

## EDUCATION

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<b>M.S. Computer Science; 4.0</b> <i>Brigham Young University</i>	2020 <i>Provo, UT</i>
<b>B.S. Applied and Computational Mathematics; 3.81</b> <i>Brigham Young University</i>	2018 <i>Provo, UT</i>

## WORK EXPERIENCE

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### Google Brain - Research Intern May - Oct 2020

- Design and orchestrate experiments requiring massive compute on internal infrastructure
- Develop expertise in automatic differentiation and modern semi-supervised learning techniques

### Lyft, Level 5, Autonomous Vehicles - Prediction Intern June - Aug 2019

- Developed A/B testing platform in high performant C++ to compare prediction models locally and in the cloud greatly increasing my team's development velocity
- Identified predictive features and developed real-time feature extraction system for use in machine learning pipeline
- Explored statistical and neural models for dynamical vehicle motion prediction leading to a 22.5% performance improvement
- Lead 3 engineers in exploratory 20% project for semantic code search
- Utilized: C++, python, mathematical modeling, machine learning, GIS, geometry, data engineering

### Qualtrics - NLP Intern May - Aug 2018

- Achieved ~96% accuracy with a .005% false positive rate, matching state of the art on phishing detection by researching and implementing system using sophisticated NLP feature engineering and machine learning
- Increased speed of system 3x resulting in a 63% reduction in hardware costs while handling 3 million daily requests by engineering asynchronous API using parallel processing and high performance computing techniques
- Identified, explored, and implemented state of the art emerging topic tracking system which allowed my team to reach their stretch goals for the quarter and led to a **patent**
- The final estimated impact of my internship is \$300k - 500k in yearly savings
- Utilized: Python, parallel processing, fraud detection, Javascript, HTML/CSS, machine learning, git, docker, NLP

### Amazon Alexa Prize: Team Eve - Machine Learning Researcher Jan - Apr 2018

- Member of team Eve for the Alexa prize challenge. One of Eight teams selected out of hundreds to research and build a social chatbot system to hold arbitrary conversation for 20 minutes on any topic
- Designed and built an offensive speech filtering system using probabilistic methods, which performed ~3% better than current industry standards
- Researched and designed a complex sentiment analysis tool that classified sentences as having complex sentiment used for noteworthy knowledge retrieval
- Utilized: Python, natural language processing, client/server architecture, parallel processing

### Perception, Control, and Cognition Lab - Deep Learning Researcher Dec 2016 - Present

- Lead multiple projects from inception to completion while mentoring students with a variety of skill levels which resulted in a number of novel contributions and publications
- 1<sup>st</sup> place Student Research Conference presentation
- Explored intersection of probabilistic programming and parametric learning
- Developed a system to improve MRI quality using a denoising auto encoder
- Designed deep architecture to improve hearing aid quality resulting in signal to noise ratio increase of 197%
- Utilized: python, NLP, computer vision, data science

### Carnegie Mellon University - IT Lab Research Fellow June - Aug 2015

- Performed secondary research on police effectiveness in the presence of body cameras. We found a 70% decrease in violence on both sides when using body cameras
- Analyzed data from user studies and developed a custom web game to help local refugees learn English

## OTHER EXPERIENCE

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**President's Leadership Council Presentation:** Selected by faculty and staff to represent my college's 4,000+ students by presenting my research to BYU's \$1 million+ donors and top administration.

**2<sup>nd</sup> place BYU ACM Hackathon 2019:** Built a computer vision pong game that is controlled with hand detection

**2<sup>nd</sup> place BI Wolff Hackathon 2018:** Built prescriptive ML solution to predict individual risk of becoming homeless

**1<sup>st</sup> place BYU ACM Hackathon 2017:** Created Auto Dino program to perfectly play the chrome dino no wifi game

**1<sup>st</sup> place BYU ACM Hackathon 2016:** Created *Mathify* app using polynomial interpolation to display text as math

**2<sup>nd</sup> place Global Legal Hackathon Utah:** Made a chrome extension using NLP to summarize terms and conditions which I grew to 2000 active users and sold

**Data Science Blog:** 300+ monthly readers. Data science problems solved with esoteric programming languages

**Ranked 8th in world:** Tetris in spring of 2011