Tahsen Islam Sajon

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Education

University of Illinois Chicago (UIC) — Chicago, IL
Ph.D. in Computer Science — August 2025 – Present
Advisor: Prof. Khairi Reda

Rajshahi University of Engineering & Technology (RUET) — Rajshahi, Bangladesh
B.Sc. in Computer Science and Engineering — 2018 – 2024

Research Experience

Graduate Research Assistant — August 2025 – Present
Electronic Visualization Laboratory, University of Illinois Chicago — Chicago, IL

- **CrossFit: Supporting Rigorous Statistical Reasoning Within Visualizations**
  - Developing a visual analytics system that lets analysts check their interpretations as they explore data. Analysts pose questions or claims in natural language, and the system answers with model-based statistical estimates and their uncertainty, visualized alongside the observed data and accompanied by plain-language summaries.
  - Designed a hypothesis grammar that represents analysts' insights as statistical quantities, and built the pipeline around it: an LLM translates each request into a grammar instance, and the statistical computation and visualization then run deterministically.
  - Conducted a qualitative study with 15 participants. Analyzed how participants used the system to formulate questions, interpret feedback, and refine their conclusions, and how reliably the system translated their requests.
- **LLM Agents for Visualization** IEEE VIS 2026 · VISxGenAI Workshop · GitHub
  - Designed an LLM agent that generates interactive data stories from a dataset and a task description. The agent plans the analysis as a set of questions, answers each with code it writes and runs, and builds the visualizations and narrative from the results. It then checks the page in a browser and revises until the charts and layout work.
  - Developed a separate agent for evaluation. Using a Playwright browser session, it inspects rendered pages, interacts with controls, and collects the resulting changes through screenshots and page telemetry. It uses this evidence to assess narrative coherence, visual design, and functionality.

Undergraduate Research Assistant — June 2022 – December 2023
YL Research Lab, RUET — Rajshahi, Bangladesh

- Proposed a multi-teacher knowledge distillation method for classifying leukemic blast cells versus healthy cells. A small gating network weights teacher predictions separately for each image, and is trained jointly with the student model. The 2.6M-parameter student improved from 94.8% to 96.1% accuracy, compared with about 98% for teachers roughly 34 times its size.
- Examined two approaches to interpretability in leukemia classification from blood smear images. The first compared hand-crafted features describing cell texture and shape (Haralick, Hu moments, threshold adjacency statistics) against transfer-learned CNNs; a Gaussian process classifier on these features came within half a point of the best CNN (99.2% vs. 99.7%). The second added channel and spatial attention (CBAM) to transfer-learned CNNs, and used feature map visualizations and Grad-CAM to check which cell regions the models relied on.

Publications

T.I. Sajon (2026). "LLM Agents for Visualization Generation and Vision-First Evaluation". In: *VISxGenAI: 2nd Workshop on GenAI, Agents, and the Future of VIS, IEEE VIS 2026*. AgenticVIS Challenge track. URL: https://visxgenai.github.io/.

T.I. Sajon, B. Roy, M.F. Faruk, A.Y. Srizon, S.M. Shuvo, M.A. Mamun, A. Sayeed, and S.M.M. Hasan (2024). "Attention Mechanism-Enhanced Deep CNN Architecture for Precise Multi-class Leukemia Classification". In: *Proceedings of the 2nd International Conference on Big Data, IoT and Machine Learning*. Vol. 867. Lecture Notes in Networks and Systems. Springer. DOI: 10.1007/978-981-99-8937-9_24.

T.I. Sajon (2023). "Scalable Multi-Teacher Gated Knowledge Distillation for Accurate and Efficient Leukemia Classification". New in ML Workshop at NeurIPS 2023. Extended abstract. URL: https://nehzux.github.io/NewInML2023NeurIPS/newinml2023.html.

T.I. Sajon, M. Chowdhury, A.Y. Srizon, M.F. Faruk, S.M.M. Hasan, A. Sayeed, and A.F.M.M. Rahman (2023). "Recognition of Leukemia Sub-types Using Transfer Learning and Extraction of Distinguishable Features Using an Effective Machine Learning Approach". In: *International Conference on Electrical, Computer and Communication Engineering (ECCE)*. IEEE. DOI: 10.1109/ECCE57851.2023.10101490.

Industry Experience

Machine Learning Engineer August 2023 – August 2025
Advanced Chemical Industries (ACI) Limited Dhaka, Bangladesh

- Built a foot traffic analysis system for ACI Shwapno retail stores. It maps person detections from multiple camera feeds onto the store floor plan using homography and aggregates them into heatmaps over time. Deployed in two stores with 16 cameras each, to plan shelf layouts and staff allocations.
- Developed a license plate recognition system for factory trucks using CCTV footage. Each truck's arrival, length of stay, and departure were logged automatically. Deployed at one ACI Salt production facility, where it helped resolve billing issues.
- Explored 3D Gaussian Splatting (3DGS) for building interactive 3D representations of retail stores from photographs. Wrote a Vulkan port of a minimal Python and CUDA 3DGS renderer, first as a compute shader and then as an early version using vertex and fragment shaders.

Associate Software Engineer June 2021 – April 2022
Brain Station 23 LTD Dhaka, Bangladesh

- Developed React frontend components and socket-based backend features in FeathersJS for a suite of real-time emergency response applications.
- Built the validation engine for responders' case reports, translating 300+ client-provided reporting rules into conditional checks across multiple data sources.

Honors & Awards

Runner-up, AgenticVIS Challenge, VISxGenAI Workshop at IEEE VIS 2026. [Entry] 2026

Champion, Robi Datathon 3.0: Data Science Competition (1,000+ teams). [News] 2024

3rd Place, AVA Challenge at IEEE MIPR 2024: Accident Risk Prediction from Dashcam Footage. [GitHub] 2024

Bronze Medal (Kaggle notebook), SenNet+HOA Competition: 3D Kidney Vasculature Segmentation. [GitHub] 2024

Award of Excellence for Research Contributions, YL Research Lab, RUET. 2023

Skills

HCI Research Methods	Mixed-methods user studies, think-aloud protocols, semi-structured interviews
Visualization & Interaction	Vega-Lite, Observable, D3, React, WebGL, Matplotlib
Data Analysis	Python (pandas, NumPy, statsmodels), R (GAMLSS, emmeans)
Agent Systems	Tool use and function calling, prompt and context engineering, structured outputs, browser automation (Playwright)
Machine Learning	PyTorch, TensorFlow, scikit-learn, OpenCV
Backend & DevOps	REST API design, Pydantic, Docker, CI/CD (GitHub Actions), Git
Languages	Python, JavaScript, C/C++, R, SQL

Leadership & Service

Vice President of Outreach, Bangladeshi Students' Association at UIC 2026 – 2027

Class Representative, Department of CSE, RUET 2018 – 2023

Student Mentor, RUET Analytical Programming Lab 2019 – 2020

References

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