

STATEMENT OF PURPOSE

Akib Sadmanee

University of Hawai'i at Mānoa
PhD in Computer Science

“The light only increases when you light more candles with your fire,” my grandfather used to say—a principle that has inspired my lifelong commitment to advancing knowledge in artificial intelligence. I have always been devoted to enhancing theoretical research and bridging knowledge with real-world applications. I am eager to continue this pursuit of impacting peoples’ lives by discovering new ways to summarize multi-document text and devise ways to write automated literature reviews.

Research Contributions

I conducted a comprehensive intrinsic evaluation of Bangla word embeddings to analyze the semantic and syntactic nuances of the language for my undergraduate thesis. This work highlighted the need for tailored evaluation metrics to optimize conventional models for underrepresented linguistic contexts. This research not only solidified my interest in Natural Language Processing (NLP) but also helped me build a solid foundation in it.

Building upon the foundation established with my early research, I explored the confluence of computer vision and NLP as a research assistant at the Center for Computational & Data Sciences. I worked on a video captioning model that employs variational stacked local attention networks with multi-stream attention mechanisms. This approach effectively captures both localized details and broader contextual cues, generating diverse and descriptively rich captions.

My work in privacy-preserving AI at Silicon Orchard Ltd led me to develop a recommender system that relies solely on non-identifiable user data. Concurrently, in another research, I enhanced the heterogeneous graph transformers by incorporating physics-inspired meta-edges, a concept that uses principles analogous to force interactions in physics, to better capture and interpret complex relationships within data. More recently, I have completed research on using a hierarchical clustering framework along with Large Language Models (LLM) for text summarization, which organizes related content into coherent clusters and uses LLM’s coherent text generation capabilities for efficient and interpretable text summarization. Each project I have worked on reflects my commitment to refining technical approaches while addressing real-world challenges.

Academic and Industry Engagement

My successful academic journey – endowed with distinctions and publications – is complemented by robust industry experience, where I have transformed theoretical insights into production-ready AI solutions. These hands-on experiences have deepened my ability to tackle complex challenges and ensured that my research is both innovative and practically viable. Throughout my career in both academia and industry, I have collaborated with interdisciplinary teams—from educators to biologists—which has reinforced my belief that ethical considerations are paramount in today’s data-driven world. This experience has sparked a growing interest in the ethical use of AI and in addressing biases inherent in LLMs, an area I am eager to explore further as a researcher.

In parallel with my research, serving as a teaching assistant and mentor has enabled me to share my expertise with students across various levels—from high school to graduate studies. By clearly communicating complex ideas and fostering a collaborative environment, I have honed both my

technical and leadership skills.

Conclusion

During my Ph.D., my ambition is to develop an automated system capable of synthesizing vast amounts of scientific literature into concise, insightful summaries. By advancing techniques in natural language understanding, semantic representation, and neural architectures, I aim to create tools that make complex research accessible and valuable across disciplines while upholding the highest standards of ethical and technical excellence.

I am eager to continue my journey as a Ph.D. student at the University of Hawai'i at Mānoa—a community that recognizes collaborative innovation and societal impact. With a commitment to "lighting more candles with my fire," I plan to contribute to this vibrant environment by advancing AI research, mentoring emerging innovators, and driving meaningful transformation in how knowledge is generated and shared as I find my way into academia.