

**Hongchao Zhang, PhD Candidate**  
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## Education

(Expected) 2025 Ph.D., Electrical Engineering, Washington University in St. Louis, St. Louis, MO, USA

□ Advisor: Prof. Andrew Clark.

2020 M.S., Electrical & Computer Engineering, Worcester Polytechnic Institute, Worcester, MA, USA

□ Advisor: Prof. Andrew Clark.

2018 B.E., Automation Engineering, Nanjing University of Aeronautics and Astronautics, Nanjing, Jiangsu, China

## Research Interests

Learning-based Control; Cyber-Physical Systems; Resilience; Neural Networks

## Publications

1. H. Zhang, J. Wu, Y. Vorobeychik, and A. Clark, "Exact Verification of ReLU Neural Control Barrier Functions." Accepted by Thirty-seventh Conference on Neural Information Processing Systems, 2023
2. H. Zhang, Z. Li, H. Dai, and A. Clark, "Efficient Sum of Squares-Based Verification and Construction of Control Barrier Functions by Sampling on Algebraic Varieties." Accepted by IEEE Conference on Decision and Control (CDC), 2023
3. H. Zhang, Z. Li, S. Cheng, and A. Clark, "Cooperative Perception for Safe Control of Autonomous Vehicles under LiDAR Spoofing Attacks." Symposium on Vehicle Security and Privacy (VehicleSec), 2023. **General Motors Autodriving Security Award.**
4. H. Zhang, S. Cheng, L. Niu, and A. Clark, "Barrier Certificate based Safe Control for LiDAR-based Systems under Sensor Faults and Attacks" 2022 IEEE 61st Conference on Decision and Control (CDC). IEEE, 2022
5. L. Niu, H. Zhang and A. Clark, "Safety-Critical Control Synthesis for Unknown Sampled-Data Systems via Control Barrier Functions," 60th IEEE Conference on Decision and Control (CDC), 2021, pp. 6806-6813, doi: 10.1109/CDC45484.2021.9683019.
6. H. Zhang, Z. Li and A. Clark, "Model-based Reinforcement Learning with Provable Safety Guarantees via Control Barrier Functions," IEEE International Conference on Robotics and Automation (ICRA), 2021, pp. 792-798, doi: 10.1109/ICRA48506.2021.9561253.
7. A. Clark, Z. Li and H. Zhang, "Control Barrier Functions for Safe CPS Under Sensor Faults and Attacks," 59th IEEE Conference on Decision and Control (CDC), 2020, pp. 796-803, doi: 10.1109/CDC42340.2020.9303766.

**Awards**

1. 2023 General Motors AutoDriving Security Award at the inaugural ISOC Symposium on Vehicle Security and Privacy at the Network and Distributed System Security Symposium (NDSS)

**Teaching**

1. Mentoring in Washington University Summer Engineering Fellowship Program (WUSEF) in 2023
2. Mentoring in the Worcester Polytechnic Institute Major Qualifying Project (MQP) in 2021 and 2022

**Activities**

- ☐ Public Demonstration at WPI TouchTomorrow 2019, 2022

**Patents**

- ☐ Hongchao Zhang, Patent- A following housekeeper robot (Patent No.: 201710406907.1)
- ☐ Hongchao Zhang, Patent- Laptop Heat Exchange Cupholder (Patent No.: ZL 2014 2 0806400.7)