02/2026

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Assistant Professor

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Educational Background

09/2014-12/2018	Doctor of Philosophy, Electrical Engineering, Texas A&M University, College Station, Texas, USA
04/2011-07/2014	Master of Science, Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
01/2006-02/2011	Bachelor of Science, Electrical and Electronic Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Professional Appointments

06/2021-Present	Physical Science Research Scientist, Department of Radiation Oncology, Stanford University, Stanford, CA
06/2019-05/2021	Postdoctoral Scholar, Department of Radiation Oncology, Stanford University, Stanford, CA

Honors and Awards

1. Amato Giaccia Award for Excellence in the Radiation Sciences, 2024, Department of Radiation Oncology, Stanford University
2. International Education Fee Scholarship (IEFS) Award, 2016, Texas A&M University

Scholarly Publications:

A. Peer-reviewed journal articles (original research)

1. Yan*, R., **Islam*, M.T.** and Xing, L., “Interpretable discovery of patterns in tabular data via spatially semantic topographic maps”, *equal contribution, 2025, Nature Biomedical Engineering, 9, pp. 471–482.
2. Yan, R., **Islam*, M.T.** and Xing, L., “Deep representation learning of protein-protein interaction networks for enhanced pattern discovery”, 2024, Science Advances, 10, eadq4324. * Participated in the analysis and interpretation of data and drafting of the manuscript.
3. **Islam, M.T.** and Xing, L.,“Deciphering the feature representation of deep neural networks for high performance biomedical AI”, 2024, IEEE Transactions on Pattern Analysis and Machine Intelligence, 46(8), pp. 5273 – 5287.
4. Wei*, Q., **Islam*, M.T.**, Zhou, Y. and Xing, L., “Self-supervised deep learning of gene-gene interactions for improved gene expression recovery”. *equal contribution, 2024, Briefings in Bioinformatics, 25(2), p.bbae031.
5. **Islam, M.T.**, Zhou, Z., Zou, J., Kapp, D., Liao, J. and Xing, L., “Revealing hidden patterns in deep neural network feature space continuum via manifold learning”, 2023, Nature Communications, 14(1), p.8506.
6. **Islam, M.T.** and Xing, L.,“Cartography of genomic interactions enables deep analysis of single-cell expression data”, 2023, Nature Communications, 14(1), p.679.
7. **Islam, M.T.** and Xing, L.,“Leveraging cell-cell interactions for high-performance spatial and temporal cellular mappings from gene expression data”, 2023, Patterns, Cell Press, p.100840.
8. Sang, S., Zhou, Y., **Islam*, M.T.** and Xing, L.,“Small-object sensitive segmentation using across feature map attention”, 2023, IEEE Transactions on Pattern Analysis and Machine Intelligence, 45 (5), pp.6289-6306. * Participated in the analysis and interpretation of data and drafting of the manuscript.
9. Liu, J., **Islam*, M.T.**, Sang, S., Qiu, L., and Xing, L., “Biology-aware mutation-based deep learning for

outcome prediction of cancer immunotherapy with immune checkpoint inhibitors", 2023, npj Precision Oncology, 7 (1), p.117. * Participated in the statistical analysis of the data, and manuscript drafting.

10. Ye, S., Shen, L., **Islam*, M.T.** and Xing, L., "Super-resolution biomedical imaging via reference-free statistical implicit neural representation", 2023, Physics in Medicine and Biology, 68(20), p.205020. *Participated in the statistical analysis of the data
11. Jiang, Y., Zhou, K., Sun, Z., Wang, H., Xie, J., Zhang, T., Sang, S., **Islam*, M.T.**, Wang, J.Y., Chen, C. and Yuan, Q., "Non-invasive tumor microenvironment evaluation and treatment response prediction in gastric cancer using deep learning radiomics", 2023, Cell Reports Medicine, 4(8). * Participated in drafting the manuscript
12. Zhou, Z., **Islam*, M.T.** and Xing, L., "Multibranch CNN with MLP-mixer-based feature exploration for high-performance disease diagnosis", 2023, IEEE Transactions on Neural Networks and Learning Systems. * Authored Methods section of the manuscript
13. Vasudevan, V., Bassenne, M., **Islam*, M.T.**, and Xing, L., "Image classification using graph neural network and multiscale wavelet superpixels"', 2023, Pattern Recognition Letters, 166, pp. 89–96. * Participated in drafting the manuscript.
14. Khan, M.H.R., **Islam*, M.T.**, Taraballi, F. and Righetti, R., "Assessment of compression-induced solid stress, fluid pressure and mechanopathological parameters in cancers in vivo using poroelastography", 2023, Physics in Medicine and Biology, 68, p.135014. * Participated in drafting the manuscript.
15. Majumder, S., **Islam*, M.T.** and Righetti, R., "Non-invasive imaging of interstitial fluid transport parameters in solid tumors in vivo", 2023, Scientific Reports, 13(1), p.7132. * Participated in drafting the manuscript.
16. **Islam, M.T.**, Wang, J., Ren, H., Li, X., Khuzani, M., Yu, L., Shen, L., Zhao, W., and Xing, L., "Leveraging data-driven self-consistency for high-fidelity gene expression recovery", 2022, Nature Communications, 13(1), p.7142.
17. Vasudevan, V., **Islam*, M.T.**, Pong, D. and Xing, L., "Implicit neural representation for radiation therapy dose distribution", 2022, Physics in Medicine and Biology, 67(12), p.125014. * Participated in drafting the manuscript.
18. Majumder, S., **Islam*, M.T.**, Righetti, R., "Estimation of mechanical and transport parameters in cancers using short time poroelastography", 2022, IEEE Journal of Translational Engineering in Health and Medicine, 10, pp.1-11. * Participated in drafting the manuscript.
19. Liang, X., Bassenne, M., Hristov, D.H., **Islam*, M.T.**, Zhao, W., Jia, M., Zhang, Z., Gensheimer, M., Beadle, B., Le, Q. and Xing, L., "Human-level comparable control volume mapping with a deep unsupervised-learning model for image-guided radiation therapy", 2022, Computers in Biology and Medicine, 141, p.105139. * Participated in drafting the manuscript.
20. **Islam, M.T.** and Xing, L., "A data-driven dimensionality-reduction algorithm for the exploration of patterns in biomedical data", 2021, Nature Biomedical Engineering, 5(6), pp.624-635.
21. **Islam, M.T.** and Xing, L.,"Geometry and statistics-preserving manifold embedding for nonlinear dimensionality reduction", 2021, Pattern Recognition Letters, 151, pp.155-162.
22. **Islam, M.T.**, Tasciotti, E. and Righetti, R.,"Non-invasive assessment of the spatial and temporal distributions of interstitial fluid pressure, fluid velocity and fluid flow in cancers in vivo", 2021, IEEE Access, 9, pp.89222-89233.
23. Zhao, W., Shen. L., **Islam*, M.T.**, Qin, W. Zhang, Z., Liang, X., Zhang, G., Xu, S., and Li, X.," Artificial intelligence in image-guided radiotherapy: a review of treatment target localization", 2021, Quantitative Imaging in Medicine and Surgery. * Participated in drafting the manuscript.
24. Li, X., Jia, M., **Islam*, M.T.**, Yu, L. and Xing, L.,"Self-supervised feature learning via exploiting multi-modal data for retinal disease diagnosis", 2020, IEEE Transactions on Medical Imaging, 39(12), 4023-4033. * Participated in drafting the manuscript.
25. **Islam, M.T.**, Tang, S., Liverani, C., Saha, S., Tasciotti, E. and Righetti, R. "Non-invasive imaging of Young's modulus and Poisson's ratio in cancers in vivo", 2020, Scientific Reports, 10(1), pp.1-12.
26. **Islam, M.T.** and Righetti, R., "A spline interpolation based data reconstruction technique for estimation of strain time constant in ultrasound poroelastography", 2020, Ultrasonic Imaging, 42(1), pp.5-14.
27. **Islam, M.T.**, Tasciotti, E. and Righetti, R. "Non-invasive imaging of normalized solid stress in cancers in vivo", 2019, IEEE Journal of Translational Engineering in Health and Medicine, 7, pp.1-9.
28. **Islam, M.T.** and Righetti, R. "A new poroelastography method to assess the solid stress distribution in cancers", 2019, IEEE Access, 7, pp.103404-103415.
29. **Islam, M.T.**, Tasciotti, E. and Righetti, R. "Estimation of vascular permeability in irregularly shaped cancers using ultrasound poroelastography", 2019, IEEE Transactions on Biomedical Engineering, 67(4), pp.1083-

1096.

30. **Islam, M.T.** and Righetti, R.,“Estimation of mechanical parameters in cancers by empirical orthogonal function analysis of poroelastography data”, 2019, Computers in Biology and Medicine, p.103343.
31. **Islam, M.T.** and Righetti, R., “A novel finite element model to assess the effect of solid stress inside tumors on elastographic normal strains and fluid pressure”, 2019, ASME Journal of Engineering and Science in Medical Diagnostics and Therapy, 2(3), p.031006.
32. **Islam, M.T.** and Righetti, R.,“An analytical poroelastic model of a spherical tumor embedded in normal tissue under creep compression”, 2019, Journal of Biomechanics, 89, pp.48-56.
33. **Islam, M.T.**, Chaudhry, A. and Righetti, R. “A robust method to estimate the time constant of elastographic parameters”, 2019, IEEE Transactions on Medical Imaging, 38(6), pp.1358-1370.
34. Tang S., Sabonghy E., **Islam* M.T.**, Shajudeen P. S., Chaudhry, A., Tasciotti E. and Righetti, R. “Assessment of the long bone inter-fragmentary gap size in ultrasound strain elastograms” 2019, Physics in Medicine and Biology, 64(2), p.025014. * Participated in statistical analysis of the data and drafting the manuscript
35. **Islam, M.T.**, Chaudhry, A. and Righetti, R. “An analysis of the error associated to single and double exponential approximations of theoretical poroelastic models”, 2019, Ultrasonic Imaging, 41(2), pp.94-114.
36. **Islam, M.T.**, Reddy, J.N. and Righetti, R., “A model-based approach to investigate the effect of elevated interstitial fluid pressure on elastography”, 2018, Physics in Medicine and Biology, 63(21), p.215011.
37. **Islam, M.T.** and Righetti, R., “A novel filter for estimation of fluid pressure and fluid velocity”, 2018, Computers in Biology and Medicine, 101, pp.90-99.
38. Tang, S., Chaudhry A., Shajudeen P. S., **Islam*, M.T.**, Kim N., Cabrera F. J., Reddy J. N., Tasciotti E. and Righetti, R., “A model-based approach to investigate the effect of a long bone fracture on ultrasound strain elastography”, 2018, IEEE Transactions on Medical Imaging, 37 (12), 2704-2717. * Participated in statistical analysis of the data and drafting the manuscript
39. **Islam, M.T.**, Reddy, J.N. and Righetti, R. “An analytical poroelastic model of a non-homogeneous medium under creep compression for ultrasound poroelastography applications - Part I”, 2018, Journal of Biomechanical Engineering, 141(6), p.060902.
40. **Islam, M.T.**, Reddy, J.N. and Righetti, R. “An analytical poroelastic model of a non-homogeneous medium under creep compression for ultrasound poroelastography applications - Part II”, 2018, Journal of Biomechanical Engineering, 141(6), p.060903.
41. **Islam, M.T.**, Chaudhry, A., Unnikrishnan, G., Reddy, J.N. and Righetti, R., “An analytical model of tumors with higher permeability than surrounding tissues for ultrasound elastography imaging”, 2018, Journal of Engineering and Science in Medical Diagnostics and Therapy, 1(3), p.031006.
42. **Islam, M.T.**, Chaudhry, A., Tang, S., Tasciotti, E. and Righetti, R., “A new method for estimating the effective Poisson’s ratio in ultrasound poroelastography”, 2018, IEEE Transactions on Medical Imaging, 37(5), pp.1178-1191.
43. **Islam, M.T.**, Chaudhry, A., Unnikrishnan, G., Reddy, J.N. and Righetti, R., “An analytical poroelastic model for ultrasound elastography imaging of tumors”, 2018, Physics in Medicine and Biology, 63(2), p.025031.
44. **Islam, M.T.**, Shahnaz, C., Zhu, W.P. and Ahmad, M.O., “Rayleigh modeling of teager energy operated perceptual wavelet packet coefficients for enhancing noisy speech”, 2017, Speech Communication, 86, pp.64-74.
45. **Islam, M.T.**, Shahnaz, C., Zhu, W.P. and Ahmad, M.O., “Speech enhancement based on student t modeling of teager energy operated perceptual wavelet packet coefficients and a custom thresholding function”, 2015, IEEE/ACM Transactions on Audio, Speech and Language Processing (TASLP), 23(11), pp.1800-1811.

B. Peer-reviewed publications other

None

C. Non peer reviewed journal articles, reviews, editorials

None

D. Book Chapters

None

E. Books

None

F. Digital publications

None

G. Abstracts

1. Laurie, M., **Islam*, M.T.**, Eminaga, O., Shkolyar, E., Jia, X., Lee, T., Lau, H., Xing, L., and Liao, J., "A temporal correlation-driven AI model powered by large-scale clinical data for endoscopic detection of bladder tumors", In Proc. SPIE 12817, Advanced Photonics in Urology 2024, Jan 27-Feb 1, 2024, San Fransisco, CA. * Participated in drafting the abstract
2. Zhou, Z., **Islam*, M.T.**, Xing L., and Chen, Y. "Medical Explainable AI for Multitask High-Performance Disease Diagnosis." In AAPM 65th Annual Meeting & Exhibition. AAPM, July 23-27, 2023, Houston, TX. * Participated in drafting the abstract.
3. Jia, X., Shkolyar, E., Eminaga, O., Laurie, M., Zhou. Z., Lee, T., **Islam*, M.T.**, Meng, M., Liao, J., and Xing, L., "Flat lesion detection of white light cystoscopy with deep learning", In Proc. SPIE 12353, Advanced Photonics in Urology 2023, Jan 28-Feb 3, 2023, San Fransisco, CA. * Participated in drafting the abstract
4. Shkolyar, E., Jia, X., Eminaga, O., Laurie, M., Zhou, Z., **Islam*, M.T.**, Xing, L. and Liao, J., 2023. PD01-12 Deep Learning Augmented Detection of Flar lesions on White Light Cystoscopy. Journal of Urology, 209(Supplement 4), p.e68. * Participated in drafting the abstract
5. Jia, X., Sang, S., Zhou, Y., Ren, H., Laurie, M., **Islam*, M.T.**, Eminaga, O., Liao, J. and Xing, L., 2022, June. Augmented Colorectal Cancer Detection Using Self-Attention-Incorporated Deep Learning. In Medical Physics (Vol. 49, No. 6, pp. E442-E442). * Participated in drafting the abstract
6. Liang, X., Bassenne, M., Hristov, D., **Islam*, M.T.**, Zhao, W., Jia, M., Zhang, Z., Huang, C. and Xing, L., 2020, June. Human-Level Comparable Control Volumes Mapping with An Unsupervised-Learning Model for CT-Guided Radiotherapy. In Medical Physics (Vol. 47, No. 6, pp. E425-E425). * Participated in drafting the abstract

Grants

A. Current Funding

1. Grant No. 4R00LM01430903
Title: High-performance deep neural networks for medical image analysis
Granting agency: National Library of Medicine, National Institutes of Health
Type: R00
Role: Principal Investigator
Duration: 05/2025-04/2028

B. Pending / Submitted Funding

None

C. Past Funding

None

Presentations

A. Invited presentations

None

B. National and Regional Meetings

1. Title: Transforming genomic data into images for enhanced deep learning in precision oncology
   Conference: American Association for Cancer Research Annual Meeting 2024
   Date: April 5-10, 2024
   Location: San Diego, CA.
2. Title: Deciphering Single-cell Biology Using Imaging Physics
   Meeting: Stanford Symposium on Emerging Technologies & AI for Modern Radiation Oncology, Stanford University

Date: Nov 10-11, 2023

Location: Palo Alto, CA.

3. Title: Deciphering Single-cell Biology Using Imaging Physics

   Meeting: Medical Physics Division Retreat, Department of radiation Oncology, Stanford University

   Date: August 12, 2023

   Location: Santa Cruz, CA.

4. Title: Physics-Based Reconfiguration of Genomic and Radiomic Data Enables Substantially Improved and Interpretable Deep Data Exploration

   Conference: AAPM 65th Annual Meeting & Exhibition

   Date: July 23-27, 2023

   Location: Houston, TX.

C. International Meetings

1. Title: Genomap: reconfiguration of tabular genomics data into images enables deep data exploration

   Conference: 26th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)

   Date: October 8-12, 2023

   Location: Vancouver, Canada.

2. Title: Discovering distinctive elements of medical image datasets for high-performance exploration

   Conference: 25th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)

   Date: September 18-22, 2022

   Location: Sentosa Gateway, Singapore.

D. Visiting Professorship

None