Charles T. Montagnoli

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Education

Embry-Riddle Aeronautical University August 2021 – May 2023
Master of Science, Mechanical Engineering - GPA: 3.8/4.0 *Daytona Beach, FL, USA*

Embry-Riddle Aeronautical University August 2016 – May 2021
Bachelor of Science, Mechanical Engineering *Daytona Beach, FL, USA*

Relevant Coursework
Machine Learning, Mechatronics, Robotic Systems, Modern and Optimal Control, Sensor Processing

Work Experience

Autonomy Engineer I May 2023 - March 2024
Pratt Miller Engineering *New Hudson, MI, USA (Remote)*

- Worked in a Small, Agile Team of Remote Developers to Advance Autonomous Capabilities.
- Developed Successful Algorithms for PointCloud Filtering and Feature Extraction in C++, Python & ROS.
- Troubleshoot, Test, and Create Fixes for PME's various Autonomous Ground Vehicle Robotic Platforms.
- Tracked Issues and Development Progress through the use of Remote Version Tracking Tools.
- Worked to Create Data Entry Automations for Robotic Platforms.
- Previously interned with the Autonomy Team in-person, Summer 2022.

Graduate Teaching Assistant, Model-Based Control Systems August 2021 – December 2021
Embry-Riddle Aeronautical University *Daytona Beach, FL, USA*

- Created and Presented Lectures while Overseeing Lab Sessions Three Nights a Week.
- Hosted Office Hours and 1-on-1 Tutoring for Students.
- Distributed Information and Maintained Grades for Over 35 Students with Canvas.

Maritime RobotX Team Lead, Software Lead January 2022 – May 2023
Embry-Riddle Aeronautical University, Naval Engineering Education Consortium

- Lead the Team's Efforts in Developing Autonomous Tasking in C++ and Python with ROS.
- Onboard New Members to the Team - Providing Introductions to Linux, ROS, C++, Python, and Git.
- Develop Software for the Autonomous Surface Vessel, Focusing on Computer Vision Capabilities.

Master's Thesis

Semantic Segmentation Deep Learning for Object Detection in the Maritime Environment
Embry-Riddle Aeronautical University, Master's in Mechanical Engineering Thesis

- Labeling and Training of HDR Imagery for Semantic Segmentation Deep Learning Using TensorFlow and Keras on the DeepLabV3+ Network; Performed Hyperparameter Tuning/Optimization.
- Implementation of Data Augmentation with Python to Expand Trainable Data from a Smaller Dataset.
- Presentation of Written Paper and Defense of Thesis to Committee of University Advisors.

Research Experience

Multi-Modal Sensor Fusion for ASV Situational Awareness August 2021 – May 2023
Embry-Riddle Aeronautical University, Naval Engineering Education Consortium *Daytona Beach, FL, USA*

- Calibration and Integration of Camera and LiDAR Systems into ASV.
- Image processing for use in ROS with OpenCV in Python and C++.
- Design for Integration of Additional Sensors Including RADAR and GPS/INS.
- On-boarding of Junior Research Group Members through Education and Hands-On Training with Mobile Robotics, Machine Learning, and Software Development

Specialized Skills

Programming Languages: Python, C++, MATLAB, SQL
Machine Learning: TensorFlow, Keras, PyTorch, Scikit-Learn
Software Tools: Git, GitHub, BitBucket, Jira, Docker, MS Office Suite, AWS, PostgreSQL, ROS
Engineering Software: SolidWorks, CATIA, EAGLE, Inventor, ArcGis, QGIS

Other

Collegiate Clubs: Maritime RobotX Challenge Team Member & Leader (2020-2023)
Collegiate Awards: Maritime RobotX Challenge Champions (2022), Graduate Honors (2023)