EMORY DUCOTE
801 Sugaree Ave APT 2201 Austin, TX 78757
emoryducote@gmail.com - (504) 206-1528
https://www.linkedin.com/in/emoryducote/

EDUCATION

University of Virginia, Master of Computer Science (MCS) January 2022-May 2023
- **Cumulative GPA:** 3.9/4.0, **Certificate:** Cyber-Physical Systems
- **Relevant Coursework:** Learning in Robotics, Robotic Autonomy, Machine Learning in Image Analysis, Autonomous Mobile Robots, Compilers, Dynamical Systems

University of Virginia, B.S. Computer Engineering August 2018-May 2022
- **Cumulative GPA:** 3.62/4.0
- **Relevant Coursework:** Autonomous Vehicles: Perception Planning & Control, Machine Learning, Embedded Computing and Robotics I-II, Fundamentals of Electrical Engineering I-III, Program and Data Representation

TECHNICAL SKILLS

Programming Languages: Python, C++, YAML, Java, Arduino, TypeScript
Software: Robot Operating System (ROS2), Linux, Docker, Podman, Git, Gitlab CI/CD, Qt, Matlab, Fusion360,
Robotics: Perception, Localization, Object Detection and Tracking, Mapping, State Estimation, Simulation

EXPERIENCE

Applied Research Laboratories at UT Austin- | Robotics Software Engineer (Cleared Position) July 2023-Present
- Reworked and improved upon perception pipelines by vectorizing code and adding data playback tooling for analysis
- Developed and implemented a multi-agent motion planning algorithm for Unmanned Underwater Vehicles (UUVs)
- Designed and created CI/CD pipeline, creating test coverage for different OS architectures and package versions
- Led effort to containerize codebase, ensuring cross-platform compatibility and minimizing image size
- Improved simulation capabilities by creating tooling for bulk simulation with parameter and scenario variation
- Coordinated in-water demonstrations by creating detailed scenario plans, defining operational area specifics, offering on-site development and support, and conducting post-mission data analysis

Cavalier Autonomous Racing | Radar Perception Lead | **Site:** http://autonomousracing.dev February 2021-May 2023
- Led radar object detection on an autonomous race car traveling 120+ mph in the Indy Autonomous Challenge
- Tuned an opponent tracking EKF with measurement/process covariances as well as window-based filtering
- Performed CPU usage benchmarking, mimicking real-time use, to identify problematic sections of software stack
- Identified high CPU usage python ROS2 nodes and led effort to convert to C++ and utilize GPU

Capital One Bank | Software Engineering Intern June 2021-August 2021
- Created a pop-up message to engage checking account users with marketing campaigns
- Utilized the Angular framework in conjunction with NgRx and RxJS to create a new effect
- Coordinated with product owners and marketing to enable campaigns to engage with millions of customers
- Presented ideas and reasoning to over 250 associates within company

Northrop Grumman Corporation | Systems Engineering Intern May 2020-June 2020
- Developed time-saving scripts using the ansible platform
- Produced scripts for installing certificates, configuring proxies, and installing applications
- Composed scripts using YAML to install and configure software such as npm, nodejs, and yarn
- Deployed and tested scripts on virtual machines so they could be created and equipped with software tools

PROJECTS

RACECAR Dataset | Contributor | **Github:** https://github.com/linklab-uva/racecar_data January 2022-Present
Associated Paper: RACECAR - The Dataset for High-Speed Autonomous Racing | IROS 2023
- Pruned ROS2 sensor data bags for a dataset with scenarios from the Indy Autonomous Challenge
- Provided benchmark results for radar filtering using a ROS2 node along with detailed methodology
- Documented the benchmark with performance as range varies, demonstrating capabilities of radar data usage

Relevant Course Projects
- Learning in Robotics - UKF for drone state estimation with IMU data, LiDAR particle filter SLAM, policy iteration
- Robotic Autonomy - object detection using D435i camera, object tracking EKF, graph-based trajectory planner
- Autonomous Mobile Robots - KF and particle filter, quadrotor PD controller, object and apriltag detection
- F1/10 Autonomous Racing (http://f1tenth.org) - simulator implementations of wall following and follow the gap