ATTICUS REX

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EDUCATION

Georgia Institute of Technology **May 2024 - Present**
Ph.D. Candidate – Computational Science & Engineering Atlanta, GA
National Science Foundation - Graduate Research Fellowship

Virginia Tech **May 2023**
B.S. in Mechanical Engineering, B.S. in Computational Modeling & Data Analytics Blacksburg, VA
Summa Cum Laude, Honors Laurate Diploma

EXPERIENCE

Georgia Institute of Technology **Aug 2023 – Present**
Graduate Teaching Assistant Atlanta, GA

- AE 4803 – Foundations of Scientific Machine Learning for Aerospace Engineers: contributed to curriculum development, held lectures, gave oral assessments, held office hours, and graded the first offering of this course. Supervisor: Elizabeth Qian, Ph.D.
- CSE 6040 – Graduate Computing for Analytics: held office hours & live-coding sessions, supported faculty and proctored exams. Supervisor: Richard Vuduc, Ph.D.

Cox Communications **May 2024 – Aug 2024**
Graduate Data Science Intern Atlanta, GA

- Leveraged techniques in natural language processing, time-series analysis, and data mining with AWS (Sagemaker, Athena, SQL) to uncover novel insights into how outbound SMS notifications drive digital interactions.

NAVSEA Naval Surface Warfare Center Dahlgren Division **Aug 2022 – May 2023**
Optimal Shock Damping for Improved Controllability of Antenna Test Fixture Blacksburg, VA

- Technical lead in specialized team to design and manufacture novel vibration equipment to simulate shock pulses.
- Achieved ~400% damping improvement and reduced cost by 80% compared to previous testing.

Student Athletic Academic Support Service **Aug 2019 – May 2022**
Tutor and Math Teacher Blacksburg, VA

- Academic tutor in STEM and liberal arts; held math lectures attended by dozens of student athletes.

PROJECTS

Multi-Fidelity Surrogate Modeling **Aug 2024 – Present**
Advisor: Elizabeth Qian, Ph.D. Atlanta, GA

- Creating novel regression frameworks using supervised machine learning with kernels, to approximate expensive simulations when data from faster approximations are available. Analyzing existing uncertainty quantification and reduction techniques and developing information theory-based interpretations.

Best Buy Project Week 2024 Competition **Jan 2024**
First Place Winner Atlanta, GA

- Utilized data mining, dimensionality reduction, parallel computing, and visualization to develop a deep learning model that accurately categorized over 500,000 customer service transcripts.

Echo State Networks and Noisy Differentiation for Dynamical Systems Modeling **Aug 2022 – May 2023**
Advisor: Serkan Güğercin, Ph.D. Blacksburg, VA

- Successfully applied linearized Echo State Network models to improve chaotic dynamical system models.
- Demonstrated ~20% more accuracy than Sparse Identification of Nonlinear Dynamics (SINDy, Brunton et al.)

SKILLS & CERTIFICATIONS

Programming: Python (PyTorch, Tensorflow, Numpy, Pandas, Scikit-Learn, Dask), R, SQL, MATLAB, Julia, C/C++, Java, Git, Linux, Parallel Computing (Slurm), AWS
Computational Science: Machine learning, finite-element simulation, numerical linear algebra, algorithm development, time-series analysis, optimization, model reduction, natural language processing, Bayesian statistics
Engineering: Fundamentals of Engineering (FE Mechanical) Certified, CFD/FEA, Solidworks, Controls
Languages: English (native), Spanish (fluent)