

Md Kowsher

Portfolio: [kowsher.github.io](https://github.com/kowsher)

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EDUCATION

- University of Central Florida** FL, USA
• *PhD. in Computer Science; GPA: 4.00/4.00* 2024 - Present
Research Area: Multi-modal, Computer Vision and Language
- Stevens Institute of Technology** New Jersey, USA
• *MSc. in Computer Science; GPA: 4.00/4.00* 2021 - 2023
Research Area: NLP, LLM and Deep Learning

EXPERIENCE

- Meta, Menlo Park, CA, USA** Onsite
• *Multimodal GenAI Intern (Full-time)* May 2025 - Present
I will work on developing AI models for understanding and improving the quality of text, image, and video content. My role focuses on addressing integrity challenges like misinformation and harmful content using multi-modal GenAI and unsupervised learning techniques.
- Center for Research in Computer Vision Lab, UCF, USA** Hybrid
• *Research Assistant in Vision and Language* August 2024 - Present
Engaged in research exploring the intersection of computer vision and natural language processing, focusing on innovative approaches to enhance multi-modal understanding and applications.
- Nokia Bell Labs, NJ, USA** Onsite
• *Research Scientist Intern in LLM (Full-time)* June 2024 - August 2024
At Nokia Bell Labs, I worked on improving Nokia's language model by developing and testing new methods to make it more accurate and efficient. My focus was on finding better ways for the model to understand and generate language
- Stevens Institute of Technology, NJ, USA** Onsite
• *Graduate Research Assistant (Full-time)* August 2021 - June 2024
I conducted research in NLP and deep learning, creating a new reservoir transformer to improve NLP tasks and time series forecasting. I built transformer-based models for NLP and worked with a team to publish our research.
- Amazon, Remote** Remote
• *Alexa Prize Researcher (Part-time)* November 2022 - September 2023
Achieved second place in the Alexa Prize competition by leading research on large language models and conversation-based image generation. I worked closely with a team of researchers and engineers to develop advanced conversational AI systems.
- Amazon, Seattle, WA, USA.** Onsite
• *Applied Scientist Intern (Full-time)* May 2022 - August 2022
At Amazon, I built and tested deep learning models to improve machine learning monitoring systems. I analyzed data, created features to boost AI performance, and worked with teams to deploy AI solutions in production.
- Hishab Ltd, Dhaka, Bangladesh** Onsite
• *AI Scientist (Full-time)* April 2020 - August 2021
Worked and led a team of data scientists in developing AI-driven solutions for conversational agents and ASR. Developed machine learning models for NLP. Collaborated with clients to understand their business needs and translate them into AI solutions.
- NKSoft, Dallas, TX, USA.** Remote
• *AI Engineer Intern (Full-time)* November 2019 - May 2020
Contributed to the development of NLP module for a chatbot application. Conducted experiments to improve the chatbot's understanding and response generation capabilities. Integrated into the existing software infrastructure.
- Global Emerging Technology Networks, Dhaka, Bangladesh.** Remote
• *AI and NLP researcher (Part-time)* May 2018 - September 2019
Conducted research on Bengali NLP and sentiment analysis and published papers. Developed language models and participated in various NLP-related projects. Presented research findings to internal teams and contributed to knowledge sharing within the organization.

PUBLICATIONS (SELECTED)

- **How Bidirectionality Helps Language Models Learn Better via Dynamic Bottleneck Estimation:** M Kowsher, NJ Prottasha, S Xu, S Mohanto, C Chen, N Yousefi, O Garibay, **39th NeurIPS**, 2025 (Under review), [\[Link\]](#)[\[Code\]](#)
- **Infinite reservoir transformer:** J Xu, M Kowsher **US Patent App.** 18/780,055, 2025, [\[Link\]](#)
- **Predicting Through Generation: Why Generation Is Better for Prediction:** M Kowsher, N Jahan, C Chen, N Yousefi, **63rd ACL**, 2025 (Main) [\[Link\]](#)[\[Code\]](#)
- **RoCoFT: Efficient Finetuning of Large Language Models with Rows and Columns Updates:** M Kowsher, T Esmailbeig, C Yu, M Soltanian, N Yousefi, **63rd ACL**, 2025 (Main), [\[Link\]](#)[\[Code\]](#)
- **TituLLMs: A Family of Bangla LLMs with Comprehensive Benchmarking:** SK Nahin, RN Nandi, S Sarker, QS Muhtaseem, M Kowsher, AC Shill, MI, MH Menon, TA Muntasir, F Alam, **63rd ACL**, 2025 (Finding), [\[Link\]](#)[\[Code\]](#)

- **Propulsion: Steering LLM with Tiny Fine-Tuning:** M Kowsher, NJ Prottasha , P.Bhat, The **31st COLING** (Main), 2025, [\[Link\]](#)[\[Code\]](#)
- **BnTTS: Few-Shot Speaker Adaptation in Low-Resource Setting:** MJI Basher, M Kowsher, MS Islam, RN Nandi, NJ Prottasha, SA Chowdhury, F Alam, **NAACL**, 2025, [\[Link\]](#)[\[Code\]](#)
- **Changes by Butterflies: Farsighted Forecasting with Group Reservoir Transformer:** M Kowsher, A Khan, J Xu, **ICML**, 2025 (Under Review), [\[Link\]](#)
- **Llm-Mixer: Multiscale Mixing in LLMs for Time Series Forecasting:** M Kowsher, MSI Sobuj, NJ Prottasha, EA Alanis, OO Garibay, N Yousefi, **ACL Workshop**, 2025, [\[Link\]](#)[\[Code\]](#)
- **Does Self-Attention Need Separate Weights in Transformers?:** M Kowsher, NJ Prottasha, CN Yu, **NAACL**, 2025, [\[Link\]](#)[\[Model\]](#)
- **L-TUNING: SYNCHRONIZED LABEL TUNING FOR PROMPT AND PREFIX IN LLMS :** M Kowsher, MSI Sobuj, A Mahmud, NJ Prottasha, P Bhat, **ICLR**, 2024 (Tiny), [\[Link\]](#)[\[Code\]](#)
- **Token Trails: Navigating Contextual Depths in Conversational AI with ChatLLM :** M Kowsher, R Panditi, NJ Prottasha, P Bhat, AK Bairagi, MS Arefin, **29th NLDB**, 2024, [\[Link\]](#)[\[Model\]](#)
- **Parameter-Efficient Fine-Tuning of Large Language Models using Semantic Knowledge Tuning :** NJ Prottasha, A Mahmud, MDS Islam, P Bhat, M Kowsher, N Yousefi, OO Garibay, **Scientific Reports, Nature Journal**, 2024, [\[Link\]](#)[\[Code\]](#)
- **Contrastive Learning for Universal Zero-Shot NLI with Cross-Lingual Sentence Embeddings:** M Kowsher, MSI Sobuj, NJ Prottasha, MS Arefin, Y Morimoto, **EMNLP Workshop**, 2023, [\[Link\]](#)
- **Bangla-bert: transformer-based efficient model for transfer learning and language understanding:** M Kowsher, AA Sami, NJ Prottasha, MS Arefin, PK Dhar, T Koshiba, **IEEE Access**, 2022, [\[Link\]](#)
- **CARAN: A Context-Aware Recency-Based Attention Network for Point-of-Interest Recommendation:** Md B Hossain, M S Arefin, I H Sarker, M Kowsher, P K Dhar, T Koshiba, **IEEE Access**, 2022, [\[Link\]](#)
- **SeqVectorizer: Sequence Representation in Vector Space:** M Kowsher, A Das, MM Hossain Sarker, A Tahabilder, MZ Islam Sanjid **Proceedings of the 4th NIS, ACM**, 2021, [\[Link\]](#)
- **Support directional shifting vector: A direction based machine learning classifier:** M Kowsher, I Hossen, A Tahabilder, NJ Prottasha, K Habib, ZRM Azmi, **Emerging Science Journal**, 2021, [\[Link\]](#)

SKILLS SUMMARY

- **Languages:** Python, C, C++, Matlab, PHP, Javascript, Fortran, Mathematica
- **Frameworks:** Pytorch, Transformers, Matplotlib, Tensorflow, Keras, Sklearn, NLTK, Pandas, Numpy, Scipy, OpenCV, Rasa, DeepSpeed, Accelerate, PEFT
- **Tools:** Spark, Hadoop, Tableau, Docker, MySQL, Postgresql, LaTeX
- **Platforms:** Linux, Jupyter Notebook, Spyder, PyCharm, Visual Studio, AWS, GCP
- **Soft Skills:** Leadership, Event Management, Writing, Public Speaking, Time Management
- **Other Skills:** Academic Research, Teaching, Competitive Programming

HONORS AND AWARDS

- NAACL Travel Award, 2025
- ORCGS Doctoral Fellowship Award (Tuition fee & stipend), University of Central Florida
- Won the second place in Alexa Prize Social Bot Challenge 5, Amazon, USA - 2023
- Awarded Full Membership, Sigma Xi, The Scientific Research Honor Society, USA - 2023
- Graduate Fellowship Award (Tuition fee & stipend), Stevens Institute of Technology, USA - 2021
- Research Excellence Award, Global Innovation & Excellence Award, India - 2021
- Best Paper Award, In. Con. on Cyber Security and Computer Science, Springer - 2020
- Top Wining Award, Coronathon-19, Hackathon on Combating the Coronavirus, Bangladesh - 2020
- Best Paper Award, In. Con. on Computer, Chemical, Materials & Electronic Engineering, IEEE. - 2019
- Champion Award Robi r-ventures 2.0, Robi Axiata Limited - 2019
- National BASIS ICT Award - 2019

VOLUNTEER EXPERIENCE

- **Conference Reviewer:** ACL(2025), NAACL(2025), ICLR(2024), EMNLP (2023), IJCNN(2024), ICEICT (2023, 2022), ICDM (2023), ICCIDM (2022, 2021), ICMLIS (2022), ICSECS (2021), ICoCSIM (2021), MIET(2022), MLIS(2022), CDPCS(2022), ICMSEA(2021)
- **Journal Reviewer:** Scientific Reports, Nature (2022 - 2024), IEEE Access, IEEE (2022 - 2024), Electronics, MDPI (2023, 2022), Visual Computing for Industry, Biomedicine, and Art, Springer Journal (2023, 2022), Big Data and Information Analytics , Springer (2023, 2022), Applied Artificial Intelligence, Taylor and Francis (2023, 2022), Sensors, MDPI (2023, 2022), Applied Sciences, MDPI (2023, 2022)

TEACHING EXPERIENCE

- **Teaching Assistant** Stevens Institute of Technology
CS-541-Artificial Intelligence Jan 2024 - May 2024
- **Teaching Assistant** Stevens Institute of Technology
CS-583-Deep Learning Sept 2022 - Dec 2023
- **Teaching Assistant** Stevens Institute of Technology
CS 800-Special Research Problem Jan 2023 - May 2023