

Ankush Agarwal

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RESEARCH SUMMARY

Applied Researcher in NLP, LLMs, and Knowledge Graphs, specializing in retrieval-augmented reasoning, multi-hop QA, synthetic data pipelines, and empirical evaluation. Lead author of top-tier publications (ACL, NAACL, EMNLP) with experience releasing benchmarks, filing patents, and building AI solutions for enterprise applications.

EDUCATION

- **Indian Institute of Technology, Bombay** Jul 2020 – Jun 2023
MS by Research — Computer Science and Engineering; GPA: 8.79
Thesis: Synergy of Large Language Models and Knowledge Graphs for Question Answering
- **International Institute of Information Technology, Bhubaneswar** Jul 2016 – Jun 2020
B.Tech — Computer Science and Engineering; GPA: 7.61

TECHNICAL SKILLS

- **Languages:** Python (Advanced), C++, SQL, Bash Scripting, LaTeX
- **Frameworks & Libraries:** PyTorch, TensorFlow, Hugging Face (Transformers, TRL, PEFT), LangChain, Neo4j
- **Core Competencies:** LLM Fine-tuning (SFT), RLHF (DPO, GRPO), RAG / KG-RAG, Multi-hop QA, Agentic Workflows, Synthetic Data Generation, Prompt Engineering
- **Tools & Platforms:** Docker, Git, vLLM, Weights & Biases, Linux/Unix Environments

PROFESSIONAL EXPERIENCE

Fujitsu Research, Bangalore Jul 2023 – Present
Senior Researcher

- **Enterprise AI Orchestration & Agent Training:**
Built a full-stack solution connecting enterprise APIs (GitHub, OwnCloud) to a synthetic data pipeline for agentic training.
 - Developed **EnterpriseBench** (accepted at **EMNLP 2025**), a framework simulating enterprise tasks to generate high-quality environment trajectories.
 - Utilized synthetic data for SFT and RL-based training (DPO, GRPO) of local models (e.g., Qwen3-8B); evaluation showed performance competitive with GPT-4o on enterprise workflows.
 - Framework adopted as a corporate-level full-stack solution; extended research on agentic workflows is under review at **ICML 2026**.
 - Deployed scalable chat platform with MCP servers to automate routine employee workflows.
- **Knowledge Graph-RAG & Reasoning Framework:**
Developed technology to transform unstructured text into structured Knowledge Graphs, connecting edges to enable multi-hop reasoning for enterprise queries.
 - Core research published as **HOLMES (ACL 2024)** and **Hybrid Graph QA (NAACL 2025)**.
 - *PoC 1 (Risk Assessment)*: Built a system for assurance teams to automate risk identification from document sets, supporting internal audit processes.
 - *PoC 2 (Heathrow Airport)*: Collaborated with Fujitsu Europe to build a local search system integrating domain-specific KG+LLM reasoning; outperformed Google Search by **20%** on 200 human-crafted queries.
- **Fine-Grained Document Understanding:**
Designed a document QA framework with visual-text alignment and patch-based strategies (published at **ACL 2025**) to precisely extract “needles” from complex visual documents.
 - Optimized system achieved **20% accuracy improvement** over standard baselines with a favorable speed-accuracy trade-off.
 - Technology directly executed and integrated into the client system, facilitating the **Fujitsu-Daikin partnership deal** by demonstrating superior processing of Daikin’s technical documents.

PUBLICATIONS & PATENTS

- **EnterpriseLab: A Full-Stack Platform for Developing and Deploying Agents in Enterprises**, Under Review at NeurIPS 2026.
- **Can LLMs Help you at Work? A Sandbox for evaluating LLM Agents in Enterprise Environments**, EMNLP Main 2025. <https://ast-fri.github.io/EnterpriseBench>

- **Finding Needles in Images: Can Multi-modal LLMs Locate Fine Details?**, ACL Main 2025. <https://aclanthology.org/2025.acl-long.1152.pdf>
- **Hybrid Graphs for Table-and-Text QA using LLMs**, NAACL Main 2025. <https://aclanthology.org/2025.naacl-long.39/>
- **HOLMES: Hyper-Relational KGs for Multi-hop QA using LLMs**, ACL Main 2024. <https://aclanthology.org/2024.acl-long.717/>
- **KITLM: Domain-Specific Knowledge InTeGration into LMs**, ICON 2023. <https://aclanthology.org/2023.icon-1.20/>
- **There is No Big Brother or Small Brother: Knowledge Infusion in Language Models for Link Prediction and Question Answering**, ICON 2022. <https://aclanthology.org/2022.icon-main.26/>
- **Knowledge Graph - Deep Learning: A Case Study in QA for Aviation Safety**, LREC 2022. <https://aclanthology.org/2022.lrec-1.673/>
- **Hyper-Relational Knowledge Graph for Question Answering**, Patent Application No. 202411044331
- **Graph-Driven Retrieval for Table-Text Query Answering**, Patent Application No. 202411100498
- **Automated Evaluation Task Generation for External LLM Agents**, Patent Application No. 202511108271

SELECTED ACADEMIC PROJECTS

- **Aviation Safety Search Engine (Master's Thesis Project)** IIT Bombay
Advisor: Prof. Pushpak Bhattacharyya; Sponsored by Ministry of Education (IMPRINT-2) & Honeywell Inc.
 - Designed a domain-specific intelligent search engine for aviation safety manuals using Knowledge Graphs combined with deep learning models (BERT, GPT-3).
 - Developed a hybrid KG + GPT-3 QA system achieving **85.3% accuracy** on real-world aviation datasets, outperforming baseline approaches by 12%.
 - Presented research findings at **LREC 2022**; system projected to reduce aircraft maintenance costs by **40%** through intelligent information retrieval.

PROFESSIONAL SERVICE & LEADERSHIP

- **Reviewer:** ACL Rolling Review (ARR) 2022–Present, ACL 2025, EMNLP 2025, NAACL 2025, ICML 2026, NeurIPS 2026.
- **Mentorship:** Guided research interns and team members, leading multiple projects to completion at Fujitsu Research that directly resulted in successful enterprise deliverables.
- **Invited Talks & Presentations:**
 - Delivered technical sessions on “KG-RAG Solutions” and “Reinforcement Learning for Agents (GRPO)” to Fujitsu Global Research teams.
 - Presented research findings at major AI conferences (ACL, NAACL, EMNLP, LREC) and to the Ministry of Education, India.
- **Industry Engagement:** Demonstrated Fujitsu’s AI technologies at the Fujitsu India Tech Open House; engaged with AI industry leaders and global analysts (e.g., Gartner) to showcase technical capabilities.

ACHIEVEMENTS & RECOGNITION

- **EnterpriseBench** accepted at EMNLP 2025; nominated for **Best Resource Paper Award**.
- Received **SAC Highlights Award (Top 1%)** at ACL 2025 for “Finding Needles in Images”.
- **Best Researcher Award**, FRIPL-AI Team (2024, 2025) - Recognized twice for outstanding contributions.
- **Fujitsu Research India Grand Award** (2024) - For Knowledge Graph research and development.
- **FRIPL Award** (2025) - Developing document understanding technology contributing to Fujitsu-Daikin partnership.
- Fast-tracked promotion to **Applied Researcher-II** within 9 months.
- Ranked **All India Rank 178** among 100,000+ candidates in GATE CS (2020).