Peter Wei

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Ph.D. candidate in electrical engineering with experience in conducting original research and applying machine learning and AI techniques to robot systems and real-time, intelligent connected systems.

Education

Columbia University — **New York, NY**
Ph.D. Candidate, Electrical Engineering, Presidential Fellowship — *2016–Present*

Carnegie Mellon University — **Pittsburgh, PA**
M.S. Electrical and Computer Engineering — *2015–2016*
B.S. Electrical and Computer Engineering, University Honors — *2011–2015*

Work Experience

iRobot Corporation — **Bedford, MA**
Software Engineering Intern — *Summer 2015*

- Designed and implemented a low-power sensing system for detecting floor types for the Roomba.
- Trained random forest and SVM classifiers to differentiate 3 types of surfaces with $> 90\%$ accuracy.
- System and experiments served as a precursor to the Carpet Boost technology in newer Roomba models.

Projects and Research

Intelligent and Connected Systems Laboratory, Columbia University — **New York, NY**
Project: Analysis and Visualization of Personal Energy Consumption — *2016–Present*

- Deployed a novel cyber-physical system for measuring and analyzing energy consumption in commercial buildings.
- Designed a tripartite graph data structure and algorithms for computing energy consumption.
- Developed an iOS/Android application for visualizing real-time personal energy consumption.

Project: Recommender System for Energy Savings

- Implemented a recommender system to output real-time energy saving recommendations using deep Q-Learning.
- Ran simulations and developed a mobile application for a focus group study to show potential energy savings.

Project: City-Wide Personal Energy Footprint and Visualizations

- Currently developing regression models for predicting building energy consumption from historical data.
- Using real-time data and machine learning models to predict population dynamics in New York City.

The Robotics Institute, Carnegie Mellon University — **Pittsburgh, PA**
Project: Car Diagnostics Logging for Android — *Spring 2016*

- Developed an Android app module for logging car diagnostics data over Bluetooth.
- The module improved GPS localization accuracy through wheel RPM and accelerometer data.

GRASP Laboratory, University of Pennsylvania — **Philadelphia, PA**
Project: Dynamic Path Planning for Mobile Robots in Manipulable Environments — *Summer 2014*

- Implemented a heuristic search algorithm (D* Lite) for a mobile robot in an cluttered, unknown environment.
- Algorithm enabled real-time map updates as the robot traverses the environment.

Technical Skills

Programming: Python, C/C++, Matlab, Swift, Android, HTML, JavaScript, x86 Assembly, Arduino

Tools and Software: MongoDB, Git, LaTeX, OpenCV, TensorFlow, SystemVerilog