Nathan Stefanik

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Summary

Dual major in math and computer science with a passion for data analysis and machine learning. Experienced in collaborative research and leading research teams in critical thinking to help generate creative solutions to challenging problems.

- Research interests include deep learning and natural language processing
- Working knowledge of machine learning, encryption, and cyber security
- Collaborates well with others. Effective project leader
- Creative and versatile in applying math and building models to solve complex problems

Education

Georgia Institute of Technology   *Atlanta, GA*
BS in Mathematics & Computer Science, GPA: 3.6/4   *Expected Dec 2022*

- Concentration in Machine Learning and Enterprise Computing
- **Notable Math Courses**: Real Algebraic Geometry & Optimization, Algebraic Topology, Statistical Theory, Probability Theory, Real Analysis, Complex Analysis, Abstract Algebra
- **Notable CS Courses**: Database System Implementations, Deep Learning, Machine Learning, Honors Algorithms, Intro to AI, Computer Systems & Networks

Experience

Invesco Ltd   *Atlanta, GA*
Info Risk and Controls Intern   *June - August 2022*

- Provided key insights to Global Risk and Controls team using data analysis
- Built incident ticket classification model using Doc2Vec and GMM with 70% accuracy
- Built software applications using PowerApps for internal risk management and control validation
- Processed large datasets in Python from Microsoft SQL Server using pyodbc

GT School of Math   *Atlanta, GA*
Grader for Linear Algebra II   *Fall 2021*

- Graded problem sets and progress for over 70 students
- Created answer key/rubric for assignments

Ascent Math   *Dunwoody, GA*
Founder   *May 2016 - Present*

- Founded tutoring company focusing on peer instruction and consolidated local tutors under one network
- Created and led a summer camp for remedial math and advanced math for middle and high school students
- One-on-one instruction for math up to multivariable calculus and physics

Projects

Initial Orbit Determinations in Projective Geometry   *GT School of Math*
Researcher   *January 2022 - PRESENT*

- Developing algebraic and numerical algorithms for Initial Orbit Detection (IOD) of objects in space using MATLAB and Macaulay2
- Researching tools in algebraic projective geometry to formalize methods

Course2Career
SOFTWARE DEVELOPER

Database Systems Course
Aug - Dec 2022

- Built course-to-industry-skill mapping web application using Rocket
- Built complex queries using SeaORM to help generate graph visualizations of data

What Should I Add to My Playlist?
RESEARCHER

Machine Learning Course
Aug - Dec 2022

- Trained linear regression, lasso regression, random forest on spotify millions playlist dataset for next-song recommendation
- Created deep learning model using Conv2d and other layers using tensorflow/keras

Financial Sentiment Analysis
RESEARCHER

GT AI Research Group -
January 2021 - May 2022

- Proposed and implemented solutions in investment portfolio management theory
- (Tensorflow/Keras) Built feed forward neural network to predict price movement on tech stocks with 60% accuracy
- Building VADER sentiment analysis model on relevant Tweets to aid in retail trading decisions (Work in progress)

Music Generation with Transformers
RESEARCHER

Deep Learning Course
Spring 2022

- Trained deep learning models on Bach's Well Tempered Klavier to generate new music
- Built model using Google Brain Magenta music transformer with custom layers using tensor2tensor library
- Built RNN and LSTM models using PyTorch

Solving High Dimensionality Problems in Data Preprocessing
RESEARCHER

GT AI Research Group
Spring 2021

- Built Python scripts to scrape financial data
- Developed modules to process data using tools such as Support Vector Machines, Principal Component Analysis, and K-Nearest Neighbors

Tropical Geometry/Combinatorics
RESEARCHER

GT School of Math
Jan 2021 - May 2021

- Conducted literature review on intersection of tropical geometry and optimization problems
- Solved problems in combinatorics using tropical determinants and eigenvalues

Skills

DBMS/APIs	Microsoft SQL Server, MySQL, PostgreSQL, Rocket
Languages	Python, C++, C, MATLAB, Java, Rust, SQL
Python Libraries	Tensorflow, Keras, PyTorch, Scikit-learn, SciPy, NumPy, Pandas, Matplotlib

Honors & Awards

2018-22 **Scholarship Recipient**, Zell Miller Scholarship · *Atlanta, Georgia*

Extracurriculars

GT AI Safety Initiative
MEMBER

Sep 2022 - PRESENT

- Collaborated in AI Technical Safey seminar and planned team project in examining bias in machine learning models

GreyHat Cybersecurity Club

Jan 2021 - PRESENT

- Contributed to weekly lectures in cybersecurity and completed club's cybersecurity demonstrations

GreyHat Cybersecurity Club

MEMBER *Jan 2021 - PRESENT*

- Contributed to weekly lectures in cybersecurity and completed club's cybersecurity demonstrations