Aritra Mazumder

Salt Lake City, UT | aritra741@gmail.com | Portfolio | Linkedin | Github | +1-385-235-9286

Education

University of Utah — Aug '25 – Present
Ph.D. in Computer Science – Advisor: Dr. Anna Fariha — *GPA: 4.00/4.00*

Research Papers

• 1st author ○ 2nd author

- AgentCollabBench: Diagnosing When Good Agents Make Bad Collaborators. ***NeurIPS 2026***.
- QuWARTS: Query Workload Aware Relational Table Synthesis from Unstructured Text. ***VLDB 2026***.
- AtomSQL: Interactive Disambiguation of NL-to-SQL via User-Guided Atom-Level Alignment. ***VLDB 2026***.
- AgentCheck: A Reproduce-Intervene-Mitigate Workbench for LLM Agents over MCP. ***EMNLP 2026***.
- ○ Learning What Not to Forget: Long-Horizon Agent Memory from a Few Kilobytes of Learning. ***EMNLP 2026***.

Talks

- Talk on multi agent evaluation in **Kaggle** Bench Summit - invited by **Google DeepMind** (2026)
- Talk on agent evaluation - invited by **Microsoft AI** (upcoming - 2027)

Achievements

- **VLDB 2026**: **Best Demonstration Award – Honorable Mention** for **QuWARTS**. Conference awards
- **Qdrant** Vector Space Day Hackathon 2026: **Global champion**. Announcement
- International AI Agent Olympics Hackathon: **Second runner-up** out of **2,300+** people (**Google DeepMind award**).
- Won **Lambda Cloud Research Grant** for **QuWARTS**.
- Ranked **Candidate Master** on Codeforces (max rating **1932**, **Top 0.2%** globally out of **1.3M+** users, Profile).
- **ICPC Asia West Finalist 2021** – **5th place** (top 0.2%) at ICPC Dhaka Regional 2021 out of **2500+** teams.
- **6-star** on CodeChef (max rating 2244) – Top 10 nationally, **top 0.01%** globally out of **1M+** users. Profile

Work Experience

Askturing.ai – Senior Software Engineer – Remote, California — Feb '25 – May '25

- Architected and deployed production **NL2SQL RAG pipeline** using **LangChain** and **LangGraph**.
- Engineered legal-tech case resolution system with **Neo4j knowledge graphs**, processing complex relationship analysis across 100K+ legal documents.
- Optimized RAG retrieval pipeline latency by **60%** through parallel computation and semantic chunking improvements.
- Implemented multi-tool **AI agents** with capabilities for web search, code execution, and vector-based retrieval.

Projects

COSMOS-Q | *Python, Qwen, pgvector, MCP, React, Alibaba Cloud*

- Architected a cognitive memory layer for long-horizon agents with four mechanisms: **RTR** (Retrieval-Triggered Reconsolidation), **UACP** (Utility-Aware Context Packing), **IAAF** (Interference-Aware Adaptive Forgetting), and **ASC** (Asynchronous Schema Consolidation).
- Engineered **pgvector ANN** retrieval over **text-embedding-v3**, exposed memory ops as **MCP** tools over SSE, and deployed on **Alibaba Cloud** (**ApsaraDB RDS** + **Function Compute**).

MemoryAtlas | *Qdrant, FastAPI, PyTorch, React Three Fiber, BGE, Marengo* | **Qdrant Hackathon 2026 Global Champion**

- Built a multimodal memory system on **Qdrant** with **6 named vectors** per entry (**BGE** semantic, **GoEmotions**, **Marengo** audio, spaCy linguistic, dissonance) and **4** per trajectory, fused via weighted multi-vector search.
- Engineered recovery retrieval with Qdrant's **Recommend API** (negative examples + datetime filters), a custom **PyTorch** trajectory transformer for spiral matching, and a graduated 3-stage intervention rendered in **React Three Fiber**.

FindResearch.online | *Next.js, TypeScript, DistilBERT* | ***1000+** monthly users across **20+** countries*

- Research paper aggregation platform with **AI-powered insights** using **DistilBERT** transformers for automatic paper summarization.
- Implemented **BM25 relevance ranking** and advanced filtering.

Leadership

Hivemind Research Organization
Founder & Technical Lead — *May '25 – Present*

- Coordinate weekly meetings, assign research tasks, and oversee multiple ongoing research projects across institutions including **UMBC**, **UMich**, **UVA**, **ASU**, and **UTD**.

Fatima Institute for Global AI Research
Mentor — *Fall '26 – Present*

- Conduct research in **AI safety**; currently mentoring **3 FIGAR fellows**.