NAVID HASHEMI

navidhas@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.

INTERESTS

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 LMIs 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)