Neeresh Kumar Perla

+1 774-518-9337 neereshkumar.nk@gmail.com nperla neeresh portfolio/neeresh

Education

University of Massachusetts Lowell **Jan. 2025 – Jan 2028**
Doctor of Philosophy in Computer Science *Lowell, United States*

University of Massachusetts Dartmouth **Jan. 2023 – Dec 2024**
Master of Science in Data Science, GPA: 3.97/4.0 *Dartmouth, United States*

Research Experience

Context-Aware Image Description Generation **Sep 2024 – Jan 2025**
Advisor: Ming (Daniel) Shao *UMass Dartmouth, United States*

- Reverse engineered theoretical research into a working system by implementing a context-aware image captioning pipeline using LLaMA, OpenAI, and DeepSeek APIs.
- Optimized Vision-Language Model (VLM) reasoning over images by leveraging generated descriptions, improving contextual understanding and image interpretation.

Fine-Grained Image Editing with Diffusion Models **Sep 2024 – Dec 2024**
Advisor: Ming (Daniel) Shao *UMass Dartmouth, United States*

- Designed novel loss functions based on theoretical research to achieve disentangled and fine-grained image editing within the latent space of diffusion models.
- Leveraged Stable Diffusion as the model architecture and employed DDPM, DDIM, and guided diffusion processes as sampling strategies to enhance attribute-specific modifications while preserving image fidelity.

Domain-Adaptive Time-Series Forecasting **May 2024 – Sep 2024**
Advisor: Ming (Daniel) Shao *UMass Dartmouth, United States*

- Improved model utility score from 0.04 to 0.26 (550% increase) by employing masked modeling and domain adaptation techniques to enhance generalization across datasets from different hospitals.

Evaluating Vulnerabilities in Continual Learning Models **Jan 2024 – May 2024**
Advisor: Ming (Daniel) Shao *UMass Dartmouth, United States*

- Identified weaknesses in class-incremental learning methods and demonstrated the effectiveness of a proposed adversarial attack, reducing model accuracy by at least 8%.

Industry Experience

Cognizant **Feb 2020 – Dec 2022**
Programmer Analyst *Hyderabad, India*

- Developed and examined SQL scripts, reducing query execution time by 30% for faster data retrieval.
- Designed and optimized automation scripts, ensuring 100% accuracy in verifying discrepancies between manual costs and system-calculated costs, significantly reducing manual intervention.

WingfoTech Pvt. Ltd, India **May 2019 – Jul 2019**
AI Intern *Hyderabad, India*

- Developed machine learning models to automate the data-driven decision-making process. **Improved prediction accuracy from 80% to 95%**, enhancing overall efficiency.

Technical Skills

Programming Languages: Python, SQL, Bash, Git, Java, C
Cloud Platforms: Azure (Data Science Associate DP-100, Data DP-900, AI AI-900), AWS
Soft Skills: Problem-Solving, Analytical Thinking, Collaboration, Communication

Professional Associations

- Reviewer for International Conference on Learning Representations (**ICLR**) (2025).
- Member of GenAI Explorers Club at UMass Dartmouth (2024).
- Researcher for UMass-URI Gravity Research Consortium (**U2GRC**) at UMass Dartmouth (2023–2024).
- Contributor to PyCBC Open-Source Software Package (2023).

Publications

- **N.K. Perla**, Y. Qin, Y.S. Zhang, and M. Shao. A Self-Supervised Learning Framework for Domain Invariant Early Prediction of Sepsis in IEEE/ACM CHASE 2025 (**Accepted**)
- **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)