

Prisha Priyadarshini

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EDUCATION

Rutgers University - New Brunswick (Transfer from The College of New Jersey, 2023-2025)

Bachelor of Science: Computer Science & Mathematics Minor

GPA: 3.5/4.0

Expected May 2027

Relevant Coursework: Discrete Structures I-II, Data Structures, Artificial Intelligence, Linear Optimization, Calculus I-III, Deep Learning, Numerical Computing & Analysis, Elementary Differential Equations, Design & Analysis of Algorithms

TECHNICAL SKILLS & CERTIFICATIONS

- **Core ML & AI:** PyTorch, Transformers, Hugging Face, LightGBM, XGBoost, MLP, OpenCV, CNNs, Temporal Fusion Transformers (TFT), U-Net++, RAG
- **Programming Languages:** Python, C, C++, Java, JavaScript, MATLAB
- **Data & Scientific Computing:** NumPy, Pandas, GeoPandas, Matplotlib, Seaborn
- **Backend Frameworks:** Flask, FastAPI, REST APIs, Streamlit
- **Frontend Frameworks:** React, Next.js, Tailwind CSS, HTML/CSS, TypeScript, GraphQL
- **Databases:** PostgreSQL, SQLite
- **Research Concepts:** Multi-Agent LLM Systems, Multimodal Chain-of-Thought (MMCoT), Interpretable ML, Generative AI
- **Cloud, Systems & MLOps:** Git, GitHub, AWS, Azure, Docker, CI/CD, Bitbucket, Jira, RunPod, Anaconda, Vercel
- **Certifications:** AWS Certified Machine Learning — Specialty, AWS Certified Cloud Practitioner

RELEVANT EXPERIENCE

Incoming Machine Learning Intern | *Regeneron* | Troy, NY

Start May 2026

- Incoming Summer 2026

ML Research Extern (Team Lead)- Interpretable ML via Rutgers MBS Exchange | *DIMACS* | New Brunswick, NJ

Jan

2026 - Present

- Conducting an empirical study of optimal decision tree algorithms (SPLIT/RESPLIT, GOSDT, LicketyRESPLIT/SPLIT) vs XGBoost on real-world binary tabular datasets.
- Evaluating performance vs complexity tradeoffs using accuracy, recall, macro F1, confusion matrices, and model size (# leaves).
- Analyzing Rashomon set multiplicity and effects of regularization on structural vs predictive diversity.

AI Associate Developer | *Insurity* | Remote

Oct 2025-Jan 2026

- Project 1: Peril Prediction Project
 - Engineered large-scale geospatial preprocessing pipelines (6M+ rows) integrating climate variables with peril events through time alignment, spatial filtering, and feature engineering using Python, Pandas, and GeoPandas.
 - Built and evaluated LightGBM-based multi-class peril classifiers; applied SMOTE class balancing, increasing accuracy and F1 score by ~10%.
 - Experimented with a Temporal Fusion Transformer (TFT) model, modeling seasonal dependencies via cyclical week encoding and trained GPU-accelerated PyTorch models in a managed Anaconda environment on NVIDIA RTX hardware.
- Project 2: Computer Vision Project
 - Developed a geospatial change-detection system for before/after satellite imagery using OpenCV, CNN and Transformer architectures including U-Net++ for high-resolution segmentation.

AI Researcher | *Algoverse* | Remote

June 2025-Present

- Project 1: DynaStride: Dynamic Stride Windowing with MMCoT for Instructional Multi-Scene Captioning.
 - Contributed to a hierarchical scene-captioning pipeline integrating dynamic stride window selection, multimodal chain-of-thought (MMCoT) reasoning for temporally coherent caption generation.
 - Designed and implemented evaluation frameworks (BLEU-4, METEOR, CIDEr, BERTScore) and conducted ablation studies on frame sampling strategies.
 - Ran large-scale YouCook2 experiments on 30 RTX A6000 GPUs and achieved 17% higher CIDEr than GPT-4o and 14% over VLLaMA-3.
 - Accepted for an oral presentation at NeurIPS 2025 (7HVU) and accepted to AAAI 2026 (AI4EDU).
- Project 2: Multi-agent LLM Deliberation on subjective questions
 - Designing a multi-agent LLM system to analyze how consensus emerges on subjective global opinion questions, leveraging the GlobalOpinionsQA and OpinionsQA dataset.
 - Building a reproducible experimental pipeline with structured agent outputs of multi-round deliberation using GPT-4.1 family, DeepSeek R1, grok 3, and Llama-3.3-70B-Instruct and creating visualizations of results with pie charts, bar charts, and line plots via Matplotlib.

Algorithms Researcher | *The College of New Jersey* | Ewing, NJ

Jan 2025-May2025

- Researched RNA secondary structure prediction algorithms (Nussinov, Zuker, LinearFold) and implemented sparse dynamic programming optimizations, running large-scale folding experiments on a SLURM HPC cluster using ViennaRNA.

PUBLICATIONS

Pham, E., Priyadarshini, P., Maliackel, A., Bandi, K., Meo, C., Zhu, K.

DynaStride: Dynamic Stride Windowing with MMCoT for Instructional Multi-Scene Captioning

Accepted to **NeurIPS 2025 (Holistic Video Understanding Workshop)** and **AAAI 2026 (AI4EDU Workshop)**.

TECHNICAL PROJECTS

- **GenreBlender (Python, PyTorch, Multilayer Perceptron, Generative AI, Streamlit)**

- Engineered a Generative AI system combining Meta's MusicGen and a 4-layer PyTorch Multilayer Perceptron (92% validation accuracy) to create and quantitatively evaluate controllable music genre blends via a weighted probability framework in a Streamlit app.

- **PocketRAG (Python, Flask, FAISS, Gemini-2.5-Flash, AWS EC2, Docker, Gunicorn, RAG, NLP)**

- Engineered a production RAG pipeline with document chunking, FAISS vector retrieval, and Gemini-2.5-Flash inference; containerized and deployed on AWS EC2 (Docker + Gunicorn) achieving sub-second latency.

PROFESSIONAL DEVELOPMENT & EXTRACURRICULARS

Mathematics Grader | *Rutgers University - New Brunswick* | New Brunswick, NJ

Dec 2025 - Present

- Grading homework and exams for Multivariable Calculus across 3 sections

Peer Tutor | *The College of New Jersey* | Ewing, NJ

September 2024-May 2025

- Provided one-on-one tutoring for Linear Algebra, Data Structures, Analysis of Algorithms, and Statistical Inference and Probability.

Recruitment Chair | *Kappa Theta Pi - Zeta Chapter (The College of New Jersey)* | Ewing, NJ

Dec 2024-May 2025

- Collaborated with the VP of Membership to welcome 10 new members into the fraternity for the Spring 2025 semester.

CS Department Volunteer | *The College of New Jersey* | Ewing, NJ

Sept 2024-May 2025

- Served as a representative for the department at key admissions events, including Lion's Day Open House and Accepted Students day.

Student Athlete | *The College of New Jersey* | Ewing, NJ

Aug 2023-May 2024

- Competed as a member of TCNJ's NCAA Division III Women's Tennis Team, balancing 20+ hours/week of practice, training, and competition with a full academic course load and earned All-NJAC Singles and Doubles recognition (2024) for athletic and competitive excellence.