

NAVID HASHEMI

@ navid.hashemi@usc.edu +1-3233823023 California, USA

EDUCATION

PhD program in Computer Science

University of Southern California (USC)

📅 Degree conferral: December 2024 GPA - 3.85

M.Sc Degree in Computer Science

University of Southern California (USC) GPA :3.85

M.Sc Degree in Mechanical Engineering

University of Texas at Dallas (UTD) GPA :3.83

B.Sc Degree in Mechanical Engineering

Amirkabir University of Technology GPA :3.49

WORK EXPERIENCE

Research Scientist Intern at Toyota Research Institute (TRINA)

📅 May 2022 - August 2022

- Created the first deterministic formal verification framework for Signal Temporal Logics.

10 Semesters Research Assistantship in USC

📅 January 2021-present

- Worked in the intersection of Machine Learning, Formal Methods and Temporal Logics with application on Cyber-Physical Systems (CPS) and Reinforcement Learning.

8 Semesters Research Assistantship in UTD

📅 May 2017-December 2020

- Worked in the intersection of control theory, safety analysis of Cyber-Physical Systems and the robustness analysis of Deep Neural Networks.

2 Semesters Teachnig Assistantship in USC

📅 August 2023-May 2024

- Taught programming with C++ to undergraduate students, I was also teaching Autonomous Cyber-Physical Systems to graduate students.

PRESENTATIONS

- SoCal Control Conference in UCLA 2024
- International Conference on Cyber Physical systems ICCPS 2023
- Annual American Control Conference ACC 2023
- Annual American Control Conference ACC 2018
- Texas system day in university of Texas A&M 2019
- Texas system day in unversity of Texas at Dallas 2018

SKILLS

Python

MATLAB

C++

Java

Latex

Microsoft Office

FIELD OF INTEREST

- Deep Learning and Machine Learning
- Robustness analysis of Deep Neural Networks
- Optimal Control and Reinforcement Learning

COURSEWORK

- Deep Learning and its Applications
- Theory of Machine Learning
- Big Data
- Introduction to Machine Learning
- Advanced Analysis of Algorithms
- Data Structure and Algorithm Analysis
- Discrete Structures
- Formal Language and Automata Theory
- Autonomous Cyber-Physical Systems
- Dynamics of Complex Networks
- Engineering Optimization
- Random Processes
- Linear Systems
- Optimal Control & Dynamic programming
- Optimal Estimation and Kalman Filtering
- Convex Optimization
- Stability & Bifurcations of Nonlinear systems

HONORS & AWARDS

- ANNENBERG FELLOWSHIP** | for top 5% admitted students in PhD programs of USC.
- ANNENBERG FELLOWSHIP** | for top research projects focusing on multi-agent systems in USC.

INTERSETS

Traveling, Fitness, Nutrition Foods, Self-improvement

PERSONAL TRAITS

- Highly motivated and eager to learn new things.
- Strong motivational and leadership skills.
- Ability to work as an individual as well as in a team.

PROJECTS AND PUBLICATIONS

Conference Publications

- **Navid Hashemi**, Justin Ruths, Mahyar Fazlyab, -[Certifying Incremental Quadratic Constraints for Neural Networks via Convex Optimization](#)-, in 2021 Annual Conference on Learning for Dynamics and Control (L4DC). PMLR, 2021, pp. 842-853. (18 citation)
- **Navid Hashemi**, Mahyar Fazlyab, Justin Ruths, -[Performance Bounds for Neural Network Estimators: Applications in Fault Detection](#)-, in 2021 Annual American Control Conference (ACC). IEEE 2021, pp. 5356-5361.(2 citation)
- **Navid Hashemi**, , Bardh Hoxha, Tomoya Yamaguchi, Danil Prokhorov, Georgios Fainekos, Jyotirmoy V. Deshmukh -[A Neurosymbolic Approach to the Verification of Temporal Logic Properties of Learning enabled Control Systems](#)-, Proceedings of the ACM/IEEE 14th International Conference on Cyber-Physical Systems (with CPS-IoT Week 2023)(8 citation)
- **Navid Hashemi**, Sam Williams, Bardh Hoxha, Danil Prokhorov, Georgios Fainekos, Jyotirmoy Deshmukh, -[LB4TL: Smooth Semantics for Temporal Logic for Scalable Training of Neural Feedback Controllers](#)- IFAC-PapersOnLine (accepted)
- **Navid Hashemi**, Xin Qin, Jyotirmoy V. Deshmukh, Georgios Fainekos, Bardh Hoxha, Danil Prokhorov, Tomoya Yamaguchi, -[Risk-Awareness in Learning Neural Controllers for Temporal Logic Objectives](#)-, 2023 American Control Conference (ACC), 4096-4103(6 citation)
- **Navid Hashemi**, , Xin Qin, Lars Lindemann, Jyotirmoy V. Deshmukh -[Data-Driven Reachability Analysis of Stochastic Dynamical Systems with Conformal Inference](#)-, in proceedings of the 62nd IEEE Conference on Decision and Control (CDC) 2023, 3102-3109(3 citation)
- Xin Qin, **Navid Hashemi**, Lars Lindemann, Jyotirmoy V. Deshmukh -[Conformance Testing for Stochastic Cyber-Physical Systems](#)-, CONFERENCE ON FORMAL METHODS IN COMPUTER-AIDED DESIGN-FMCAD 2023, 294
- **Navid Hashemi**, , Justin Ruths, Jyotirmoy V. Deshmukh -[Convex Optimization-based Policy Adaptation to Compensate for Distributional Shifts](#)-, in proceedings of the 62nd IEEE Conference on Decision and Control (CDC) 2023, 5376-5383
- **Navid Hashemi**, C. Murguia, and J. Ruths, -[A comparison of stealthy sensor attacks on control systems](#)- in 2018 Annual American Control Conference (ACC). IEEE, 2018, pp. 973-979.(41 citations)
- SH Kafash, N Hashemi, C Murguia, J Ruths -[Constraining Attackers and Enabling Operators via Actuation Limits](#)- in 2018 Conference on Decision and Control (CDC). IEEE 2018, pp. 4535-4540.(14 citations)
- **Navid Hashemi** and J. Ruths, -[Generalized chi-squared detector for LTI systems with non-Gaussian noise](#)-, in 2019 Annual American Control Conference (ACC). IEEE, 2019, pp. 404-410.(13 citations)
- **Navid Hashemi**, E. V. German, J. P. Ramirez, and J. Ruths, -[Filtering approaches for dealing with noise in anomaly detection](#)-, in proceedings of the 58th IEEE Conference on Decision and Control (CDC), IEEE 2019, pp. 5356-5361.(9 citation)
- Venkatraman Renganathan, **Navid Hashemi**, Justin Ruths, Tyler H Summers, -[Distributionally Robust Tuning of Anomaly Detectors in Cyber-Physical Systems with Stealthy Attacks](#)-, in 2020 Annual American Control Conference (ACC). IEEE 2020, pp. 1247-1252. (13 citation)
- **Navid Hashemi**, Justin Ruths, -[Gain Design via LMI to Minimize the Impact of Stealthy Attacks](#)-, in 2020 Annual American Control Conference (ACC). IEEE 2020, pp. 1274-1279. (12 citations)

Journal Publications

- **Navid Hashemi**, Bardh Hoxha, Danil Prokhorov, Georgios Fainekos, Jyotirmoy Deshmukh, - [Learning based Policy Optimization for Temporal Tasks via Dropout](#) -, ACM Transactions on Cyber Physical Systems (TCPS 2024) (submitted)
- **Navid Hashemi**, Lars Lindemann, Jyotirmoy Deshmukh, - [Statistical Reachability Analysis of Stochastic Cyber-Physical Systems under Distribution Shift](#) -, IEEE Transactions on Parallel and Distributed Systems (TPDS 2024) (accepted)
- Venkatraman Renganathan, **Navid Hashemi**, Justin Ruths, Tyler H Summers, -[Higher-Order Moment-Based Anomaly Detection](#)-, in IEEE Control Systems Letters (LCSS) (2021). (13 citations)
- **Navid Hashemi**, Justin Ruths, -[Co-design for Resilience and Performance](#)-, in IEEE. Transactions on Network Controlled Systems (TCNS) (2023) (published)(16 citations)