

Prisha Priyadarshini

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EDUCATION

Rutgers University - New Brunswick

Bachelor of Science: Computer Science & Mathematics Minor

GPA: 3.5/4.0

Expected May 2027

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

The College Of New Jersey

Bachelor of Science: Computer Science & Mathematics Minor

GPA: 3.36/4.0

Aug 2023- May 2025

Relevant Coursework: Data Structures, Analysis of Algorithms, Operating Systems, Cryptography and Cybersecurity, Computer Architecture, Natural Language Processing, Intro to Data Science, Database Systems, Linear Algebra, Probability & Statistics, Calculus B

TECHNICAL SKILLS & CERTIFICATIONS

- **Core ML & AI:** PyTorch, Transformers, Hugging Face, FAISS, LightGBM, XGBoost, CNNs, Temporal Fusion Transformers (TFT), U-Net++, RAG
- **Programming Languages:** Python, C, C++, Java, JavaScript, PostgreSQL, MATLAB, HTML/CSS, GraphQL
- **Data & Scientific Computing:** NumPy, Pandas, GeoPandas, Matplotlib, Seaborn
- **Research Concepts:** OpenAI APIs, Multi-Agent LLM Systems, Multimodal Chain-of-Thought (MMCoT)
- **Cloud, Systems & MLOps:** Git, GitHub, AWS, Microsoft Azure, Azure AI Foundry, Docker, CI/CD, Bitbucket, Jira, RunPod, Google Colab, Anaconda, Virtual Environments
- **Research Metrics:** BLEU-4, METEOR, CIDEr, BERTScore, SBERT
- **Development Environments:** VSCode, Jupyter Notebook, Xcode
- **Certifications:** AWS Certified Machine Learning — Specialty, AWS Certified Cloud Practitioner

RELEVANT EXPERIENCE

Incoming Machine Learning Intern | Regeneron | Troy, NY

May 2026

- Incoming Summer 2026

ML Research Extern - Interpretable ML via Rutgers MBS Exchange | DIMACS | New Brunswick, NJ Jan 2026 - Present

- Conducting empirical research on whether real-world tabular datasets admit small, accurate, and interpretable ML models with a focus on model multiplicity and Rashomon sets.
- Implementing and benchmarking SOTA interpretable decision tree algorithms (SPLIT, LicketyRESPILT) against XGBoost using metrics beyond accuracy.
- Running large-scale experiments in Python/Linux using Rutgers' Amarel HPC cluster, and communicating findings through weekly research updates and a final presentation.

AI Associate Developer | Insurify | 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 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, Qwen2.5, Qwen3, MiniLM, and subcaption aggregation for temporally coherent caption generation.
 - Designed and implemented evaluation frameworks for BLEU-4, METEOR, CIDEr, BERTScore, SBERT similarity, and temporal analysis metrics; conducting ablation studies on frame sampling and aggregation strategies to validate pipeline effectiveness.
 - 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, GPT-4.1-nano, GPT-4.1-mini, 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 | TCNJ | Ewing, NJ

Jan 2025-May 2025

- Investigated classical and modern RNA secondary structure prediction algorithms (Nussinov, Zuker, LinearFold), focusing on dynamic programming optimizations and free energy minimization techniques.
- Implemented sparse dynamic programming strategies to reduce computational complexity in large-sequence folding tasks, improving scalability and pruning redundant substructure evaluations.
- Deployed large-scale experiments on a SLURM-managed HPC cluster using the ViennaRNA package; automated batch processing pipelines to benchmark folding accuracy, energy scores, and runtime across thousands of RNA sequences.

TECHNICAL PROJECTS

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

- Developed a lightweight RAG web app, enabling instant PDF summarization and Q&A through Gemini-2.5-Flash integrated with FAISS vector retrieval.
- Implemented end-to-end pipeline for document parsing, chunk embedding, and local indexing, achieving sub-second interval latency and privacy-preserving inference.
- Dockerized and deployed on AWS EC2 with Gunicorn for production reliability; designed a minimal Flask UI supporting cached multi-document access.

• Telematics UBI- Usage-Based Insurance Prototype (Python, XGBoost, AWS, FastAPI, GraphQL, Docker, React, HTML)

- Developed a full-stack usage-based insurance prototype with FastAPI backend (Docker + AWS App Runner) and React frontend (AWS Amplify + CloudFront).
- Trained and deployed an XGBoost risk scoring model with isotonic calibration for fairer premium predictions based on driver telematics features.
- Integrated AWS AppSync + DynamoDB (GraphQL) to persist driver history and fetch the last 5 entries seamlessly for the dashboard.

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
- Evaluating mathematical reasoning, correctness, and clarity with consistency and accuracy

Peer Tutor | TCNJ | Ewing, NJ

September 2024-May 2025

- Provided one-on-one tutoring for Linear Algebra, Data Structures, Analysis of Algorithms, and Statistical Inference and Probability.
- Assisted students in understanding complex concepts, solving problems, and preparing for exams.

Recruitment Chair | Kappa Theta Pi - Zeta Chapter | Ewing, NJ

Dec 2024-May 2025

- Coordinated the rush process for the spring 2025 semester to attract top talent to Kappa Theta Pi.
- Collaborated with the VP of Membership to welcome 10 new members into the fraternity.

Student Athlete | TCNJ | 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.
- Earned All-NJAC Singles and Doubles recognition (2024) for athletic and competitive excellence.

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).