr.2019*

Bronze Prize in the 5th CHD 'Internet +' College Student Innovation and Entrepreneurship Competition *Aug.2019*

Third Prize in the 5th CHD Future Innovative Design of Urban Transportation Competition *Jun.2020*

First Prize in the 4th CHD Future Innovative Design of Urban Transportation Competition *Jun.2019*

Third Prize in CHD Comprehensive Transportation Scheme Design Competition *Jun.2019*

Third Prize in the 3rd CHD Micro Video Competition *Jun.2019*

First Prize in CHD Video Mixing and Editing Competition *Nov.2019*

MISCELLANEOUS

- ✧ **Transportation Software:** TransCAD, Vissim, SYNCHRO, Cube, Visum, HintCAD, CASS, ArcGIS
- ✧ **Computer Skills:** Matlab, SPSS, Origin, AutoCAD, C4D, MS Office (Word, Excel, PowerPoint, Onenote), Adobe AE, PR, Final Cut Pro
- ✧ **Languages:** English (proficient), Chinese (native)