Syeda Sabrina Akter

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Professional Summary

A driven Ph.D. researcher specializing in AI/ML with expertise in NLP, deep learning, and RAG. Experienced in designing controlled experiments to evaluate SOTA LLMs and address complex real-world challenges. Skilled in fine-tuning, benchmarking, prompt engineering and making SOTA LLMs capable of handling complex, real-world tasks across specialized domains, such as Education and Policy Studies. Published in top conferences (EMNLP, NAACL) and committed to creating impactful, responsible AI applications and fostering collaborative innovation.

Research Interests

Large Language Models, Generative AI, Retrieval Augmented Generation, Deep Learning, Text Generation and Analysis, Human-NLP Collaboration, Low-Resource and Multilingual NLP, Speech Recognition and Translation.

Education

George Mason University, Ph.D. in Computer Science (Expected) Summer 2026

- Advisor: Antonios Anastasopoulos, Ph.D, Assistant Professor
- Research: *NLP and LLMs Applications in High-Stakes Specialized Domains*

George Mason University, M.S. in Computer Science 2024

- Advisor: Antonios Anastasopoulos, Ph.D, Assistant Professor
- Cumulative GPA: 4.00/4.00

Research Experience

Graduate Research Assistant, George Mason University 2021 – Present

- **LLMs in Specialized Domains:**
  - *Education:* Developed data driven system to simplify open ended tasks using SOTA LLMs, i.e., the analysis of school improvement plans, and designed robust solutions that incorporate human-in-the-loop systems.
  - *Policy Analysis:* Utilized LLMs for topic extraction from tech policy documents and interviews, focusing on automating and streamlining a process traditionally requiring manual expert annotation.
- **Multilingual News Framing Analysis:**
  - Enhanced multilingual news framing analysis using fine-tuned language models for diverse user groups and language-specific datasets.
  - Explored efficiency gains for domain adaptation and cross lingual transfer learning. Collected Synthetic data through crowdsourcing; established high-quality datasets in Bengali and Portuguese.
- **Predicting Performance of Multilingual LLMs Across Multiple Languages**
  - Developed a performance prediction system for multilingual NLP models based on the LITMUS model, enhanced with three new features and model ensembling. Achieved improvements over the baseline.

Publications

** indicates equal contribution*

1. Costs and Benefits of AI-Enabled Topic Modeling in P-20 Research: The Case of School Improvement Plans BEA 2025
Syeda Sabrina Akter, Seth B. Hunter, David S. Woo, Antonios Anastasopoulos.
Proceedings of the 20^{th} Workshop on Innovative Use of NLP for Building Educational Applications

2. The LLM Effect: Are Humans Truly Using LLMs, or Are They Being Influenced By Them Instead? EMNLP 2024
Alex Choi*, **Syeda Sabrina Akter***, JP Singh, Antonios Anastasopoulos.
Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing.

3. A Study on Scaling Up Multilingual News Framing Analysis NAACL 2024
Syeda Sabrina Akter and Antonios Anastasopoulos.
Findings of the Association for Computational Linguistics: NAACL 2024.

4. SLP Sidekick: An Open-Source, Multilingual Speech Therapy Platform. Interspeech 2025

S. Blouir*, C. Watkins*, M. Agarwal*, P. Acharya*, **S. S. Akter** et al.
To appear in Interspeech 2025 Demo Track.

5. The GMU System Submission for the SUMEval 2022 Shared Task AACL 2022

Syeda Sabrina Akter and Antonios Anastasopoulos.
Proceedings of the First Workshop on Scaling Up Multilingual Evaluation, pages 13–20, Online. Association for Computational Linguistics.

6. A systematic review on the use of AI and ML for fighting the COVID-19 pandemic IEEE Access 2021

Islam, Muhammad Nazrul, Toki Tahmid Inan, Suzzana Rafi, **Syeda Sabrina Akter**, Iqbal H. Sarker, and AKM Najmul Islam.
IEEE Transactions on Artificial Intelligence 1, no. 3 (2020): 258-270.

7. An IoT based proposed system for monitoring manhole in context of Bangladesh iCEEiCT 2018

Saadnoor Salehin, **Syeda Sabrina Akter**, Anika Ibnat, Tasmiah Tamzid Anannya, Nurun Nahar Liya, Manisha Paramita, and Md Mahboob Karim.
In 2018 4th International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT), pp. 411-415. IEEE, 2018.

Conference Presentations

** indicates equal contribution*

1. Empirical Costs and Affordances of AI-Enabled Topic Modeling in P-20 Research: The Case of School Improvement Plans. AEFP 2025

Akter, S. S., Hunter, S. B., Anastasopoulos, A., Choi A., & Woo, D.
Annual Meeting of the Association for Education Finance and Policy, Washington, D. C. 2025.

2. Using Artificial Intelligence for Principal Evaluation to Differentiate Performance, Reduce Bias, and Alleviate Administrator Burden. AEFP 2025

Hunter, S. B., Woo, D., Anastasopoulos, A., Bowser, K. M., **Akter, S. S.***, Hairston, S., Hairston, T., & Mjavanadze. E.*
Annual Meeting of the Association for Education Finance and Policy, Washington, D. C. 2025.

3. Examining Covid-19's Influence on School Leaders' Priorities: An application of LLM's to analyze Building Improvement Plans. AEFP 2025

Woo, D., Hunter, S. B., Hairston, S. L., Mjavanadze, E.*, Anastasopoulos, A., Bowser, K. M., **Akter, S. S.***, & Hairston, T.
Annual Meeting of the Association for Education Finance and Policy, Washington, D. C. 2025.

4. Principal-Supervisor and Machine Generated Evaluation Scores of Principal Performance Portfolios in a Rurally-Focused Multi State Evaluation System: Their Reliability, Validity, Differences, and Determinants AEFP 2024

Seth B Hunter, David S Woo, Antonios Anastasopoulos, Katherine M Bowser, **Syeda S Akter**, Sarah L Hairston, Thomas W Hairston, and Eter Mjavanadze.
49th Annual Conference of Association for Education Finance and Policy. March 14-16, 2024. Baltimore, Maryland.

Programming Skills

Python, PyTorch, NumPy, Pandas, TensorFlow, Scikit-Learn, Java, C, C++, PHP, UNIX shell scripting, Linux, Unity, SQL, Oracle, MySQL, Matlab, Hadoop and others.

Teaching Experience

Graduate Teaching Assistant, Department of CS, GMU 2021 - 2024

- **Courses:** Advanced Natural Language Processing, Software Testing, Data Structures, Object Oriented Programming, Database Concepts.

Awards

- **Distinguished Academic Achievement Award**, 2023-2024, Department of Computer Science, GMU
- **Outstanding Graduate Teaching Assistant Award**, 2022-2023, Department of Computer Science, GMU
- **Best Project Award**, Faculty of Electrical and Computer Engineering (2017, MIST)
- **Commandant's List Award** for Academic Excellence (2016, MIST)
- **IUT ICT Fest Project Showcasing – Runners Up** (2017, Islamic University of Technology)