Erfan Aasi

857-316-7715 | eaasi@mit.edu | https://erfanaasi.github.io/ | linkedin.com/in/erfan-aasi/

Education

M.I.T, Cambridge, MA — Spring 2024 – Now
Postdoctoral Associate, Supervisor: Prof. Daniela Rus

Boston University, Boston, MA — Fall 2018 – Fall 2023
Ph.D. in Mechanical Engineering, Supervisor: Prof. Calin Belta — *GPA: 3.87/4.00*

Boston University, Boston, MA — Fall 2018 – Summer 2022
M.S. in Mechanical Engineering — *GPA: 3.87/4.00*

Sharif University of Technology, Tehran, Iran — Fall 2013 – Summer 2018
B.Sc. in Electrical Engineering — *GPA: 3.60/4.00*

Research Interests

- Motion planning and control
- Time-series analysis and prediction
- Classification and anomaly detection
- Deep learning algorithms for dynamic systems

Experience

Machine Learning Intern, Symbotic — September 2022 – May 2023
- Developed anomaly detection methods for the time-series behavior of ground warehouse robots
- Provided data manipulation and integration frameworks for high-level maintenance decision makings

Graduate Research Assistant in Robotics Lab, Boston University — December 2018 – December 2023
- Developing control, motion planning, decision-making, and machine learning algorithms for dynamic systems, specifically robots and autonomous vehicles

Technical Skills

Coding: Python (expert), Matlab (intermediate), C++ (beginner)
Machine Learning: Deep Neural Network, Decision Tree, LSTM, CNN, GAN
Libraries: PyTorch, Pandas, Scipy, Matplotlib, Pyswarm
Developer Tools: SQL, ROS, Git, Shell
Databases: Snowflake, Tableau, Azure Microsoft
Simulators: CARLA, AirSim, Gazebo, CoppeliaSim

Projects

Time-Incremental Learning from Data Using Temporal Logics (L4DC 2023 - accepted)
- Proposed a temporal logic-based classification method for time-series data in an incremental learning framework
- Used decision trees and neural networks to minimize the misclassification rates

Deep Reinforcement Learning for Continuous Control in Cluttered Environments (IROS 2023 - accepted)
- Proposed a deep policy gradient control algorithm for a robot with unknown dynamics in a cluttered environment
- Designed a reward scheme, using sampling based methods, to overcome the exploration challenges

Classification of Time-Series Data using Boosted Decision Trees (IROS 2022 - accepted)
- Developed a decision-tree based approach for data classification using temporal logic specifications
- Aimed to improve runtime performance and misclassification rate over existing approaches

Control Architecture for Provably-Correct Autonomous Driving (ACC 2021 - accepted)
- Proposed a receding horizon controller for deterministic environments, constrained to traffic rules and safety
- Achieved substantial improvements, in the sense of runtime performance and solution quality, over literature works

Learning Spatio-Temporal Specifications for Dynamical Systems (L4DC 2022 - accepted)
- Developed a spatio-temporal logic based algorithm for generating desired patterns in dynamical systems
- Maximized occurrence of desired patterns, by using clustering, supervised learning and optimization techniques.

Control Algorithm for Autonomous Driving in Uncertain Environments (T-ITS 2023 - under review)
- Developing a control method for self-driving cars in uncertain environments, subject to safety and traffic rules
- The goal is to obtain improved runtime performance and solution quality, compared to existing works