Alec **Hodgkinson**

Deep Learning Engineer

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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 ±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 ±4.95cm.
- 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

Deep Learning Engineer

- 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

Deep Learning Intern

- 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