

Abhishek Satpathy

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EDUCATION

University of Virginia

Charlottesville, VA

B.S. Computer Science, B.A. Mathematics - GPA: 4.0

Aug 2023 – May 2027

- Relevant Coursework: Machine Learning, Reinforcement Learning, Algorithmic Economics, Data Structures and Algorithms II, Computer Systems and Organizations II, Parallel Computing, Probability, Linear Algebra.

EXPERIENCE

Carnegie Mellon University - REUSE Research Intern

Pittsburgh, PA

ML Security Research

May 2025 – Present

- Developed methods to enhance reasoning in LLMs through Tree-of-Thought prompting, Retrieval-Augmented Generation (RAG), and LoRA fine-tuning for threat modeling in ML pipelines (Advisor: Prof. Christian Kaestner).
- Implemented evaluation frameworks for autonomous security agents focused on identifying and analyzing threats in machine learning systems.

Forge

Richmond, VA

Director of Engineering

Aug 2024 – Present

- Led a team of 3 engineers to develop and maintain applicant matching algorithms and a personalized resume builder platform serving 500+ active users, utilizing Next.js, Firebase, and Golang.
- Implemented advanced authentication and security protocols, including OAuth 2.0, Firebase Authentication, and robust Content Security Policies; automated deployment with GitHub Actions, reducing deployment latency by 90%.

University of Virginia

Charlottesville, VA

Research Assistant

Jan 2024 – Jan 2025

- Developed a novel graph transformer architecture improving accuracy in long-tail diagnosis prediction within medical datasets.
- Designed rigorous evaluation methodologies for Named Entity Recognition (NER) tasks, benchmarking multiple model architectures and aligning practices with current literature.
- Optimized wrist keypoint detection model to achieve sub-40ms latency on NVIDIA Jetson Nano through multiprocessing, asynchronous computation, and lazy inference techniques.

Voltus

San Francisco, CA

Backend Engineer

May 2024 – Aug 2024

- Enhanced a containerized ETL pipeline using Python and AWS ECS, integrating multiprocessing, robust data validation, and optimized container management practices, decreasing failure rates by 91%.
- Migrated Delta Lake data pipelines from Databricks Spark clusters to a scalable internal Go-based service, increasing throughput by 10x and reducing annual cloud infrastructure costs by \$60,000.

PROJECTS

diff-sentry.tech – DevSecOps Pipeline (React, FastAPI, Docker, GitHub Actions, Gemini)

Mar 2025

- Created a scalable full-stack DevSecOps platform to perform automated ML-based vulnerability detection and free code scanning for open-source software repositories on each commit.
- Integrated and automated deployment workflows leveraging GitHub Actions and Cloudflare Pages, ensuring continuous and secure releases.

PUBLICATIONS

DKEC: Domain Knowledge Enhanced Multi-Label Classification for Diagnosis Prediction. Proceedings of EMNLP 2024 - Xueren Ge, **Abhishek Satpathy**, et al. doi:10.48550/ARXIV.2310.07059

TECHNICAL SKILLS

Languages: Python, Rust, C, C++, Bash, Go, JavaScript.

Frameworks & Libraries: PyTorch, TensorFlow, FastAPI, LangGraph, Pandas, NumPy, SciPy, Docker, Next.js, Firebase, Slurm.