

# Maxwell McKinnon

## EXPERIENCE

### Apple, Cupertino — *Audio Machine Learning Engineer*

2018 - Present

Currently working on ?? & other past projects ?? - Apple disclosure policy

Collaborated with our bug screeners to build a tool that assigns keywords and routes audio bugs, subtools based on TFIDF, Naive Bayes, word embeddings, and BERT.

Built a sentence similarity detection pipeline to acquire high quality training data for an active learning with weakly labeled data scheme.

Deep distillation and compression applied to CNNs and LSTMs in the context of the SoundAnalysis framework.

Wrote cross platform audio anomaly detection tool that still runs on HomePod, Watch, iPhone, iPad, and MacBook supporting multiple independent teams.

Wrote DSP feature generation and follow up ML for categorizing and duping issues found with QA automation, still in use.

Prototyped ML for room adaptation and beamforming on the HomePod.

### Apple, Cupertino — *Audio Analytics & Automation Engineer*

2017 - 2018

Made our team one of the first running full CI on PRs. Because of privacy and framework constraints, I had to solve some difficult Apple specific hurdles, but the results spoke for themselves. We went from 1-2 time consuming regressions in production per month to under 0.05 per month and still falling.

Led several successful ventures in improving cross team tools and collaboration in device setup and lab scaling tools. Previous solutions were siloed and not well supported for their wide range of customers. Most notably I led a monstrous hackathon to bring python 3 support to roughly twenty very popular packages, including the top internal package with 14.3k unique downloads. I had overwhelming grassroots support to make this happen, and we did it. It was amazing. Prior to this event, there was no coordination or plans to support python 3. After this event, the majority of engineers were unblocked from using python 3 and could finally deprecate 2.

Volunteer in the Quality Culture Initiative at Apple as Damned Liar (statistician).

Created and still lead Apple Machine Learning Makers, a hackerspace at Apple for ML enthusiasts — previously there was just an ML research discussion club which is awesome but didn't fulfill me as much as creating does.

Wrote an ML workflow tool to allocate a cloud GPU for dev notebooking (such a service doesn't exist formerly at Apple), at least 443 users by the user group count.

Led an Apple-wide study group for the FastAI course. The group is still active in many countries and has many subdivisions going through the course, aided by the ML workflow tool made above.

## SKILLS

### Domain Experience

Embedded Audio (HW and SW)

DSP

NLP

### ML Engineering

Scikit-learn

PyTorch, Keras, TF

PySpark, Solr, Splunk

Hadoop

CoreML with C++, Swift, ObjC

MATLAB/Octave

### DevOps

Turi

Docker

Ansible

Jenkins

Zsh / bash

XCTest / pytest

There is no secret weapon, but TDD comes close

## AWARDS

### Maxim Toastmaster 2015

#### Competition

1st Place

### San Jose Toastmaster 2015

#### Competition

3rd Place

### Idaho

M.S. Artificial Intelligence

### Oregon Tech

B.S. Math B.S. EE (4.0)

## CONTACT

(408) 816-9050

m@xwellmckinnon.com