

Jillur Rahman Saurav

Ph.D. Candidate in Computer Science

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RESEARCH INTERESTS

Generative models for medical imaging and computational pathology; virtual staining and multiplexed imaging; representation learning and multimodal learning; clinically deployable and cost-aware AI systems; foundation models for vision and language.

EDUCATION

- **University of Texas at Arlington** Arlington, TX
Ph.D. in Computer Science *Aug 2021 – May 2026 (Expected)*
 - Advisor: Dr. Jacob M. Lubner
 - Dissertation: Generative Imaging for Computational Pathology
- **Shahjalal University of Science & Technology** Sylhet, Bangladesh
B.Sc. (Engg.) in Computer Science *Jan 2013 – Jun 2018*

RESEARCH EXPERIENCE

- **Graduate Research Assistant** Jun 2022 – Present
University of Texas at Arlington, Lubner Lab *Arlington, TX*
 - Built foundation-model-guided virtual staining system (UNISTainNet) for H&E to IHC translation, handling multiple markers (HER2, Ki67, ER, PR) in a single unified model; achieved SOTA on MIST and BCI benchmarks.
 - Developed multi-level VQGAN models for virtual H&E synthesis from multiplex immunofluorescence, improving downstream nuclei segmentation and tissue classification; published at MICAD 2025.
 - Designed SSIM-guided conditional GAN architectures for cross-channel image synthesis, validated on HuBMAP and lung adenocarcinoma datasets; published at IEEE CIBCB 2023.
 - Contributed to VAE-based compression pipeline for EEG spectrograms achieving 1:293 compression ratio while retaining 91% seizure detection accuracy; focused on model architecture and spectrogram representation.
 - Co-authored NEJM AI 2024 study benchmarking histopathology search engines against clinical workflows.

INDUSTRY EXPERIENCE

- **Software Engineer (ML & Search Infrastructure)** Nov 2017 – Dec 2020
Pipilika *Dhaka, Bangladesh*
 - Developed end-to-end Bangla NLP systems for speech recognition, POS tagging, and NER, achieving 3.96% WER, 93.86% accuracy, and 86% Macro-F1.
 - Co-created B-NER dataset with 22,144 annotated sentences; published in IEEE Access 2023.
 - Designed scalable news aggregation and search infrastructure covering 5,500+ sources; contributed to the largest Bangla n-gram corpus.
 - Led applied computational social science and public health projects, including dengue surveillance and large-scale media bias analysis.

PUBLICATIONS

1. **Saurav, J.R.**, Pham, T.L.H., Mukherjee, P., Yi, P., Orr, B.A., Lubner, J.M. UNISTainNet: Foundation-Model-Guided Virtual Staining of H&E to IHC. arXiv preprint, 2026.
2. **Saurav, J.R.**, Nasr, M.S., Lubner, J.M. Cross-Domain Image Synthesis: Generating H&E from Multiplexed Biomarker Imaging. MICAD, Springer LNCS, 2025.
3. Nasr, M.S., et al., **Saurav, J.R.** Histopathology Slide Indexing and Search — Are We There Yet?. NEJM AI, 2024.
4. **Saurav, J.R.**, et al. A SSIM Guided cGAN Architecture for Clinically Driven Generative Image Synthesis of Multiplexed Spatial Proteomics Channels. IEEE CIBCB, 2023.
5. Haque, M.Z., et al., **Saurav, J.R.** B-NER: A Novel Bangla Named Entity Recognition Dataset With Largest Entities and Its Baseline Evaluation. IEEE Access, 2023.
6. Nasr, M.S., et al., **Saurav, J.R.** Clinically Relevant Latent Space Embedding of Cancer Histopathology Slides through Variational Autoencoder Based Image Compression. IEEE ISBI, 2023.
7. **Saurav, J.R.**, et al. A Comparative Study of Language Dependent Gender Bias in Online Newspapers. HCII, Springer, 2021.
8. **Saurav, J.R.**, et al. End-to-End POS Tagging and NER in Bangla Language. ICBSLP, 2019.
9. **Saurav, J.R.**, et al. Bangla Speech Recognition for Voice Search. ICBSLP, 2018.

TECHNICAL SKILLS

Programming: Python, Java, SQL

Deep Learning: PyTorch, TensorFlow, Keras, JAX, GANs, VAEs, Diffusion Models

Medical Imaging: Computational pathology, multiplexed imaging, virtual staining, histopathology

NLP: Transformers, BERT, GPT, speech recognition, low-resource NLP

Systems: Docker, Linux, HPC clusters, embedded inference

Scientific Computing: NumPy, Pandas, SciPy, Matplotlib

HONORS & SERVICE

- **Google Research Computer Science Research Mentorship Program (CSRMP)** Class A Recipient
Google Research *Jan 2023 – Apr 2023*
- **Teaching Assistant — Artificial Intelligence (CSE 5360)** Aug 2021 – May 2022
University of Texas at Arlington *Arlington, TX*