

# Lexington Whalen

Graduate Machine Learning Engineer

## **SUMMARY**

- Machine Learning Research Leadership: Led interdisciplinary teams of Ph.D. and Masters students in pioneering diffusion model research, achieving 5x training efficiency improvements while preserving model quality. Experience in efficient training and inference strategies, publishing at premier computer vision conferences, with research methodologies adopted by NVIDIA for internal development. Demonstrated expertise in optimizing training and inference strategies for both state-space and transformer architectures.
- Machine Learning Engineering: Developed comprehensive evaluation and training pipelines for NVIDIA's internal diffusion-LLM projects, scaling model training from millions to billions of parameters across billions to trillions of tokens. Experience with distributed training systems leveraging thousands of GPUs with advanced parallelization strategies.
- Technical Lead on United States' THOR healthcare initiative, developing innovative tiny PyTorch models that reduced cancer detection sensor degradation by over 70%. Collaborate with researchers at top institutions like Carnegie Mellon University, Stanford, Purdue, Georgia Tech, et cetera. Present to funding representatives, assist in developing grant reports.
- Recognition: NSF Graduate Research Fellowship recipient (\$150,000 value), University of South Carolina Top Scholar Award (\$100,000+ value), and Critical Language Scholar of Japanese (U.S. Department of State, only 500 selected among 5000+ applicants).
- Technical Development: Full-stack developer for research study websites using Django/React/SQL, managing databases with thousands of participant entries. Developed and won grants totaling \$20,000+, leading teams of developers.

## **EXPERIENCE**

**Mar. 2025 – Present**

**NVIDIA (Atlanta, Georgia & Santa Clara, California)  
Efficient Deep Learning Intern**

- Train, finetune, evaluate 1-8B diffusion language models. Modify architectures and loss functions to improve accuracy-efficiency tradeoffs.
- Profile text diffusion language models (7B parameters) to identify critical latency bottlenecks during training and inference phases using PyTorch Profiler and DeepSpeed.
- Specialize in optimizing diffusion models on high-performance computing infrastructure utilizing clusters of thousands of NVIDIA A100 GPUs on SLURM-managed servers.
- Present weekly progress reports and technical findings to audiences of 20+ senior researchers and cross-functional engineering teams.

- Track comprehensive performance metrics including FLOPs reduction, memory usage, throughput, and accuracy to validate optimization strategies.
- Leading early-stage project with promising preliminary results indicating substantial efficiency improvements. Research targeted for ICLR 2026 submission, with methodologies already adopted by internal NVIDIA teams for production applications.

**Dec. 2024 – Present**

**NVIDIA (Atlanta, Georgia)**

**Data Filtering Challenge Lead**

- Led development and management of challenge website utilizing Google Analytics to track engagement and optimize user experience across 30+ participating university research teams and companies.
- Assisted in profiling of initial 400M parameter baseline model for participants, creating standardized benchmarks to evaluate submission quality.
- Designed and implemented a comprehensive evaluation framework leveraging 10B token fine-tuning datasets to ensure consistent, fair assessment of model submissions. Managed the evaluation process for participant submissions, establishing standardized performance benchmarks.
- Promoted challenge at International Conference on Machine Learning, ranked in the top 3 machine learning conferences globally with ~9,000 attendees and <25% paper acceptance rate.
- Coordinated with corporate sponsors including Lambda Labs and Turing to secure GPU resources, evaluating team submissions and managing the end-to-end competition workflow.
- Analyzed model training runs using Weights & Biases and profiled optimization potential with DeepSpeed, identifying key performance indicators.
- Curated challenge results for integration into NVIDIA's internal research roadmap, creating pathways for technology transfer from academic research to industry applications.

**Aug. 2024 – Present**

**Georgia Institute of Technology (Atlanta, Georgia)**

**Machine Learning Engineer**

- Led team of 3 Ph.D. and Masters students to design innovative methods of reducing diffusion model training time by up to 5x on average while maintaining generation quality. Method was accepted to the top conference on computer vision in the world (Computer Vision and Pattern Recognition 2025)
- Algorithm lead for United States' ARPA-H THOR healthcare initiative. Spearheaded effort to reduce cancer detection sensor degradation by over 70%, improving the lifetime of the sensors from only a few hours to several days (over a 10x improvement)
- Engineered resource-efficient machine learning architectures designed to be powered by energy from the human body.
- Collaborated with 5+ teams from top universities like Stanford, Northwestern, Carnegie Mellon, and MIT. I represent Georgia Tech.
- Travel nationally to present technical progress to federal sponsors and healthcare stakeholders, effectively communicating complex technical concepts to diverse audiences.

**Jan. 2021 – Aug. 2024**

**University of South Carolina (Columbia, South Carolina)  
Software Developer**

- Led the design and implementation of three full-stack research study websites using PHP/Django/React/SQL, enabling efficient data collection and analysis for research studies.
- Architected and managed SQL databases of thousands of participant entries, ensuring data integrity, security compliance, and optimized query performance.
- Led the development of competitive federal and state grants applications, winning \$20,000+ in funding.
- Led teams of 4+ developers, providing mentorship and technical guidance while meeting KPIs and performance targets.
- Implemented advanced machine learning techniques including clustering algorithms, random forests, and neural networks to analyze patient data, identify patterns, and develop predictive models that enhanced research outcomes and clinical insights.
- Developed an innovative automated language similarity analysis system using numpy and pandas that reduced document comparison time by approximately 99% (from 2-3 days requiring bilingual experts to under 10 minutes using basic computing resources), revolutionizing linguistic research efficiency through advanced natural language processing techniques. Published in Linguistic Society of America, a top linguistics conference.

**EDUCATION**

- Georgia Institute of Technology August 2024 – Present  
Graduate Researcher of Efficient Machine Learning Systems
- University of South Carolina January 2024 – August 2024  
Degree: Accelerated Master's in Computer Science
- University of South Carolina January 2021 – December 2023  
Degree: Bachelor's in Computer Science

**QUALIFICATIONS**

- Japanese Language Proficiency Test (N1)

**TECHNICAL SKILLS**

- Programming Language: Python, Java, JavaScript, HTML/CSS, C/C++, R, PHP, Rust
- Cloud & Container: Docker, SLURM
- Machine Learning: Pytorch, Tensorflow, DeepSpeed, Weights & Biases (WandB)
- Web: React, Node, Django, Symfony, SQL
- Data Science: Numpy, Pandas, Scikit-learn, Matplotlib
- Database: SQL, MongoDB
- High-Performance Computing: Experience with running large-scale GPU workloads

**LANGUAGE SKILLS**

- English – Native Level
- Japanese – Professional Level (N1 Certified)
- Mandarin – Intermediate Level