# Neeresh Kumar Perla

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## Education

**University of Massachusetts Lowell** **Jan. 2025 – May 2027**
*Doctor of Philosophy in Computer Science, GPA: 4.0/4.0* *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

**MultiModal Recovery with UniTransformer** **Jan 2025 – present**
*Advisor: Ming Shao* *UMass Lowell, United States*

- Built a generative model for reconstructing missing image or text modalities using shared latent representations and a unified transformer-based diffusion architecture.
- Implemented distributed training on multi-GPUs using PyTorch Distributed for scalability.
- Enabled efficient text-to-image, image-to-text, and joint modality generation with improved sampling speed.

**Context-Aware Image Description Generation** **Sep 2024 – Jan 2025**
*Advisor: Ming 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.
- Enhanced VLM contextual grounding through optimized prompt conditioning
- 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 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.

## 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
**ML/AI Frameworks**: PyTorch, Transformers, Stable Diffusion, LLaMA, OpenAI API, Hugging Face
**Tools**: HPC Systems, Linux, Docker
**Soft Skills**: Problem-Solving, Analytical Thinking, Collaboration, Communication

## Professional Associations

- Reviewer: BMVC 2024, ICDM 2024, ICLR 2025, ICCV 2025, CVPR 2026
- 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
- **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)