Sachin Sulkunte
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Education

University of Maryland - College Park *Expected May 2024*
- B.S. Computer Engineering
- Minor in Robotics & Autonomous Systems | Cybersecurity Honors Program

Technical Skills

Programming: C++, Python, Java, Bash, C, Ruby, Javascript
Software: ROS, Vim, Git, Linux, Docker, MATLAB, OpenCV, Jenkins, CUDA, TensorFlow, AWS
Engineering: Altium Designer, Autodesk Inventor, Microcontrollers, 3D Printing, Oscilloscopes

Technical Experience

Application Software Intern at Stryker (Mako Surgical Robots) *May 2022 - Present*
- Implemented feature-based state machines in C++ for the next-generation Mako 6-DOF surgical robot arm used in total hip arthroplasty operations
- Incorporated algorithms to conduct robot localization based on tracker fiducial data as well as TCP verification for various end effectors into surgeon-facing application
- Implemented biomechanics class for computing key calculations - including determination of leg length, hip offset, and inclination/anteversion of acetabular bone implants

Robotics Associate at the National Institute of Standards and Technology *Oct 2021 - May 2022*
- Utilized control algorithms, rigid body dynamics, and kinematics to control a 7-DOF KUKA robotic manipulator using Java
- Integrated and debugged a custom vision system for pose estimation of parts and manipulator path planning with ROS
- Created and evaluated test procedures for commercial 3D vision systems used in robotic manufacturing for pick-and-place operations

Machine Learning Intern at Praxis Engineering *Apr 2021 - Aug 2021*
- 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 the open-source Tesseract engine to analyze videos for embedded text
- Constructed a random forest classifier to utilize aggregated analysis results from ML models - extracted video transcriptions, OCR, sentiment analysis, and object detection to identify events

UMD Loop (Collegiate Engineering Team: Tunnel Boring Machine) *Sept 2020 – Present*
- Set-up and conducted testing for CAN communication and the 2-DOF steering sub-assembly using STM32 microcontrollers
- Designed and 3D printed a custom Archimedes spiral-based target, allowing for distance and center-line deviation measurement from a single-point RS-422 based laser sensor
- Customized a COSMOS control-and-command platform for use with a VxWorks real-time operating system, interfacing with various sensors and peripherals

Embedded Software Intern at Crystal Clear Automation *June 2018 – Sept 2019*
- 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 SLAM capabilities including GPS, infrared, and ultrasonic sensors using ROS and RViz to improve AI-driven path planning