

# Neeresh Perla

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## SKILLS

- **Technical Skills:** Python, Bash, SQL, PyTorch, TensorFlow, Azure, Git, Conda, LaTeX
  - **Soft Skills:** Problem-Solving, Analytical Thinking, Collaborative Teamwork and Leadership abilities
  - **Certifications:** Microsoft Certified: Azure Data Scientist Associate (DP-100), Azure Data (DP-900) and AI (AI-900) Fundamentals, Azure Fundamentals (AZ-900)
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## EDUCATION

**University of Massachusetts Dartmouth, Dartmouth**

**Doctor of Philosophy, Computer Science**

**Expected Jan 2029**

Relevant Courses: Advance Mathematical Methods, Pre-Dissertation Research

GPA: 3.967/4.0

**University of Massachusetts Dartmouth, Dartmouth**

**Master of Science, Data Science**

**Expected Dec 2025**

Relevant Courses: Advance Mathematical Statistics, Advance Data Mining, High Performance Computing

GPA: 4.0/4.0

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## EXPERIENCE

**UMass Dartmouth, Computer and Information Science**

**Research Assistant**

**Jan/2024-Jan/2027**

- Conducted research to enhance the guidance process in diffusion models, enabling more precise and effective image editing capabilities.
- Directed the development of advanced reasoning frameworks for Vision-and-Large-Language Models, tackling complex multi-modal reasoning challenges and achieving a 2.5% improvement in accuracy across all domains

**UMass Dartmouth, Data Science**

**Research Assistant & Grader**

**Jan/2023-Dec/2023**

- Optimized gravitational-wave data analysis pipeline, achieving up to 51.45% faster execution for FFTW and 61.80% for NumPy-based computations by leveraging Apple Silicon M2's architecture
- Addressed challenges in large-scale data processing and improving throughput for astrophysical data analysis, setting a new benchmark in computational performance

**Cognizant, India**

**Mar/2021-Dec/2022**

**Programmer Analyst**

- Developed and optimized SQL scripts, reducing query execution time by 30% for faster insurance data retrieval
- Designed and Implemented automation scripts, ensuring 100% accuracy in verifying the discrepancy between insurance costs and system-calculated costs, reducing manual intervention

**Cognizant, India**

**Feb/2020-Sep/2020**

**Data Engineer Intern**

- Assisted in building and optimizing a data pipeline using Apache Spark to preprocess and transform over 1 million movie records, supporting the implementation of the ALS algorithm via MLlib to improve recommendation accuracy

**WingfoTech Pvt. Ltd, India**

**May/2019-Jul/2019**

**AI Intern**

- Developed machine learning models to automate the data-driven decision-making process by improving prediction accuracy from 70% to 85%.
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## PROFESSIONAL ASSOCIATIONS

- International Conference on Learning Representations (ICLR) (2025)
- GenAI Explorers Club at UMass Dartmouth (2024)
- UMass-URI Gravity Research Consortium (U2GRC) at UMass Dartmouth (2023 - 2024)
- PyCBC Open-Source Software Package (2023)

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## PROJECTS

### PhysioNet Early Sepsis Prediction Challenge with Transformers - PyTorch, Transformers, Transfer Learning (2024)

- Utilized state-of-the-art transformer architectures to diagnose sepsis up to 6 hours before clinical onset
- Improved model utility score from 0.04 to 0.26 (550% increase) by employing domain adaptation techniques to enhance generalization across patient data from different hospitals.

### 3D Images Classification - TensorFlow, Video Vision Transformers (2024)

- Achieved 74.5% accuracy in classifying abdominal CT scans by implementing a Multi-View Transformer from scratch, incorporating cross-view attention and MLP fusion for advanced video recognition

### Image Captioning - PyTorch, Text Transformer, Vision Transformer (2023)

- Developed a Custom Image Captioning model with a pre-trained Vision Transformer for feature extraction and a custom Transformer for generating captions, and built a UI that accepts images and displays the generated captions

### Patch Attack - PyTorch, CNNs (2023)

- Decreased model performance by 5-10% by identifying CNN model vulnerabilities and manipulating key image patches using mutual information and adversarial techniques

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## PUBLICATIONS

- [1] **NK. Perla**, MI. Hossain, A. Sajeeda and M. Shao. Are Exemplar-Based Class Incremental Learning Models Victim of Black-box Poison Attacks? in Winter Conference on Applications of Computer Vision (WACV 2025) (**ACCEPTED**)
- [2] MI. Hossain, **NK. Perla**, A. Sajeeda, and M. Shao. Adversarial Attack and Defense on Vision Language Multimodal Models: A Survey. Submitted to Neural Networks (**UNDER REVIEW**)
- [3] MI. Hossain, A. Sajeeda, **NK. Perla** and M. Shao. Robust Defense Strategies for Multimodal Contrastive Learning: Efficient Fine-tuning Against Backdoor Attacks. Submitted to ACM Transactions on Multimedia Computing, Communications, and Applications (**UNDER REVIEW**)