Lanyue Tang

Research Interest: Human-Machine Interaction, Artificial Intelligence, Autonomous Vehicle, and Traffic Simulation.

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EDUCATION

Tongji University *Shanghai, China*

Master of Transportation Planning and Management *Sep 2021 - present*

- Supervisor: Prof. Jian Sun and Assis. Prof. Lishengsa Yue
- Average score: 86.52/100 (GPA: 4.09/5)
- Main courses: Deep learning and its application transportation, Traffic planning theories and methods, Optimization Method, Traffic Flow Theory and Simulation Analysis

Southeast University *Nanjing, China*

Bachelor of Traffic Engineering *Sep 2017 – Jun 2021*

- Average score: 88.32/100 (GPA: 3.69/4)
- Main courses: Traffic analysis, Traffic data analysis, Traffic management and control, Traffic simulation

PUBLICATION

JOURNAL PUBLICATIONS**:**

Tang, L., Zhang, D., Han, Y., Tian, Y., Yue, L., Sun, J.* (2023), Parallel-Computing-Based Calibration for Microscopic Traffic Simulation Model, Transportation Research Record, Washington, DC.

Tang, L., Yue, L*, Zhou, X., Fu, A., Li, Z. (2023), CPSOR-GCN: A trajectory prediction method considering emotion in pre-crash scenarios based on SOR theory. **(submitted for publication)**

CONFERENCE PUBLICATIONS**:**

Tang, L., Yue, L*, Fu, A. (2023), Interactive Vehicle Trajectory Prediction Considering Abnormal Emotion Based on SOR Cognitive Framework, 2023 7th CAA International Conference on Vehicular Control and Intelligence (CVCI), Oral Presentation.

Tang, L., Han, Y., Zhang, D., Tian, Y., Sun, J.* (2021), Parallel Computing-based Calibration for Microscopic Traffic Simulation Model, Transportation Research Board 101st Annual Meeting (TRB).

Tang, L., Yue, L.* (2023), CPSOR-GCN: An Interactive Vehicle Trajectory Prediction Method Considering Emotion Based on SOR Cognitive Theory, 2023 2nd International Conference of Human Performance Modelling and Augmentation (HPMA), Oral Presentation.

Liu, S., Zhang, Q., Wang, P., Feng, B., Huang, C., Zhang, Y., **Tang, L.**, Yue, L., Sun, J. (2023), Enhance SIL Simulation Through Driver Behaviour Modeling at Unprotected Left-turn Scenario for Autonomous Driving SOTIF Analysis, 2023 7th International Conference on Intelligent Traffic and Transportation (ICITT).

Fu, A., Zhang, H., **Tang, L**., Tian, Y. * (2023), Accelerated Verification of Autonomous Driving Systems based on Subset Simulation, Transportation Research Board 103rd Annual Meeting (TRB).

RESEARCH Projects

Trajectory Prediction in Pre-Crash Scenarios considering drivers' abnormal emotion *Dec 2022 – Present*

- Proposed a trajectory prediction method that takes into account drivers' abnormal emotions, aiming to solve the

problem of false alarms in active safety systems.

- The model takes into account physical motion and cognitive characteristics, and its accuracy is confirmed through building and experimenting with driving simulator environments (based on UE4 and Carla).
- Based on the stimulus-organism-response theory, the cognitive characteristics of the driver are extracted, allowing this method to significantly reduce errors and provide an effective means for the improvement of active safety systems.

Parallel Computing-based Calibration for Microscopic Traffic Simulation Model *Jue 2021 –Jue 2022*

- Developed a microscopic traffic simulation calibration algorithm by applying parallel computing technology, which solved the problems of traditional heuristic algorithms that are time-consuming and inefficient.
- By building a simulation model based on SUMO and parallelizing the genetic algorithm and particle swarm optimization algorithm.
- The calibration time is shortened from 5 hours to less than 1 hour, and the calibration efficiency is increased by 80%.

Project: Driver Modelling and Scenario Generation – Huawei Technologies Co., Ltd. *May 2022 – Sep 2023*

Core member

- Established a multi-style driver model of left-turn vehicle interaction at the intersection based on the actual collected trajectory data to meet the heterogeneity of drivers in the actual traffic environment.
- Deployed the established driver model in VTD simulation software and provided a test environment that can adjust the heterogeneity of traffic flow for the autonomous driving algorithm.

HONORS

- Outstanding Student of the Fifth Yinfu Class *Mar 2023*
- American College Student Mathematical Modeling Competition, Honourable Mention *Mar 2020*
- YunYing Scholarship *Oct 2019*

SKILLS

- Proficiency with Python and MATLAB.
- Proficient in Carla, Vissim, Sumo, VTD, UE4, and roadRunner.
- Proficiency in PyTorch and TensorFlow possessing a strong grasp of deep learning and machine learning concepts, can address problems such as overfitting and gradient explosion.
- Having strong communication and collaboration skills and strong execution ability, once served as the main personnel to complete the deployment and implementation of research work in a school-enterprise cooperation project with Huawei Technology Company.