Samir Hassen

🇺🇸 US Citizen

Experience

Greensea IQ   Plymouth, MA
Robotics Software Engineer – Autonomy, GNC   Oct 2021 – Feb 2024

My main focus was to expand and improve Greensea's autonomy software stack. I also collaborated with vendors, customers, and other stakeholders to utilize our software suite on ROV/AUV fleets. Two major products I've contributed towards were EverClean, a ship hull cleaning service, and OPENSEA, hardware agnostic software for underwater robotics.

- Led a 4-person team to obtain sonar-based feature detections and SLAM capabilities to ensure navigation accuracy is within 30 cm within all missions (OpenCV, PCL, C++, LCM)
- Co-implemented a modular navigation stack which uses EKF or UKF to fuse any sensor suite together with a selection of vehicle models in GPS-denied environments (C++, LCM)
- Developed, tested, and integrated obstacle avoidance into a fleet of vehicles (C++, LCM)
- Found and fixed key errors in perception, navigation, and controls legacy software (C++, LCM)
- Co-presented to senior executives, and co-planned future technology expansion for data-driven applications
- Mentored 10+ engineers regarding autonomy, coding practices, and company's legacy code through presentations and onboarding documentation

Bush Combat Development Complex   College Station, TX
Research Engineer   May 2020 – Sep 2021

I concentrated on sensor processing, mapping, and navigation for off-road ground automobiles. The main problem we were solving was related to multi-agent systems where we needed decisive coordination between multiple ground and air vehicles.

- Implemented a program to construct local 2D costmaps during runtime using LiDAR (OpenCV, PCL, C++, ROS)
- Built and executed local planners for ground vehicle obstacle avoidance (C++, Python, ROS)
- Conducted unit and field tests to validate autonomous functionality with data analysis and visualization (Python)
- Standardized overall code repository for all ground vehicles (Git, Docker)
- Supervised 5 interns to perform tasks such as CAD modeling, machining, and software development

Connected Autonomous Safe Technology Laboratory   College Station, TX
Graduate Researcher   Aug 2018 – May 2020

I designed and implemented a data-driven nonlinear longitudinal and lateral controller for ground vehicles.

- Collected and analyzed experimental data to identify system's throttle, brake, and steering dynamic response (Python)
- Implemented a sliding mode controller to handle on-road and off-road terrain with 0.5 m/s and 25 cm accuracy for velocity and path tracking (Python, ROS)
- Managed a team of 5 graduate students to plan and execute autonomous features for a 6-person UTV

SAE AutoDrive Challenge   College Station, TX
Controls Team Lead / Co-Project Manager   Aug 2017 – May 2018

I designed, developed, and applied controls for a commercial vehicle. The team ultimately won 2nd place overall.

- Verified a state feedback lateral controller with simulations (MATLAB)
- Implemented a longitudinal and lateral controller to follow a given path with 30 cm accuracy (C++, ROS)
- Co-developed a program to transmit and receive throttle, brake and steering CAN messages (Python, ROS)
- Planned a year-long schedule with demo milestones for 10 sub-teams (55 people)

Skills & Interests

Languages: C++, Python, MATLAB/Simulink
Technologies: Git, Docker, ROS, Bash, JIRA, SolidWorks, Windows, Linux
Interests: Photography, hiking, basketball, volleyball, table tennis, music, snowboarding, rock climbing, chess

Education

TEXAS A&M UNIVERSITY   College Station, TX
MS, Mechanical Engineering
   Thesis: Nonlinear Control of a Ground Vehicle using Data-Driven Dynamic Models
BS, Mechanical Engineering