MASOUMEH GHANBARPOUR MAMAGHANI

Address: University of California, Santa Cruz

Email: maghanba@ucsc.edu

Homepage: https://masoumehgm.github.io

Google Scholar: https://scholar.google.com/citations?user=vFsfAxEAAAAJ&hl=en

RESEARCH INTERESTS

Automation and Control Systems
Optimization, Model Predictive Control
Uncertainty Quantification and Stochastic Systems
Reinforcement & Machine Learning

EDUCATION

2018 – Present

University of California Santa Cruz, Santa Cruz, USA
Graduate Student
Department of Electrical & Computer Engineering

RWTH Aachen, Aachen, Germany
Master of Science (M.Sc.)
Communication Engineering (GPA: **3.65/4**)

Azad University Central Tehran Branch, Tehran, Iran
Bachelor of Science (B.Sc.)
Electrical Engineering (GPA: **3.42/4**)

Iran University of Science & Technology, Teheran, Iran
Bachelor of Science (B.Sc.)
Applied Mathematics (GPA: **3.29/4**)

PUBLICATION

A Converse Robust-Safety Theorem for Differential Inclusions (Submitted, IEEE Transactions on Automatic Control)
Sufficient conditions for robust safety in differential inclusions using barrier functions (Submitted, Automatica)
On the Feasibility and Continuity of Feedback Controllers Defined by Multiple CBFs (ACC2022)
Barrier Functions for Robust Safety in Differential Inclusions, Part II: The Converse Problem (CDC 2021)
Barrier Functions for Robust Safety in Differential Inclusions, Part I: Sufficient Conditions (CDC 2021)
A Duality Approach to Set Invariance and Safety for Nonlinear Systems (CDC 2021)
Centralized non-convex model predictive control for cooperative collision avoidance of networked vehicles

RESEARCH EXPERIENCE

Research Assistance at UCSC from 2018:

- Smart grid, control of power systems
- Safety analysis of nonlinear continuous systems using Mirror decent optimization
- Safety and Inverse Safety problem of differential inclusion systems using Barrier Functions
- Optimal and continuous safety control synthesis for inclusion systems using non-smooth Control Barrier Functions
- Safety of stochastic dynamical system using uncertainty quantification techniques

Research Assistance at Institute of Automatic Control (IRT)

- Development of a Model Predictive Control Concept for Vehicle Collision Avoidance

WORK EXPERIENCE

11/2016 – 05/2017	Production Engineering of E-Mobility Components (PEM), Germany Control & Indoor Navigation for a Quadcopter
01/2016 – 08/2016	Institute of Automatic Control (IRT), Aachen, Germany Pressure Estimation Using Structural Vibration Measurements of Diesel Engine
12/2014 – 03/2015	Fraunhofer Institute for Production Technology (IPT), Aachen, Germany Accurate Wave front-based Active Alignment of Multi-element Optical System
2011 – 2012	Institute of Automatic Control (IRT), Aachen, Germany System Identification: Neural Networks & Local Linear Model Tree (LOLIMOT) Automatic Control and Dynamic Optimization (Acado) Toolkit
07/2006 – 09/2006	Mobile Communication Company of Iran, Tehran, Iran Mobile Essential Basis

TEACHING EXPERIENCE

Summer 2022	Applied Discrete Mathematics
Spring 2022	Probability and Statistics for Engineers
Winter 2022	Computer Systems and C Programming
Spring 2020	Digital Signal Processing
Winter 2020	Modern Electronic Technology and How It Works
Fall 2019	Electrical Circuits

COURSES

Dynamical Systems	Hybrid Dynamical Systems, Nonlinear Control, Optimal Control, Applied Dynamical Systems
Optimization	Convex Optimization, Numerical Optimization, Optimization and Control for Smart Grid
Data Science	Machine Learning, Decision Theory, Foundations of Data Science, Statistical Learning and High Dimensional Data Analysis
Stochastic	Fundamentals of Uncertainty Quantification in Computational Science and Engineering, Stochastic Differential Equations, Applied PDEs

PROGRAMMING

MATLAB, Python, C, C++, R

LANGUAGE KNOWLEDGE

Persian, English, German