

# Aaron Havens

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## Education

- 2020–2024 **Ph.D Electrical and Computer Engineering**, *University of Illinois at Urbana-Champaign*, Champaign, IL.  
Advisor: Bin Hu  
Thesis: Enforcing Control Theoretic Constraints and Guarantees in Imitation Learning.
- 2018–2020 **M.S. Aerospace Engineering**, *University of Illinois at Urbana-Champaign*, Champaign, IL (GPA: 3.70).  
Advisor: Girish Chowdhary  
Thesis: Model-Based Approaches for Learning Control from Multimodal Data
- 2013–2017 **B.S. Mechanical Engineering**, *Iowa State University of Science and Technology*, Ames, IA (GPA: 3.68).

## Academic Experience

- Aug – Curr **Graduate Research Assist.**, COORDINATED SCIENCE LAB, Champaign, IL.  
2018 Graduate Research under Prof. Bin Hu (Ph.D) and Girish Chowdhary (M.S.).
  - Studying the interplay of control, optimization and learning. Developing control theoretic and provable constraints for imitation learning such as stability and robustness.
- Jan – May **Post-Undergraduate Research Assistant**, IOWA STATE UNIVERSITY, Ames, IA.  
2018 Full-time researcher in the Self-aware Complex Systems Lab under Prof Soumik Sarkar
  - Created new meta-learning actor-critic framework for deep reinforcement learning agents under adversarial information attacks.

## Professional Experience

- May – Aug **Research Intern**, PREFERRED NETWORKS INC., Tokyo, Japan.  
2019 Robotics and RL Research Team
  - Carried out independent research in efficient learning-based planning algorithms for control, bridging planning, control and RL.
  - **First-author work accepted to NeurIPS 2019 Deep Reinforcement Learning Workshop** and under review at ICLR 2020.
- May – Aug **Vehicle Control Algorithms Intern**, TUSIMPLE, Tucson, AZ.  
2018 Control formulation and software for autonomous semi-trucks.
  - Developed next iteration of controller based on fully dynamic tractor-trailer model. Integrated and tested on highway. **First-author US Patent submitted.**
- Jan – Aug **Robotics Intern**, NASA JET PROPULSION LABORATORY, Pasadena, CA.  
2017 Extended Co-op with science division 329-H and robotics division 347-J
  - Developed probabilistic multi-agent tracking and novel maneuver prediction algorithms on real-time mission critical systems (C++).

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## Honors and Awards

- 2021 CSL Student Conference 2021 **Best Speaker Award** for Control, Optimization and Reinforcement Learning Session.
- 2020 UIUC ECE Promise of Excellence Fellowship
- 2018 NeurIPS 2018 Travel Award
- 2017 Tau Beta Pi Honor Society

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## Conference Presentations/ Proceedings

- [1] **Aaron Havens** and Bin Hu. On Imitation Learning of Linear Control Policies: Enforcing Stability and Robustness Constraints via LMI Conditions. In *(To Appear) American Control Conference (ACC)*., 2021.
- [2] **Aaron Havens** and Girish Chowdhary. Forced Variational Integrator Networks for Prediction and Control of Mechanical Systems. In *(To Appear) 3rd Conference on Learning for Dynamics and Control (L4DC)*., 2021.
- [3] Naveen Kumar Uppalapati, Benjamin Walt, **Aaron Havens**, Armeen Mahdian, Girish Chowdhary, and Girish Krishnan. A Berry Picking Robot With A Hybrid Soft-Rigid Arm: Design and Task Space Control. In *Proceedings of Robotics: Science and Systems (RSS)*., 2020.
- [4] **Aaron Havens**, Zhanhong Jiang, and Soumik Sarkar. Online Robust Policy Learning in the Presence of Unknown Adversaries. In *Advances in Neural Information Processing Systems (NeurIPS) 31*, 2018.