Riddhimaan Senapati

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Education

University of Massachusetts Amherst — Amherst, MA
M.S. in Computer Science, Data Science & AI Concentration; GPA: 3.90/4.0 — *Expected Dec 2027*
- Manning College of Information and Computer Science

University of Massachusetts Amherst — Amherst, MA
B.S. in Computer Science, Summa Cum Laude*; GPA: 3.997/4.0* — *Dec 2025*
- Honors thesis: "Fortifying LLM Relevance Judgements against Query Injection Attacks"
- AWS Certified AI Practitioner, AWS Certified Cloud Practitioner
- Relevant Coursework: Algorithms for Data Science, AI Alignment, Systems for Deep Learning, Software Engineering, Practice & Application of Data Management, Intro. to Simulation

Experience

Research Intern — Feb 2026 – Aug 2026
Graphite Growth, Inc. — *Amherst, MA*
- Investigating whether retrieval-augmented generation collapses when its own AI-generated answers re-enter the retrieval corpus ("RAG collapse"), mentored by Graphite's Chief AI Officer
- Built a Python vLLM/LiteLLM serving and evaluation stack (local, HTTP-server, and API back-ends; an LLM-as-judge harness; text- and entity-level collapse metrics) and orchestrated 100+ dual-GPU SLURM jobs sweeping a 1,400-question benchmark at 10 samples/round across up to 30 recursive rounds
- Built a GEPA reflective prompt-optimizer with an LLM entity-clustering collapse metric and ran multi-objective Pareto search (anti-collapse × answer quality); no optimized candidate beat the already near-Pareto-optimal production seed prompt
- Replicated the HotpotQA distractor benchmark (Yang et al., EMNLP 2018) and shipped an agentic-RAG variant with a model-driven `retrieve()` tool, hardened for multi-model sweeps via async concurrency limits, backoff retries, and tool-call fallbacks

AI & AWS Intern (Hybrid) — Apr 2025 – Sept 2025
AI for Commonwealth of Massachusetts (Mass.Gov) — *Amherst, MA*
- Built a RAG chatbot (Streamlit, LangChain, AWS Bedrock) for the UMass Unity HPC & AI platform serving 500+ users, backed by an event-driven AWS Lambda + EventBridge pipeline refreshing 164+ documents weekly into a Bedrock Knowledge Base; presented to the Governor of Massachusetts
- Implemented Anthropic-style contextual retrieval via a custom-chunking Lambda and benchmarked four Bedrock models (Claude, Llama, Amazon Nova) on cost, latency, and accuracy to select the production model
- Implemented a CI/CD pipeline with GitHub Actions, Docker, and AWS CloudFormation, deploying and managing a RAG application on AWS ECS with 99.99% uptime; improved accessibility and reduced response time by 30%

AI/ML Intern (Onsite) — Dec 2023 – Jan 2024
LTIMindtree — *Chennai, India*
- Optimized the Azure OpenAI API to convert SQL queries between formats for a SQL Server to Microsoft Fabric migration, benchmarked over 1,000+ queries, improving query development time by 25%

Projects

Selected Projects | *FastMCP, CLIP, Supabase, PyTorch, GEPA* — Fall 2024 – Spring 2026
- **Unofficial Hacker News MCP/CLI**: Published to PyPI a dual-interface Hacker News client: a Typer CLI plus a FastMCP server exposing 6 typed tools over one shared async `httpx` client; CI matrix across Python 3.10–3.13 with tokenless OIDC publishing and 14 network-mocked tests
- **Recuvia**: Built a semantic image-search platform (CLIP embeddings, Supabase pgvector, Row-Level-Security auth); merged upload, embedding, and vector-DB insert into one cached serverless call to fit Vercel's free tier
- **Open-Source (LangFair, CVS Health)**: Merged an upstream PR into CVS Health's LLM bias/fairness library and added Python 3.13 support

Technical Skills

AI/ML & LLM: LangChain, vLLM/LiteLLM, Hugging Face, PyTorch, RAG, LLM-as-judge, MCP/FastMCP, pgvector/FAISS, embeddings, GEPA
Languages: Python, TypeScript, Java, SQL, JavaScript
Cloud & MLOps: AWS (Bedrock, SageMaker, Lambda, ECS, S3, CloudFormation), Docker, GitHub Actions, SLURM/HPC, Linux
Web & Tools: React/React Native, Next.js, Node.js, FastAPI, REST API, Supabase, MongoDB, Git, Tableau