FARDIN AHSAN SAKIB

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EXPERIENCE:

Applied Research Intern   May 2024 - August 2024
Brillient Corporation   Reston, VA
- Developed key components of BRAG (Brillient Retrieval-Augmented Generation) using PyTorch, implementing query distillation and synonym generation modules to enhance contextual understanding across multiple domains.
- Optimized information retrieval by designing efficient chunking algorithms and re-ranking methods, improving the relevance of extracted data by 22% as measured by Mean Average Precision (MAP), and reducing processing time by 35%.
- Finetuned domain-specific Large Language Models (LLMs) and performed advanced prompt engineering (e.g., chain-of-thought, tree-of-thought), successfully deploying the system across medical, HR, and IRS domains with an 85% user satisfaction rate.

Graduate Teaching and Research Assistant   August 2021 - Present
George Mason University   Fairfax, VA
- Conducting research on applying Foundation Models to health data, specifically focusing on social determinants of health to enhance medical information retrieval and analysis.
- Exploring methods to identify and mitigate bias in LLMs, aiming to improve fairness and accuracy in health-related AI systems, and enhancing explainability to increase transparency and trust in medical applications.
- Conducting labs and facilitating classroom discussions for over 100 students, providing individualized feedback on quizzes, assignments, and tests, resulting in enhanced student engagement and understanding of course material, and demonstrating strong written and verbal communication skills.

Machine Learning and AI Intern   May 2023 - August 2023
Brillient Corporation   Reston, VA
- Engineered and fine-tuned advanced Natural Language Processing models for tasks including question answering, summarization, emotion detection, and readability analysis, improving model performance by 12-18% as measured by F1 score, ROUGE, and accuracy metrics, thus enhancing capabilities for critical IRS and USCIS projects.
- Architected and implemented an end-to-end machine learning pipeline from model development to AWS deployment and API creation using AWS SageMaker, Lambda, and API Gateway, reducing deployment time by 40%.

EDUCATION:

Ph.D. in Computer Science (4th Year)   August 2021 - May 2026
George Mason University   Fairfax, VA
Bachelor's in Computer Science and Engineering   January 2017-March 2021
Islamic University of Technology   Dhaka, Bangladesh

TECHNICAL EXPERTISE:
- Deep Learning: PyTorch, TensorFlow, Foundation Models, Hugging Face, Generative AI, Reinforcement Learning
- Programming Languages: Python, Java, C++, JavaScript
- Cloud and MLOps: AWS, Azure, Docker, Kubernetes
- Databases: Relational and NoSQL
- Web Development: HTML, CSS, Bootstrap
- Data Engineering: VectorDBs, Pandas, NumPy
- Development Tools: Git, API Development

RECENT RESEARCH PUBLICATIONS
- Rahman, Md Mushfiqur, **Fardin Ahsan Sakib**, Fahim Faisal, and Antonios Anastasopoulos. "To token or not to token: A Comparative Study of Text Representations for Cross-Lingual Transfer." In Proceedings of the 3rd Workshop on Multi-lingual Representation Learning @ EMNLP, pp. 67-84. 2023. (Link)
- **Sakib, Fardin Ahsan**, AHM Rezaul Karim, Saadat Hasan Khan, and Md Mushfiqur Rahman. "Intent Detection and Slot Filling for Home Assistants: Dataset and Analysis for Bangla and Sylheti." In The First Workshop on Bangla Language Processing @ EMNLP, p. 48. 2023. (Link)