Wenhan Wu

Date of birth: May 11, 1998

Nationality: Chinese

Current position: Fifth-year Ph.D. student

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Education Background

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

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. (Revised and Resubmit)

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. (Impact Factor = 8.5, JCR Q1, First author)

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. (Impact Factor = 8.5, JCR Q1, First author)

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. (Impact Factor = 8.5, JCR Q1, First author)

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. (Impact Factor = 8.5, JCR Q1, First author)

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. (Impact Factor = 8.3, JCR Q1, First author)

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. (Impact Factor = 7.3, JCR Q1, First author)

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. (Impact Factor = 11.8, JCR Q1, Co-first author)

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. (Impact Factor = 5.0, JCR Q1, First author)

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. (Impact Factor = 6.6, JCR Q1, First author)

11. 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. (Impact Factor = 8.5, JCR Q1, Second author)

12. 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. (Impact Factor = 3.3, JCR Q2, Second author)

13. Jinghai Li[#], Maoyin Chen, **Wenhan Wu**, Binglu Liu, Xiaoping Zheng*. Height map-based social force model for stairway evacuation. *Safety Science*, 2021, 133: 105027. (Impact Factor = 6.1, JCR Q1, Third author)

14. 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. (Impact Factor = 2.9, JCR Q1, Fourth author)

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)

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**