SACHIN SULKUNTE

COMPUTER ENGINEERING AT THE UNIVERSITY OF MARYLAND

sulkunte@gmail.com
linkedin.com/in/sachinsulkunte
301-605-0719
sachinsulkunte.github.io

SKILLS

PROGRAMMING

- Python, C, Java, Bash, ROS, MATLAB, x86_64 Assembly, OpenCV, C++, Javascript

SOFTWARE TOOLS

- Vim, Git, Jira, Jenkins, Ghidra, AWS Lambda, AWS S3, Elastic Stack, MySQL

MACHINE LEARNING

- NVIDIA CUDA, TensorFlow, Exploratory Data Analysis, PyTorch, Computer Vision

EMBEDDED SYSTEMS

- Jetson Nano, Raspberry Pi, Arduino Uno, ESP32

ELECTRICAL/MECHANICAL

- Soldering, 3D Printing, Solidworks, PCB Design, CNC Milling

AWARDS

- **Best Technical Project & Best Presentation** - AFCEA Summer 2021 Internship Presentation Showcase
- **2nd Place Technical Project** - Northrop Grumman 2021 Covid AI Challenge

PROJECTS

AUTONOMOUS VEHICLE

- Mobile robot with **SLAM**, lane detection, **visual odometry**, and **motion planning** capabilities

PICK/PLACE OPERATIONS WITH 6-DOF MANIPULATOR

- Utilized **OpenCV** and **ROS** to control a UR3 robotic arm

EDUCATION

UNIVERSITY OF MARYLAND

B.S. in Computer Engineering
Expected May 2023

- Minor: Robotics + Autonomous Systems
- Cybersecurity Honors College

EXPERIENCE

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY | Intern

Oct 2021 - Present | Gaithersburg, MD

- Utilizing **control algorithms**, rigid body dynamics, and kinematics to control a 7-DOF KUKA robotic manipulator using **Java**
- Integrating and debugging a custom 3D vision system for **pose estimation** of parts and manipulator **path planning** with **ROS**
- Creating and evaluating test procedures for commercial **3D vision** systems used in robotic manufacturing for pick and place operations
- Developing industry standards for 3D vision systems used in the manufacturing industry

PRAXIS ENGINEERING | Machine Learning Intern

Apr - Aug 2021 | Annapolis Junction, MD

- Developed set of machine learning models to automatically extract and store data from video datasets using **AWS S3** cloud storage, **AWS Lambda** events, and Elasticsearch/Kibana for data visualization
- Implemented and optimized an optical character recognition (OCR) model using **OpenCV** and the **open-source** Tesseract Engine to analyze videos for embedded text and store results in **Elasticsearch**
- Constructed a **random forest classifier** to utilize aggregated analysis results from ML models - extracted video transcriptions, OCR, **sentiment analysis**, and **object detection** outputs to identify events

ROCKVILLE-MONTGOMERY ROBOTICS ASSOCIATION | President

Sept 2017 - Apr 2020 | Rockville, MD

- Organized 30+ community outreach events, bringing **STEM education** opportunities to underrepresented and students across five counties
- Implemented a custom **Javascript** and **MySQL** based organization management system, allowing for a 50% increase in the quantity of outreach programs offered
- Headed FIRST Team 5421 in the mechanical design and autonomous programming of a mobile robot using **Java**

CRYSTAL CLEAR AUTOMATION | Software Engineer Intern

June 2018 - Sept 2019 | Gaithersburg, MD

- Integrated design of necessary safety features using **Autodesk Inventor** into a mechatronic system designed to automate lawn mowers used on golf courses
- Visualized and tested essential sensing capabilities including **GPS**, infrared, and **ultrasonic sensors** using **ROS** and **RViz**
- Slashed **path-planning** processing time by 15% through the development of machine-learning algorithms in Python

EXTRACURRICULARS

UMDLOOP: TUNNEL BORING MACHINE | Systems Engineer

Sept 2020 - Present | College Park, MD | *Top 12 Team Globally • Best Team Safety Award*

- Set-up and conducted testing using **STM32** microcontrollers for **CAN** communication and the 2-DOF steering sub-assembly
- Designed a custom Archimedes spiral target, allowing for distance and deviation measurement from a single-point **RS-422** based laser sensor