

Charles Montagnoli

533 72nd St
Brooklyn, NY 11209
(856)725-0409

charles.montagnoli@gmail.com
www.linkedin.com/in/ctmont/



Education

MASTER OF SCIENCE & BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING CONCENTRATED IN ROBOTIC SYSTEMS

GPA: 3.80

Embry-Riddle Aeronautical University, Daytona Beach, Florida

August 2016 – May 2023

Computer Skills

AutoCAD • CATIA • Ansys FEA • SolidWorks • Agi32 • Visual Lighting • Python • C/C++ • CMake • ROS • OpenCV • Docker • Linux • BASH • Tensorflow • Keras • PyTorch • SQL • Git/GitHub • Jira • Jenkins • MATLAB • Arduino • MS Office

Work Experience

ENGINEERING PROJECT MANAGER/NYC DOT, NEW YORK, NY

2024 – CURRENT

- Engineer DOT Infrastructure Projects for the Traffic Ops and Street Lighting Division, following all NYCDOT and USDOT Standards.
- Design Public Infrastructure using AutoCAD, Agi32, and Visual Lighting to ensure NYC public roads are properly lit and signalized for all people using the roadways.
- Review consultants designed infrastructure projects by checking lighting and signal designs and suggesting fixes where needed.
- Coordinate with engineers, consultants, and clients to review, edit, and approve mechanical and electrical engineering designs.

AUTONOMY ENGINEER/PRATT & MILLER ENGINEERING, NEW HUDSON, MI

2023 – 2024

- Worked on a Robotics Engineering Team to Design Custom Robotic Systems for Autonomous Applications.
- Utilized Agile to define project goals, align with stakeholder needs, and give visibility into product development via milestones.
- Designed Algorithms using modified K-Means for PointCloud Filtering and Feature Extraction in C++ & ROS.
- Created Data Entry Automations for Robotic Platforms to the Company's Relational Database.
- Wrote unit tests as well as worked with CI/CD software using Docker, CMake, and CTest for Safety Critical Systems.

MACHINE LEARNING RESEARCHER/EMBRY-RIDDLE, DAYTONA BEACH, FL

2020 – 2023

- Autonomous Tasking Team Lead - Developed Robotic Tasks in C++ and Python with ROS.
- Developed Deep Learning Methods for Autonomous Robotic Tasking using Semantic Segmentation and Object Detection.
- Created a Computer Vision Pipeline for the Capture of Imagery using BASH and GStreamer.
- Trained and Created a CUDA Accelerated Machine Learning Model for the Live Processing of Imagery for Autonomous Tasks.
- Onboarded New Members to the Team - Providing Introductions to Linux, ROS, C++, Python, and Git.

AUTONOMY ENGINEERING INTERN/PRATT & MILLER ENGINEERING, NEW HUDSON, MI

SUMMER OF 2022

- Using C++ and ROS, I created an Efficient Ground Vehicle Route Planner using A* and D* Search Algorithms.
- Combined my Efficient Ground Vehicle Route Planner with a Terrain Mapper using GeoServer and QGIS to plan the optimal route for a Ground Vehicle based on Terrain Traversal Difficulty.
- Tracked Issues and Development Progress through the use of Remote Version Tracking Tools like JIRA and Git.

Project Experience

MASTER'S THESIS - SEMANTIC SEGMENTATION DEEP LEARNING FOR OBJECT DETECTION IN THE MARITIME ENVIRONMENT

- Trained HDR Imagery Data for Semantic Segmentation Deep Learning Using TensorFlow and Keras on the DeepLabV3+ Network.
- Performed Hyperparameter Tuning and Optimization of the Deep Learning Network.
- Implemented Data Augmentation Methods with Python to Expand Trainable Data from a Smaller Dataset.
- Presented a Written Paper and Oral Defense of my Master's Thesis to a Committee of University Advisors and Field Experts.

EMBRY-RIDDLE ROBOTX SOFTWARE TEAM LEAD

- ERAU Maritime RobotX software team lead. We created an autonomous surface vessel that performed tasks like autonomous boat docking, obstacle avoidance in a narrow corridor of buoys, and signal detection and reaction.
- My team won the 2022 Maritime RobotX Challenge in Sydney, Australia. Our successes in combining Machine Learning Models with Autonomous Tasking Decision Making allowed us to perform best-in-class at Autonomous Tasking and Mission Planning.
- Performed Calibration and Integration of Camera and LiDAR Systems into Autonomous Surface Vessel.
- Onboarded Junior Research Group Members through Education and Hands-On Training with Mobile Robotics, Machine Learning, and Software Development

MULTI-MODAL SENSOR FUSION FOR AUTONOMOUS SURFACE VESSEL (ASV) SITUATIONAL AWARENESS

- Designed and created a system for integrating three different sensing modalities into the team's ASV. We created a Sensor Suite of 6 Cameras, 3 LiDAR, and 1 Marine Radar to increase the situational awareness capabilities of the vessel through sensor fusion.
- Performed sensor efficacy studies, planned mounting, integrated sensors, and created software for capturing all sensor data simultaneously through an Nvidia Jetson.