Sachin Sulkunte

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Education

University of Maryland, College Park | A. James Clark School of Engineering | College Park, MD
B.S. Computer Engineering; Minor - Robotics & Autonomous Systems; Cybersecurity Honors — Expected May 2023

Relevant Skills

Software: Vim, Git, Ghidra, Autodesk Fusion360, AWS S3, AWS Lambda, Elastic Stack, MySQL, Jira, Jenkins
Programming: C, C++, Python, Java, MATLAB, Swift, Bash, Javascript, AJAX, UNIX, ROS, x86 Assembly

Experience

Robotics Research Intern | NIST - Intelligent Systems Division — Sept 2021 - Present

- Implementing machine learning algorithms and integrating 3D sensors and 360° cameras on a mobile emergency response robot to allow it to autonomously open doors
- Utilizing control algorithms, rigid body dynamics, and kinematics to control a 7-DOF robotic manipulator

Machine Learning & Data Science Intern | Praxis Engineering — April 2021 – August 2021

Project: *VAST - Video Analytics with Speech and Text*

- Built front-end interface in Javascript using AJAX and Serverless Framework and deployed to AWS EC2
- Developed set of machine learning models to automatically extract and store data from video datasets using AWS S3, AWS Lambda, and Elasticsearch/Kibana
- Implemented and optimized an optical character recognition (OCR) model using OpenCV and open-source Tesseract Engine to analyze videos for embedded text and store in Elasticsearch
- Constructed classification model to utilize aggregated analysis results from ML models - video transcriptions, OCR, text-based sentiment analysis, and object detection outputs to classify event types such as political riots
- Visualized and generalized application results from any dataset using Kibana, enabling data analysts to quickly identify significant text using TF-IDF analysis, points of interest from video audio, location and video creation time correlation, and additional insights

UMD Loop | The Boring Company: Not-a-Boring Competition — Sept 2020 – Present

Top 12 Team Globally - Systems Engineer

- Conducted the integration and testing for a RS-422 based laser time-of-flight sensor implemented into the navigation and guidance system of a micro tunnel boring machine
- Designed, prototyped, and tested a laser target using an Archimedes spiral, allowing for distance and deviation measurement from a single-point laser sensor, eliminating 2 points of failure and decreasing electrical load
- Set-up and conducted electrical unit tests using STM32 microcontrollers for multiple components including the 2-DOF steering sub-assembly
- Documented design requirements, power consumption calculations, and safety justifications for several low-voltage sensors including draw-wire potentiometers, laser and infrared distance sensors, and optical sensors as well as high-voltage and hydraulic system components

President | Rockville-Montgomery Robotics Association — Sep 2017 – April 2020

- Organized over 30 community outreach events, bringing STEM education opportunities to underrepresented and underserved students across four counties
- Headed FIRST Tech Challenge Team 5421 in the mechanical design, custom component manufacturing, autonomous programming, and debugging of a custom robot
- Implemented a custom PHP and MySQL based organization management system, allowing for a 50% increase in the quantity of outreach programs offered

Intern | Crystal Clear Automation — June 2018 – Sept 2019

- Integrated design of necessary safety features using Autodesk Inventor into an automation platform designed to modify existing lawn mowers used in commercial applications, specifically golf courses
- Slashed path-mapping processing time by 15% through the development and testing of machine-learning algorithms in Python
- Tested essential sensing capabilities including GPS, infrared, and ultrasonic sensors, allowing for the safe testing of the entire automation platform

Awards

Best Technical Project & Best Presentation - AFCEA Summer Internship Presentation Showcase — 2021
2nd Place Technical Project - Northrop Grumman Covid AI Challenge — 2021
Honorable Mention - Toshiba Exploravision Research Competition — 2019