SAMEER KHAN
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EDUCATION

Master of Science in Engineering in Robotics
Johns Hopkins University, Baltimore, MD Expected Graduation: May 2025

Bachelor of Science in Electrical Engineering Graduated May 2023
The Pennsylvania State University, University Park, PA GPA: 3.75/4.00
Penn State Provost Award and Deans List

RELEVANT WORK EXPERIENCE

Carnegie Robotics- *Pittsburgh, PA* *Summer 2023*
Electrical Engineering Intern
- Followed and implemented testing guidelines and procedures as related by customer to diagnose electrical issues in stereo cameras and validate expected results
- Selected hardware components (PLC, Power Supply) and diagrammed cable harnesses to create a fully automated functionality test with a GUI, resulting in a LIDAR safety laser tester for the Manufacturing and Production department
- Collaborated with multiple engineers to test all hardware and software components for an autonomy module utilized by AMRs

Westinghouse Electric Company- *New Stanton, PA* *Summer 2022*
Electrical Engineering Intern - Eagle Lab
- Developed an upgraded hardware and software system for the Multibus Assurance (MBA) Tester
- Documented electrical schematics and diagrams for subsystems of the MBA Tester
- Integrated virtual machines using MS DOS for compatibility with older systems to efficiently diagnose issues with failed boards
- Researched and collaborated across engineering disciplines to address internal challenges and brainstorm effective solutions

RESEARCH

Intuitive Computing Laboratory - *Johns Hopkins University* *Summer 2024 - Present*
Coffee Robot System *(Ongoing)*
- Implemented a robot controller and hand intrusion detector that directly control a 7-DOF Kinova robot arm
- Merged multi camera data collection system with robot controller to fully automate the coffee ordering and brewing process
- Conducting user study that collects facial data of coffee robot users to discern user experiences when the robot intentionally fails

Alchemist *(Ongoing)*
- Researched 3D Reconstruction techniques using NeRF and Gaussian Splatting for real world scene simulation
- Integrating a 3D Reconstruction with open language embedded query ability to the Alchemist system

LEADERSHIP & INVOLVEMENT

Penn State Advanced Vehicle Team - *Vehicle Systems Department Head* *May 2022 – June 2023*
- Attended the AutoDrive Challenge II Year 2 Competition and helped Penn State win third overall
- Implement software and mounting solutions for LIDAR, radar, camera, and GPS sensors
- Design power system to distribute power to all sensors and computers using the car's internal power

Penn State Robotics Club - *Vice President* *May 2021 – May 2023*
- Mentor students on electronics, software coding and robotic design
- Manage the electronics teams for our ThonBot and BattleBot projects
- Design autonomous sensing robots for in-club competitions

PROJECTS

Structure from Motion using OpenCV- GitHub *Spring 2024*
- Used structure from motion principles and OpenCV to create a sparse 3D reconstruction from multi-view stereo data
- Compared the quality of SfM sparse reconstructions to other 3D reconstruction techniques including NeRF

2D Robot Motion Planning Project- GitHub *Spring 2024*
- Solved various 2D motion planning problems using motion planning methods including potential field, modeling nonholonomic systems, RRT, PRM and also applied these to a 3D model case

Traffic Object Detection Neural Network- GitHub *Fall 2022*
- Trained and validated a custom convolutional neural network architecture using Pascal VOC 2007 dataset and TensorFlow
- Used trained network for object detection in a busy highway scenario and detected vehicles and people in a video

SKILLS AND SOFTWARE

Programming Languages: Python, C++, Java, MATLAB/Simulink
Applications/Systems: ROS, OpenCV, PyTorch, TensorFlow, SolidWorks, Linux, Git
Relevant Coursework: Robot Motion Planning, Computer Vision, Robot System Programming, Deep Learning