RUTH HAMMOND

Linkedin Profile: https://www.linkedin.com/in/ruthjhammond

EDUCATION

Ph.D. in Computer Science *May 2028*
Thesis Advisor: **Dr. M. Hadi Amini**
Florida International University, Miami, FL USA

B.S. in Mechanical Engineering *May 2023*
Rose-Hulman Institute of Technology, Terre Haute, IN USA

Computer Science Exchange Student *Jan. - May 2022*
KTH Royal Institute of Technology, Stockholm, Sweden

TECHNICAL STRENGTHS

Programming Languages	Python, C/C++, SQL, Java, CUDA
ML/DL Frameworks:	PyTorch, TensorFlow, JAX, scikit-learn, Keras
Data Analysis & Statistical Software	NumPy, SciPy, Pandas, Matplotlib, MATLAB, R
Statistical Methods	Time series analysis, Classification, Regression, Clustering
Other Apps	MCP, SFT, LATEX, Linux, Kubernetes

WORK EXPERIENCE

Lawrence Livermore National Laboratory May 2025 - Present
Agentic AI HPC Intern .

- Developing Job-Management Agents (JMA) within MADA framework using LLM-parsed user goals to optimize HPC workflows for El Capitan supercomputer.
- Integrating an open-source workflow orchestration tool into the MADA Agentic workflow for large-scale, near-linear HPC simulations.
- Creating continuous improvement loops where agents adapt policies based on real-time feedback and experimental data from massively parallel environments.

solidlab Research Group Aug. 2023 - Present
Machine Learning Researcher .

- Designed and implemented a privacy-preserving Federated Learning framework using a Trusted Execution Environment (TEE) and quantum key-based noise injection, achieving 93% validation accuracy on the USPS dataset while mitigating side-channel attacks on edge devices.
- Developed a PyTorch-based model to predict electric vehicle (EV) charging time using CorbinFL, a privacy-preserving Federated Learning framework, enabling accurate time-series analysis without sharing raw user data across charging stations.

Los Alamos National Laboratory May - Aug. 2023
Computational Structural Dynamics Intern .

- Created end-to-end pipelines for crack identification using computer vision and acoustic resonance spectroscopy.
- Utilized data science, advanced physics principles, and statistical analysis for automated quality control to achieve 96% detection accuracy.

IBM Research May - Aug. 2022
Climate & Sustainability Intern .

- Developed predictive models using structural analysis for materials discovery, reducing materials discovery cycle time by 90%.
- Implemented systems that learn optimal material property predictions through iterative feedback from experimental validation.
- Applied advanced statistical methods to complex multi-dimensional datasets, balancing discovery efficiency with prediction accuracy.

Ethicon, Johnson & Johnson Sept. - Dec. 2021
R&D Design & Development Co-op .

- Conducted early-stage data analysis to develop LightGBM and CNN models for surgical robotics applications.
- Designed and built a custom test fixture using mechanical design and rapid prototyping to validate device performance.

SELECTED PUBLICATIONS (DURING PHD AT FIU:)

1. **Ruth Hammond**, Alexandra Murphy, Lindsay Wright, Milo Prisbey, and John Greenhall. "Acoustic Resonance Crack Detection in Thermoelectric Bi2Te3 Wafers" in International Modal Analysis Conference (IMAC XLII).
2. Ervin Moore, **Ruth Hammond**, and M. Hadi Amini. "Protecting Edge Side Channel Attacks in Quantum Federated Learning Environments" (In Progress).
3. **Ruth Hammond**, and M. Hadi Amini. " Predicting EV charging time using Privacy-Preserving Federated Learning mechanism" (In Progress).

HONORS AND RECOGNITION

1. AGI House AGENTHACKS 2nd Place Voice AI Agent Winner (2025)
2. NSF Bridge to Doctorate Fellowship (2023-2025)
3. Apple Pathways Scholar (2021-2022)
4. Google Computer Science Research Mentorship Program (2022)

SERVICE TO THE COMMUNITY

Project SHORT Co-Director of Pre-Grad Mentorship: As the Co-director of Pre-Grad Mentorship for Project SHORT, the first student-led non-profit working to shrink the socioeconomic gap in graduate school, I helped implement automation into the matching system to create over 2,000 matches between applicants and mentors and implemented systematic matching algorithms improving mentor-mentee compatibility by 85%.

Other Professional Organizations: Rewriting the Code, ShellHacks Mentor, CRA-WP, Chi Omega