Monoshiz Mahbub Khan

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Personal website ◇ LinkedIn profile
Available to start from June 2026

EDUCATION

PhD in Computing and Information Sciences
Rochester Institute of Technology
August 2021 - Present (Expected: August 2026)
CGPA: 3.93 (out of 4.00)

BSc in Computer Science and Engineering
University of Dhaka
January 2016 - January 2020
CGPA: 3.55 (out of 4.00)

PUBLICATIONS

- Khan, M. M., & Yu, Z. (2024). Approaching Code Search for Python as a Translation Retrieval Problem with Dual Encoders. *Empirical Software Engineering*, 30(1), 1-28. DOI: 10.1007/s10664-w024-10580-3
- Khan, M. M., Xi, X., Meneely, A., Tang, Y. & Yu, Z Efficient Story Point Estimation With Comparative Learning. arXiv preprint arXiv:2507.14642 (2026).
- Bethi, M. R., Jhade, S. R., Yaganti, P., Khan, M. M., & Yu, Z. Modeling Art Evaluations from Comparative Judgments: A Deep Learning Approach to Predicting Aesthetic Preferences. arXiv preprint arXiv:2602.00394 (2026).
- Minni, K., Zhang, Q., Khan, M. M., & Yu, Z. Modeling Image-Caption Rating from Comparative Judgments. arXiv preprint arXiv:2602.00381 (2026).

WORK EXPERIENCE

- **Intern** **June 2024 - August 2024**
  ABB
  Mannheim, Germany
  – Developed an end-to-end Named Entity Recognition (NER) pipeline to serve as an internal product for engineers. Used traditional NLP methods, ML models, deep learning models and LLMs.
  – Final NER model showed an improvement in F-1 score of **0.36** over the initial NER model.
  – Used various tools including PyTorch, spaCy, scikit-learn, Hugging Face, MLflow.
  – Conducted under the supervision of Nika Strem as part of the **DAAD RISE Professional Program 2024**.

- **Graduate Research Assistant** **Fall 2021 - Fall 2023, Fall 2024, Fall 2025**
  Lab of Human-In-the-Loop Software Engineering
  Rochester Institute of Technology
  Supervisor: Dr. Zhe Yu
  – Conducted research on **code search** and published in **EMSE**, using NLP and ML tools to retrieve most relevant code snippet based on text query. The proposed showed an average improvement of **10.03%** over state-of-the-art methods in terms of MRR scores.
  – Conducted research on **comparative learning**, using NLP and ML tools for agile story point estimation, showing an average increase of **21.84%** in Spearmans rank correlation coefficient scores.
  – Conducted human subject experiments to support comparative learning research.
  – Also explored research topics involving explainable AI and image classification.
  – Served as **Graduate mentor** for **REU Site: Trustworthy AI Workshop 2025**.
  – Mentored Masters students on thesis projects.

- **Graduate Teaching Assistant**
  Rochester Institute of Technology
  ○ **IDAI-710: Fundamentals of Machine Learning**
  Spring 2025, Spring 2026
  Instructor: Dr. James Heard
  ○ **IDAI-720: Research Methods for Artificial Intelligence**
  Spring 2024
  Instructors: Dr. Zhe Yu & Dr. Esa Rantanen

TECHNICAL STRENGTHS

Programming languages	Python, Java, R, C, C++, JavaScript
Machine Learning & AI	TensorFlow, Keras, PyTorch, scikit-learn, LLM fine-tuning, RAG
MLOps & Data Engineering	MLflow, Airflow, PySpark, Docker
Frameworks & Databases	Flask, Spring, Angular, SQL (Oracle, SQLite), NoSQL (MongoDB)
Tools & Methodologies	Git (GitHub, Azure DevOps), LaTeX, Agile, Scrum

DOCTORAL RESEARCH EXPERIENCE

Code Search 2021 - 2024

Research project focusing on retrieving programming language artifacts related to some natural language queries from a pool of possible programming language artifacts and ranking them by relevance, using dual encoder models. Model is built in Python using TensorFlow and Keras modules. This model showed an average improvement of 10.03% over state-of-the-art methods in terms of MRR scores. This work has been published in Empirical Software Engineering Journal (EMSE) and presented at FSE 2025 in the journal-first track.

Comparative learning 2023 - Present

Research project focusing on modeling learning comparative judgments for Agile story point estimation through machine learning and human subject experiments. Machine learning experiments involved building a model to learn from pairwise story point data and rank them. These experiments involved using GPT2, SBERT, FastText language models and traditional machine learning methods. The framework was built using TensorFlow modules. The proposed model showed an average increase of 21.84% in Spearman's rank correlation coefficient scores over state-of-the-art models.

COLLABORATIVE RESEARCH EXPERIENCE

Explainable image classification 2024

Image processing and Explainable AI-based research project focusing on explaining a pre-trained VGG model's classification decisions on face image data. This work involved fine-tuning a pre-trained VGG model on SCUT face image data for classification, and using the model's gradients on the images to explain why the model made those decisions.

Comparative learning for face image attractiveness 2024 - Present

Research project focused on modeling comparative learning on face image data. This work involved using the comparative judgment framework with a pre-trained VGG model as the encoder to predict a ranked preference order for the images.

Comparative learning for image captioning 2024 - 2026

Research project focused on modeling comparative learning on image and associated caption data. This work involved using the comparative judgment framework on this multi-modal data to predict whether a paired image and text caption are likely to be connected.

Modeling Art Evaluations from Comparative Judgments 2024 - 2026

Research project focused on modeling comparative learning on image data. This work involved using the comparative judgment framework on image based data to evaluate direct and comparative judgments on image data.

Outdated comment detection for repository commits 2024

Research project focused on detecting whether the comment associated with repository commits are up-to-date or outdated after new commits. This work involved the use of various deep learning structures, including dual encoders.

Bangla Text Summarization 2019 - 2020

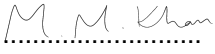
A research project on constructing a dataset for the task of abstractive text summarization in Bangla, and constructing a deep learning based model capable of using said dataset. The model was written in Python using TensorFlow modules. The research was conducted as the final year research project at University of Dhaka under the supervison of Dr. Muhammad Asif Hossain Khan, collaborating with another final year student.

MENTORSHIP & SUPERVISION EXPERIENCE

- **Graduate mentor, REU Site: Trustworthy AI Workshop 2025**
  Faculty mentor: Dr. Zhe Yu
  Mentored a visiting student on a research project focused on outdated comment detection in repository commits. Mentorship responsibilities included -
  - Guiding the overall direction of the research project
  - Contributing to experimental design and methodology
  - Providing detailed feedback on literature review, experiment execution, and report writing
- **Informal Graduate Mentor, Human-in-the-Loop Software Engineering Lab, RIT**
  Mentored two Masters students on thesis projects involving comparative learning on image-caption data using multi-modal inputs. Support included -
  - Guiding overall research direction and experiment planning
  - Offering technical assistance (e.g., code-level help and architecture design)
  - Providing regular feedback in weekly meetings
  - Supported extension of this work into a peer-reviewed article submission

SCHOLARSHIPS

- DAAD Rise Professional Program 2024



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