

# PRANCHAL AGARWAL

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## Education

### University of Massachusetts Amherst, MS in Computer Science

Aug 2023 – May 2025

Coursework: Advanced NLP, Data Science Algorithms, Statistics for ML

GPA: 3.9/4.0

### Jawaharlal Nehru Technological University, BS in Computer Science

Aug 2019 – May 2023

Coursework: ML Foundations, Neural Networks, Databases, Software Engineering

## Technical Skills

- Languages: **Python**, SQL, R, C/C++, HTML, CSS, JavaScript, TypeScript
- Framework & Libraries: **TensorFlow**, **PyTorch**, HuggingFace, Scikit-Learn, XGBoost, NumPy, Pandas, Keras, React.js
- Deployment & Infra: Docker, FastAPI, **AWS (S3, EC2)**, **GCP**, Git, Github, HPC Clusters - Unity, Slurm

## Experience

### Adobe Research (Open sourced collaboration submitted to NeurIPS 2025)

Jan 2025 – Present

*Machine Learning Researcher*

*Remote, USA*

- Engineered a simplified and efficient GenAI evaluation framework to align LLM-as-a-Judge with human judgments.
- Pioneered a **7x** computationally efficient alternative to supervised fine-tuning, trained on less human feedback.
- Improved accuracy by **~20%** on pairwise preference dataset, compared to SOTA fine-tuned LLM judge - Prometheus.
- Reduced MSE by **40%** in low-data scenarios in absolute scoring via judge model calibration and self-correction.

### SS&C Intralinks - FinTech

Oct 2024 – Dec 2024

*Machine Learning Engineer Intern*

*Waltham, MA*

- Architected an image to JSON pipeline using InternVL2, achieving **~60%** higher performance than OCR.
- Benchmarked multiple **VLMs** on complex financial document understanding tasks resulting in **92%** accuracy.
- Designed multimodal ingestion pipelines that can automate data flows with **5x faster inference** using LMDeploy.

### Manning CICS - Prof. Chuang Gan

May 2024 – Aug 2024

*Machine Learning Research Assistant*

*Amherst, MA*

- Created a multimodal 3D asset generation pipeline using **GPT-4o** with advanced textual and spatial prompting.
- Improved asset recognition accuracy by **30%** via **chain-of-thought** prompting and multi-step reasoning.

### GlobalSmart IT

May 2022 – June 2023

*Machine Learning Intern*

*Remote, USA*

- Built an end-to-end **voice assistant**, using **OpenAI API** for dynamic, context-aware conversational intelligence.
- Designed and developed an internal FAQ answering tool from meeting transcriptions, sales playbooks, product demos, emails etc, leveraging multiple models systems including NER, automatic tagging and QA chatbot.

## Projects

### RAG Question Answering System

- Designed a Retrieval augmented Generation QA system leveraging **vLLM** for low-latency, high-throughput inference.
- Leveraged **FAISS** for vector search and Mistral-7B-Instruct-v0.3 as the generation backend.
- Instituted fallback logic to reduce hallucinations by **~40%** in low-context scenarios.

### Multi-Hop Tree

- Applied the Tree of Clarifications approach to a multi-hop QA dataset, analyzing 12.7M+ web snippets across 34,689 complex questions to enhance reasoning.
- Increased zero-shot QA accuracy from **50% to 77%** using targeted clarifications, validated via ROUGE-L.

### Pratibha – Learning Management System - ReactJS, Firebase, TailwindCSS, ExpressJS

- Built and deployed a full-stack LMS platform used by **6000+ students and faculty** across 10+ departments, digitizing file submissions, grading, and feedback workflows reduced grading turnaround by **80%**.
- Implemented secure, role-based access and **SSO integration** with Google OAuth, optimized component rendering and API latency, reducing average page load time to under **300ms** via lazy loading and indexed Firestore queries.

## Achievements and Certifications

- All India Rank 15 - IEEE Xtreme15.0 - 24 Hour programming contest.
- Google Developer Student Club - AI/ML Lead: Conducted Technical Bootcamps and Hackathons.
- **AWS Academy** - Cloud Foundations