Braden Eichmeier

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Education:

Carnegie Mellon University – School of Computer Science Pittsburgh, PA
Master of Science in Robotic Systems Development | GPA: 4.08/4.00 May 2021

Utah State University Logan, UT
Bachelor of Science in Mechanical Engineering | GPA: 3.99/4.00 May 2019

Experience:

Hill Air Force Base Ogden, UT
F-16 Simulation Engineer June 2021 – Current

- Maintain high fidelity simulator to support F-16 Block 30 operational flight program development
- Simulate ASQ-236 Radar Pod interaction with the F-16 for SAR map generation and recall
- Modernize difficult to maintain legacy codebase utilizing state of the art simulation tools and standards

ProtoInnovations, LLC Pittsburgh, PA
Independent Consultant January 2021 – May 2021

- Researched risk analysis and mitigation techniques for the mobility system of planetary rovers
- Synthesized fault tree and failure modes effect analysis to predict rover success for a given mission
- Quantified the likelihood and uncertainty of degraded rover performance using empirical analysis

Autonomous Solutions Inc. Logan, UT
GN&C Research Intern May 2020 – August 2020

- Developed algorithms for image processing and feature detection for neuromorphic cameras
- Formulated and prototyped event-visual-inertial localization pipeline for autonomous vehicles
- Customized simulation environment using Blender to resemble real-world testing facilities

Projects:

SLAM Covariance Estimation Personal Project | April 2021 - Current

- Investigate a novel method for estimating sensor covariance and reliability in a dynamic environment
- Implement single sensor odometry algorithms for stereo camera, 3D LIDAR, IMU, and wheel odometry
- Train neural network to estimate the sensors' relative covariance using the raw odometry estimates
- Pursue publication in academic journal or conference following the guidance of a former professor

MRSD Final Project Carnegie Mellon University | August 2019 - May 2020

- Augmented DJI M600 drone with an Autonomous Airborne Collision Avoidance System (AACAS)
- Created simulation environments in MATLAB and Gazebo (ROS) to iterate local avoidance planner
- Designed local planning algorithm using a potential field approach to reactively avoid dynamic obstacles

Autonomous Vehicle Competition Team Utah State University | January 2018 - May 2019

- Collaborated with small team on an autonomous car for Sparkfun's Autonomous Vehicle Competition
- Tuned a go-to-goal controller with LQR optimization in MATLAB to steer vehicle to next goal point
- Visualized the vehicle in RVIZ for simulations using URDF files derived from SolidWorks models
- Upgraded SLAM capabilities of the vehicle with Google Cartographer and a TIM551 LiDAR

Skills/Competencies:

Programming Languages: Python, C++, MATLAB
Robotics: ROS, State Space Control, Motion Planning, RVIZ, Computer Vision, URDF
Machine Learning: Neural Networks, CNNs, SVMs, Reinforcement Learning