Wenhan Wu

Date of birth: May 11, 1998
Nationality: Chinese
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Education Background

2015/09-2019/06	**Central South University (CSU), School of Automation** *Bachelor Degree in Engineering* *Average score: 92.97/100 (TOP 0.5%)* *Supervisor:* ***Prof. Keke Huang***	Changsha, China
Since 2019/08	**Tsinghua University (THU), Department of Automation** *Ph.D. student in Control Science and Engineering* *GPA: 3.85/4.00 (TOP 10%)* *Supervisor:* ***Prof. Xiaoping Zheng***	Beijing, China
2023/04-2024/04	**Humboldt-Universität zu Berlin (HUB), Department of Biology** *Joint Ph.D. student in Theoretical Biology* *Supervisor:* ***Prof. Pawel Romanczuk***	Berlin, Germany

Research Interests

1. **Network Science**: Reconstructing the potential structure of complex networks.
   (*2018-2019,* ***Bachelor Thesis****, under the supervision of* ***Prof. Keke Huang***)
2. **Crowd Behavior**: Simulating the evacuation process of heterogenous individuals, developing a method to identify subgroups automatically, modeling the movement behavior of pedestrian subgroups, and exploring the decision making of subgroups when facing a static obstacle.
   (*2019-2024,* ***Ph.D. Project****, under the supervision of* ***Prof. Xiaoping Zheng***)
3. **Behavioral Contagion**: Studying the behavioral contagion of fish groups during startle cascades.
   (*Since 2023,* ***Joint Ph.D. research****, under the supervision of* ***Prof. Pawel Romanczuk***)
4. **Collective Motion**: Analyzing the self-organization of pedestrian random walk in corridors.
   (*Since 2022,* ***Collaborative research****, under the supervision of* ***Prof. Guy Theraulaz*** *and* ***Prof. Clément Sire***)

Research Publications

1. **Wenhan Wu**#, Wenfeng Yi, Xiaolu Wang, Erhui Wang, Xiaoping Zheng*. A Vision-driven Model Based on Cognitive Heuristics for Simulating Subgroup Behaviors During Evacuation. ***IEEE Transactions on Intelligent Transportation Systems***, 2024, 1-11, Early Access Article.
2. **Wenhan Wu**#, Maoyin Chen, Jinghai Li, Binglu Liu, Xiaoping Zheng*. An Extended Social Force Model via Pedestrian Heterogeneity Affecting the Self-driven Force. ***IEEE Transactions on Intelligent Transportation Systems***, 2021, 23(7): 7974-7986.
3. **Wenhan Wu**#, Jinghai Li, Wenfeng Yi, Xiaoping Zheng*. Modeling Crowd Evacuation via Behavioral Heterogeneity-Based Social Force Model. ***IEEE Transactions on Intelligent Transportation Systems***, 2022, 23(9): 15476-15486.
4. **Wenhan Wu**#, Xiaoping Zheng*. A Systematic Analysis of Subgroup Research in Pedestrian and Evacuation Dynamics. ***IEEE Transactions on Intelligent Transportation Systems***, 2023, 25(2): 1225-1246.
5. **Wenhan Wu**#, Wenfeng Yi, Xiaolu Wang, Erhui Wang, Xiaoping Zheng*. Experimental study on the decision-making

and motion behavior of subgroups when facing a static obstacle during movement. ***Expert Systems with Applications***, 2023, 242: 122761.

6. **Wenhan Wu**#, Wenfeng Yi, Xiaolu Wang, Xiaoping Zheng*. A Force-based Model for Adaptively Controlling the Spatial Configuration of Pedestrian Subgroups at Non-extreme Densities. ***Transportation Research Part C: Emerging Technologies***, 2023, 152: 104154.
7. **Wenhan Wu**#, Wenfeng Yi, Jinghai Li, Maoyin Chen, Xiaoping Zheng*. Automatic Identification of Human Subgroups in Time-Dependent Pedestrian Flow Networks. ***IEEE Transactions on Multimedia***, 2023, 26: 166-177.
8. Xiaoping Zheng#, **Wenhan Wu**#, Wenfeng Deng, Chunhua Yang, Keke Huang*. Reconstruction of Tree Network via Evolutionary Game Data Analysis. ***IEEE Transactions on Cybernetics***, 2020, 52(7): 6083-6094.
9. **Wenhan Wu**#, Wenfeng Yi, Jinghai Li, Maoyin Chen, Xiaoping Zheng*. Simulating the Evacuation Process Involving Multitype Disabled Pedestrians. ***IEEE Transactions on Computational Social Systems***, 2022, 10(5): 2400-2410.
10. **Wenhan Wu**#, Maoyin Chen, Jinghai Li, Binglu Liu, Xiaolu Wang, Xiaoping Zheng*. Visual Information-Based Social Force Model for Crowd Evacuation. ***Tsinghua Science and Technology***, 2021, 27(3): 619-629.
11. Wenfeng Yi#, **Wenhan Wu**, Xiaolu Wang, Erhui Wang, Xiaoping Zheng*. Order–disorder phase transitions in front of the exit during human crowd evacuations. ***Transportation Research Part C: Emerging Technologies***, 2024, 163: 104649.
12. Wenfeng Yi#, **Wenhan Wu**, Xiaolu Wang, Xiaoping Zheng*. Modeling the Mutual Anticipation in Human Crowds With Attention Distractions. ***IEEE Transactions on Intelligent Transportation Systems***, 2023, 24(9): 10108-10117.
13. Wenfeng Yi#, **Wenhan Wu**, Jinghai Li, Xiaolu Wang, Xiaoping Zheng*. An extended queueing model based on vision and morality for crowd evacuation. ***Physica A: Statistical Mechanics and its Applications***, 2022, 604: 127658.
14. Jinghai Li#, Maoyin Chen, **Wenhan Wu**, Binglu Liu, Xiaoping Zheng*. Height map-based social force model for stairway evacuation. ***Safety Science***, 2021, 133: 105027.
15. Wenfeng Deng#, Chunhua Yang, Keke Huang*, **Wenhan Wu**. A two-stage reconstruction method for complex networked system with hidden nodes. ***Chaos: An Interdisciplinary Journal of Nonlinear Science***, 2022, 32(5): 053105.

Award and Honors

1.	2016/12 & 2018/12	**National Scholarship** for Undergraduate Students (×2)
2.	2016/10 & 2017/10 & 2018/10	**Premium Scholarship** for Academic Year (×3)
3.	2022/12	**National Scholarship** for Doctoral Students (×1)
4.	2021/10 & 2023/10	Comprehensive **First Prize Scholarship** (×2)

Conference and Workshop

1. 2024/02/15–2024/02/17: **25th Seminar "Pattern formation in Biophysics and Chemistry"**, Berlin Center for Studies of Complex Chemical Systems, Erfurt, Germany. (**Workshop**)
2. 2024/05/27–2024/05/31: **"Collective Motions of Animals and Robots"**, Research Institute Scientists De Cargèse, Cargèse, Corsica Island, France. (**Poster Presentation**)

Research Skills

1.	Research Software	**MATLAB/Simulink**, Eclipse, PyCharm, **VS Code**
2.	Programming Code	**MATLAB**, **Python**, C/C++, R, **LaTeX**
3.	Operating System (OS)	**Windows**, Linux
4.	Language Skill	Chinese (Native language), **English**