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Austin Barton

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EDUCATION

Georgia Institute of Technology Projected Graduation Date: May 2025 | Atlanta, GA

B.S. in Mathematics and Computer Science (GPA: 3.74)

Relevant Upper Coursework:

Natural Language Processing (Current); Stochastic Processes (Current); Robotics (Current); Deep Learning; Machine Learning; Statistical Theory; Math of Data Science; Database Systems; Information Theory; Artificial Intelligence; Probability Theory; Algorithm Analysis; Data Structures and Algorithms

SKILLS

Programming Languages: *Highly Proficient* in Python. *Proficient* in SQL, Java, LaTeX. *Familiar* with MATLAB, C/C++.

Libraries, Frameworks, Etc.: PyTorch, Scikit-learn, NumPy, Keras, Pandas, SciPy, Matplotlib, Seaborn, Git.

Concepts: Deep Learning, Unsupervised and Supervised Learning, Generative Models, Seq2seq Models, Computer Vision, Statistics, Data Science, AI, Databases, Data Structures, Algorithms, OOP, VCS, Agile Methodology

RESEARCH EXPERIENCE

VERTICALLY INTEGRATED PROGRAM (VIP) | Student Researcher Atlanta, GA | January 2024

- Incoming student researcher at GT FinTech Lab's VIP in Machine Learning for Financial Markets.

RESEARCH EXPERIENCE FOR UNDERGRADUATES | Researcher Raleigh, NC | May 2023 - Aug 2023

- Led research on parameter estimation and modelling at the NSF and NSA sponsored research program (REU) hosted by the Dept. of Math at NC State University. Used biologically-informed neural networks and equation learning to obtain an ODE approximation of an agent-based model with added adaptive behaviors.
- Lead author of manuscript currently submitted to the SPORA Journal of Biomathematics. Preprint is available at GitHub repository: abarton51/BINNs_EQL_Covasim. Awarded Best Poster Presentation for the REU program.

WORK EXPERIENCE

UNITED STATES MARINE CORPS | Infantry Assaultman (E-5) Camp Lejeune, NC | Oct 2016 - Oct 2020

- Served 4 years active duty and honorably separated as a Sergeant/E-5.
- Led, mentored, and collaborated with a team of 12 Marines to prioritize mission accomplishment under hazardous working conditions and stressful environments as part of Weapons Plt., Fox Co., 2/6 in support of riflemen for numerous training operations and two overseas deployments for a total of 15 months deployed.

PROJECTS

SINGLE-SHOT HYPERSPECTRAL DEEP DECONVOLUTION CS 4644, Deep Learning, Georgia Tech | Aug 2023 - Dec 2023

Course project on Single-shot Hyperspectral Deep Deconvolution. Our proposed method aims to enhance the quality of hyperspectral images by mitigating distortions inherent in snapshot acquisitions by leveraging a blind deconvolution approach with a U-Net neural network architecture. We demonstrated models capable of restoring spectral information, even in areas with highly varying intensities, while restoring the latent sharp image.

EXPLORING MUSIC CLASSIFICATION CS 4641, Machine Learning, Georgia Tech | Aug 2023 - Dec 2023

Led a group project on music classification on two distinct datasets for two different classes - composers and genres. Created a framework in Python for audio data processing, dimensionality reduction, and supervised learning methods such as convolutional neural networks and gradient-boosted trees. Created a Jekyll-powered website for the project.

BIRD CLASSIFICATION WITH CNNS MATH 4210, Math of Data Science, Georgia Tech | Jan. 2023 - May 2023

Explored 3 distinct Convolutional Neural Network (CNN) models on a multi-class image classification task in Python using Keras. The dataset consisted of approximately 88,000 bird images belonging to 515 different classes/species.

SIMPLE RANDOM WALKS AND ENUMERATION MATH 3235, Probability Theory, Georgia Tech | Oct. 2022 - Dec. 2022

Wrote a paper surveying simple random walks under probabilistic and combinatorial perspectives. Showcased the Gambler's Ruin problem and multivariate generating functions as a path enumeration technique.

ACTIVITIES

Directed Reading Program Studied enumerative combinatorics under the guidance of a postdoctoral researcher over Fall 2022.

Georgia Tech Cycling Club Recreational mountain biking and road cycling.

AWARDS

Academic Awards
John and Susan Traendly Scholar
Zell Miller Scholar
Dean's List

Notable Military Awards
Certificate of Commendation
Meritorious Promotion
Good Conduct Medal