ANNE TUMLIN

(she/her/hers)

https://atumlin.github.io/

(423)-765-8736 anne.m.tumlin@vanderbilt.edu

EDUCATION

Vanderbilt University, Nashville, TN   *Expected May 2027*
Russell G. Hamilton Scholar
Ph.D. Student in Computer Science

University of South Carolina, Columbia, SC   *August 2019 - May 2023*
Magna Cum Laude   *GPA: 3.918*
South Carolina Honors College - McNair Scholar
Bachelor of Science in Computer Science, Minor in Business Administration

RESEARCH & TEACHING EXPERIENCE

Vanderbilt University Graduate Research Assistant   *August 2023 - Present*
VeriVital and NDS Research Labs

· Researching formal methods for verification of neural networks.
· Participated in the DARPA ANSR Project focused on neuro-symbolic reasoning.
· Led research on FairNNV, a tool for formal fairness verification of neural networks.
· Leading research extending the NNV tool to support formal verification of GNNs for power system applications.

Undergraduate Research and Teaching Experience   *2020 - 2023*
University of South Carolina and NYIT

· Conducted research in ocean sensor networks, toxic comment detection, and robot pursuit-evasion, resulting in two peer-reviewed publications.
· Presented at multiple research symposiums and earned funding through the Magellan Scholar Program.
· Served as a teaching assistant for a Linux/Unix course; designed labs and supported undergraduate learning.

WORK EXPERIENCE

Summer Practicum Researcher   *May 2025 – August 2025*
Sandia National Laboratories   *Albuquerque, NM*

· Selected through the DOE CSGF program to participate in a funded research practicum at a U.S. national lab.
· Contributed to the FACETS project (Flexible, Autonomous, and Cyber-Physical Ecosystem for Trusted Security).
· Collaborated with electrical engineers and cybersecurity researchers to advance defense capabilities in real-world power systems.

PUBLICATIONS

1. Tumlin, A. M., Manzanas Lopez, D., Robinette, P., Zhao, Y., Derr, T., Johnson, T. T. (2024). FairNNV: The Neural Network Verification Tool for Certifying Fairness. *Proceedings of the 5th ACM International Conference on AI in Finance (ICAIF '24)*, 36–44. https://doi.org/10.1145/3677052.3698677

2. Serbinowska, S. S., Potteiger, N., Tumlin, A. M., Johnson, T. T. (2024). Verification of Behavior Trees with Contingency Monitors. *Formal Methods for Autonomous Systems (FMAS 2024), Electronic Proceedings in Theoretical Computer Science*, 411, 56–72. `https://doi.org/10.4204/EPTCS.411.4`

3. Aquino, M., Ortiz, Y., Rashid, A., Tumlin, A. M., Artan, N. S., Dong, Z., Gu, H. (2021). Toxic Comment Detection: Analyzing the Combination of Text and Emojis. *2021 IEEE MASS*.

4. Olsen, T., Tumlin, A. M., Stiffler, N. M., O'Kane, J. M. (2021). A Visibility Roadmap Sampling Approach for a Multi-Robot Visibility-Based Pursuit-Evasion Problem. *2021 IEEE ICRA*.

SPEAKING EXPERIENCE

- **Guest Lecture - Fairness in Machine Learning** at Vanderbilt AI Training Series, October 2024

- **Guest Lecture - Fairness in Machine Learning** for Data Science Rights and Responsibilities course, February 2025

- **Oral Presentation - FairNNV** at the 5th ACM International Conference on AI in Finance (ICAIF '24), November 2024

- **Poster Presentation - GNN Verification for Power Systems** at SPF-25, March 2025

GRADUATE COURSEWORK

- Social Network Analysis
- Algorithms for Decision Making
- Hybrid and Embedded Systems
- Automated Verification
- Advanced Artificial Intelligence
- Distributed Electrical Energy Systems
- Mathematical Data Science
- Statistical Foundations of Deep Learning
- Big Data Scaling
- Systems Theory

GRADUATE COURSE PROJECTS

- **Comparative Analysis of RL and Linear Control Methods for the Inverted Pendulum Problem** (Fall 2023): `https://github.com/atumlin/CS6376_TermProject`

- **Verifying the Robustness of FDIA Detection Models in Smart Grid Systems** (Spring 2024): `https://github.com/judydnguyen/nnv`

- **A Large Scale Data-Driven Approach to Estimating Power Generation Costs in AC-OPF Problems** (Spring 2025): `https://github.com/atumlin/DS5460_FinalProject`

LEADERSHIP AND TEAMWORK

VALIANT Attempt (Officer)   *April 2025 - Present*
Nominated officer of the student organization for Vanderbilt Lab for Immersive AI Translation, contributing to student-led efforts that support immersive AI translation research and engagement.

Computer Science Graduate Student Association (Vice President)   *August 2023 - Present*
Elected Vice President; co-founder and executive board member, supporting professional development and academic community building among graduate students.

UofSC Senior Capstone Project (Project Manager)   *August 2022 - May 2023*
Led the development of Cocky Calendar, a web app for campus events. Managed the database system and implemented a web scraping tool for event aggregation.

UofSC Chapter of Women in Computing (President)   *August 2020 - December 2021*
Promoted inclusion and leadership in tech through organized meetings, events, and outreach. Increased visibility and engagement within the CS department.

AWARDS

Department of Energy Computational Science Graduate Fellowship (DOE CSGF)   *2024*

Provost Graduate Scholarship   *2023*

Benjamin A. Gilman International Scholarship   *2022*

NYIT Research Experience for Undergraduates   *2021*

Magellan Scholar Research Grant   *2021*

UofSC Research Experience for Undergraduates   *2020*

McNair Scholarship   *2019*