MD RAHAT-UZ- ZAMAN

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EDUCATION

Ph.D. in Computer Science, University of Utah — Expected Graduation Fall 2027
CGPA: 3.98 out of 4.00

M.S. in Computer Science, University of Utah — 2025
CGPA: 3.98 out of 4.00

B.Sc. in Computer Science and Engineering, Khulna University of Engineering & Technology (KUET) — 2020
CGPA: 3.69 out of 4.00

RESEARCH AND TEACHING EXPERIENCE

PhD Research Intern, Tableau (Salesforce) — May 2026 - August 2026

- Built Vela to surface an LLM agent's intermediate state so users can verify and steer it, evaluated it with formative and summative studies, and patented it; now being productized in Tableau Next.

PhD Data Visualization Summer Intern, Epsilon — May 2025 - August 2025

- Built a transformer model and visualization tools for marketing AI pipelines, used by 30+ experts.

Graduate Research Assistant Advisor: Paul Rosen, University of Utah — Jan 2023 - Present

- Co-designed AnnoGram and Blabber (with Microsoft Research), declarative languages for chart annotation, and built AnnoBench to benchmark LLMs and VLMs on generating annotations.
- Built a DevTools extension that audits accessibility across UI states and reading orders.
- Built ChannelExplorer to explain CNN, GAN, and Stable Diffusion models through their activations.
- Built an online jsPsych experiment and a reusable jsPsych data manager for user studies.

Graduate Research Assistant Advisor: Stephen G. Kobourov, University of Arizona — Aug 2021 - Dec 2022

- Built BlobViz for PubMed knowledge-graph search and an algorithm that reconstructs point clouds from images.

Graduate Teaching Assistant

- CS 5630/6630: Vis for Data Science, University of Utah — Aug 2023 - Dec 2023
- CSC 110: Introduction to Computer Programming, University of Arizona — May 2022 - Aug 2022
- CSC 372: Comparative Programming Languages, University of Arizona — Aug 2021 - Dec 2021

PUBLICATIONS

CHI 2027 *(Submitted)* **Beyond the Spinner: What Should Analytical Agents Surface While They Work?**
Md Rahat-uz-Zaman, Srishti Palani, Dennis Bromley, Vidya Setlur
Proceedings of the 2027 CHI Conference on Human Factors in Computing Systems

CHI 2027 *(Submitted)* **Blabber: A Language for Chart Annotation**
Huichen Will Wang, **Md Rahat-uz-Zaman**, Md Dilshadur Rahman, Andrew M. McNutt, Paul Rosen, Alper Sarikaya, Chenglong Wang
Proceedings of the 2027 CHI Conference on Human Factors in Computing Systems

TVCG *(Submitted)*
AnnoBench: A Benchmark for Visualization Annotation Generation
Md Rahat-uz-Zaman, Md Dilshadur Rahman, Andrew McNutt, Paul Rosen
IEEE Transactions on Visualization and Computer Graphics

TVCG
ChannelExplorer: Exploring Class Separability Through Activation Channel Visualization
Md Rahat-uz-Zaman, Bei Wang, Paul Rosen
IEEE Transactions on Visualization and Computer Graphics

VIS 2026
Visual Accessibility Auditing Across Interaction States and Reading Orders
Md Rahat-uz-Zaman, Jake Wagoner, Tingying He, Alexander Lex, Paul Rosen
IEEE VIS 2026 Workshop on Visualization for Accessibility

VIS 2026
A Case Study in Accessible Redesign of a Wastewater Dashboard
Tingying He, Jake Wagoner, **Md Rahat-uz-Zaman**, Md Dilshadur Rahman, Willy Ray, George G. Vega Yon, Matthew Samore, Alexander Lex, Paul Rosen
IEEE VIS 2026 Workshop on Visualization for Accessibility

CCCG 2026
3DMPE: 3D Multi-Perspective Embedding
Vahan Huroyan, **Md Rahat-uz-Zaman**, Stephen Kobourov
Proceedings of the 38th Canadian Conference on Computational Geometry

VIS 2025
AnnoGram: An Annotative Grammar of Graphics Extension
Md Dilshadur Rahman, **Md Rahat-uz-Zaman**, Andrew McNutt, Paul Rosen
2025 IEEE Visualization and Visual Analytics (VIS)

PacificVis 2023
Visualizing Interaction Networks and Evidence in Biomedical Corpora
Enrique Noriega-Atala, **Md Rahat-uz-Zaman**, Ruchika Bhat, Mladen Jergovic, Stephen G. Kobourov, Janko Nikolich-Zugich
2023 IEEE 16th Pacific Visualization Symposium (PacificVis)

Electronics 2023
Handwritten Numeral Recognition Integrating Start–End Points Measure with Convolutional Neural Network
M. A. H. Akhand, **Md Rahat-uz-Zaman**, Shadmaan Hye, Md Abdus Samad Kamal
Electronics

ICECE 2022
Start-End Writing Integration with Convolutional Neural Network for Bengali Handwritten Numeral Recognition
Md Rahat-uz-Zaman, Shadmaan Hye, M. A. H. Akhand
2022 12th International Conference on Electrical and Computer Engineering

ICREST 2020
Prediction of Apple Leaf Diseases Using Multiclass Support Vector Machine
Soarov Chakraborty, Shourav Paul, **Md Rahat-uz-Zaman**
2021 2nd International Conference on Robotics, Electrical and Signal Processing Techniques (ICREST)

TENSYMP 2020
Extraction of Sequence from Bangla Handwritten Numerals and Recognition Using LSTM
S. Hye, **Md Rahat-uz-Zaman**, M. A. H. Akhand
2020 IEEE Region 10 Symposium (TENSYMP)

ICCIT 2019
Agglomerative Clustering of Handwritten Numerals to Determine Similarity of Different Languages
Md Rahat-uz-Zaman, Shadmaan Hye
2019 22nd International Conference on Computer and Information Technology (ICCIT)

ICSPC 2019
A multi-modal human machine interface for controlling a smart wheelchair
Saifuddin Mahmud, Xiangxu Lin, Jong-Hoon Kim, Hasib Iqbal, **Md Rahat-uz-Zaman**, Sakib Reza, M Asifur Rahman
2019 IEEE 7th Conference on Systems, Process and Control (ICSPC)

ICECTE 2019 **Audio Future Block Prediction with Conditional Generative Adversarial Network**
Md Rahat-uz-Zaman, Shadmaan Hye, Mahmudul Hasan
2019 3rd International Conference on Electrical, Computer & Telecommunication Engineering (ICECTE)

GRANTS AND FUNDING

NSF-Simons AI Institute for Cosmic Origins (CosmicAI) Seed Grant Feb 2026 - Present
Visual Analytics for Improving Reliability of Deep Neural Networks in Astronomy
Paul Rosen, **Md Rahat-uz-Zaman**

The Wilkes Center Research and Conference Travel Award (RCTA), *IEEE VIS 2024 paper* 2024

AWARDS AND ACHIEVEMENTS

Academic Achievements

2026 Honorable Mention, One-U Responsible AI Hackathon: Minds & Machines, University of Utah
2025 Doctoral Colloquium Presenter, IEEE VIS 2025, Vienna, Austria
2017 - 2020 B.Sc. Dean's Award (*2nd, 3rd and 4th Year*)
2020 1st Merit Position in KUET, ITEE Level-2: FE Exam, BD-ITEC

International Competition

2019 **4th position**, IEEE YESIST12 Maker Fair, Stamford International University, Thailand
2018 **Finalist**, IEEE SS12 Innovation Challenge, NSBM Green University, Sri Lanka
2019 **Regional Finalist**, HULT Prize Regional Finale, MaGIC, Kuala Lumpur, Malaysia
2019 **2nd Runners up**, Code Samurai Hackathon 2019, Dhaka University, Bangladesh
2019 **Special Award**, Code Samurai Hackathon 2019, Dhaka University, Bangladesh

National Competition

2019 **Runners up**, Datathon Segment, Technovation 2.0, North South University, Dhaka
2019 **Champion**, Student to Startup Bangladesh, Sheikh Hasina Youth Development Center
2019 **Best Programming Team**, Intra-KUET Programming Contest 2019 (Among 120+ teams)
2019 **Champion**, University Day Project Show 2019, KUET
2019 **Runners Up**, ULAB EEE Fest Poster Presentation, ULAB
2020 **Champion**, Intra University Math Olympiad, KUET
2019 **Best Project Award**, Fablab Workshop, KUET

LEADERSHIP AND SERVICES

2026 Lead Student Volunteer, Supercomputing Conference 2026 (SC26)
2026 Short Papers Committee Panel Member, IEEE VIS 2026
2026 Paper Reviewer, IEEE VIS, IEEE TVCG, and EuroVis Conference
2025 Student Volunteer, Supercomputing Conference 2025 (SC25)
2018 - 2020 President, Bit2Byte club
University club focused on Software Development
2018 Mentor, Basic Electronic Building Blocks Workshops, American Corner
Managed 5 workshops on electronics and computer science

NOTABLE PROJECTS

Vela Adaptive surfacing of LLM agents' intermediate state so users can monitor, verify, and steer analyses.
Technologies: TypeScript, Python, LLM agents, Tableau (Vela paper)

AnnoBench A benchmark evaluating LLMs and VLMs on chart annotation with human and VLM judges.
Technologies: SvelteKit, TypeScript, OpenAI/Anthropic/Gemini, OpenRouter APIs (AnnoBench)

ChannelExplorer Coordinated views of activation channels in CNNs, GANs, and Stable Diffusion models.
Technologies: TensorFlow, PyTorch, React.js, TypeScript (ChannelExplorer)

Site Accessibility Auditor A DevTools extension that drives pages through UI states and aligns reading orders.
Technologies: Svelte, TypeScript, Chrome Extensions (site-accessibility-auditor)

MarkUI A full-stack PDF to Markdown/JSON/HTML converter with LLM-assisted cleanup and a REST API.
Technologies: FastAPI, Redis job queue, Docker (GPU), SvelteKit, Marker (MarkUI)

AnnoGram A Vega extension library that incorporates existing annotation design space.
Technologies: Vega, TypeScript, Svelte, Monaco (live demo)

EyeTask Hands-free wheelchair and GUI control via eye-gaze or head direction for users with motor disabilities.
Technologies: Keras, OpenCV, Dlib facial landmarks, PyQt (EyeTask)

Latent State Learning An online experiment studying latent state learning & context generalization.
Technologies: jsPsych, Vite (live experiment)

TECHNICAL SKILLS

Generative AI	LLM agents, LLM/VLM benchmarks and judges, DSLs for LLMs, Stable Diffusion
Agentic Development	Cursor, Claude Code, Codex, MCP; reviewing and testing agent-written code
Prototyping	TypeScript, React, Node.js, SvelteKit, Next.js, Vite, Chrome extensions, FastAPI
Languages	Python, TypeScript, JavaScript, Rust, C, C++, Java, SQL, (Ba/Fi/Z)sh
User Studies	Formative, summative, and expert studies; jsPsych, ReVisit, PsychoPy, Qualtrics
Modalities	Eye-gaze and head tracking, glove gestures, screen-reader and keyboard navigation
Visualization	D3.js, Three.js, Vega/Vega-Lite, Plotly, Matplotlib, Seaborn
ML & Vision	PyTorch, TensorFlow, Scikit-learn, Transformer models, OpenCV, Torchvision
Self-Hosting	Unraid/TrueNAS/Linux servers hosting AI models & automated workflows
DBMS	PostgreSQL, MongoDB, MySQL, SQLite, Firebase, Supabase

PAST WORK EXPERIENCE

Assistant Programmer, Bangladesh University of Engineering and Technology (BUET) Mar 2021 - Aug 2021

- Developed Graduate Admission Website that scales for 10000+ applications/week.

R&D Intern, Ultra-X Asia Pacific Mar 2020 - Mar 2021

- Developed driver-level webcam software that applies real-time vision effects for anonymity.

Founder & CEO, Vision-IT Oct 2019 - Jul 2021

- AI startup building a smart cane that senses obstacles and tells visually impaired users what is ahead.

REFERENCES

Paul Rosen (Graduate Advisor)
Professor
University of Utah
Office: WEB 4887
Email: paul.rosen@utah.edu

Vidya Setlur (Internship Mentor)
Associate Professor
University of Michigan
Office: 5546 Leinweber
Email: vsetlur@umich.edu