Md Mahfuzur Rahman Siddiquee

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Education

Ph.D. in Computer Science, GPA: 4.00/4.00 — 2017–Current
Arizona State University — Tempe, AZ, USA

- Research Area: Medical Imaging, Computer Vision, Deep Learning
- Advisor: Dr. Baoxin Li, Dr. Teresa Wu

B.S. in Computer Science and Engineering, GPA: 3.70/4.00 — 2011–2015
North South University — Dhaka, BGD

Experience

Arizona State University — Tempe, AZ, USA
Graduate Research Assistant — Aug 2017–Current

- Patented 5+ inventions and published 15+ research papers in top conferences including CVPR, ICCV, WACV, MICCAI, and top journals including TMI, MedIA. My publications have received 6400+ citations.

NVIDIA Inc. — Santa Clara, CA, USA
Applied Research Intern — Summer 2021 & 2022

- *MONAI Auto3dseg (docs.monai.io/en/stable/auto3dseg.html)*
- Built this automated segmentation framework to quickly develop state-of-the-art segmentation models, especially for non-expert users. I won multiple medical image segmentation challenges using this framework.

Harpa Italia s.r.l — Rome, ITA
Software Developer — Feb 2016–Jul 2017

- Developed and delivered an energy consumption monitoring system.

Selected Awards

- 1^{st} Place in Head and Neck Tumor Segmentation Challenge (HECKTOR), MICCAI 2022 — Sept 2022
- 2^{nd} Place in Intracranial Hemorrhage Segmentation Challenge (INSTANCE), MICCAI 2022 — Sept 2022
- 2^{nd} Place in Ischemic Stroke Lesion Segmentation Challenge (ISLES), MICCAI 2022 — Sept 2022
- 1^{st} Place in Fetal Brain Tissue Annotation and Segmentation Challenge (FeTA), MICCAI 2021 — Oct 2021
- 4^{th} Place in RSNA-ASNR-MICCAI Brain Tumor Segmentation (BraTS) Challenge 2021 — Nov 2021
- Engineering Graduate Fellowship by Ira A. Fulton School of Engineering — May 2020
- Conference Travel Grant by Graduate and Professional Student Association, Arizona State University — Apr 2020
- Conference Travel Grant by International Conference on Computer Vision — Oct 2019
- CIDSE Conference Travel Award by Arizona State University — Oct 2019
- Conference Travel Grant by Graduate and Professional Student Association, Arizona State University — Aug 2019
- Conference Travel Grant by Graduate and Professional Student Association, Arizona State University — Mar 2019
- Outstanding Contribution in Reviewing by Journal of Biomedical Informatics — Jun 2018
- 2^{nd} Prize in the Annual Student Poster Competition by BMI/BMD Symposium, Arizona State University — Apr 2018

Selected Publications (Citations: 6700+, H-index: 10, I10-index: 10)

[1] **M. M. Rahman Siddiquee**, J. Shah, T. Wu, C. Chong, T. J. Schwedt, G. Dumkrieger, S. Nikolova, and B. Li, "Brainomaly: Unsupervised neurologic disease detection utilizing unannotated t1-weighted brain mr images", *WACV*, 2024.

[2] F. Al-Hindawi, T. Soori, H. Hu, **M. M. Rahman Siddiquee**, H. Yoon, T. Wu, and Y. Sun, "A framework for generalizing critical heat flux detection models using unsupervised image-to-image translation", *Expert Systems with Applications*, 2023.

[3] K. Payette, H. Li, P. de Dumast, R. Licandro, H. Ji, **M. M. Rahman Siddiquee**, D. Xu, A. Myronenko, H. Liu, Y. Pei, *et al.*, "Fetal brain tissue annotation and segmentation challenge results", *MedIA*, 2023.

[4] **M. M. Rahman Siddiquee**, J. Shah, C. Chong, S. Nikolova, G. Dumkrieger, B. Li, T. Wu, and T. J. Schwedt, "Headache classification and automatic biomarker extraction from structural mris using deep learning", *Brain Communications*, 2023.

[5] J. Shah, **M. M. Rahman Siddiquee**, J. Krell-Roesch, J. A. Syrjanen, W. K. Kremers, M. Vassilaki, E. Forzani, T. Wu, and Y. E. Geda, "Neuropsychiatric symptoms and commonly used biomarkers of alzheimer's disease: A literature review from a machine learning perspective", *Journal of Alzheimer's Disease*, 2023.

[6] A. Myronenko, **M. M. Rahman Siddiquee**, D. Yang, Y. He, and D. Xu, "Automated head and neck tumor segmentation from 3d pet/ct hecktor 2022 challenge report", in *MICCAI HECKTOR Challenge*, 2022.

[7] C. Peng, A. Myronenko, A. Hatamizadeh, V. Nath, **M. M. Rahman Siddiquee**, Y. He, D. Xu, R. Chellappa, and D. Yang, "Hypersegnas: Bridging one-shot neural architecture search with 3d medical image segmentation using hypernet", in *CVPR*, 2022.

[8] **M. M. Rahman Siddiquee** and A. Myronenko, "Redundancy reduction in semantic segmentation of 3d brain tumor mris", in *MICCAI Brainlesion Workshop*, 2022.

[9] **M. M. Rahman Siddiquee**, J. Shah, T. Wu, C. Chong, T. Schwedt, and B. Li, "Healthygan: Learning from unannotated medical images to detect anomalies associated with human disease", in *MICCAI SASHIMI Workshop*, 2022.

[10] **M. M. Rahman Siddiquee**, D. Yang, Y. He, D. Xu, and A. Myronenko, "Automated 3d segmentation of renal structures for renal cancer treatment", in *MICCAI Challenge on Correction of Brainshift with Intra-Operative Ultrasound*, 2022.

[11] **M. M. Rahman Siddiquee** and A. Myronenko, "Robust 3d mri segmentation of multiple sclerosis lesions", *MSSEG-2 challenge proceedings*, 2021.

[12] **M. M. Rahman Siddiquee**, Z. Zhou, N. Tajbakhsh, R. Feng, M. B. Gotway, Y. Bengio, and J. Liang, "Learning fixed points in generative adversarial networks: From image-to-image translation to disease detection and localization", in *ICCV*, 2019.

[13] Z. Zhou, **M. M. Rahman Siddiquee**, N. Tajbakhsh, and J. Liang, "Unet++: Redesigning skip connections to exploit multiscale features in image segmentation", *IEEE TMI*, 2019.

[14] Z. Zhou, V. Sodha, **M. M. Rahman Siddiquee**, R. Feng, N. Tajbakhsh, M. B. Gotway, and J. Liang, "Models genesis: Generic autodidactic models for 3d medical image analysis", in *MICCAI*, 2019, [**Young Scientist Award, Best Paper Award**].

[15] Z. Zhou, **M. M. Rahman Siddiquee**, N. Tajbakhsh, and J. Liang, "Unet++: A nested u-net architecture for medical image segmentation", in *DLMIA*, 2018.

Patents

[1] J. Liang, Z. Zhou, N. Tajbakhsh, and **M. M. Rahman Siddiquee**, "Systems, methods, and apparatuses for implementing fixed-point image-to-image translation using improved generative adversarial networks (gans)", US Patent App. 17/477,088, Mar. 2022.

[2] Z. Zhou, **M. M. Rahman Siddiquee**, N. Tajbakhsh, and J. Liang, "Methods, systems, and media for segmenting images", US Patent 11,328,430, May 2022.

[3] Z. Zhou, V. Sodha, **M. M. Rahman Siddiquee**, R. Feng, N. Tajbakhsh, and J. Liang, "Systems, methods, and apparatuses for the generation of source models for transfer learning to application specific models used in the processing of medical imaging", US Patent App. 17/625,313, Aug. 2022.

[4] J. Liang, Z. Zhou, **M. M. Rahman Siddiquee**, and N. Tajbakhsh, "Systems, methods, and apparatuses for implementing a multi-resolution neural network for use with imaging intensive applications including medical imaging", US Patent 11,164,067, Nov. 2021.

[5] **M. M. Rahman Siddiquee**, Z. Zhou, R. Feng, N. Tajbakhsh, and J. Liang, "Methods, systems, and media for discriminating and generating translated images", US Patent 11,164,021, Nov. 2021.

Teaching

- **Instructor** at Arizona State University — Fall 2020, Fall 2019
  Introduction to Engineering (FSE 100)
- **Teaching Assistant** at Arizona State University — Fall 2020
  Introduction to Programming (CSE 110)
- **Instructor** at Arizona State University — Summer 2020
  Introduction to Programming (CSE 110)
- **Instructor** at Arizona State University — Spring 2020
  CS Capstone Project I (CSE 485)

Skills

- **OS:** Unix/Linux, Windows
- **Programming:** Python, C/C++, Java, Javascript, PHP, Bash
- **Deep Learning:** Pytorch, Keras, Tensorflow, Caffe
- **Web Development:** HTML, CSS, Node.js
- **Database:** MySQL, MongoDB

Languages

- **Bangla:** native proficiency
- **English:** full professional proficiency
- **Italian:** limited working proficiency

Services

- **Journal Reviewer:** IEEE Access, JBI, MedIA, IEEE TBME, IEEE TIP, IEEE TMI
- **Conference Reviewer:** AAAI 2023, AAAI 2022, CVPR 2023, CVPR 2022, ECCV 2022, ICCV 2023, WACV 2020
- Travel and Research Grant Reviewer at Graduate and Professional Student Association, Arizona State University Fall 2018–Summer 2019