

Matthew S. Whitehill

1718 Summit Ave, Unit 302, Seattle, WA 98122 | (408) 691-5630 | MattW12@cs.washington.edu

Ph.D. Student - Computer Science Researcher in Health Sensing Systems

Professional Experience

University of Washington, Seattle, CA

Graduate Research Assistant – Ubiquitous Computing Lab

Sept 2018 – Present

Advised by Dr. Shwetak Patel. Researching machine learning and signal processing techniques for health sensing

- Investigating machine learning/deep learning models to classify audio samples of coughs by user
- Researching mobile-optimized models for cough detection
- Taking classes in machine learning, artificial intelligence, and computer vision

Stack Enabled (Subsidiary of Philips Lighting), Cupertino, CA

Embedded Systems Engineer

Aug 2016 – Aug 2018

Lead embedded software development and R&D projects for RF Doppler motion detection system

- Developed full operating system C code for Stack's motion detection module including architecting overall system structure, writing device drivers, and coding signal processing algorithms
- Implemented machine learning algorithm using Short Term Fourier Transform (STFT) feature extraction and Hidden Markov Model (HMM) to sense previously undetected objects moving faster than 1 m/s
- Lead research on multiple R&D Projects
 - Fall Detector – Devised and trained algorithm to detect RF doppler motion signature of elderly patient falls
 - Indoor Localizer – Developed and coded system using three light bulbs to determine object location
 - Synchronous Demodulation Circuit – Programmed MCU to modulate circuit and designed software lowpass filter
- Implemented commands for user to change light brightness and color using Zigbee wireless communications protocol

SoCore Energy, Chicago, IL

Manager of Engineering

May 2015 – Jul 2016

Managed team of 20 across 6 engineering disciplines and led design of more than 190 solar power plants

- Hired, mentored, and directed team of 20 civil/electrical/structural engineers and architects
- Increased project throughput by 2000% to execute more than 190 solar projects by creating system parameter calculator and import/export tools for computer-aided design software

Lead Design Engineer/Systems Engineer

Mar 2012 – Apr 2015

Crafted company-wide design strategy and designed electrical system for solar power plants

- Engineered more than 20 projects including drafting full construction plan set and calculating expected solar production

Education

University of Washington, Seattle, IL

Expected June 2023

Ph.D. Computer Science and Engineering

GPA: TBD (currently in first quarter)

Allen School Computer Science & Engineering Research Fellowship

Northwestern University, Evanston, IL

June 2012

B.S. Mechanical Engineering

Cumulative GPA: 3.487

Certificate in Engineering Design

Pi Tau Sigma Mechanical Engineering Honor Fraternity Member

Community Service

Engineers Without Borders, San Francisco, CA, Chicago, IL

June 2012 – Sept 2017

El Llanito, Nicaragua Senior Electrical Engineer: Designed electrical system for water pump project

- Created project schematics and bill of materials for water pump electrical components

Ak' Tenamit, Guatemala Electrical Engineer: Designed and installed solar water pump system

- Engineered and estimated energy production for solar-powered water pump at rural Guatemalan school
- Installed pump system with team of 6 in Guatemala and instructed staff on proper maintenance procedures

Skills/Interests

- **Programming:** C, C++, Python
- **Machine Learning:** Scikit-learn, Pytorch, Traditional Machine Learning and Deep Learning Models
- **Operating Systems and Microcontrollers:** RTOS, Embedded Linux, ARM Cortex M-series, Raspberry Pi, Beaglebone
- **Communication Protocols:** UART, SPI, I2C, CAN Bus, Zigbee, BLE