

Hi, my name is

# Kohmei Kadoya

I seamlessly integrate robotics and software.



## Education

2021-2023

**M.S. in Robotics Engineering**

Worcester Polytechnic Institute (WPI)  
Worcester, MA **GPA 3.93**

2019-2022

**B.S. in Robotics Engineering**

Worcester Polytechnic Institute (WPI)  
Worcester, MA **GPA 3.82**



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Worcester, MA, USA



## Technical Skills

### Programming:

C++

Java

Python

HTML

JavaScript

React

MATLAB

### Software:

Solidworks

Fusion 360

ROS

Firebase

Simulink

Adobe XD

### Manufacturing:

CNC Milling

3D Printing

Lasercutting

### Interests:

UX Design Blockchain

Video Production



## Experience and Projects

### Present

### Power Distribution Line Bird Deterrent Robot

- ▶ Lead a team of 8 to create a robot to traverse **Eversource's power lines** and deter birds that congregate on the line and cause ecological damage to the lake below
- ▶ Saved Eversource an estimated **\$2 Million** compared to buying the cable
- ▶ Designed, manufactured, and iterated on a 3D printed drive train that can operate **autonomously** on the line for **multiple days** while powering sensors, microcontrollers, and deterrent modules while charging from a **solar docking station**
- ▶ Developed a sensor suite for GPS/Encoder localization, bird detection and deterring, and telemetry that allows for the autonomous operation and easy fleet management from a web-based user interface

### October 2021

### Airport Obstacle Avoidance Robot

- ▶ Implemented a SLAM algorithm using a **Turtlebot** and **Veylodyne VLP-16 Lidar** for autonomous point-to-point navigation in a **crowded indoor environment**
- ▶ Used a combination of **A\*** and **Dynamic Window Approach** to plan an optimal path based on the predicted locations of pedestrians in the environments
- ▶ Collected, labeled, and trained **deep learning models on Lidar data** to detect, predict, track, the movement of people to continuously generate possible paths

### June 2021

### Dynamic Modeling of Quadruped Robot

- ▶ Created a CAD model of a four-legged robot dog and created a **Simscape Multibody** inverse dynamics simulation to test multiple control methods
- ▶ Derived the inverse kinematics and **dynamics** equations for the quadruped with the **Lagrangian** and Newton-Euler methods to solve for motor torques along a trajectory
- ▶ Simulated the robot in **MATLAB** to validate the trajectory tracking and gaits

### January 2021

### Lyft Autonomous Vehicle Motion Prediction

- ▶ Explored various **deep learning** methods to predict the future position of vehicles
- ▶ Developed models that combine the strengths of CNN, RNN, LGBM, and other models
- ▶ Created methods to sample the dataset and **ensemble** multiple learners for efficiency
- ▶ Competed in the Lyft challenge where we ranked among the **top 20%** of teams

### May 2020

### Design and Manufacturing for Combat Robotics

- ▶ Lead teams to **design for manufacturing**, create prototypes, and continuously and iteratively improve multiple combat-ready robots for competitions in the area
- ▶ Optimized stiffness-to-weight ratios using Solidworks **FEA analysis** and created manufacturing tool paths using Fusion360 CAM for Haas Mills
- ▶ Utilized WPI's shop to **CNC mill, turn, laser-cut, and 3D print**, various materials

### October 2019

Want to see more projects? Check out [my website!](#)