

EDUCATION

Carnegie Mellon University, Robotics Institute

- Master of Science in Robotics, Prof. Kris Kitani (August 2019 – July 2021)
- Selected Coursework: *Kinematics, Dynamics & Control; Localization & Mapping; Reinforcement Learning*

University of Minnesota, Dept. of Electrical and Computer Engineering

- B.S. Computer Engineering, Summa Cum Laude with Distinction (Sept. 2015 – May 2019)
- Thesis: *Indoor Micro-UAV Navigation with Minimal Sensing* (Profs. Volkan Isler & Derya Aksaray)
- IEEE-Eta Kappa Nu – Omicron Student Chapter – Vice President 2018-2019

SKILLS

Programming Languages: Python, C++, Embedded C, MATLAB, Java, Ruby

Robotics Tools: Robotic Operating System, Gazebo, V-REP, OpenCV, Keras, PyTorch

Other Tools: Unix ecosystem, Windows kernel development, CUDA/openACC, AWS, XPatch

Languages: English (native), Russian (native), Spanish (proficient)

WORK EXPERIENCE

Kitware, Research & Development Engineer

2021 - present

- Designed systems to identify biases in xView2 dataset, improving satellite damage detection networks
- Implemented confidence-aware detectors to improve re-ID performance in challenging scenarios

Nextdroid Robotics, Software Engineering Intern

June - Aug 2018

- Achieved sensorless high-precision motor speed control for subsea robotic platform
- Co-developed high-accuracy image processing on military hardware for aerial scene understanding

National Instruments, Software Engineering Intern

June - Aug 2017

- Implemented network interfaces for measurement device drivers to maintain stability on newer platforms
- Developed encryption systems to allow first-in-company secure device firmware/driver communication

Robotic Sensor Network Laboratory, Research Assistant

2015-2019

- Developed GPS-denied micro-UAV platform for agriculture using ROS, C, and V-REP simulation
- Designed and trialed computer vision system for micro-UAV control using low-resolution imaging

Department of Civil Engineering, Computer Science Research Assistant

2015-2016

- Parallelized state-of-art wave propagation algorithms to speed concrete simulations by 10x
- Designed MN Dept. of Transport user interfaces to ease ground-penetrating radar data analysis

MORE PROJECTS

Micro-UAV Agricultural Monitoring Platform, U of MN

2017-2019

- Designed lightweight (<50g) fully autonomous system for data collection in restricted environments

Gesture Based Micro-UAV Control, U of MN

Sept - Dec 2017

- Architected & developed high precision gesture tracking system to control micro-UAV flight

PUBLICATIONS

Learnable Spatio-Temporal Map Embeddings for Deep Inertial Localization

2021 -2022

- Learned system to introduce map constraints into odometry-only settings (to appear at IROS 2022)

Inertial Deep Orientation-estimation and Localization, CMU

2019-2020

- State-of-the-art deep-learning method for IMU-only pedestrian localization (AAAI 2021)