Mrunal Sarvaiya

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Education

New York University *August 2023 — Present*
PhD Candidate in Electrical and Computer Engineering

University of California, Berkeley *August 2018 — May 2019*
M.Eng in Control of Robotic and Autonomous Systems (3.70/4.0)

Stanford Center For Professional Development *January 2022 — May 2023*
AI Graduate Program (3.77/4.30)

University Of Illinois At Urbana-Champaign *August 2014 — May 2018*
B.S. Mechanical Engineering with Highest Honors (3.89/4.0)

Experience

Senior Robotics Engineer *August 2019 — August 2023*
Peanut Robotics

- 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 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 Project) *August 2018 — May 2019*
Squishy Robotics

- 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 *May 2018 — August 2018*
Tesla, Inc

- 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 *August 2015 — May 2018*
Illini Motorsports (Formula SAE)

- 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 *May 2017 — March 2018*
Advanced Controls Research Laboratory (Dr. Naira Hovakimyan)

- 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 *May 2018*
Formula SAE
FSAE Michigan 2016, 2017, 2018 and FSAE Lincoln 2016, 2017, 2018

GM/Philip W. Leistra Jr. Society of Automotive Engineers Award *March 2018*
Mechanical Engineering Dept at UIUC
Award for my contributions to the Formula SAE team

Dean's List *May 2018*
Mechanical Engineering Dept at UIUC
Awared every semester except Spring 2018

Languages

English: Native speaker
Hindi: Native speaker
Gujarati: Fluent

Skills

Programming: Python, C++, ROS 1/2, Matlab, Docker, PyTorch, Tensorflow
Planning and Controls: Model Predictive Control, Reinforcement Learning, PID, Trajectory Generators, Trajectory Tracking Controllers
Hobbies: Rock Climbing, Coffee connoisseur, Chef, Guitar, Formula 1 Sim Racer