Mouly Dewan

Seattle, WA | +12067581212 | mouly.dewan@gmail.com | Google Scholar | Github

EDUCATION

University of Washington, Seattle, WA   Sep 2023 - Present
PhD, Information Science
Advised by Chirag Shah (InfoSeeking Lab)

Khulna University of Engineering & Technology, Bangladesh   Mar 2016 - Mar 2020
BS, Computer Science and Engineering

RESEARCH INTERESTS

Information Retrieval, Search & Recommender Systems, Proactive Conversational AI, LLM-Assisted IR Evaluation, AI Evaluation Metrics, Human-AI Agent Collaboration, Agentic IR Pipelines, Bias & Chain-of-Thought Amplification, Misinformation & Belief Formation, Information/Misinformation Seeking Behaviour, Cognitive Biases in Search, AI Credibility & Fact-Checking.

RESEARCH & WORK EXPERIENCE

University of Washington, Seattle, WA   Sep 2023 - Present
Graduate Research Assistant
- Developing an LLM based framework for relevance, usefulness and satisfaction labeling in IR systems by analyzing user behavior metrics and search interactions.
- Conducting research on pre-trained LLMs, prompt engineering, chain-of-thought (CoT) reasoning and fine-tuning techniques (PEFT, LoRA, QLoRA) to optimize model performance in retrieval and evaluation tasks.
- Integrating Knowledge Graphs with fine-tuning LLMs for verification and attribute validation in texts using graph analysis, machine learning and deep learning techniques.
- Investigating bias and chain-of-thought amplification in LLMs, and developing human-AI multi-agent collaboration frameworks for agentic information seeking strategies.

Banglalink - Veon Ltd, Dhaka, Bangladesh   Apr 2022 - Aug 2023
Business Intelligence & Analytics Specialist
- Monitored daily operating targets with the commercial planning team and provided actionable business insights to cross-functional stakeholders.
- Collaborated with Meta Actionable Insights by analyzing a 19M 4G user database and contributing to a 3% increase in 4G market share through competitive market analysis.
- Analyzed large-scale databases of 33M users to monitor churn with SQL queries and achieved a 4% reduction in churn rate by providing insights with advanced SQL logic.
- Monitored the performance of network sites and delivered regional insights by data modeling resulting in a 32% site performance improvement and a 24% boost in site revenue extraction.

Daraz Bangladesh – Alibaba Group, Dhaka, Bangladesh   Oct 2020 - Mar 2022
Data Analyst
- Monitored the performance of 500+ premium e-commerce stores, resulting in a 13% YoY revenue increase to drive actionable strategies across cross-functional teams.
- Created performance KPI metrics dashboard for e-commerce sellers by feature engineering and formulating metrics, leading to a 5% growth in YoY revenue share.
- Analyzed store traffic data during major campaigns (11.11) for advanced analytical reporting, contributing to $13M in revenue in a single week.
- Collaborated in strategy and planning to establish monthly team targets and conducted market analysis to enhance YoY buyer growth by 25%.

TEACHING EXPERIENCE

University of Washington, Seattle, WA   Jun 2024 - Aug 2024
Pre-Doctoral Lecturer
- Taught "Foundational Skills for Data Science (INFO 201)" to undergraduate students at the Information School.

PUBLICATIONS

In Submission

- **Dewan, M.**, Liu, J., Gautam, A., & Shah, C. (2025). LLM-Driven Usefulness Judgment for Web Search Evaluation. arXiv preprint arXiv:2504.14401. In submission to **WSDM** 2026.

Peer Reviewed Publications

- **Dewan, M.**, Liu, J., & Shah, C. (2025). TRUE: A Reproducible Framework for LLM-Driven Relevance Judgment in Information Retrieval. arXiv preprint arXiv:2509.25602. The Nineteenth International Conference on Web Search and Data Mining. Boise, Idaho, USA. February, 2026.
- **Mouly Dewan**, Jiqun Liu, and Chirag Shah. 2025. LLM-Driven Usefulness Labeling for IR Evaluation. In Proceedings of the 48th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR '25**), July 13–18, 2025, Padua, Italy.
- Preetam Prabhu Srikar Dammu, Himanshu Naidu, **Mouly Dewan**, YoungMin Kim, Tanya Roosta, Aman Chadha, and Chirag Shah. 2024. ClaimVer: Explainable Claim-Level Verification and Evidence Attribution of Text Through Knowledge Graphs. In Findings of the Association for Computational Linguistics: **EMNLP** 2024, pages 13613–13627, Miami, Florida, USA. Association for Computational Linguistics.
- Sadi, M. S., Sumaiya, S., **Dewan, M.**, & Rahman, A. (2021). Tolerating Soft Errors with Horizontal-Vertical-Diagonal-N-Queen (HVDNQ) Parity. **IEEE** Journal of Electronic Testing, 37(2), 243–254.
- Sumaiya, **Dewan, M.**, & Sadi, M. S. (2019). Soft Error Tolerance using Horizontal, Vertical, Diagonal and Seven Queen Parity. 2019 **IEEE** International Conference on Signal Processing, Information, Communication & Systems (SPICSCON), 1, 114–117.

Workshops & Posters

- **Mouly Dewan**, Jiqun Liu, and Chirag Shah. 2025. LLM-Driven Usefulness Labeling for IR Evaluation. **LLM4Eval SIGIR '25**, July 13–18, 2025, Padua, Italy.
- **Dewan, M.**, & Shah, C. (2024). Mind Over Misinformation: Investigating the Factors of Cognitive Influences in Information Acceptance. Proceedings of the Association for Information Science and Technology, 61(1), 886–888.

TECHNICAL SKILLS

Core Specializations

AI & Machine Learning, Large Language Models (LLM), NLP, Data Science, Data Engineering, Data Visualization

LLM & AI Expertise

- LLM Platforms: OpenAI, Meta (Llama models), Anthropic (Claude), Cohere, Mistral, DeepSeek
- Prompt Engineering: Zero-shot prompting, Few-shot prompting, Chain-of-thought (CoT) prompting for reasoning tasks
- LLM Fine-tuning: LoRA / QLoRA fine-tuning, PEFT
- LLM Tools: Hugging face transformers, Langchain, API Integration
- Evaluation: LLM model evaluation, relevance, usefulness, bias and chain-of-thought evaluation
- Agentic AI: AutoGen, Langchain Agents, Reinforcement Learning (DPO, PPO)

Programming Skills

- Languages: Python, C/C++
- Developer Tools: VS Code, Eclipse, Android Studio, Jupyter
- Technologies & Frameworks: GitHub, Oracle, Teradata, ODPS

Cloud & Databases

- Cloud Platforms: AWS (EC2, S3 etc.) , Amazon Bedrock, Amazon Sagemaker
- SQL Databases: MySQL, PL/SQL, ODPS, AliSQL, Teradata, Oracle

Statistical & Quantitative Analysis

- Statistical Modeling: R, R Studio (ANOVA, A/B Test, T-test, Survey Analysis)
- Quantitative Methods: User Study, Experimental Design, Survey Design, Statistical Analysis, Survey Analysis

Data Visualization & Reporting

- Dashboard Tools: Tableau, MicroStrategy
- Presentation & Reporting: Microsoft Excel, Microsoft PowerPoint

PERSONAL & ACADEMIC ACCOMPLISHMENTS

PC Member: SIGIR 2024, COLM 2025, WWW 2026

CCO Excellence Awards: Banglalink's New Site Performance Dashboard 2022

Employee Spotlight Award: Banglalink Quarterly Award 2022

World Champion: IEEE YESIST12 Maker Fair 2020