Andrew Carr

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EDUCATION

PhD Computer Science; 4.0　　　　　　　　　　　　　　　　　　　　Apr 2022
Brigham Young University　　　　　　　　　　　　　　　　　　　　　　*Provo, UT*

B.S. Applied and Computational Mathematics; 3.81　　　　　　　　Apr 2018
Brigham Young University　　　　　　　　　　　　　　　　　　　　　　*Provo, UT*

WORK EXPERIENCE

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
- The final estimated impact of my internship is $300k - 500k in yearly savings
- Utilized: python, parallel processing, scala, javascript, html/css, machine learning, git, docker

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 bayesian methods and deep learning
- **Publication** Graph Neural Process: https://arxiv.org/abs/1902.10042
- Delved into differential geometry to improve machine learning generalization
- Develop system to improve MRI quality by utilizing deep manifold learning
- Designed deep architecture to improve hearing aid quality resulting in signal to noise ratio increase of 197%

Private Capital Group - Software Engineer, Intern　　　　　　　May - Oct 2016
- Developed web solutions to significantly increase employee effectiveness by creating automated systems that resulted in yearly savings of over $200,000
- Collected, cleaned, and analyzed internal and external data which was built into reporting dashboards that tracked key business insights and allowed partners to make informed decisions
- Decreased product downtime by 47% by implemented full testing suite and fixing critical bugs
- Utilized: python, javascript, html/css, git, SQL

Carnegie Mellon University - IT Lab Research Fellow　　　　　　June - Aug 2015
- Excelled in machine learning course work as a top 3 student in the cohort, achieving a 4.0
- Analyzed data and developed a custom web game to help local refugees learn English

OTHER EXPERIENCE

Start up acquisition: Founded Legal Leaf and lead a team of 3 while building product. Experienced 10x growth in 8 months which resulted in our acquisition. Product awarded *most innovative* and *best use of AI* from GLH Utah

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.

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

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

2nd **place BI Wolff Hackathon**: Built prescriptive ML solution to predict individual risk of becoming homeless

Python 3.8 Open Source contribution: Fix small doc bug in cpython pull #11683