

Ritarka Samanta

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Education

Carnegie Mellon University

Master of Science in Artificial Intelligence Engineering

Coursework: Probability and Statistics, Systems and Toolchains for AI, Deep Learning, Computer Vision

Dec 2025

Pittsburgh, PA

Georgia Institute of Technology

Bachelor of Science in Computer Engineering, 3.9/4.0 – Summa Cum Laude

Coursework: Data Structures and Algorithms, Operating Systems, Computer Architecture, Operating Systems

Dec 2023

Atlanta, GA

Skills

Programming: C, C++, Python, Java, JavaFX, CUDA, x86, Bash, C#, WPF, OpenMP, Open MPI

Software: PyTorch, Apache Spark, Kafka, Hadoop, Numpy, Pandas, GCP, PostgreSQL, NoSQL, Linux, Docker, Git, Jenkins

Hardware: FPGAs, Verilog, VHDL, RTL, Arduino, Raspberry Pi, Embedded Systems, Cadence Virtuoso

Misc: Distributed Computing, Parallel Computing, Operating Systems, Statistics, Linear Algebra, Machine Learning

Experience

Keysight Technologies

Software Engineer II

Jan 2024 – Aug 2024

Colorado Springs, CO

- Developed algorithms in to configure extremely sensitive hardware chips
- Designed multi-threaded low-level code to support oscilloscope bandwidth of over 100 GHz
- Refactored over 100,000 lines of code to support faster compilation and easier debugging while ensuring minimal downtime
- Published invention titled “*State Search and Centering in Noisy Periodic Data*” internally. Awarded \$1200 as recognition

Cadence Design Systems

Software Engineering Intern

May 2023 – Aug 2023

San Jose, CA

- Automated finding differences in hardware models using Python
- Redesigned C++ code and removed dependencies on boost library. Developed custom data-structure and algorithm libraries
- Added feature to take snapshots of hardware memory map

Northrop Grumman

Hardware Engineering Intern

Jun 2022 – Aug 2022

Baltimore, MD

- Automated testing of hardware network board and made debugging times 24 times faster
- Created novel failure detection algorithm to accurately specify which devices had problems
- Refactored C++ application to decrease initialization times of large codebase, sped up testing by 5 times

Research

Biometrics Center

Sep 2024 – Present

- Training machine learning models to detect and classify items in a grocery cart for immediate checkout
- Wrote PyTorch code to train on multiple GPUs for faster training
- Working with technologies such as PyTorch Lightning, Yolo, RetinaNet, AdaFace, etc.

High Performance Architecture Lab – Georgia Tech

Aug 2023 – Jan 2024

- Identified flaws in sponsor codebase, presented report on problems and wrote code to improve latency
- Built a DNN using PyTorch to speed up model selection by 1000 times

Share Lab – Georgia Tech

Aug 2022 – May 2023

- Devised a tool to enable source-level Vitis HLS debugging, improving the development of complex hardware designs
- Composed architecture and coordinated three multi-functional teams to manage product development
- Published a paper in IEEE Xplore titled “[Cask HLS: A Better Development Tool for Vitis HLS](#)”

Projects

Deep Learning Accelerator – Senior Design, Georgia Tech

Jan 2023 – Dec 2023

- Organized and trained a group of 6 people to accelerate machine learning algorithm using FPGAs
- Designed parallel hardware in Vitis-HLS to enable faster computation and reduced latency

Terrain Traversability GAN – Class Project

Dec 2024

- Trained a Generative Adversarial Network (GAN) to clear hazy terrain data
- Significantly improved terrain traversability models and algorithms for autonomous vehicles

Operating Systems Development – Class Project

Jan 2023 – May 2023

- Implemented core OS features such as kernel threading, file systems, copy-on-write, schedulers, and more