

## Education

- **Westminster College** New Wilmington, PA  
*Bachelor of Science in Mathematics and Financial Economics* *August 2015 - May 2019*
  - 3.7 GPA; Minor in Computer Science
  - Honors Thesis in Hierarchical Temporal Memory focused on A. I. and Fuzzy Logic
  - Endowment Fund, Honors Program, Kappa Mu Epsilon, Men's Choir, Omicron Kappa Sigma, Pi Sigma Pi, and Secretary of Robotics Team

## Professional Experience

- **Data Science Researcher** Los Angeles, CA  
*Institute for Pure and Applied Mathematics at UCLA / Praedicat, Inc.* *June 2018 - August 2018*
  - Selected to be a part of 2018's Research in Industrial Projects for Students (RIPS) at UCLA.
  - Worked for Praedicat, Inc. automating information extraction, classification, and aggregation from unstructured web data for business profiling of over 52,600 companies and corporate entities.
  - Used big data, deep neural networks, knowledge graphs, parallel programming, RDFs, and many other techniques to provide Praedicat, Inc. with a new tool for automatically finding information.
- **Software Engineer and Systems Administrator** New Wilmington, PA  
*Titan Radio and WCN 24/7* *May 2018 - Present*
  - Responsible for the hardware and software required to keep the radio and television station operating.
  - Wrote software to automate work and improve user experience including a [program to automatically update the weather conditions on air and automatically Tweet Severe Weather Warnings](#).
- **Information Technology Intern** New Castle, PA  
*Treloar & Heisel* *September 2018 - Present*
  - Responsible for data science and automation necessary for building, maintaining, and utilizing databases including data validation, database normalization, and automated report generation.
  - Developed a variety of applications for company use in Java, Python, and Visual Basic.
- **Web Developer and Teaching Assistant** New Wilmington, PA  
*Westminster College* *August 2015 - Present*
  - Developing a website for marketing and recruiting purposes using React and Ruby on Rails.
  - Assisted professors in grading, working with students individually, and developing curriculum for classes covering coursework in Calculus, Computer Science, and Operations Research.
- **Financial Analyst** Various  
*Program with Moody's Investors Service VP Ben Nelson* *December 2017 - June 2018*
  - Responsible for data science and econometrics on S&P 500 companies.
  - Presented a credit ratings and bond and stock recommendations to a panel of experts.

## Research

### Computational Fact-Checking through Relational Similarity based Path Mining

*July 2018 - Present*

- Developed an algorithm in Python and Cython for computational fact-checking on knowledge networks called *RelPredPath* based on [network flow](#), [relational similarity](#), and [discriminative path mining](#)
- Presented our work at IPAM and continually optimizing the algorithm's Graph Theory algorithm implementations in the hopes of presenting at conferences and publishing

## **An Exploration of the Logical and Topological Properties of Hierarchical Temporal Memory Networks**

*December 2017 - Present*

- **Ongoing research** in artificial intelligence modeled after the neocortex.
- Working to improve the encoding and decoding mechanisms of Hierarchical Temporal Memory through topology and attempting to use fuzzy logic to improve the performance or forecasting ability.

## **Minimum Square Deviance k-Chinese Postman Problems**

*August 2017 - December 2017*

- Worked on this variation of the k-Chinese Postman Problem with Dr. Natacha Merz. We focused on finding solutions for lattice graphs like the square grid graph.
- Unable to prove any of our results because of the intractability of the problem.

## **Algorithmic Game Theory**

*January 2017 - May 2017*

- Developed simple machine learning algorithms in Java to play repeated-play simultaneous games such as Chicken and the Colonel Blotto Game.
- Presented my results at Westminster's **2017 Undergraduate Research and Arts Celebration** and the Mathematical Association of America's **Allegheny Mountain Section 2017 Spring Meeting**.

## **Optimizing Throughput, Cost, and Safety in Toll Booth Plazas**

*January 2017*

- Lead a team of mathematicians over a single weekend in COMAP's International Mathematical Modeling Competition to produce a 20-page research paper.
- Received Honorable Mention for our solution, placing us in the top 13 in the United States and presented our results at **2017 Pi Mu Epsilon Regional Conference**

## **Projects**

### **Information Extraction and Aggregation from Unstructured Web Data for Business Profiling**

*June 2018 - August 2018*

- Proposed and **implemented** an architecture to perform information extraction, classification, and aggregation at scale. My work focused on Natural Language Processing, Classification, and Big Data.
- Produced high quality structured data at scale for business applications, designed a classification scheme that vastly outperforms TF-IDF, and worked with Knowledge Graphs for Computational Fact-Checking.

### **Trinity Firefighting Contest**

*December 2017 - April 2018*

- Built and programmed an autonomous robot to tackle various challenges at the **Trinity Firefighting Contest** including putting out candles, navigating a maze, and rescuing a baby doll.
- Won Best Robot in Division Prize for Senior, Unique Division and the North America Award for Level 2.

## **Skills**

**Computer Science:** Parallel Programming, Robotics, Software Engineering, System Administration, Virtualization, Web Development

**Data Science:** A.I., Big Data, Cognitive Computing, Information Extraction, Machine Learning

**Finance and Economics:** Algorithmic Trading, Corporate Credit Analysis, GAAP, Risk Analysis

**Languages:** Python (and Cython), Java, C++, Bash, R, HTML, CSS, XML, Ruby (and Ruby on Rails), Javascript (and React), SQL, Visual Basic

**Software & Tools:** AWS, Google Cloud, NLTK, Numpy, Pandas, scikit-learn, Selenium