Jeremy Castagno

Roboticist & Software Engineer
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I am an engineer, computer scientist, and roboticist. My area of expertise is in machine learning, systems modeling, simulation, and developing robust decision-making strategies. I enjoy programming in C++, Python, and creating high-fidelity simulations.

Education

Doctor of Philosophy – Robotics	University of Michigan	**Sep 2016 – May 2021**
Master of Science – Robotics	University of Michigan	**Sep 2016 – May 2018**
Bachelor of Science – Chem. Eng. Minors: Computer Science & Math	Brigham Young University	**Sep 2006 – April 2013**

Work Experience

Robotics PhD Candidate — University of Michigan — Sep 2016 – May 2021

Presented first rigorous method to incorporate rooftops as emergency landing sites for small drones in cities
Conducted large-scale multi-city analysis for predicting roof shapes utilizing deep learning with sensor fusion
Established a data pipeline for GIS data including airborne LiDAR, satellite images, and vector maps
Created state of the art parallelized non-convex polygon extraction algorithm/library for both 2D and 3D data

Independent Consultant — National Security Innovation Network — Jan 2020 – Jun 2020

Reviewed predictive maintenance methods for DOD assets and interviewed personnel
Presented whitepaper proposal for video/audio information extraction using computer vision and NLP

Research Intern — NASA Langley Research Center — May 2019 – Aug 2019

Conducted experiments for real-time landing site selection of drones with onboard LiDAR
Designed multi-process software architecture for online sensing with emergency landing directives

Process Control Engineer — Valero Energy Corporation — May 2013 – Oct 2015

Led advanced control system upgrade with an estimated savings of 2 million/year at oil refinery
Managed design and field testing of four new safety systems intended for gas-fired heaters
Conducted simulation, hardware-in-the-loop, and live field testing of control and safety systems
Provided daily control systems support for operation of five refinery processing units

Selected Publications & Presentations

IEEE RA-L / IROS	Polylidar - Polygons from Triangular Meshes. Link to Publication
MDPI Sensors	Polylidar3D - Fast Polygon Extraction from 3D Data. Link to Publication and Software
AIAA JAIS	Wildfire Boundary Estimation using a Semantic Segmentation Neural Network. Preprint
Amazon re:MARS	Rooftop Landings for Safe Urban Drone Operations. Link to Presentation

Skills

Python | C++ | TensorFlow | PyTorch | Linux | Docker | CUDA | JavaScript | Simulation | GIS