Biplob Biswas

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Experience

Senior Research Engineer — Dec. 2023 – Present
Fujitsu Research of America, Inc. — *Santa Clara, CA*

- Built an **end-to-end agentic evaluation pipeline** for the WoW enterprise benchmark (6K+ tables) using the A2A protocol and MCP-ReAct executors. *[vLLM, OpenAI API, A2A]*
- Engineered an agentic business-process analysis tool, **reducing manual effort (FTE) by 15%** and outperforming top-ranked TableBench model in data analysis task. *[Python, LangGraph, Scikit, Streamlit]*
- Designed and trained a sequence generation model for predictive process monitoring.*[Python, PyTorch]*

Machine Learning Intern — Jun. 2021 – Dec. 2023
Emplifi — *Columbus, OH*

- Developed a knowledge-grounded **response generation framework** for customer care, deployed as an API. *[AWS, Docker, Python, PyTorch, HuggingFace, FastAPI]*
- Employed neural IR to integrate historical data with a fine-tuned GPT-2, improving **informativeness by 12% and semantic similarity by 15.3%** over baselines.

Graduate Research Associate — Aug. 2021 – Dec. 2023
The Ohio State University — *Columbus, OH*

- Designed a **hybrid (sparse + dense) ranking system** for product-QA RAG, improving **MRR@5 by 10.95%** with 30% lower latency and 38% fewer FLOPs than SOTA cross-encoders. (Code, Data). *[Python, PyTorch, BERT, T5, FAISS]*
- Developed **TransICD**, an explainable model for ICD coding (MIMIC-III), outperforming LEAM benchmarks in **micro-AUC (0.92)** and micro-F1 (0.64). (Code, Data).*[Python, PyTorch]*
- Built TransDTBA, a transformer-based model for drug-protein binding affinity prediction.(Code, Data).
- Implemented joint slot-filling/intent detection and an end-to-end NLG system for shared tasks.(Code, Data: ATIS, E2E).

Engineer, Research and Development — Mar. 2016 – Jul. 2018
KONA Software Lab Limited (in collaboration with KONA I, Seoul, Korea) — *Dhaka, Bangladesh*

- Developed the front-end for NexusPay (5M+ downloads), integrating REST APIs for NFC, QR-code, and online payment transactions.*[Android, Java, SQLite]*
- Developed a Nexgo POS application to facilitate secure mobile payment transactions.*[C]*

Independent Projects

Raven
Conversational Data Assistant

- Built a backend for natural-language querying of heterogeneous data; orchestrated multi-agent workflow with LangGraph and an optional local LLM to ensure privacy, **reducing manual look-ups by 23%**. (Code)
- Engineered RAG over vector database with persistent memory across multi-turn sessions, served via FastAPI and containerized with Docker Compose. *[LangGraph, PostgreSQL, pgvector, Chroma, Docker, FastAPI]*

Education

The Ohio State University — Aug. 2018 – Dec. 2023
Ph.D. in Computer Science and Engineering — *Columbus, OH*

- Advisor: Dr. Rajiv Ramnath
- Research Topics: Natural Language Processing, Text Generation, Information Retrieval
- Dissertation: Improving Response Automation for Customer Communication through Document Categorization and Information Retrieval
- Courses Taken: Machine Learning, Data Mining, Parallel Computing, Neural Networks, Speech and Language Processing, Social Media and Text Analysis
- GPA: 3.89 / 4.00

The Ohio State University — Aug. 2018 – May. 2023
Master of Science in Computer Science and Engineering — *Columbus, OH*

- GPA: 3.89 / 4.00

Bangladesh University of Engineering and Technology Feb. 2011 – Mar. 2016
Bachelor of Science in Computer Science and Engineering *Dhaka, Bangladesh*

- GPA: 3.73 / 4.00

Professional Services

- Reviewer: EMNLP 2023 - Workshop BLP, ASONAM 2023
- Led a team of graduate students to employ a **deep reinforcement learning model for a question-answering task** in customer care service.

Technical Skills

Languages: Python, Java, C, C++
Frameworks & Others: PyTorch, LangChain, LangGraph, Streamlit, FastAPI, Scikit, spaCy, MCP, vLLM
Platforms: Android, AWS, Docker, CUDA, Databricks
Tools: Git, Jira, VS Code, Ollama, LangSmith, Cursor, Claude Code
LLMs: BERT, GPT, Gemini, Llama, Qwen, OpenAI APIs
Database: Oracle, MySQL, PostgreSQL, Chroma, Pinecone

Publications

- **Efficient and Interpretable Information Retrieval for Product Question Answering with Heterogeneous Data**, Biplob Biswas, Rajiv Ramnath. In Proceedings of the Seventh Workshop on e-Commerce and NLP @ LREC-COLING, May 2024.
- **Retrieval Based Response Letter Generation For a Customer Care Setting**, Biplob Biswas, Renhao Cui, Rajiv Ramnath. In Proceedings of the 2022 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL): Human Language Technologies: Industry Track, July 2022.
- **TransICD: Transformer Based Code-wise Attention Model for Explainable ICD Coding**, Biplob Biswas, Hoang Pham, Ping Zhang. In International Conference on Artificial Intelligence in Medicine (AIME) Jun 2021.
- **Towards Simulating Non-lane Based Heterogeneous Road Traffic of Less Developed Countries**, Q. M. Alam, B. Sarker, Biplob Biswas, K. H. Zubaer, T. Toha, N. Reza and ABM A. Al Islam. In ICT4S, May 2018.

Honors and Awards

- Dean's Merit List in 2nd and 4th year of Bachelors 2013 - 2016
- Education Board Scholarship - for notable performance in SSC and HSC examination 2010

Additional Information

- H-1B visa approved in 2024