Gulfam Ahmed Saju

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Education

- **PhD in Engineering and Applied Science** Jan. 2022 – May 2026 (Expected)
  Concentration: Computer Science and Information Systems
  University of Massachusetts Dartmouth North Dartmouth, Massachusetts
  Thesis Topic: Generative AI for solving inverse problems in Image Reconstruction.
- **Bachelor of Science in Computer Science and Engineering** Jan. 2016 – Jan. 2020
  Daffodil International University Dhaka, Bangladesh
  Thesis Topic: Wireless Sensor Networks (WSN)

Experience

Graduate Research Assistant Jan. 2022 – Present
University of Massachusetts Dartmouth North Dartmouth, Massachusetts

Skills

Programming	Python, PyTorch, TensorFlow, JAX, Scikit-learn, MATLAB, LangChain, C, C#, .NET.
Tools	AWS, VTK, Docker, Git, Jupyter, Tensorboard, ImageJ.
Miscellaneous	CUDA, Linux, Data Processing & Analysis, Image Processing, LaTeX, Microsoft Office.
Soft Skills	Communication Skills, Public Speaking, Teamwork, Leadership.
Linguistics	English (Professional Proficiency), Bengali (Native).

Awards & Honors

- Computer & Information Science (CIS) Graduate Research Award – University of Massachusetts Dartmouth (2024)
- IEEE EMBC NextGen Scholar Award – 46th IEEE Engineering in Medicine and Biology Conference (EMBC) (2024)
- Recipient of Graduate Student Travel Grant (GSTG) – University of Massachusetts Dartmouth (2024)
- Scholarship from Daffodil International University for outstanding result in a single semester (2017).
- Honorary award from Prothom Alo for HSC examination result (2014).

Publications

Peer-Reviewed Journal Articles

[1] **Gulfam Ahmed Saju,** Alan Okinaka, Marjan Akhi and Yuchou Chang. "An ensemble approach for accelerated and noise-resilient parallel MRI reconstruction utilizing CycleGANs". Machine Vision and Applications. Volume 35, Article 136 (2024). DOI: 10.1007/s00138-024-01617-0

[2] **Gulfam Ahmed Saju**, Zhiqiang Li, Hui Mao, Tianming Liu, and Yuchou Chang. "Suppressing image blurring of PROPELLER MRI via untrained method". Physics in Medicine and Biology (2023). DOI: 10.1088/1361-6560/acebb1

[3] **Gulfam Ahmed Saju,** Zhiqiang Li and Yuchou Chang. "Improving Deep PROPELLER MRI via Synthetic Blade Augmentation and Enhanced Generalization". Magnetic Resonance Imaging (2024). DOI: 10.1016/j.mri.2024.01.017

[4] Yuchou Chang, Zhiqiang Li, **Gulfam Ahmed Saju**, Hui Mao, and Tianming Liu. "Deep Learning-Based Rigid Motion Correction for Magnetic Resonance Imaging: A Survey". Meta-Radiology (2023). DOI: 10.1016/j.metrad.2023.100001

Peer-Reviewed Conference Papers

[1] **Gulfam Ahmed Saju,** Marjan Akhi, Yuchou Chang. "Large Multimodal Model for Simulating Big Training Data in Deep PROPELLER MRI". 28th IEEE High Performance Extreme Computing (HPEC) 2024.

[2] **Gulfam Ahmed Saju,** Marjan Akhi, Yuchou Chang. "Evaluating the Impact of Noisy Blades on PROPELLER MRI Reconstruction Quality". 28th IEEE High Performance Extreme Computing (HPEC) 2024.

[3] Yuchou Chang, Huy Anh Pham, **Gulfam Ahmed Saju.** "LLM-Based Task Planning for Navigating Companion Robot from Emotion Signals". 28th IEEE High Performance Extreme Computing (HPEC) 2024.

[4] Girish Babu Reddy, **Gulfam Ahmed Saju**, Yi Liu, Yuchou Chang. "Quantum Computing for Data Calibration in Parallel Magnetic Resonance Imaging Reconstruction". 28th IEEE High Performance Extreme Computing (HPEC) 2024.

[5] Alan Okinaka, **Gulfam Ahmed Saju,** Yuchou Chang. "Transfer Learning Assisted Parameter Selection for Water-Fat Separation in Dixon MRI". 28th IEEE High Performance Extreme Computing (HPEC) 2024.

[6] **Gulfam Ahmed Saju,** Marjan Akhi, Yuchou Chang. "Ensemble CycleGAN for Retrospective Rigid Motion Correction in MRI". 46th IEEE Engineering in Medicine and Biology Conference (EMBC) (2024). DOI: 10.1109/EMBC53108.2024.10782023

[7] Yuchou Chang, Zhiqiang Li, Huy Anh Pham, **Gulfam Ahmed Saju.** "Intelligent Agent Planning for Optimizing Parallel MRI Reconstruction via a Large Language Model" 46th IEEE Engineering in Medicine and Biology Conference (EMBC) (2024). DOI: 10.1109/EMBC53108.2024.10782629

[8] **Gulfam Ahmed Saju**, Alan Okinaka, Yuchou Chang. "Exploiting Generative Adversarial Networks in Joint Sen-sitivity Encoding for Enhanced MRI Reconstruction". 18th International Symposium on Visual Computing (ISVC) (2023). DOI: 10.1007/978-3-031-47966-3_35

[9] Alan Okinaka**, Gulfam Ahmed Saju**, Yuchou Chang. "Automating Kernel Size Selection in MRI Reconstruction via a Transparent and Interpretable Search Approach". 18th International Symposium on Visual Computing (ISVC) (2023). DOI: 10.1007/978-3-031-47966-3_33

[10] Alan Okinaka**, Gulfam Ahmed Saju**, Yuchou Chang. "Enhancing Image Reconstruction via Phase-Constrained Data in an Iterative Process". 18th International Symposium on Visual Computing (ISVC) (2023). DOI: 10.1007/978-3-031-47969-4_32

[11] **Gulfam Ahmed Saju**, Nazrul Islam, Md. Moshgul Bhuiyan, Narayan Ranjan Chakraborty, Bimal Chandra Das, and Manoranjan Dash. "RECH-LEACH: A New Cluster Head Selection Algorithm of LEACH on the Basis of Residual Energy for WIRELESS Sensor Network". Soft Computing and Signal Processing: Proceedings of 3rd ICSCSP 2020. DOI: 10.1007/978-981-33-6912-2_47

Peer-Reviewed Conference Abstracts

[1] **Gulfam Ahmed Saju**, Zhiqiang Li, Reza Abiri, Tianming Liu, and Yuchou Chang. "Joint Estimation of Coil Sensitivity and Image by Using Untrained Neural Network without External Training Data". International Society for Magnetic Resonance in Medicine Annual Meeting 2023**,** Abstract: 3893.

[2] **Gulfam Ahmed Saju**, Zhiqiang Li, Reza Abiri, Tianming Liu, and Yuchou Chang. "Improving JSENSE Using an Initial Reconstruction with an Unrolled Deep Network Prior". International Society for Magnetic Resonance in Medicine Annual Meeting 2023**,** Abstract: 4037.

[3] **Gulfam Ahmed Saju**, Zhiqiang Li, Reza Abiri, Tianming Liu, and Yuchou Chang. "Incorporating Untrained Neural Network Prior in PROPELLER Imaging". International Society for Magnetic Resonance in Medicine Annual Meeting 2023, Abstract: 4038.

[4] Yuchou Chang, **Gulfam Ahmed Saju**, Jasina Yu, Reza Abiri, Zhiqiang Li, and Tianming Liu. "Suppressing MRI Background Noise via Modeling Phase Variations". International Society for Magnetic Resonance in Medicine Annual Meeting 2023, Abstract: 2031.

[5] Yuchou Chang, **Gulfam Ahmed Saju**, Jasina Yu, Reza Abiri, Zhiqiang Li, and Tianming Liu. "Phase-Constrained Reconstruction for Enhancing PROPELLER SNR". International Society for Magnetic Resonance in Medicine Annual Meeting 2023, Abstract: 2004.

[6] **Gulfam Ahmed Saju**, Huy Anh Pham, Yuchou Chang. "A Triple CycleGAN Model Ensemble for Motion Correction in 7T MR Brain Images". 14th Scientific Symposium on Clinical Needs, Research Promises and Technical Solutions in Ultrahigh Field Magnetic Resonance.

Professional Services

- **Peer Reviewer**
  - **Journals**
    - Medical Image Analysis (MedIA), Computational and Structural Biotechnology Journal, Physics in Medicine & Biology, Magnetic Resonance Imaging (MRI), Engineering Research Express, Meta-Radiology, Physica Scripta, Signal, Image and Video Processing
  - **Conferences**
    - IEEE International Symposium on Biomedical Imaging (ISBI) 2024, Medical Image Computing and Computer Assisted Interventions (MICCAI) 2024
- **Abstract Committee Member –** International Society for MR Radiographers & Technologists (ISMRT) Annual Meeting 2025

Presentations and Talks

- 46th IEEE Engineering in Medicine and Biology Conference (EMBC) 2024 – Presented two papers.
- Poster Presentation in Industry Day – University of Massachusetts Dartmouth
- Research Talk – Doctoral Gathering - University of Massachusetts Dartmouth

Leadership Experience

- Mentor – NSF REU Program Summer - 2023
  University of Massachusetts Dartmouth
  - Mentored undergraduate students on research projects, which led to three conference paper publications.

Training Experience

- Front End Web Application Development Nov. 2018 – Mar. 2019
  Coderstrust Bangladesh
- ASP .NET Web Application Development Sept. 2019 – Dec. 2019
  BITM Bangladesh

Professional Affiliations

- Member of International Society for Magnetic Resonance in Medicine (ISMRM)
- Graduate Student Member of MICCAI
- Graduate Student Member of Institute of Electrical and Electronics Engineers (IEEE)
- Graduate Student Member of IEEE Engineering in Medicine and Biology Society (EMBS)