

# Haimin Hu

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## EDUCATION

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- **Princeton University** Princeton, NJ  
*Ph.D. in Electrical and Computer Engineering* Aug. 2020 – Jun. 2025  
*M.A. in Electrical Engineering* Aug. 2020 – May 2022  
Supervisor: Jaime F. Fisac
- **University of Pennsylvania** Philadelphia, PA  
*M.S.E. in Electrical Engineering* Aug. 2018 – May 2020  
Supervisors: George J. Pappas, Manfred Morari, and Nikolai Matni
- **ShanghaiTech University** Shanghai, China  
*B.E. in Electronic and Information Engineering* Sep. 2014 – Jul. 2018  
Supervisor: Boris Houska
- **University of California, Berkeley** Berkeley, CA  
*Visiting student in Electrical Engineering and Computer Sciences* Aug. 2017 – May 2018  
Supervisor: Claire J. Tomlin

**Research Interests:** Model predictive control, human-robot interaction, learning for control

## PUBLICATIONS

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- [1] **H. Hu** and J. F. Fisac, “Active uncertainty reduction for human-robot interaction: an implicit dual control approach,” *Algorithmic Foundations of Robotics XV (WAFR)*, 2022.
- [2] **H. Hu**, K. Nakamura, and J. F. Fisac, “SHARP: Shielding-aware robust planning for safe and efficient human-robot interaction,” *IEEE Robotics and Automation Letters (RA-L)*, 2022.
- [3] M. Chen\*, S. L. Herbert\*, **H. Hu**, Y. Pu, J. F. Fisac, S. Bansal, S. Han, and C. J. Tomlin, “FaSTrack: a modular framework for real-time motion planning and safe tracking,” *IEEE Transactions on Automatic Control (TAC)*, 2021.
- [4] L. Lindemann, **H. Hu**, A. Robey, H. Zhang, D. V. Dimarogonas, S. Tu, and N. Matni, “Learning Hybrid Control Barrier Functions from Data,” *4th Conference on Robot Learning (CoRL)*, 2020.
- [5] **H. Hu**, M. Fazlyab, M. Morari, and G. J. Pappas, “Reach-SDP: Reachability analysis of closed-loop systems with neural network controllers via semidefinite programming,” *IEEE Conference on Decision and Control (CDC)*, 2020.
- [6] A. Robey\*, **H. Hu**\*, L. Lindemann, H. Zhang, D. V. Dimarogonas, S. Tu, and N. Matni, “Learning control barrier functions from expert demonstrations,” *IEEE Conference on Decision and Control (CDC)*, 2020.
- [7] **H. Hu**, K. Gatsis, M. Morari, and G. J. Pappas, “Non-cooperative distributed MPC with iterative learning,” *21st IFAC World Congress*, 2020.
- [8] **H. Hu**, K. Gatsis, M. Morari, and G. J. Pappas, “Tuning communication latency for distributed model predictive control,” *8th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)*, 2019.
- [9] X. Feng, **H. Hu**, M. E. Villanueva, and B. Houska, “Min-max differential inequalities for polytopic tube MPC,” *American Control Conference (ACC)*, 2019.
- [10] **H. Hu**, Y. Pu, M. Chen, and C. J. Tomlin, “Plug and play distributed model predictive control for heavy duty vehicle platooning and interaction with passenger vehicles,” *57th IEEE Conference on Decision and Control (CDC)*, 2018.
- [11] **H. Hu**, X. Feng, R. Quirynen, M. E. Villanueva, and B. Houska, “Real-time tube MPC applied to a 10-state quadrotor model,” *American Control Conference (ACC)*, 2018.

## HONORS AND AWARDS

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- **WAFR 2022 Student Travel Grant** National Science Foundation, 2022
- **The Toby and Jack Wolf Grant (Travel Grant)** Princeton University, 2022
- **First Year Fellowship in Natural Sciences and Engineering** Princeton University, 2020
- **Outstanding Research Award** University of Pennsylvania, 2020
- **GAPSA Professional Travel Grant** University of Pennsylvania, 2018
- **Outstanding Graduate (Top 5%)** ShanghaiTech University, 2018
- **President’s Scholarship (Top 2%)** ShanghaiTech University, 2017
- **Merit Student for Excellence in Research (1/199)** ShanghaiTech University, 2017
- **Scholarship for Academic Excellence (Top 15%)** ShanghaiTech University, 2015

## INVITED TALKS

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- “*Active Uncertainty Reduction for Human-Robot Interaction*” University of Colorado Boulder, 2022
- “*Shielding-Aware Robust Planning*” Robotics Seminar, Princeton University, 2021
- “*Distributed MPC for the Internet-of-Things*” Institute for Dynamic Systems and Control, ETH Zürich, 2020

## INDUSTRY EXPERIENCE

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- **Research Internship:** Game-theoretic motion planning, Honda Research Institute USA, Inc. (Summer 2022), Supervisors: Dr. David Isele and Dr. Sangjae Bae

## TEACHING

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- **Assistant in Instruction (Solo):** ECE 539/COS 512 Safety-Critical Robotic Systems (Fall 2021), Princeton University, Instructor: Prof. Jaime F. Fisac
- **Teaching Assistant (Solo):** ESE 619 Model Predictive Control (Spring 2020), University of Pennsylvania, Instructor: Prof. Manfred Morari

## PROFESSIONAL ACTIVITIES

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- **Peer Reviewer:**
  - Automatica
  - IEEE Transactions on Automatic Control (TAC)
  - IEEE Robotics and Automation Letters (RA-L)
  - IEEE International Conference on Robotics and Automation (ICRA)
  - IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
  - IEEE Conference on Decision and Control (CDC)
  - American Control Conference (ACC)
  - IFAC World Congress
  - IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys)
  - Optimal Control Applications and Methods
- **Program Assistant:** Princeton AI4ALL (2022)

## TECHNICAL SKILLS

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- **Programming Languages:** C/C++, Python, MATLAB, Julia
- **Research Software:** YALMIP, ACADO, CVX, MPT3, Google Jax, CasADi, ROS, Simulink,  $\LaTeX$