

## EDUCATION

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### PhD Computer Science; 4.0

*Brigham Young University*

Apr 2022

*Provo, UT*

### B.S. Applied and Computational Mathematics; 3.81

*Brigham Young University*

Apr 2018

*Provo, UT*

## WORK EXPERIENCE

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### Lyft, Level 5, Autonomous Vehicles - Machine Learning Engineer, Intern

June - Aug 2019

- Intern on the Prediction team
- Utilized: c++, python, mathematical modeling, machine learning, GIS, geometry, data engineering

### Qualtrics - Machine Learning Engineer, 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, javascript, html/css, machine learning, git, docker, NLP

### Amazon Alexa Prize Team Eve - Machine Learning Researcher

Jan - Apr 2018

- 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
- **Publication** BYU-EVE: Mixed Initiative Dialog via Structured Knowledge Graph Traversal and Conversational Scaffolding, Alexa Prize Proceedings, 2018
- Utilized: python, natural language processing, client/server architecture, naive bayes

### Perception, Control, and Cognition Lab - Deep Learning Researcher

Dec 2016 - Present

- Explored relationship between differential geometry and deep learning
- **Publications** see <https://andrewnc.github.io/projects/publications.html>
- 1<sup>st</sup> place Student Research Conference presentation
- 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

## OTHER EXPERIENCE

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**Communication:** 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:** Build 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

**pyprobml Open Source:** A primary contributor for Machine Learning a Probabilistic Perspective Python code

**Computer Vision:** See <https://andrewnc.github.io/projects/projects.html> for videos of my various vision projects

**NLP:** Built a simple search tool that takes a legal query and outputs a potential practice area, designed to help underprivileged gain better access to legal help

**Data Science:** Collected, cleaned, engineered, and analyzed data exploring the relationship between market health and US retirement activities. Found that employer sponsored retirement plans are less susceptible to market declines than privately managed retirement plans.