

Deponker Sarker Depto

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Education

2025–Now	M.S. in Computer Science • University of Tennessee at Chattanooga	Chattanooga, TN, USA
2015–2021	B.S. in Computer Science and Engineering • North South University • Advisor: Dr. Mahdy Rahman Chowdhury <i>Thesis: A High Variant Blood Smear Image Dataset With Comparative Benchmarks of Deep Learning, Machine Learning and Image Processing Techniques</i>	Dhaka, Bangladesh

Research Experience

2025–Now	Graduate Research Assistant • Center for Urban Informatics and Progress, University of Tennessee at Chattanooga * Contribute to industry-funded intelligent transportation projects focused on traffic safety and mobility analysis using real-world intersection camera and LiDAR data, including visualization and surrogate safety measures such as time-to-collision (TTC) and post-encroachment time (PET). * Develop and evaluate trajectory forecasting models for vehicles and vulnerable road users, including pedestrians and scooter riders, using real-world urban traffic data to support safety and mobility analysis.	Chattanooga, TN, USA
2023–2024	Research Mentor • Mahdy Research Academy * Supervised and mentored computer vision and medical image analysis research projects for 26 student groups comprising approximately 80 students. * Guided students through project ideation, dataset selection and preparation, experimental design, model implementation, result analysis, technical writing, manuscript editing, and journal submission preparation. * Mentored several student-led research manuscripts currently under journal review, including submissions to <i>Engineering Reports</i> and <i>Biomedical Physics & Engineering Express</i> .	Dhaka, Bangladesh
2021–2024	Research Assistant • NSU Optics and Biomedical Lab, North South University * Conducted computer vision research in medical image analysis, contributing to problem formulation, custom dataset development and curation, experimental design, model evaluation, manuscript writing, submission, revision, and rebuttal preparation. * Published two first-author journal articles on biomedical image segmentation and imbalanced medical image classification in Q1 and Q2 journals.	Dhaka, Bangladesh

Teaching Experience

2023–2024	Instructor • Mahdy Research Academy * Taught live online courses on Python programming and deep learning, with practical applications in computer vision and medical image analysis; prepared course materials, assignments, grading, and completion certificates.	Dhaka, Bangladesh
2022–2023	Instructor	Dhaka, Bangladesh

- North South University
* Delivered quantum computing lectures for senior undergraduate thesis students and taught hands-on Qiskit programming, including circuit construction, simulation, debugging, assignments, and grading.

⌵ Administrative Experience

2026–Now	UTC Sports Complex Assistant	Chattanooga, TN, USA
	• University of Tennessee at Chattanooga * Coordinated sports facility operations during assigned shifts for student and rental groups, including opening and closing gates, monitoring access and security, preventing unauthorized entry, supporting rentals, maintaining facility assets, tracking hourly occupancy, handling cleanliness, reporting incidents, and providing end-of-shift updates to the supervisor.	
2023–2024	Program Coordinator	Dhaka, Bangladesh
	• Mahdy Research Academy * Managed program operations for student research activities, including student registration, research group allocation, mentor assignment, workload tracking, progress records, financial transaction tracking, and coordination reports to the advisor.	

🎓 Projects

Few-Shot Segmentation of Retinal Vessels Using Pseudo Annotations

- Designed a pseudo-labeling pipeline for retinal vessel segmentation under limited annotation settings. Trained a U-Net on a small labeled subset to generate pseudo masks for a larger training set, then trained a downstream U-Net using the pseudo annotations and evaluated performance with Dice score and Jaccard index against ground-truth masks.

Experimental Analysis of DDPMs for Medical Image Synthesis

- Implemented and evaluated DDPM-based medical image generators on DermaMNIST using CNN and UNet backbones. Compared noise schedules, diffusion timesteps, learning rates, and time embeddings across controlled runs, using training/validation MSE and qualitative inspection of generated skin-lesion images to analyze model performance and computational trade-offs.

📖 Publication

Journal Articles

- 2026 J2 **Understanding When Attention Helps: A Systematic Empirical Study of Attention Mechanisms in Medical Image Classification**
Nujhat Raisa Arpa, Mahtab Newaz, Md. Mazharul Islam Nibir, Ramisa Lamya, Deponker Sarker Depto, and M. R. C. Mahdy.
Engineering Reports
DOI: <https://doi.org/10.1002/eng2.70957>
- 2023 J1 **Quantifying imbalance classification methods for leukemia detection**
Deponker Sarker Depto, Md. Mashfiq Rizvee, Aimon Rahman, Hasib Zunair, M. Sohel Rahman, and M. R. C. Mahdy.
Computers in Biology and Medicine
DOI: [10.1016/j.compbiomed.2022.106372](https://doi.org/10.1016/j.compbiomed.2022.106372)
- 2021 J0 **Automatic segmentation of blood cells from microscopic slides: A comparative analysis**
Deponker Sarker Depto, Shazidur Rahman, Md. Mekayel Hosen, Mst. Shapna Akter, Tamanna Rahman Reme, Aimon Rahman, Hasib Zunair, M. Sohel Rahman, and M. R. C. Mahdy.
Tissue and Cell
DOI: [10.1016/j.tice.2021.101653](https://doi.org/10.1016/j.tice.2021.101653)

Selected Coursework

- Machine Learning; Principles of Data Analytics; Introduction to Statistics; Model Analysis and Simulation.

Awards, Honors, and Competitions

- 2026 **CECS Student Research Showcase**, 2nd Place, University of Tennessee at Chattanooga
- 2026 **ACM Spring Programming Contest**, 3rd Place, University of Tennessee at Chattanooga
- 2026 **UTC Prompt Injection Competition**, 4th Place, University of Tennessee at Chattanooga
- 2026 **SGA Resilience Scholarship**, University of Tennessee at Chattanooga
- 2011 **Education Board Scholarship**, Government of Bangladesh, Bangladesh

Presentation

Poster Presentation

- Transportation Research Board Annual Meeting (TRB), Washington, D.C. (2026)
- UTC Spring Research and Arts Conference, Chattanooga, TN (2026)
- Chattanooga Connect, Chattanooga, TN (2025)

Academic Service

Peer Reviewing 5 full papers 2026

- Transportation Research Board Annual Meeting (TRB) (2026)
- IEEE International Conference on Intelligent Transportation Systems (ITSC) (2026)

Skills

Programming	Python, C, C++, Java, JavaScript, R
Machine Learning	Scikit-learn, TensorFlow, PyTorch, OpenCV
Data & Databases	SQL, MySQL, Pandas, NumPy
MLOps & Tools	Docker, Kubernetes, Linux
Visualization	Matplotlib, Seaborn, Plotly
Languages	Bengali (Native), English (Fluent; IELTS 7.5)
Other	Qiskit, Adobe Photoshop, AutoCAD, CorelDRAW, SketchUp, Microsoft Word, PowerPoint, Excel

Leadership

- 2026 President, International Student Club, University of Tennessee at Chattanooga
- 2026 Vice President, International Student Leadership Council, University of Tennessee at Chattanooga
- 2026 Senator, Student Government Association, University of Tennessee at Chattanooga

Volunteering

- 2026 Feedback Collector, Chattanooga Minority Health Fair
- 2026 Volunteer, UTC Spring Research and Arts Conference, University of Tennessee at Chattanooga