

RISHABH THAPLIYAL

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Education

University of California San Diego | *GPA: 3.96/4.0* San Diego, CA

Master of Science in Electrical & Computer Engineering | Machine Learning & Data Science Sep '24 - Dec '25

Courses: Deep Generative Models, Optimizing & Accelerating Deep Neural Networks, Statistical Learning I & II

Indian Institute of Technology (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

Programming & Data Tools: Python, C++, R, SQL, MATLAB, Pandas, NumPy, Dask, Matplotlib, Seaborn

ML & AI Frameworks: PyTorch, TensorFlow, Scikit-learn, Transformers, Large Language Models, Natural

Language Processing, Deep Neural Networks, LLM Fine-tuning, Quantization, Pruning, Reinforcement Learning

Cloud & Big Data: PySpark, Hadoop, GCP (Vertex AI), Azure AI Studio, Docker, Kubernetes, MLflow, Redis

Work Experience

Qualcomm Inc. San Diego, CA

Machine Learning/Gen AI intern | QGenie AI Team Jun '25 - Sep '25

- Developing and deploying **GenAI** applications such as SQL Agents, Design Document Generators, and Code assistants to enhance productivity across workflows, leveraging **LLMs**, distributed systems, and cloud-native infrastructure

Walmart Global Tech Bengaluru, India

Machine Learning Engineer III | International Global Sourcing & Catalog Team Jun '24 - Sep '24

- Innovated a novel architecture by integrating **semantic router chains**, multiple LLM sub-chains, & **multi-prompting** techniques using LangChain to build interactive **Text-to-SQL** queries chatbot with **90%** accuracy
- 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

- Build a Global Item Mapper solution to map product reviews by using product title, descriptions, image features (HSV, SSIM, SIFT, & ORB), and attributes (brand, size, color, etc.) for **200M+** items across US, Mexico, and Canada. Scaled this pipeline across multiple **GPUs** (4 T4s) using **Dask** to reduce the model's computation time by **60%**
- 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 Experience & Projects

Unlearning Styles in Diffusion Models | *Diffusion models, LoRAs, PEFT, PyTorch* UC San Diego

Student Researcher | Advisor: Prof. Nuno Vasconcelos, Statistical & Visual Computing Lab Mar '25 - Present

- Replicated results from **ZipLoRA** and **UnZipLoRA** papers, analyzing style-content disentanglement in diffusion models
- Developing novel architectural modifications for selective style unlearning while preserving content fidelity
- Computed quantitative evaluation metrics to assess style removal effectiveness using **CLIP** embeddings & HPS-V2 score

Wildfire Smoke Detection | *multimodal LLMs, Vision transformers, CNN, LSTM* UC San Diego

Student Researcher | Advisor: Dr. Mai H. Nguyen, San Diego Supercomputer Center Nov '24 - Present

- Compared **LLaVA**, **Llama**, and **Qwen2.5** models; and set up LLaVA model on expanse to finetune on fire sequences
- Developed scripts for **few-shot learning** and for **fine-tuning** the Qwen2.5 MLLM using PEFT techniques - LoRA

KV Cache Implementation | *Transformers, Llama model, Optimization* UC San Diego

Course Project | Course: ECE226 Feb '25 - Mar '25

- Implemented KV Cache in transformer decoder from scratch, analyzing memory-performance tradeoffs through inference time and memory usage benchmarks. Validated implementation by computing **perplexity** scores on multiple datasets

Achievements

- Certifications:** [GenAI with LLMs](#), [Transformers](#), [Computer Vision](#), [Introduction to Deep Learning](#), [NLP](#)
- Leadership/Team Work:** IITB Cricket Team Captain, Academic Mentor, IITB Placement Team, TA for Physics