Aadit Munjal github.com/aaditmunjal | linkedin.com/in/aaditmunjal/

EDUCATION

B.S. Computer Science, University of Minnesota – Twin Cities **Expected December 2025**
GPA: 3.935 | Dean's List: Fall 2022 – Spring 2025 (All Semesters)
Relevant Coursework: Linear Algebra in Data Exploration (Graduate seminar focusing on ML research), Machine Learning Fundamentals, Computer Vision, Natural Language Processing, Artificial Intelligence, Spatial Data Science, Analysis of Numerical Algorithms, Computer Graphics, Algorithms and Data Structures, Program Design and Development, Operating Systems

SKILLS

Languages: Python, C, Java, SQL, OCaml, x86 Assembly, C++ (Basic), Rust (Basic), HTML/CSS, shell
AI/ML Concepts: Deep Learning (Transformers, CNNs, LSTMs, GNNs, Diffusion Models), Supervised/Unsupervised Learning (Classification, Regression, Clustering), GenAI and LLMs, Model Evaluation and Validation, 3D Reconstruction, Search Algorithms
Libraries/Frameworks/Tools: PyTorch, Scikit-learn, OpenCV, Pandas, Numpy, Matplotlib, Beautiful Soup, FastAPI, Git

WORK EXPERIENCE

Artificial Intelligence Intern, Walgreens | Deerfield, IL   **June 2024 - August 2024, June 2025 - August 2025**
- Developed and trained a custom multivariate LSTM model with PyTorch and utilized Meta's Prophet to forecast call volume and containment, providing data-driven insights for resource planning.
- Generated tuning reports and optimized grammar files, achieving a measurable increase in grammar coverage from 82.73% to 84.04% and reducing conversational friction.
- Validated the Automatic Speech Recognition (ASR) and Natural Language Understanding (NLU) models using human speech, identifying and documenting critical failure points in drug and infection name recognition.
- Engineered a Python-based automated testing framework for Interactive Voice Response (IVR) grammar files, featuring a CustomTkinter GUI and Git-integrated version control to streamline validation workflows.
- Created tests for Question-Answer (QA) nodes and NLU intents in Cyara with the goal of assisting with future sprints and ultimately setting up a full regression suite.
- Developed scripts to monitor prescriptions refilled by the IVR system; collaborated with stakeholders to identify and address reporting discrepancies.
- Implemented new features and resolved bugs in the in-house transcription tool based on feedback from transcriptionists.

RESEARCH AND PROJECTS

A VGGNet for the 2020s: Modernizing a Classic ConvNet | Individual Work   **October 2025 - December 2025**
- Modernized VGG16 to align with hierarchical vision transformer topology through ConvNeXt-guided structural improvements, including a custom 'VGGNeXt' block, revamped stage compute distribution, and modern downsampling via strided convolutions.
- Outperformed the VGG16 baseline on Tiny ImageNet, achieving 51.66% Top-1 accuracy (+1.24%) while simultaneously reducing computational cost by 19% (1.12 GFLOPs).

Parameter-Efficient Fine-Tuning with LoRA: A Comparative Study | Group Work   **November 2025 - December 2025**
- Benchmarked Low-Rank Adaptation (LoRA) against full-model and head-only fine-tuning on SST-2 and IMDB; demonstrated that LoRA achieves superior accuracy on SST-2 (94.27% vs 93.81%) and parity on IMDB (~95.5%), validating PEFT as a robust alternative to computationally expensive full fine-tuning.

Semantic 3D Reconstruction for Indoor AI Agents | Group Work   **February 2025 - May 2025**
- Developed an end-to-end semantic 3D reconstruction pipeline from RGB-D sequences, integrating a fine-tuned YOLO11 instance segmentation model that achieved 0.916 bounding box precision.
- Implemented the point-to-point Iterative Closest Point (ICP) algorithm from scratch to optimize point cloud alignment, initialized via OpenCV-based SIFT feature matching and Perspective-n-Point (PnP) pose estimation.

Ray Tracer | Individual Work   **January 2025 - April 2025**
- Built a ray tracer from scratch in C, incorporating Blinn-Phong illumination, shadows, textures, and recursively handling reflection and transmission of light.

ACTIVITIES

Player, UMN Counter-Strike   **February 2023 - September 2025**
- Competed in collegiate-level Counter-Strike, developing strategic thinking and performing effectively under high-pressure conditions.

Member, Avionics, UMN Rocket Team   **October 2023 - May 2024**
- Set up unit tests in Rust to ensure correct handling of the packets being received at the ground station during flight.