Rishabh Thapliyal

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Education

University of California San Diego | *GPA: 3.96/4* — San Diego, CA
Master of Science in Electrical & Computer Engineering | Machine Learning & Data Science — *Sep '24 - Dec '25*

Courses: Deep Generative Models, Scalable Data Systems, Systems for LLMs and AI Agents, Safety in GenAI, Optimizing & Accelerating Deep Neural Networks, Recommender Systems, Computer Vision, Statistical Learning

Indian Institute of Technology Bombay (IIT Bombay) | *GPA: 8.4/10* — Mumbai, India
Bachelor of Technology in Chemical Engineering | Minor in Artificial Intelligence & Data Science — *July '18 - May '22*

Courses: Machine Learning, Deep Learning, Machine Learning for Remote Sensing, Mathematical Optimization

Technical Skills

ML & AI Frameworks: PyTorch, TensorFlow, Transformers, Large Language Models, NLP, Generative AI, Diffusion models, Multimodal Models, Reinforcement Learning (RLHF), FAISS, Scikit-learn, Prompt Engineering
Programming & Tools: Python, C++, SQL, PySpark, Dask, Git, Postman, FastAPI
Cloud & MLOps: Docker, Kubernetes, Ray, Vertex AI, Azure AI Studio, Google Cloud Platform
Agentic frameworks: LangChain, LangGraph, CrewAI, Agno, Autogen, CodeACT

Work Experience

Qualcomm Inc. — San Diego, CA
Machine Learning/Generative AI intern | *QGenie AI Team* — *Jun '25 - Sep '25*

- Scaled and productionized **agentic GenAI applications** such as **Text-to-SQL**, **LogTalk**, & **Slide Generation** to enhance productivity across workflows by serving **50k+** employees; from prototype to beta deployment within 10 weeks

Walmart Global Tech — Bengaluru, India
Machine Learning Engineer III | *International Global Sourcing & Catalog Team* — *Jun '24 - Sep '24*

- Developed an LLM-powered **Retrieval-Augmented Generative** question answering service for Walmart associates. Collaborated with data engineering, product, and UI/UX teams to ensure seamless accessibility for end users

Machine Learning Engineer II | *Received **Return Offer** after Internship* — *Jun '22 - May '24*

- **Architected** and **deployed** a **multimodal** GenAI pipeline that transformed social media and search trends into product designs using LLMs and diffusion models, reducing the product ideation-to-design timeline by **18 weeks**.
- Developed a **multimodal embedding** model unifying product title, description, and image features (ViT, ORB) to map **200M+** items into a shared semantic space, directly improving retrieval and similarity ranking.
- Improved the catalog hierarchy for the Walmart's Mexico market by predicting product types from product titles for **10M+** un-navigable items using a max voting **ensemble model** of XGBoost, MPNet, and GPT-3.5
- Created a **content quality** scoring pipeline to score titles, images, and attributes for **50M+** products in the Walmart's Mexico catalog. Deployed this as an API on **Google Cloud Platform** and scaled it to handle **100+** requests/second

Research Projects

Unlearning Styles in Diffusion Models | *LoRAs, PyTorch, PEFT* — UC San Diego
Student Researcher | Advisor: Prof. Nuno Vasconcelos, Statistical & Visual Computing Lab — *Mar '25 - Jun '25*

- Investigated **novel** methods for controllable **image generation** by developing architectural modifications to **diffusion models** (SDXL) for selective style unlearning, extending the ZipLoRA and UnZipLoRA frameworks.
- Designed and computed **quantitative evaluation metrics** using **CLIP** embeddings and human preference scores (HPSv2) to rigorously assess style removal efficacy and content preservation.

Wildfire Smoke Detection | *Vision-Language Models, Spatial-Temporal Reasoning, PEFT* — UC San Diego
Student Researcher | Advisor: Dr. Mai H. Nguyen, San Diego Supercomputer Center | Github — *Nov '24 - Jun '25*

- Implemented **spatial gridding** and **hierarchical prompting** strategies to improve localization accuracy and quantify per-region prediction confidence, enabling fine-grained **spatial-temporal** analysis of fire progression.
- Designed and executed a comprehensive **evaluation framework** to benchmark **5+ multimodal LLMs** on a custom-curated dataset of **500+** fire sequence images and meteorological data for real-time wildfire smoke detection.
- Developed scripts for **few-shot learning** and for **fine-tunning** the multimodal LLMs using PEFT techniques (LoRAs)