SAGAR SACHDEV

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EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Master of Science in Mechanical Engineering — Conferred: May 2023
Concentration: Robotics — GPA: 3.75/4.00

University of Illinois at Urbana-Champaign — Champaign, IL
Bachelor of Science in Engineering Mechanics — Conferred: May 2021
Concentration: Mechatronics and Design — GPA: 3.43/4.00

SKILLS

Programming Languages: Python, C/C++, MATLAB/Simulink, HTML/CSS, LaTeX, Bash, Zsh
Software: Linux, Git/Github, ROS, aPriori, Cura, Jupyter, Pandas, Scipy, OpenCV, Numpy, LightGlue, Blender

WORK EXPERIENCE

Path Robotics — September 2023 – Present
Robot Deployment Engineer — Columbus, OH

- Wrote utilities for calibrations, reducing autonomous cell welding downtime by 50%, resulting in efficient and streamlined process using Python and ROS
- Created and maintained configuration files for autonomous welding cells, optimizing CAD data using Blender and exporting to Collada format for URDF generation
- Utilized MoveIt plugins to generate collision matrices, ensuring seamless integration of components and safety in robotic operations
- Identified, resolved, and documented software bugs in C++ leading to a 30% decrease in system downtime
- Combined MetaAI's SAM algorithm with classical computer vision techniques to segment cell components and bridge the sim-to-real gap; Improved URDF validation times by 40%

RESEARCH EXPERIENCE

The AirLab at CMU — August 2022 – May 2023
Graduate Research Assistant — Pittsburgh, PA

- Developed and validated time-optimal paths for a curvature constrained dynamics model in uniform wind conditions for fixed-wing UAVs, with over 37% speed improvement in path solving speeds using C++
- Executed a decision matrix and closed-form solutions from published research for feasible trajectories in zero-wind conditions, achieving a 10x increase in path solving speed

Biorobotics Lab at CMU — August 2021 – August 2022
Graduate Research Assistant — Pittsburgh, PA

- Created software suite for autonomous disassembly station, improving fastener removal accuracy to 95% using ROS, Python and C++
- Streamlined forward kinematics calculations for a 6-DOF General Stewart Manipulator in MATLAB and Python by utilizing an offline lookup table, leading to 25% reduction in runtime

Engineering System Design Lab at UIUC — May 2020 – May 2021
Undergraduate Research Assistant — Champaign, IL

- Evaluated impact of hydrodynamic and aerodynamic conditions on stability of floating platform for offshore wind-turbines using OPENFAST software, providing insights for platform design optimization

PROJECTS

Machine Learning and Feature Engineering for Artist Classification, CMU — August 2021 – December 2021

- Realized an 18% higher art classification accuracy with Convolutional Neural Networks (CNN) compared to shallow Machine Learning techniques, identifying 50 artists

PUBLICATIONS

- Brady Moon*, **Sagar Sachdev***, Junbin Yuan, Sebastian Scherer, "Time-Optimal Path Planning in a Constant Wind for Uncrewed Aerial Vehicles using Dubins Set Classification," *IEEE Robotics and Automation Letters, 2023*. arXiv: 2306.11845v2. (Accepted)