Aryaman Dora Tepal

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Education

University of Massachusetts Amherst Expected Graduation: 05/2027

BS in Computer Science & Applied Mathematics, Commonwealth Honors College ***GPA:*** *3.91 / 4.0*

- **Relevant Coursework:** Data Structures, Algorithms, Robotics, Databases, Computer Architecture, Systems
- **Leadership:** President at UMass AI Club (2024–Present), Resident Assistant, UMass Run Club

Experience

Remote Hyperspectral Observers (RHO) group Sep 2025 - Present

Machine Learning Research Engineer | PyTorch, GANs, Remote Sensing *Amherst, MA*

- Leading a project to improve 1-D convolutional GANs for single spectral signature generation using CRISM data, with special emphasis on small/unremarkable spectra and thorough analysis of failure modes.
- Exploring diffusion-based generative models and spectral priors (latent/spectral diffusion) to complement/correct GAN output, enforcing physical constraints (band consistency, nonnegativity).
- Integrating generative outputs into open-set classification pipelines, including PU (positive-unlabeled) and mutual-point learning approaches, to enable discovery and clustering of unknown mineral spectra.

Forschungszentrum Jülich May 2025 - Aug 2025

Machine Learning Research Engineer | Python, PyTorch Lightning, MLflow *Jülich, Germany*

- Built large-scale data pipelines for geospatial foundation models, handling multi-terabyte datasets on GPU clusters.
- Adapted state-of-the-art models (ViT, DINOv2) for satellite data, demonstrating experience with cutting-edge, high-performance ML systems.
- Automated distributed training workflows via SLURM and MLflow, reducing experiment setup time by 70%.

Tufts University May 2024 – Aug 2024

Machine Learning Research Engineer | Github | Python, PyTorch, MATLAB *Medford, MA*

- Researched advanced computer vision methods, focusing on hyperspectral image (HSI) clustering and unmixing.
- Integrated dimensionality reduction into a diffusion learning pipeline (MATLAB, Jupyter), reducing data processing time and improving clustering accuracy by 5%.
- Optimized state-of-the-art HSI models, reducing runtime by 20% and scaling experiments to multi-GB datasets.

Salesforce August 2024 – Dec 2024

Machine Learning Engineer Intern | Github | Python, sklearn, React.js, TypeScript, SQL *Amherst, MA*

- Conducted NLP-driven sentiment analysis on customer feedback to prioritize leads and assess satisfaction, using SQL for data processing.
- Engineered a predictive analytics model to determine optimal customer outreach timing, considering product availability and impact metrics to maximize engagement and conversion probability.
- Built a predictive analytics model to assess lead conversion likelihood using sentiment scores with 91% accuracy.

Projects

Trivela | *Vision-Language Models (VLMs), PyTorch, OpenCV, Transformers*

- Developing an AI coaching system for football targeting 20%+ improvement in shooting and passing accuracy.
- Leveraging vision-language models (VLMs) to fuse video motion analysis with natural language feedback, enabling real-time, player-specific guidance.

NSFW Content Filtering for Text-to-Video Generation | Github | Poster | *Python, Phi-4, Deepseek-R1, Transformers*

- Built and implemented a content filtering pipeline for generative video systems using LLMs (Phi-4, Deepseek-R1) to detect NSFW and risky prompt content, achieving 61% accuracy on temporal risks.

Spectral Vision Transformer | GitHub | *Tech: PyTorch, Python, Docker*

- Designed a Spectral Vision Transformer for HSI classification on Indian Pines, achieving 95% accuracy through spectral-spatial patch embeddings and positional encoding; containerized with Docker and deployed on AWS.

Skills

Programming Languages: Python, GoLang, TypeScript, JavaScript, C/C++, Java, R, MATLAB
Frameworks and Tools: PyTorch, TensorFlow, React, Redux, Next.js, PHP, FastAPI, Flask, Express, Node.js, Pandas, NumPy
DevOps & Infra: AWS, Google Cloud, PostgreSQL, MongoDB, Git, Docker, MySQL