NIKET JAIN

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**EDUCATION**

**Carnegie Mellon University (CMU) | School of Computer Science Pittsburgh, PA**

Master of Computational Data Science - GPA: 3.96/4.0Aug 2024 – Dec 2025

*Selected Coursework*: Introduction to ML, LLM applications, Cloud Computing, Deep RL, LM Inference, DL Systems

*Teaching Assistant:* Mathematical Foundations of ML, Computational Foundations of ML, Interactive Data Science

**Vellore Institute of Technology (VIT)** **Vellore, India**

Bachelor of Technology in Computer Science and Engineering - GPA: 8.96/10.0 Jul 2018 - May 2022

**EXPERIENCE**

**Honeywell Inc. Atlanta, GA**

*Machine Learning Intern | Honeywell Forge Team* Jun 2025 – Aug 2025

* Optimized sentence-transformer inference **2×** via ONNX export, knowledge distillation, and Kubernetes HPA with PVC caching, accelerating client onboarding to the data fabric platform for building sensor analytics.
* Built multimodal RAG agent with MCP server for **native image-doc processing**, replacing chunking/OCR workflows and improving generation quality by **35%**, enabling industry engineers to better process and understand maintenance documents.
* Designed random forest–based agitator fault detection agent, **winning company hackathon** and cutting maintenance costs **41%** through predictive scheduling optimization.

**Carnegie Mellon University Pittsburgh, PA**

*Research Assistant | Language Technologies Institute | Advisor: Prof. Carolyn Rose* Jan 2025 – May 2025

* Authored and benchmarked a novel 150-instance dataset for image-guided webpage code editing, establishing state-of-the-art baselines using GPT-4o/4.1, QwenCoder, and QwenVL-32B (0.7686 similarity).
* Designed agentic workflow with QwenVL-32B + QwenCoder-32B (served with vLLM), strategically decomposing UI modification tasks to target a 40% speedup in code editing.

**UBS Mumbai & Pune, India** *Software Engineer* **|** *Credit Risk Insights Team*Jul 2022 - Jul 2024

* Developed core modules of the Nucleus document processing system integrating OpenAI GPT-3.5 APIs for OCR, extraction, and summarization, reducing manual review time by 87.5% across 500+ financial documents.
* Engineered performant, fault-tolerant Java-based ETL pipelines using Kafka to aggregate daily credit risk transactions, reducing data latency by 60%.

*Software Engineer Intern | Business Automation Team* Jan 2022 – Jul 2022

* Built RPA bots with Python and Alteryx, automating data workflows and improving integration with data science pipelines.

**National Solar Observatory Boulder, CO**

*Research Intern* May 2020 - Jun 2020

* Conducted data wrangling, power-spectral analysis, and visualization of solar data, uncovering subsurface magnetic activity linked to solar cycle behavior and space weather events. Work published in **The Astrophysical Journal Letters**. [[paper](https://iopscience.iop.org/article/10.3847/2041-8213/ac3de9/meta)]

**PROJECTS**

**Neural Network Backend Accelerator (needle)** | CMU **Sept 2025**

* Engineered a deep learning system (PyTorch clone) with autodiff, standard modules (Linear, Conv, TransformerLayer), and optimized backends for CPU and CUDA for sparse matrix operations.

**LLM-Based Data Rewriter for DCLM Pre-training |** Advisor: Prof. Chenyan Xiong | CMU **Sept 2025**

* Designed a data-centric LLM rewriter to progressively replace high-impact heuristic cleaning filters (e.g., page length, repetition) in the DCLM pre-training data construction pipeline.
* Set up and benchmarked the DCLM training/evaluation pipeline on cloud accelerators for comparison and analysis baseline filter methods.

**Data Attribution Benchmark for LLMs |** Advisor: Prof. Chenyan Xiong | CMU **Apr 2025**

* Benchmarked 8+ data attribution methods (LESS, MATES, gradient-based)across 3 LLM tasks (training data selection, toxicity filtering, factual attribution) with modular pipeline supporting models from Pythia-1B to Llama-3.1-8B.
* Ran large-scale evaluation showing no method dominates; simple baselines matched gradient methods at significantly lower computational cost (up to 11× reduction in FLOPs). Released Hugging Face leaderboard with community submissions and pre-trained checkpoints, cutting evaluation burden **70%**. Work accepted at **NeurIPS 2025 Datasets and Benchmark Track**. [[paper](https://arxiv.org/abs/2507.09424)]

**Cloud-Native Scalable Microservice for Twitter Analytics (1TB+ ETL, Kubernetes, REST)** | CMU **Apr 2025**

* Designed, built, and deployed a fault-tolerant microservice architecture on a self-managed Kubernetes cluster (Helm, CI/CD), processing >1TB of raw data and sustaining 100K+ real-time HTTP requests.

**Enhancing LLM Math Solving Abilities via Code Generation** | CMU **Sept 2024**

* Implemented distributed QLoRA PEFT of Llama (3B) & Qwen (7B) models using data parallelism across four GPUs, achieving **4**× **faster training speed** with increased batch sizes and accelerated training. Outperformed base models with improved perplexity (1.28) and accuracy (0.68) vs. zero/3/10-shot baselines.

**SKILLS**

* **Programming Languages & Databases** - Python, SQL, Java, R, Scala, C++, MySQL, MongoDB, PostgreSQL, Redis
* **Tools** - Git, Anaconda, Azure, AWS, GCP Vertex AI, Databricks, Langgraph, Langsmith, Terraform, Helm, GitHub Actions, HPC (SLURM), Maven, Kubernetes, Docker, MCP Inspector, UV, SonarQube
* **Frameworks & Libraries** - PyTorch, TensorFlow, Hugging Face, vLLM, PySpark, MLFlow, Onnx, Ray, Accelerate, FastAPI, Flask, Django, OpenCV, NumPy, Pandas, scikit-learn, PyTorch Lightning, LangChain, MCP, CUDA, Kafka, Samza