Mrunal Sarvaiya

 Brooklyn, New York, US   mrunal.s@nyu.edu   mrunaljsarvaiya.github.io

Education

New York University   *Brooklyn, NY*
PhD Candidate in Electrical and Computer Engineering   *Aug 2023 – present*
- [Agile Robotics and Perception Lab](#)

University of California, Berkeley   *Berkeley, CA*
M.Eng in Control of Robotic and Autonomous Systems   *Aug 2018 – May 2019*
- GPA: 3.70/4.0

Stanford Center For Professional Development   *Jan 2022 – May 2023*
Graduate Coursework in AI Graduate Program
- GPA: 3.77/4.30

University Of Illinois At Urbana-Champaign   *Champaign, IL*
B.S. in Mechanical Engineering with Highest Honors   *Aug 2014 – May 2018*
- GPA: 3.89/4.0

Publications

HPA-MPC: Hybrid Perception-Aware Nonlinear Model Predictive Control for Quadrotors with Suspended Loads   *Nov 2024*

Mrunal Sarvaiya, Guanrui Li, Giuseppe Loianno

[mrunaljsarvaiya.github.io/hpa-mpc.github.io](#)

Experience

Senior Robotics Software Engineer   *San Francisco, CA*
Peanut Robotics   *Aug 2019 – Aug 2023*
- Developed the motion planning software architecture for a custom mobile manipulator
- Selected, integrated and tuned a trajectory tracking controller and time optimal trajectory generator (TOPPRA)
- Designed and implemented a custom navigation planner for hotel hallways that generates human-like and aesthetically pleasing motions
- Trained a neural network model to estimate manipulator currents. The model was used to add trajectory generator torque constraints for enhanced reliability
- Engineered tools to optimize robot paths by smoothing trajectories and reducing, overall joint-space distance by tweaking input configurations using an optimization program

Controls and Software Engineer (M.Eng. Capstone)   *Berkeley, CA*
Squishy Robotics   *Aug 2018 – May 2019*
- Implemented and tuned a path planning technique using A-star and MPC for a Tensegrity robot
- Increased range of communication by 200% by integrating long range radio software
- Developed software that allowed interchangeable use of different frequency radios

R&D Test Systems Engineering Intern   *Palo Alto, CA*
Tesla, Inc   *May 2018 – Aug 2018*
- Created a Python program that automated data logging and was deployed on over 20 workstations replacing hardware worth over $5,000 per dynamometer workstation
- Increased data accessibility and reduced post processing time by uploading data to a company-wide server which is accessed by a Jenkins pipeline
- Reduced complexity of non-standard test scripts by integrating python into the existing testing architecture

Team President and Business Team Lead Presenter   *Champaign, IL*
Illini Motorsports (Formula SAE)   *Aug 2015 – May 2018*
- Managed and allocated a $30,000+ budget for 6 subsystems for a team of 80 students

- Raised funds by building relationships with 10 corporate sponsors and represented the team at major university outreach events
- Secured four top 3 finishes as the business team presenter at international university competitions
- Optimized vehicle intake geometry using GT-Power simulations, increasing engine power output by 2 HP
- Led a team of 6 students to design and validate a new vehicle radiator and fan

Research Assistant *Champaign, IL*
Advanced Controls Research Laboratory (Dr. Naira Hovakimyan) *May 2017 – Mar 2018*
- Developed a genetic algorithm in Matlab to find the best path for multiple drones given time, velocity, acceleration and space constraints
- Programmed an on-board controller for the motor that increased precision of the manipulator arm by 40% and increased range of motion by 100%
- Reduced complexity of non-standard test scripts by integrating python into the existing testing architecture

Awards

Top 3 in the Business and Sales Presentation event *Champaign, IL*
Formula SAE at UIUC *May 2018*
- FSAE Michigan 2016, 2017, 2018 and FSAE Lincoln 2016, 2017, 2018

GM/Philip W. Leistra Jr. Society of Automotive Engineers Award *Champaign, IL*
Mechanical Engineering Dept at UIUC *Mar 2018*
- Recognized for contributions to the Formula SAE team

Dean's List *Champaign, IL*
Mechanical Engineering Dept at UIUC *May 2018*
- Awarded every semester except Spring 2018