

# Ritvik Rangaraju

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## EDUCATION

### University of Maryland - College Park

College Park, MD

Bachelor of Science in Computer Science, Minor in Technology Innovation Leadership

August 2022 – May 2026

**Coursework:** Multimodal Deep Learning, Cloud Computing, Machine Learning, Advanced Data Structures, Computer Vision, Network Security, Computational Photography, Compilers, Database Design

**Extracurriculars:** Trip Leader @ Adventure Program (Hiking, Backcountry Camping, Backpacking, Caving, Kayaking), Resident Assistant @ Department of Resident Life, Photographer @ Indian Student Association

## PROFESSIONAL EXPERIENCE

### Amazon Web Services

May 2025 — August 2025

Software Development Intern

Seattle, WA

- Engineered zero-downtime update system for a managed database service, transforming cluster-wide outages into rolling updates and improving availability from 95% to 99.9% – directly affecting 60+ enterprise clients across 10,000+ clusters.
- Designed batched update architecture that parallelizes node updates, reducing downtime from 15 minutes to <30 seconds per node and reducing system overhead by 35%.
- Reduced on-call burden by 20%, saving 150+ developer hours annually by preventing update-related production node failures that previously caused 120+ customer tickets quarterly.

### Peraton Labs

June 2024 — August 2024

Software Engineering Intern

Basking Ridge, NJ

- Created an autonomous deep learning model training system for active tactical assets, improving location and network status prediction accuracy by 20%, providing operators with high-fidelity data and insights to support real-time mission planning.
- Implemented a pull-based, synchronous re-training scheme leveraging a named-data networking architecture to reduce model update latency by 35%, resulting in 15% more reliable intelligence for assets and a shared source of truth for all parties.
- Developed a compact, high-efficiency model serialization framework that reduced storage size by 40% and inference latency by 25%, enabling high-performance deployment on resource-constrained edge devices with minimal system footprint.

### SEQ Technology

May 2023 — August 2023

Software Engineering Intern

New York, NY

- Built a natural-language analytics tool that converts plain-English business questions into specialized SQL queries over client data warehouses using a database schema-aware RAG layer, reducing analyst turnaround time by 45%.
- Fine-tuned the FLAN-T5 LLM on healthcare/banking terms and entity extraction, improving conversion accuracy by 25% and raising one-shot task success to 85% via an active-learning loop from user edits.
- Delivered full-stack solution: React frontend, Express API gateway, FastAPI ML microservice, and BigQuery query execution.

## PROJECT

### Pulsar Classification with GAN-Augmented Hybrid CNN-LSTM Models

April 2024 — May 2024

- Built on the work of Connor et al. (2018) by developing a hybrid deep learning model using CNN and LSTM architectures to classify a wide variety of Pulsars – a type of Neutron star – based on signal information.
- Utilized GANs to generate synthetic data for underrepresented pulsar classes, significantly balancing the dataset and improving recall for those classes by 25% through augmented data.
- Applied noise reduction techniques including wavelet transforms, bandpass filtering, and spectral subtraction, reducing false positives by 15% and achieving 92% overall accuracy on a diverse validation set.

## TECHNICAL SKILLS

**Programming Languages:** Java, Python, C, JavaScript, Rust, OCaml, Racket, Bash, Assembly, SQL, MATLAB

**Libraries & Frameworks:** TensorFlow, PyTorch, OpenCV, NLTK, Pandas, React, Express.js, Flask, Django

**Tools & Web:** Git, Docker, Kubernetes, Linux, Node.js, MongoDB, PostgreSQL, AWS: Lambda, S3, EC2, DynamoDB