Rifat Rafiuddin

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EDUCATION

- **Oklahoma State University** — Stillwater, OK, USA
  Ph.D. in Computer Science — *Aug 2022 – Jul 2027 (Expected)*
- **Rajshahi University of Engineering and Technology (RUET)** — Rajshahi, Bangladesh
  B.Sc. in Computer Science and Engineering — *Jan 2012 – Oct 2016*

SKILLS SUMMARY

- **Programming Languages**: C, C++, Java, Python
- **Frameworks & Libraries**: NumPy, pandas, Matplotlib, Seaborn, NLTK, Scikit-learn, TensorFlow, PyTorch
- **DevOps & Cloud**: Docker, Kubernetes, Amazon AWS, Git, Linux
- **Big Data & DBMS**: Hadoop, Apache Spark, MySQL, Oracle, PL/SQL
- **Tools & Scientific Platforms**: LaTeX, Adobe Illustrator, Adobe Photoshop, Matlab, Unity, Blender

EXPERIENCE

- **Oklahoma State University, rAIson Lab** — Stillwater, OK, USA
  Graduate Researcher, Reasoning and Artificial Intelligence — *Jan 2025 – Present*
  - **Sentiment reasoning (ABSA/MABSA)**: Developed multimodal sentiment reasoning models with aspect-aware fusion and attention alignment (text+image), and ran ablations to identify the most critical components.
  - **Causal & robust multimodal reasoning**: Investigated robustness/causal-style alignment in multimodal learning (e.g., cross-modality alignment + feedback for real-time emotion understanding) under missing/noisy modalities.
  - **Masking & optimization**: Built masking-based training/inference methods (contextual/syntax-guided masking; token-retention gating) to improve efficiency and memory/throughput, with fully reproducible pipelines and profiling.

- **Oklahoma State University** — Stillwater, OK, USA
  Graduate Teaching Assistant — *Aug 2022 – Present*
  - **Course Assistance**: Assisted in teaching 750+ students in Computer Security, OS Design, and Algorithm Analysis.
  - **Mentorship**: Led labs, graded assignments, and mentored students in systems and algorithmic courses.
  - **Content Design**: Designed assignments and exams to reinforce hands-on and conceptual understanding.

- **University of Asia Pacific** — Dhaka, Bangladesh
  Lecturer — *Oct 2018 – Jul 2022*
  - **Course Instruction**: Delivered core CS courses and labs using interactive, applied teaching strategies.
  - **Programming Team Coaching**: Coached RUET IUPC 2019 programming team to notable competitive success.
  - **Curriculum Development**: Contributed to OBE-based curriculum enhancement through IQAC workshops.

SELECTED PUBLICATIONS (MOST RECENT FIRST)

- Rafiuddin, S.M. and Khan, M.N., 2026. **Emergent Discrete Controller Modules for Symbolic Planning in Transformers.**: In *International Conference on Learning Representations (ICLR 2026)*. **(CORE A* Conference)**

- Rafiuddin, S.M. and Khan, M.N., 2025, December. **A Formal Analysis of Chain-of-Thought Prompting via Turing Reductions.**: In *Proceedings of the 14th International Joint Conference on Natural Language Processing and the 4th Conference of the Asia-Pacific Chapter of the Association for Computational Linguistics (IJCNLP-AACL 2025)* (pp. 87–98), Mumbai, India. The Asian Federation of Natural Language Processing and The Association for Computational Linguistics. **(CORE B Conference)**

- Rafiuddin, S.M., 2025. **Edu-EmotionNet: Cross-Modality Attention Alignment with Temporal Feedback Loops.**: In *International Conference on Machine Learning and Applications (ICMLA 2025)*, Boca Raton, FL, USA, Dec 3–5, 2025. `doi:10.48550/arXiv.2510.08802` **(CORE C Conference)**

- Rafiuddin, S.M. and Khan, M.N., 2025. **Learning What to Remember: Adaptive Probabilistic Memory Retention for Memory-Efficient Language Models.**: In *Findings of the Association for Computational Linguistics: EMNLP 2025* (pp. 3969–3981), Suzhou, China. Association for Computational Linguistics. `doi:10.18653/v1/2025.findings-emnlp.212` **(CORE A* Conference)**

- Rafiuddin, S.M., Kamal, S., Rakib, M., Bagavathi, A. and Sen, A., 2026. **AdaptiSent: Context-Aware Adaptive Attention for Multimodal Aspect-Based Sentiment Analysis.**: In *International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*. `doi:10.1007/978-3-032-13513-1_11` **(CORE B Conference)**

- Rafiuddin, S.M., Rakib, M., Kamal, S. and Bagavathi, A., 2024, April. **Exploiting Adaptive Contextual Masking for Aspect-Based Sentiment Analysis.**: In *Advances in Knowledge Discovery and Data Mining (PAKDD 2024)*, Lecture Notes in Computer Science (LNAI), vol. 14650, pp. 147–159. Springer, Singapore. `doi:10.1007/978-981-97-2266-2_12` **(Acceptance Rate: 18.47%)** **(CORE B Conference)**

Projects

- **Image Embedding and Classification (Vision, Deep Learning)**: Implemented Xception-based pipeline to extract and visualize high-dimensional image embeddings with downstream classification; built clean training/evaluation scripts and TensorBoard 2D/3D demos. Tech: TensorFlow, NumPy, Matplotlib (2021). [GitHub]

- **GAN-based Data Augmentation for Bangla Characters (Generative Models, Low-Resource Vision)**: Applied adaptive discriminator augmentation to stabilize GAN training on limited data; produced robust character/numeral synthesis with visual demos and reproducible configs. Tech: PyTorch, GANs, OpenCV (2021). [GitHub]

- **Breast Cancer Detection with Deep Learning (Medical Imaging, CNNs)**: Built and compared Inception, VGG16, MobileNet, and Transformer-based models for IDC detection in histopathology images; constructed an end-to-end data pipeline and evaluation on Kaggle IDC. Tech: TensorFlow, Keras, NumPy (2021). [GitHub]

- **GO–CART , 3D Unity Game (Real-Time Graphics & Physics)**: Designed a Unity/C# 3D racer with real-time gameplay loop: WASD controls, third-person camera, physics-based handling, collision detection, scoring and game-over logic; tuned for smooth interaction. Tech: Unity, C# (2021). [GitHub]

- **Adaptive Blockchain with Dynamic Difficulty & SJF (Systems, Queuing)**: Simulated blockchain under high-load; integrated dynamic difficulty control and Shortest-Job-First prioritization via min-heap to improve throughput and reduce queue length/wait time; course project (OSU CS5113). Tech: Python, Priority Queues (2024). [GitHub]

Work Authorization

CPT-eligible for **Summer 2026/2027 internship** (May–Aug); at least one academic term remaining after internship.

Honors and Awards

- **AIRS Travel Fund, Oklahoma State University (2025)**: Awarded travel funding to support conference participation and research dissemination.

- **GPSGA Travel & Research Award, Oklahoma State University (2024)**: Awarded **USD 600** for conference and research support. [Link]

- **Honorable Mention, ICT Fest**: Islamic University of Technology (2014)

- **Honorable Mention, NCPC**: Daffodil International University (2014)

- **Champion, ICT Olympiad – CSE Fest**: RUET (2012)

Voluntary Services

- **National High School Programming Contest (NHSPC), Rajshahi**: *Volunteer*   2016

- **Divisional Mathematical Olympiad, Faridpur**: *Math Olympiad Volunteer (MOVer)*   2006

- **Reviewed research papers for COLING (2024), ICWSM (2026), IJCNN (2024), and PAKDD (2025)**: *Reviewer*

References

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