

# Alec Hodgkinson

DEEP LEARNING ENGINEER

☎ (+1) 650-255-2445 | ✉ hodgka@gmail.com | 🏠 alechodgkinson.com | 📷 hodgka | 📺 hodgka

## Summary

A deep learning engineer with experience rapid prototyping, implementing state of the art models, and writing technical reports. I like to work on cool projects which means I touch every part of the technology stack nearly every day.

## Education

### Rensselaer Polytechnic University

Aug 2013 - Dec 2016

B.S. IN APPLIED MATHEMATICS, MINOR IN COMPUTER SCIENCE

## Experience

### Panasonic Beta

Mar 2018 - Present

ACTION GENOME HOME, PROJECT LEAD

- Managing activities in a team of seven, including engineering, process development, and data recording, and proposal writing.
- Developed hardware prototype using Raspberry Pi and a variety of sensors. Wrote custom firmware to communicate between the Pi and sensors over I2C Bus.
- Wrote software to cleanly record and package video and sensor data into a video container for easy distribution.
- Developed a Flask-based front-end for recording synchronized data across multiple sensor suites, speeding up recording time by 50x.
- Wrote proposal for a workshop at the ECCV2020 conference.

DOORGYM: A SCALABLE DOOR OPENING ENVIRONMENT AND BASELINE AGENT, PROJECT LEAD

- Developed initial proof of concept for door opening simulation.
- Developed a novel CNN-based vision pipeline for regressing 3D door knob location from multiple views. Achieved an accuracy of  $\pm 1.7$  cm in simulation, accurate enough for an agent to open a door.
- Transferred vision neural network trained in simulation to real doorknobs with an accuracy of  $\pm 4.95$ cm.
- Performed ablation tests to verify the necessity of each component in the vision network pipeline.
- Created infrastructure for interfacing neural networks with the Baxter Robot platform.

### Panasonic Silicon Valley Labs

Mar 2017 - Mar 2018

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- Developed a novel post-processing filter for image codecs resulting in a 20%+ reduction in bitrate.
- Implemented end-to-end deep learning models for image compression using Tensorflow.
- Evaluated and adapted state of the art deep learning models for alleviating catastrophic forgetting in neural networks.
- Developed face tracking/identification software for a robotic platform running in real time at 30 FPS.
- Authored technical papers and descriptions for three individual patents.
- Developed proof of concept demonstration using deep learning based monocular image height estimation running on a Raspberry Pi for presentation to CEO.
- Developed a gesture detection model and API for use in a smart home setting.

### Junior.io

Jun 2016 - Aug 2016

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- Architected the backend of a content based music recommender system for an open space environment using a PostgreSQL database, the Spotify API, and git for source control.
- Built a neural network to classify user preferences based on previous listening habits in Keras.

## Projects

### Pixel Recursive Super Resolution Implementation

PERSONAL

Mar 2017 - Apr 2017

- Implemented "Pixel Recursive Super Resolution" using Tensorflow, to "enhance" low resolution images by adding missing details to generate higher resolution images.
- Reproduced results of the original authors using multiple different metrics such as PSNR and SSIM.

**Programming** Python, JavaScript, C++, LaTeX

**Machine Learning** PyTorch, Tensorflow, Keras, NumPy, OpenCV

**Web** Flask, HTML5, CSS3, React, P5.js

**Other Technologies** Git, Docker, AWS, ZeroMQ