

Md Kowsher

✉ ga.kowsher@gmail.com

☎ +1(551)-3004127

🌐 <https://kowsher.github.io>

Professional & Academic Experiences

- Nov 2022 – Sept 2023 📌 **Alexa Prize Researcher**, Amazon, Remote, USA.
Won second place in the Alexa competition. Conducting cutting-edge research in Natural Language Processing (NLP) (LLM) for Amazon's Alexa Prize competition. Collaborating with a team of researchers and engineers to develop innovative conversational AI systems. Presenting research findings in internal meetings and academic conferences. Contributing to the advancement of AI technologies and enhancing user experiences through conversation AI systems.
- May 2022 – Aug 2022 📌 **Applied Scientist Intern**, Amazon, Seattle, WA, USA.
Implemented and tested deep learning models for improving ML model monitoring systems. Assisted in data analysis and feature engineering to enhance the performance of AI algorithms. Collaborated with cross-functional teams to deploy AI solutions in production environments.
- Sept 2021 – Present 📌 **Graduate Research Assistant**, Stevens Institute of Technology, NJ, USA.
Conducted cutting-edge research in Natural Language Processing (NLP) and Deep learning. Proposed a novel reservoir transformer architecture for enhancing NLP tasks and time series forecasting. Developed and implemented deep learning models for NLP, including transformer-based architectures. Collaborated with a team of researchers to evaluate and benchmark the proposed reservoir transformer. Conducted experiments and performed in-depth analyses to demonstrate the model's effectiveness. Presented research results in departmental seminars and academic conferences.
- Jun 2020 – Sept 2021 📌 **AI scientist**, Hishab Ltd, Saarland, Germany.
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.
- Nov 2019 – April 2020 📌 **AI Engineer Intern**, NKSoft, Texas, USA.
Contributed to the development of a natural language processing module for a chatbot application. Conducted experiments to improve the chatbot's understanding and response generation capabilities. Assisted in integrating AI components into the existing software infrastructure.
- May 2018 – Sept 2019 📌 **AI and NLP researcher**, Global Emerging Technology Networks, Dhaka, Bangladesh.)
Conducted research on Bengali language processing 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.

Education

- Aug 2021 – Sept 2023 📌 **M.Sc. Computer Science** in Stevens Institute of Technology, NJ, USA.
CGPA: 4.0/4.0
- April 2015 – Aug 2019 📌 **B.Sc. Applied Mathematics** Noakhali Sci & Tech University, Bangladesh.

Research Interest

- NLP
- Computer Vision
- Deep Learning
- Statistical Learning
- Multimodal Learning
- Optimization

Research Publications

Selected Publications

- 1 **Kowsher, M.**, Ghanadan, R., & Xu, J. (2024). Infinite reservoir transformer. In *NAACL* (In review).
- 2 **Kowsher, M.**, & Xu, J. (2024a). Do your neighbors feature you? In *AAAI* (In review).
- 3 **Kowsher, M.**, & Xu, J. (2024b). Reservoir transformer at infinite horizon: The lyapunov time and the butterfly effect. In *ICLR* (In review).
- 4 **Kowsher, M.**, Zhang, M., & Xu, J. (2024). Monitoring nlp models in production: Introducing a novel learning metrics approach for enhanced drift detection. In *NAACL* (In review).
- 5 **Kowsher, M.**, Sobuj, M. S. I., Prottasha, N. J., Arefin, M. S., & Morimoto, Y. (2023). Contrastive learning for universal zero-shot nli with cross-lingual sentence embeddings. In *EMNLP workshop*.
- 6 **Kowsher, M.**, Panditi, R., & Arefin, M. S. (2023). Syntactic evaluation on bi-directional transformer outputs with multiple sequential masks. In *Sensors*, MDPI.
- 7 Prottasha, N. J., Murad, S. A., Muzahid, A. J. M., Rana, M., **Kowsher, M.**, Adhikary, A., ... Bairagi, A. K. (2023). Impact learning: A learning method from feature's impact and competition. *Journal of Computational Science, Elsevier*.
- 8 Hossain, M. B., Arefin, M. S., Sarker, I. H., **Kowsher, M.**, Dhar, P. K., & Koshiba, T. (2022). Caran: A context-aware recency-based attention network for point-of-interest recommendation. *IEEE Access*, 10, 36299–36310.
- 9 **Kowsher, M.**, Sami, A. A., Prottasha, N. J., Arefin, M. S., Dhar, P. K., & Koshiba, T. (2022). Bangla-bert: Transformer-based efficient model for transfer learning and language understanding. *IEEE Access*, 10, 91855–91870.
- 10 Murad, S. A., Muzahid, A. J. M., Azmi, Z. R. M., Hoque, M. I., & **Kowsher, M.** (2022). A review on job scheduling technique in cloud computing and priority rule based intelligent framework. *Journal of KSU-Computer and Information Sciences, Elsevier*.
- 11 Prottasha, N. J., Sami, A. A., **Kowsher, M.**, Murad, S. A., Bairagi, A. K., Masud, M., & Baz, M. (2022). Transfer learning for sentiment analysis using bert based supervised fine-tuning. *Sensors*, 22(11), 4157.
- 12 Sarker, S., Arefin, M. S., **Kowsher, M.**, Bhuiyan, T., Dhar, P. K., & Kwon, O.-J. (2022). A comprehensive review on big data for industries: Challenges and opportunities. *IEEE Access*.
- 13 Uddin, K. A., **Kowsher, M.**, & Sakib, K. (2022). Bsdrm: A machine learning based bug triaging model to recommend developer team. In *International conference on machine intelligence and emerging technologies* (pp. 256–270). Springer.
- 14 **Kowsher, M.**, Das, A., Hossain Sarker, M. M., Tahabilder, A., & Islam Sanjid, M. Z. (2021). Seqvectorizer: Sequence representation in vector space. In *Proceedings of the 4th international conference on networking, information systems & security* (pp. 1–6).
- 15 **Kowsher, M.**, Hossen, I., Tahabilder, A., Prottasha, N. J., Habib, K., & Azmi, Z. R. M. (2021). Support directional shifting vector: A direction based machine learning classifier. *Emerging Science Journal*, 5(5), 700–713.
- 16 **Kowsher, M.**, Hossen, I., Tahabilder, A., Prottasha, N. J., Sarker, M. M. H., Ahasan, N., & Hoque, M. I. (2021). Sdsv: Angle measurement for supervised classification. *Procedia Computer Science*, 189, 216–223.

- 17 **Kowsher, M.**, Tahabilder, A., Sanjid, M. Z. I., Prottasha, N. J., Uddin, M. S., Hossain, M. A., & Jilani, M. A. K. (2021). Lstm-ann & bilstm-ann: Hybrid deep learning models for enhanced classification accuracy. *Procedia Computer Science*, 193, 131–140.
- 18 **Kowsher, M.**, Prottasha, N. J., Tahabilder, A., & Islam, M. B. (2020). Machine learning based recommendation systems for the mode of childbirth. In *Cyber security and computer science: Second eai international conference, iconcs 2020, dhaka, bangladesh, february 15-16, 2020, proceedings 2* (pp. 295–306). Springer.
- 19 **Kowsher, M.**, Tahabilder, A., Sanjid, M. Z. I., Prottasha, N. J., & Sarker, M. M. H. (2020). Knowledge-base optimization to reduce the response time of bangla chatbot. In *2020 joint 9th international conference on informatics, electronics & vision (iciev) and 2020 4th international conference on imaging, vision & pattern recognition (icivpr)* (pp. 1–6). IEEE.
- 20 **Kowsher, M.**, Tahabilder, A., Sarker, M. M. H., Sanjid, M. Z. I., & Prottasha, N. J. (2020). Lemmatization algorithm development for bangla natural language processing. In *2020 joint 9th international conference on informatics, electronics & vision (iciev) and 2020 4th international conference on imaging, vision & pattern recognition (icivpr)* (pp. 1–8). IEEE.
- 21 **Kowsher, M.**, Alam, M. A., Uddin, M. J., Ahmed, F., Ullah, M. W., & Islam, M. R. (2019). Detecting third umpire decisions & automated scoring system of cricket. In *2019 international conference on computer, communication, chemical, materials and electronic engineering (ic4me2)* (pp. 1–8). IEEE.

Skills

Coding	Python, C, C++, Matlab, PHP, Javascript, Fortran, Mathematica
ML	Pytorch, Transformers, Matplotlib, Tensorflow, Keras, Sklearn, NLTK, Pandas, Numpy, Scipy, OpenCV, Rasa, deepspeed, accelerate.
Tools	Spark, Hadoop, Tableau, Docker
IDE	Jupyter Notebook, Spyder, PyCharm, Visual Studio
SWE	MLOps, Git, Data Structure & Algorithm, HTML, CSS, Linux .
Databases	SQL, Postgresql,
Others	AWS, Academic Research, Teaching, Training, Competitive Programming.

Awards and Achievements

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