

## EDUCATION

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**M.S. Computer Science; 4.0** Dec 2020  
**B.S. Applied Mathematics; 3.82 GPA** Apr 2019  
*Brigham Young University* Provo, UT

## WORK EXPERIENCE

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**Machine Learning Engineer Intern - Wish** May 2019 - Aug 2019

- o Drove 1.2% revenue increase (\$10MM - 15MM yearly revenue, per A/B testing) by identifying and recommending daily trending products.
- o Launched the company's first realtime computer vision pipeline, classifying 100 images/second with Amazon SQS and TensorFlow Serving in Golang. Efficiently backfilled predictions for tens of millions of products.
- o Designed a trend detection algorithm in four different languages using probabilistic keyword tracking and NLP features. Integrated trends into product recommendations, search autocomplete, and email campaigns.
- o Created an dataset of 3 million products for category prediction and content filtering. Improved content filtering precision by 15x by training and ensembling both an image & text classifier, mitigating noisy imbalanced data.
- o Utilized: Go, Python, MongoDB, TensorFlow, SQL, Hive, Presto, Docker, Spark

**Machine Learning Researcher - Perception, Control and Cognition Lab** Sep 2018 - May 2019

- o Led a consulting project responsible for \$120,000 in grant funding. Developed sophisticated unsupervised and semi-supervised methods for early alert systems in semiconductor manufacturing.
- o Video frame prediction using invertible neural networks and controlled dynamical systems.
- o Fourier convolutional neural networks, faster inference with activation functions in the complex domain.
- o Publication: [Invertible Linear Embeddings for Video](#).
- o Utilized: Python, PyTorch, NumPy/SciPy, Docker

**Microsoft - Software Engineer Intern** May 2018 - Aug 2018

- o Increased monthly revenue by \$100,000. Built support for a secure private network in Microsoft Azure enterprise device management, enabling 1,000 new client subscriptions.
- o Responsible for end-to-end feature development: automated browser testing, updating API endpoints, modifying device configuration files. Completed project three weeks ahead of schedule.
- o Improved service uptime and build speed by migrating portions of the monolithic codebase to microservices.
- o Utilized: C#, TypeScript, Bazel, Selenium, Git

**MantisX - Software Developer** Jun 2016 - May 2018

- o Achieved 99% accuracy with a 2% false positive rate, using a convolutional neural network for firearm shot detection from gyroscope and accelerometer timeseries data. Deployed model to iOS and Android.
- o Designed, deployed, and scaled a production database handling 50K monthly active users and 200MM shots.
- o Opened a market partnership with the U.S. Marines by creating secure private groups.
- o Utilized: Python, TensorFlow, Django, PostgreSQL, AWS, Redis, HTML/CSS, JavaScript, Git

## PROJECTS & OTHER

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**NeurIPS Competition 2019:** Competing in CellSignal, applying computer vision to disentangle biological signal from experimental noise in cellular images. Currently 90th/350 entrants, creating TPU pipelines on Google Cloud.

**March Madness 2019:** Modified Google's PageRank algorithm to track basketball team strength instead of website popularity, then competed in ESPN's bracket challenge.

**Google Hash Code 2019:** Placed in top 10% of teams worldwide, finding the optimal photo slideshow layout for continuity and diversity, with a Metropolis-Hastings algorithm.

**Coursework:** Computational linear algebra, convex optimization, differential equations, Bayesian statistics, control theory, Fourier analysis, Monte Carlo methods, Markov chains, wavelets, expectation maximization, PCA, LDA.

**Entrepreneurship:** 1<sup>st</sup> place BYU New Venture Challenge 2018 with *Fresh Stamp*, encoding food expiration dates directly into barcodes. Our partnership received seed funding offers of \$300,000.