

## 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)