Mohammad Sareeb Hakak

919-986-5345 | mhakak@ncsu.edu | www.linkedin.com/in/m-sareeb-hakak
2805 O'kelly Street, Apt. B, Raleigh, North Carolina

OBJECTIVE

Seeking full time opportunities in the field of robotics, control or autonomous systems.

EDUCATION

Master of Science in Electrical and Computer Engineering — *GPA: 4.0/4.0*
North Carolina State University, Raleigh, NC, USA — *Anticipated May 2020*

Bachelor of Technology in Mechanical Engineering — *GPA: 8.514/10.0*
National Institute of Technology, Srinagar, India — *July 2013 – June 2017*

Relevant Courses: Autonomous Aerial Robotics, Autonomous Mobile Robotics, Machine Learning, Deep Learning, Object Oriented Programming, Data Structures, System Controls Engineering, Industrial Robotic Systems, Design of Electro-Mechanical Systems, Advanced Dynamics, Mechatronics, AI for Robotics, CAD/CAE, Industrial Automation. Udacity's Intro to Self-Driving Cars.

SKILLS

Software: MATLAB, Simulink, AutoCAD, SolidWorks, PTC Creo Elements/Pro, Ansys Workbench & Maxwell, FEMM, Mathematica
Programming: Python, MATLAB, C, C++, ROS, OpenCV, Bash Scripting, Linux Command Line, Latex, Docker, Git

Miscellaneous: State Estimation and Transformation, Robot Localization, Extended Kalman Filters, State and Object-Oriented Programming, C++ optimization, Assembly Language, Data Structures, Sensor Fusion, Perception, Route Planning and Trajectory Construction, Vehicle Motion Control , Control System Design, PID and LQRControl.

PROJECTS

Master's Independent Research — *June 2019-Ongoing*
- Implemented developer level APIs for Autonomous Operation of UAVs for various cases and applications through Drone-kit in Python and MavROS in C++.
- Currently working on developing full-stack software for autonomous flying and software testing of UAVs which will be used by the 5G Communications Lab to test their product in the air.
- The software testing platform will also be used as a reference test-bed platform by students of the graduate course – ECE 592 Autonomous Aerial Robotics.

Robot Localization — *Nov 2018*
- Designed a 2-D histogram filter for Robot Localization in Python and susequently converted the filter to C++ for optimization, better memory efficiency and smooth working.

State Estimation of an Autonomous Vehicle — *Dec 2018*
- Designed an Extended Kalman Filter in Python for the vehicle State Estimation based on LiDAR data.

Planning an Optimal Path — *Jan 2019*
- Implemented a Google Maps style routing algorithm based on the A* search for the Udacity self-driving car.

Trajectory Visualizer — *Feb 2019*
- Implemented an algorithm for the reconstruction of vehicle trajectories from accelerometer data.

Image Classifier from Scratch — *Mar 2019*
- Built a traffic light classification pipeline in computer vision for a self-driving car based on feature extraction.

Autonomous Tethered Drone — *Jan 2019 –May2019*
- Fabricated an autonomous drone with an autopilot based on MAVLINK tethered to an autonomous ground control system powering it robustly for one hour while the drone loiters at 50m altitude.

Obstacle Avoiding Wheelchair — *Feb 2019 –May2019*
- Implemented the algorithms responsible for Obstacle Avoidance in ROS and C++ to an autonomous driving wheelchair through an array of sonar sensors instead of the traditionally used LiDAR in an effort to reduce costs.

Electro-Permanent Magnetic Clamp — *Jan 2019 –May2019*
- Designed an Electro-Permanent Magnetic clamp (EPMC) for a local manufacturer, using Magnetic Circuit Analysis (MCA) to provide a high reluctance force on the workpiece during machining process, reducing set-up times.

Stewart Platform Manipulator — *Sep 2018 – Dec 2018*
- Develped the model of a Stewart Platform leg manipulator and simulated the inverse kinematic equations using MATLAB.

EXPERIENCE

FIL Industries, Srinagar, India | Junior Mechanical Engineer — *July 2017– July 2018*
- Operations, Maintenance in-charge of the Juice manufacturing plant and Warehouse facility of the Fruit and Beverages Department.
- Special focus on production and quality control, preventive and breakdown maintenance, spare part inventory management, maintenance of plant machinery and various operational control measures.

Maruti Suzuki India Limited, Gurgaon, India | Project Intern — *Dec 2015 – Jan 2016*
- Implemented a Programmable Logic Controller (PLC) system for automation through Poka-Yoke mechanism enabling mistake-proofing leading to high standards of quality.