

# Abdullah-Al-Zubaer Imran

📍 319 Davis Marksbury Building, Lexington, KY 40506, USA  
☎ (859) 257-5254 ✉ aimran@uky.edu 🌐 aaz-imran.github.io

## RESEARCH INTERESTS

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Artificial Intelligence, Computer Vision, Medical Imaging, Climate Change

## POSITIONS

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### Primary (Academic):

#### **University of Kentucky (UK)**

*Assistant Professor*, Department of Computer Science  
*Lighthouse Beacon Foundation Faculty Scholar*

*Director*, Computational Health, Imaging and Learning Laboratory (CHILL)

*Faculty Affiliate*, Markey Cancer Center (MCC)/Cancer Research Priority Initiative

*Faculty Affiliate*, Center for Clinical and Translational Science (CCTS)

*Faculty Affiliate*, UNITE-Research Priority Area

**Lexington, KY, USA**

Aug 2022–present

#### **Stanford University**

*Postdoctoral Scholar*, Radiological Sciences Laboratory (RSL)

**Stanford, CA, USA**

Jul 2020–Jul 2022

#### **University of California, Los Angeles (UCLA)**

*Teaching Assistant*, Department of Computer Science

*Graduate Student Researcher*, Computer Graphics & Vision Laboratory

**Los Angeles, CA, USA**

Oct 2018–Jun 2020

Sep 2017–Jun 2020

#### **North South University**

*Lecturer*, Department of Electrical & Computer Engineering

**Dhaka, Bangladesh**

Jan 2017–Sep 2017

#### **Delaware State University (DSU)**

*Research Assistant*, Medical Imaging & Simulation Laboratory

**Dover, DE, USA**

Aug 2014–Dec 2016

#### **Ahsanullah University of Science & Technology**

*Lecturer*, Department of Computer Science & Engineering

**Dhaka, Bangladesh**

Nov 2013–Jul 2014

#### **Northern University Bangladesh**

*Lecturer*, Department of Computer Science & Engineering

**Dhaka, Bangladesh**

Sep 2012–Nov 2013

### Secondary (Corporate Research):

#### **Tencent Medical AI**

*Research Intern*

**Palo Alto, CA, USA**

Jun 2019–Dec 2019

#### **Philips Research**

*Research & Development Intern*

**Cambridge, MA, USA**

Jun 2018–Sep 2018

#### **VoxelCloud, Inc.**

*Visiting PhD Researcher*

**Los Angeles, CA, USA**

Sep 2017–Jun 2018

## EDUCATION

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#### **University of California, Los Angeles (UCLA)**

*Ph.D. in Computer Science*

Thesis title: *From fully-supervised, single-task to scarcely-supervised, multi-task deep learning for medical image analysis.*

Thesis advisor: Dr. Demetri Terzopoulos (Distinguished Professor and Chancellor's Professor of Computer Science).

Thesis committee: Professors Song-Chun Zhu, Guy Van den Broeck, and Kai-Wei Chang.

**Los Angeles, CA, USA**

Jun 2020

#### **Delaware State University (DSU)**

*M.S. in Computer Science*

Thesis title: *Estimation of breast anatomical descriptors from mastectomy CT images.*

Thesis advisors: Dr. David Pokrajac (formerly Professor of Computer Science at DSU) and Dr. Predrag Bakic (formerly Professor of Radiology at the University of Pennsylvania).

**Dover, DE, USA**

Aug 2016

#### **Rajshahi University of Engineering & Technology (RUET)**

*B.S. in Computer Science & Engineering*

Thesis title: *Automatic extraction of road networks from high-resolution satellite images.*

Thesis Advisor: Dr. Boshir Ahmed (Professor of Computer Science & Engineering).

*President Gold Medal Winner as the Top Graduating Candidate.*

**Rajshahi, Bangladesh**

Sep 2012

## RESEARCH GRANTS

**Grants Received:**

- ◇ *End-to-End CT Imaging for Faster, Focused, and Safer Liver Cancer Diagnosis*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): J. Zhang, L. Chen, J. Lee, H. Ganesh (UK)  
 Sponsor/Program: UK Center for Clinical and Translational Science (CCTS)  
 Amount: \$32,881  
 Duration: 01/01/26–12/31/26
- ◇ *Detection of harmful and misinformation social media content with multimodal AI*  
 PI: **A. Imran**  
 Sponsor/Program: UNITE–Research Priority Area, University of Kentucky  
 Amount: \$10,000  
 Duration: 03/01/26–02/28/27
- ◇ *ConduitGen: Physics-guided Generative AI for Geologically Realistic Cave Conduit Generation*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): J. Zhu (UK)  
 Sponsor/Program: UK College of Engineering Lighthouse Beacon Foundation Scholar Program  
 Amount: \$10,000  
 Duration: 07/01/25–06/30/2026
- ◇ *A Deep-Learning-Based Metric for Comprehensive CT Image Quality Assessment*  
 PI: J. Zhang  
 Co-PI/Co-I(s): **A. Imran**, J. Lee, H. Ganesh (UK)  
 Sponsor/Program: Radiology Pilot Grant  
 Amount: \$30,000  
 Duration: 06/01/25–05/31/26
- ◇ *DiffNA: Reliable Generative Medical AI with Conditional Noise and Anatomy Guidance*  
 PI: **A. Imran**  
 Sponsor/Program: UNITE–Research Priority Area, University of Kentucky  
 Amount: \$49,716  
 Duration: 08/01/24–07/31/25
- ◇ *CLIMBS: Climate Resilience through Multidisciplinary Big Data Learning, Prediction & Building Response Systems*  
 PI: R. Andrews  
 Co-PI/Co-I(s): **A. Imran**, A. Erhardt, J. Fox, S. Bryson, J. Zhu (UK) and many others  
 Sponsor/Program: National Science Foundation: EPSCoR RII—Track 1  
 Amount: \$24,000,000 (State-matched 20%)  
 Duration: 07/01/24–06/30/29
- ◇ *Det-a-Air: Object-Level Generative AI for Enhanced Aircraft Inspection*  
 PI: **A. Imran**  
 Sponsor: Boeing Project Program, UK College of Engineering  
 Total award: \$9,000  
 Duration: 02/2024–01/2025
- ◇ *Generative Dermatology AI for Bias-Free Diagnosis*  
 PI: **A. Imran**  
 Sponsor: UNITE–Research Priority Area, University of Kentucky  
 Total award: \$49,265  
 Duration: 07/2023–06/2024
- ◇ *Privacy Preserving Protest Dynamics with Social Media Images*  
 PI: **A. Imran**  
 Co-PI(s)/Co-I(s): N. Sakib, S. Cheung (UK)  
 Sponsor: Igniting Research Collaborations, University of Kentucky  
 Total award: \$29,990  
 Duration: 07/2023–12/2023
- ◇ *CT Acquisition Technique for Radiation Dose and Image Quality Optimization of Pediatric Examinations*  
 PI: **A. Imran**  
 Co-PI(s)/Co-I(s): J. Zhang (UK)  
 Sponsor: Igniting Research Collaborations, University of Kentucky  
 Total award: \$31,990  
 Duration: 07/2023–02/2024

- ◇ *Self-supervised CT image segmentation*  
 PI: **A. Imran**  
 Sponsor: UK College of Engineering – Undergraduate Research Fellowship  
 Total award: \$2500 (50% cost sharing with PI)  
 Duration: 09/2023–12/2023
- ◇ *AI-based Workflow for Improved Computer Vision and Medical Imaging*  
 PI: **A. Imran**  
 Sponsor: UK College of Engineering  
 Total award: \$373,000  
 Duration: 2022–2025

#### Grants Pending:

- ◇ *Prospective Radiograph-based Multimodal AI for Individualized CT Acquisition via Joint Estimation of Organ Dose and Task-relevant Image Quality*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): J. Zhang, J. Lee, H. Ganesh (UK); A. Wang, S. Wang, J. Tse (Stanford University)  
 Sponsor/Program: National Institute of Health—R01  
 Amount: \$3,053,260  
 Proposed start: December 2026
- ◇ *CSR: ARM-D2: Automated Resource-Aware Multi-Modal Medical Diagnostic Decision Making System*  
 PI: H. Khamfroush  
 Co-PI: **A. Imran**  
 Sponsor/Program: National Science Foundation CISE—Future CoRE  
 Amount: \$814,000  
 Proposed start: April 2026
- ◇ *CAIG: GeoFusion: Multimodal Exploration of Geologic Mapping*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): M. Massey, J. Zhu (UK)  
 Sponsor/Program: National Science Foundation—Collaborations in Artificial Intelligence and Geosciences  
 Amount: \$885,987  
 Proposed start: September 2026
- ◇ *DLCT-IQA: Development and Clinical Translation of a Deep Learning-based Metric for CT Image Quality Assessment*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): J. Zhang, J. Lee, H. Ganesh, L. Chen  
 Sponsor/Program: National Institute of Health—Impact of AI on Healthcare Safety (R18)  
 Amount: \$796,414  
 Proposed start: July 2026
- ◇ *Use of Artificial Intelligence (AI) in Periodontology: From Early Diagnosis to Decision-Making*  
 PI: L. Shaddox  
 Co-PI/Co-I(s): **A. Imran**, M. Santamaria  
 Sponsor/Program: National Institute of Health—Impact of AI on Healthcare Safety (R18)  
 Amount: \$749,259  
 Proposed start: July 2026
- ◇ *Automatic Detection of Breast Cancer Lumpectomy Margin from Intraoperative Multimodal Specimen Data*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): X. Wang, L. Chen, L. Wong, S. Nozad, L. Winer  
 Sponsor/Program: American Cancer Society – Institutional Research Grant  
 Amount: \$39,621  
 Proposed start: June 2026
- ◇ *Enhancing Reliability in Pulmonary Disease Diagnosis Through Multimodal Quality-Aware Generative Models*  
 PI: **A. Imran**  
 Co-PI/Co-I(s): J. Zhang  
 Sponsor/Program: The Marfan Foundation—Career Development Award  
 Amount: \$100,000  
 Proposed start: July 2026
- ◇ *A Deep Learning Approach to Measuring Breast Volume for Breast Reconstruction*  
 PI: L. Wong  
 Co-PI/Co-I(s): **A. Imran**  
 Sponsor/Program: National Endowment for Plastic Surgery

Amount: \$50,000  
Proposed start: July 2026

◊ *Longitudinal Breast Cancer Risk Prediction with Multimodal Continual Learning*

PI: **A. Imran**

Co-PI/Co-I(s): X. Wang, L. Chen

Sponsor/Program: Markey Cancer Center — Cancer Center Support Grant

Amount: \$49,981

Proposed start: July 2026

## SELECTED AWARDS AND HONORS

Lighthouse Beacon Foundation Faculty Scholar Award	2026
Best Oral Presentation Abstract, Annual Radiology Clinical Research Showcase at UK	2025
3rd place in the 2023 MICCAI LDCTIQA Challenge	2023
6th place in the MIDRC mRALE Mastermind Challenge	2023
CMBBE: Imaging & Visualization Best Paper Award for the 2019–2020 Biennium	2021
Stanford Bio-X Travel Award	2021
AAPM Expanding Horizons Travel Grant	2020
AAAI 2020 Student Travel Scholarship	2020
LabeX Primes Fellowship	2019
UCLA Graduate Division Fellowship	2017–2019
NVIDIA Best Paper Award at 2018 MICCAI Deep Learning in Medical Image Analysis (DLMIA)	2018
Machine Learning Summer School (MLSS 2018) Travel Stipend	2018
President Gold Medal as the Top Graduating Candidate at RUET	2014
Student of the Year Award at RUET	2009, 2011

## PUBLICATIONS

### Papers in Review:

- “CAP-IQA: Context-aware prompt-guided CT image quality assessment.”  
K. Rifa, J. Zhang, **A. Imran**.  
*IEEE Transactions on Radiation and Plasma Medical Sciences (TRPMS)*, 2026.
- “Multimodal vision-language models with guided cross-attention for crisis event understanding.”  
N. Munia, J. Zhu, O. Nasraoui, **A. Imran**.  
*IEEE Transactions on Artificial Intelligence (TAI)*, 2026.
- “ABFR-KAN: Kolmogorov-Arnold networks for functional brain analysis.”  
T. Ward, **A. Imran**.  
*Journal of Machine Learning for Biomedical Imaging (MELBA)*, 2025.
- “P3D: Privacy preserving protest dynamics with in-depth bias analysis.”  
C. Archbold, U. Hassan, N. Sakib, S. Cheung, **A. Imran**.  
*ACM Journal on Responsible Computing (JRC)*, 2026.
- “Detection of breast cancer lumpectomy margin with SAM-incorporated forward-forward contrastive learning.”  
T. Ward, B. McFarland, M. Ahamed, S. Nozad, T. Arshad, H. Nebbache, J. Chen, X. Wang, **A. Imran**.  
*ACM Transactions on Computing for Healthcare (HEALTH)*, 2025.
- “SARFA: Segment anything with radiomic feature alignment.”  
T. Ward, **A. Imran**.  
*International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2026.
- “Robustness of medical imaging AI models with physics-based image quality variations.”  
T. Ward, **A. Imran**.  
*International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2026.
- “Knowledge-preserving multimodal continual breast cancer prediction.”  
N. Nayla, **A. Imran**.  
*International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2026.

9. “Evaluating a deep learning-based CT image quality model using radiologist assessment in clinical abdominal CT.”  
A. Siddique, G. Ge, T. Brooks, Z. Hassan, W. Furtado, B. Jones, E. Nassar, J. Lee, H. Ganesh, **A. Imran**, J. Zhang.  
*American Association of Physicists in Medicine (AAPM) Annual Meeting*, 2026.

#### Papers in Preparation:

1. “Self-supervised learning: pretrain-finetuning or joint training?.”  
N. Munia, T. Ward, M. Massey, N. Nayla, **A. Imran**.  
*The Fortieth Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2026.
2. “Deep learning image quality assessment for pediatric CT imaging.”  
**A. Imran**, J. Zhang.  
*Manuscript invited to the Pediatric Radiology Journal*, 2026.
3. “EarthScope: A multimodal dataset for surficial geologic mapping and earth surface analysis.”  
M. Massey, N. Munia, **A. Imran**.  
*Journal of Earth System Science Data (ESSD)*, 2026.
4. “Noise and anatomy-guided diffusion for realistic CT image synthesis.”  
K. Rifa, N. Munia, J. Zhang, **A. Imran**.  
*Manuscript in preparation for a journal submission*, 2026.

#### Patents and Patent Applications:

1. “Patient anatomy and task specific automatic exposure control in computed tomography.”  
**A. Imran**, A. Wang, D. Pal, S. Wang, E. Zucker, B. Patel.  
*U.S. Patent No. 12,067,715*, issued Aug 20, 2024.
2. “Patient anatomy and task specific automatic exposure control in computed tomography.”  
**A. Imran**, A. Wang, D. Pal, S. Wang, E. Zucker, B. Patel.  
*U.S. Patent No. 12,002,204*, issued Jun 4, 2024.

#### Chapters in Books:

1. “Multi-adversarial variational autoencoder nets for simultaneous image generation and classification.”  
**A. Imran**, D. Terzopoulos.  
*Deep Learning Applications, Volume 2*, 2021.

#### Refereed Journal Publications:

1. “Autoadaptive medical segment anything model.”  
T. Ward, M. Owen, O. Coleman, B. Noehren, **A. Imran**.  
*Manuscript accepted in Nature Scientific Reports*, 2026.
2. “Domain and task-focused example selection for data-efficient contrastive medical image segmentation.”  
T. Ward, A. Moseley, **A. Imran**.  
*Journal of Machine Learning for Biomedical Imaging (MELBA)*, 2026.
3. “Deep learning vs global noise for CT image quality assessment.”  
G. Ge, K. Rifa, **A. Imran**, J. Zhang.  
*Journal of Clinical Images and Medical Case Reports (JCIMCR)*, 2026.
4. “Scout-Dose-TCM: Direct and prospective scout-based estimation of personalized organ doses from tube current modulated CT exams .”  
M. Medrano, S. Wang, L. Sun, **A. Imran**, J. Cao, G. Stevens, J. Tse, A. Wang.  
*Physics in Medicine and Biology (PMB)*, 2025.
5. “Deep learning advances in breast medical imaging with a focus on clinical readiness and radiologists’ perspective.”  
O. Oladimeji, **A. Imran**, X. Wang, S. Unnikrishnan.  
*Journal Image and Vision Computing (IMAVIS)*, 2025.
6. “An effective image despeckling and reconstruction approach using U-Net based model and comparative analysis.”  
M. Gokmen, B. Arslan, C. Bumgardner, **A. Imran**.  
*Nature Scientific Reports*, 2025.
7. “TFKT V2: Task-focused knowledge transfer from natural images for computed tomography perceptual image quality assessment.”  
K. Rifa, M. Ahamed, J. Zhang, **A. Imran**.  
*Journal of Medical Imaging (JMI)*, 2025.

8. “Low-dose computed tomography perceptual image quality assessment.”  
W. Lee, F. Wagner, A. Galdran, Y. Shi, W. Xia, G. Wang, X. Mou, M. Ahamed, **A. Imran**, J. Oh, K. Kim, J. Baek, D. Lee, B. Hong, P. Tempelman, D. Lyu, A. Kuiper, L. Blokland, M. Calisto, S. Hsieh, J. Baek, A. Maier, A. Wang, G. Gold, J. Choi.  
*Medical Image Analysis (MedIA)*, 2025.
9. “Automated estimation of individualized organ-specific dose and noise from clinical CT scans.”  
S. Wang, M. Medrano, **A. Imran**, W. Lee, J. Cao, G. Stevens, J. Tse, A. Wang.  
*Physics in Medicine and Biology (PMB)*, 2025.
10. “Task-specific self-supervision for CT image denoising.”  
A. Haque, A. Wang, **A. Imran**.  
*Computer Methods in Biomechanics and Biomedical Engineering (CMBBE): Imaging & Visualization*, 2023.
11. “Generalized multi-task learning from substantially unlabeled multi-source medical image data.”  
**A. Imran**, A. Haque, A. Wang, D. Terzopoulos.  
*Journal of Machine Learning for Biomedical Imaging (MELBA)*, 2021.
12. “Upstream machine learning in radiology.”  
C. Sandino, E. Cole, C. Alkan, A. Chaudhari, A. Loening, D. Hyun, J. Dahl, **A. Imran**, A. Wang, and S. Vasanawala.  
*Radiologic Clinics of North America (RCNA): Artificial Intelligence in Radiology*, 2021.
13. “Fast and automatic segmentation of pulmonary lobes from chest CT using a progressive dense V-network.”  
**A. Imran**, A. Hatamizadeh, S. Ananth, X. Ding, N. Tajbakhsh, D. Terzopoulos.  
*Computer Methods in Biomechanics and Biomedical Engineering (CMBBE): Imaging and Visualization*, 2020.  
[\[Best Paper Award for the 2019-2020 biennium\]](#) [\[Cover Article\]](#)

#### Peer-Reviewed Conference Publications:

1. “A probabilistic segment anything model for ambiguity-aware medical image segmentation.”  
T. Ward, **A. Imran**.  
*SPIE Medical Imaging: Imaging Informatics*, Vancouver, BC, Canada, 2026.
2. “U-KAN-Seg: Improving universal text-driven CT image segmentation with Kolmogorov-Arnold networks.”  
K. Rifa, J. Zhang, **A. Imran**.  
*SPIE Medical Imaging: Image Processing*, Vancouver, BC, Canada, 2026.
3. “Towards memory-efficient foundation models in medical imaging: A federated learning and knowledge distillation approach.”  
A. Mahanipour, **A. Imran**, H. Khamfroush.  
*The Second Workshop on GenAI for Health: Potential, Trust, and Policy Compliance, NeurIPS*, San Diego, CA, USA, 2025.
4. “EarthScape: A multimodal dataset for surficial geologic mapping and earth surface analysis.”  
M. Massey, N. Munia, **A. Imran**.  
*Paper unaccepted after being accepted at NeurIPS*, 2025.
5. “Federated reprogramming knowledge distillation for medical image classification.”  
A. Mahanipour, **A. Imran**, H. Khamfroush.  
*MICCAI Workshop on Distributed, Collaborative and Federated Learning (DeCaF)*, Daejeon, South Korea, 2025.
6. “Improving brain disorder diagnosis with advanced brain function representation and Kolmogorov-Arnold Networks.”  
T. Ward, **A. Imran**.  
*Medical Imaging with Deep Learning (MIDL)*, Salt Lake City, UT, USA, 2025.  
[\[Top 16%\]](#)
7. “Classification-integrated diffusion model for improved fairness in skin lesion diagnosis.”  
N. Munia, **A. Imran**.  
*IEEE Engineering in Medicine and Biology Society Conference (EMBC)*, Copenhagen, Denmark, 2025.
8. “Annotation-efficient task guidance for medical segment anything.”  
T. Ward, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Houston, TX, USA, 2025.
9. “Prompting medical vision-language models to mitigate diagnosis bias by generating realistic dermoscopic images.”  
N. Munia, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Houston, TX, USA, 2025.
10. “Swin-KAT: Advancing Swin Transformer with Kolmogorov-Arnold Network for CT image quality assessment.”  
K. Rifa, J. Zhang, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Houston, TX, USA, 2025.

11. “Task-focused knowledge transfer from natural images for CT image quality assessment.”  
K. Rifa, M. Ahamed, J. Zhang, **A. Imran**.  
*SPIE Medical Imaging: Image Perception, Observer Performance, and Technology Assessment*, San Diego, CA, USA, 2025.
12. “DermDiff: Generative diffusion model for mitigating racial biases in dermatology diagnosis.”  
N. Munia, **A. Imran**.  
*MICCAI Workshop on Advancing Data Solutions in Medical Imaging AI (ADSMI)*, Marrakesh, Morocco, 2024.
13. “Privacy preserving protest dynamics.”  
C. Archbold, U. Hassan, N. Sakib, S. Cheung, **A. Imran**.  
*16th IEEE International Workshop on Information Forensics and Security (WIFS)*, Rome, Italy, 2024.
14. “Automatic detection of breast cancer lumpectomy margin from intraoperative specimen mammography.”  
M. Ahamed, B. McFarland, X. Wang, J. Chen, **A. Imran**.  
*International Workshop on Breast Imaging (IWBI)*, Chicago, IL, USA, 2024.
15. “PolyCL: Context-aware contrastive learning for image segmentation.”  
A. Moseley, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Athens, Greece, 2024.
16. “Personalized, scout-based dose estimation for prospective optimization of CT tube current modulation.”  
M. Medrano, S. Wang, **A. Imran**, G. Stevens, J. Tse, A. Wang.  
*SPIE Medical Imaging: Physics of Medical Imaging*, San Diego, CA, USA, 2024.
17. “Retrospective tube current modulation optimization of individualized organ-level CT dose and image quality.”  
S. Wang, M. Medrano, **A. Imran**, G. Stevens, J. Tse, A. Wang.  
*SPIE Medical Imaging: Physics of Medical Imaging*, San Diego, CA, USA, 2024.
18. “Multimodal contrastive learning for prospective personalized estimation of CT organ doses.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, E. Zucker, A. Wang.  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Singapore, 2022.  
[\[Top 13%\]](#)
19. “Joint learning with local and global consistency for improved medical image segmentation.”  
M. Ahamed, **A. Imran**.  
*Medical Image Understanding and Analysis (MIUA)*, Cambridge, UK, 2022.
20. “LightSeg: Efficient yet effective medical image segmentation.”  
H. Jahan, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Kolkata, India, 2022.
21. “Personalized CT organ noise estimation from scout images.”  
**A. Imran**, D. Pal, S. Wang, S. Dutta, E. Zucker, A. Wang.  
*SPIE Medical Imaging: Physics of Medical Imaging*, San Diego, CA, USA, 2022.
22. “3D deep neural network to automatically identify TSC structural brain pathology based on MRI.”  
M. Shabanian, **A. Imran**, A. Siddiqui, R. Davis, J. Bissler.  
*SPIE Medical Imaging: Image Processing*, San Diego, CA, USA, 2022.
23. “Noise2Quality: Non-reference, pixel-wise assessment of low-dose CT images.”  
A. Haque, A. Wang, **A. Imran**.  
*SPIE Medical Imaging: Image Perception, Observer Performance, and Technology Assessment*, San Diego, CA, USA, 2022.
24. “Efficient ATR using contrastive learning.”  
A. Purpura-Pontoniere, **A. Imran**, T. Bhattacharya.  
*SPIE Defense: Automatic Target Recognition*, Orlando, FL, USA, 2022.
25. “Personalized CT organ dose estimation from scout images.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, B. Patel, E. Zucker, A. Wang.  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Strasbourg, France, 2021.  
[\[Top 13%\]](#)
26. “Window-Level is a strong denoising surrogate.”  
A. Haque, A. Wang, **A. Imran**.  
*MICCAI Machine Learning in Medical Imaging (MLMI)*, Strasbourg, France, 2021.
27. “SSIQ: Multi-task learning for non-reference CT image quality assessment with self-supervised noise level prediction.”  
**A. Imran**, D. Pal, B. Patel, A. Wang.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Nice, France, 2021.

28. “MultiMix: Sparingly supervised, extreme multitask learning from medical images.”  
**A. Imran**, A. Haque, A. Wang, D. Terzopoulos.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Nice, France, 2021.
29. “Progressive adversarial semantic segmentation.”  
**A. Imran**, D. Terzopoulos.  
*International Conference on Pattern Recognition (ICPR 2020)*, Milan, Italy, 2021.
30. “Self-supervised, semi-supervised, multi-context learning for the combined classification and segmentation of medical images.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, Y. Xiao, D. Hao, Z. Qian, D. Terzopoulos.  
*AAAI Conference on Artificial Intelligence*, New York, NY, USA, **34**(10): 13815–13816, 2020.
31. “Partly supervised multitask learning.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, Y. Xiao, D. Hao, Z. Qian, D. Terzopoulos.  
*IEEE International Conference on Machine Learning and Applications (ICMLA)*, Miami, FL, USA, 2020.
32. “Fully-automated analysis of scoliosis from spinal X-ray images.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, K. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*IEEE Symposium on Computer Based Medical Systems (CBMS)*, Rochester, MN, USA, 2020.
33. “Multi-adversarial variational autoencoder networks.”  
**A. Imran**, D. Terzopoulos.  
*IEEE International Conference on Machine Learning And Applications (ICMLA)*, Boca Raton, FL, USA, 2019.
34. “Semi-supervised multi-task learning with chest X-ray images.”  
**A. Imran**, D. Terzopoulos.  
*MICCAI Machine Learning in Medical Imaging (MLMI)*, Shenzhen, China, 2019.
35. “Automatic segmentation of pulmonary lobes using a progressive dense V-network.”  
**A. Imran**, A. Hatamizadeh, S. Ananth, X. Ding, N. Tajbakhsh, D. Terzopoulos.  
*MICCAI Deep Learning in Medical Image Analysis (DLMIA)*, Granada, Spain, 2018.  
[\[NVIDIA Best Paper Award\]](#)
36. “Characterization of adipose compartments in mastectomy CT images.”  
**A. Imran**, P. Bakic, D. Pokrajac.  
*SPIE Medical Imaging: Physics of Medical Imaging*, Houston, TX, USA, 2018.
37. “Optimization of the simulation parameters for improving realism in anthropomorphic breast phantoms.”  
**A. Imran**, P. Bakic, A. Maidment, D. Pokrajac.  
*SPIE Medical Imaging: Physics of Medical Imaging*, Orlando, FL, USA, 2017.
38. “Validation of Cooper’s ligaments thickness in software phantoms.”  
A. Kuperavage, **A. Imran**, P. Bakic, A. Maidment, D. Pokrajac.  
*SPIE Medical Imaging: Physics of Medical Imaging*, Orlando, FL, USA, 2017.
39. “Estimation of adipose compartment volumes in CT images of a mastectomy specimen.”  
**A. Imran**, P. Bakic, A. Maidment, D. Pokrajac.  
*SPIE Medical Imaging: Physics of Medical Imaging*, San Diego, CA, USA, 2016.
40. “Monte Carlo testing and verifications of numerical algorithm implementations.”  
D. Pokrajac, **A. Imran**, P. Bakic.  
*Telecommunication in Modern Satellite, Cable and Broadcasting Services (TELSIKS)*, Nis, Serbia, 2015.

#### Peer Reviewed Abstracts and Short Papers:

1. “LiDAR-conditioned graph diffusion for karst conduit network generation.”  
N. Munia, J. Zhu, **A. Imran**.  
*CVPR 2026 Workshop on Foundation and Large Vision Models in Remote Sensing (MORSE)*, 2026.
2. “Differential attention for multimodal crisis event analysis.”  
N. Munia, J. Zhu, O. Nasraoui, **A. Imran**.  
*CVPR 2025 Workshop on Multimodal Foundation Models (MMFM)*, Nashville, TN, USA, 2025.
3. “Deep learning-based CT image quality assessment for abdominal protocol optimization in animal and clinical studies: toward clinical integration.”  
A. Siddique, K. Rifa, H. Ganesh, J. Lee, G. Ge, **A. Imran**, J. Zhang.  
*UK Annual Radiology Clinical Research Showcase*, 2025.

4. “Automated intraoperative lumpectomy margin detection using SAM-incorporated forward-forward contrastive learning.”  
T. Ward, B. McFarland, S. Nozad, T. Arshad, H. Nebbache, J. Chen, X. Wang, **A. Imran**.  
*Short paper track – Medical Imaging with Deep Learning (MIDL)*, Salt Lake City, UT, USA, 2025.
5. “Deep learning-based metric vs global noise for CT image quality assessment.”  
J. Zhang, K. Rifa, C. Weaker, G. Ge, **A. Imran**.  
*American Association of Physicists in Medicine (AAPM)*, Washington, DC, 2025.
6. “Decoding earth’s surface: The role of multimodal large language models.”  
M. Massey, **A. Imran**.  
*Paper accepted at the WACV Workshop on Computer Vision for Geospatial Image Analysis (GeoCV)*, 2025.
7. “Deep Learning-Based Metric for CT Image Quality Assessment: Capabilities and Potential Clinical Applications.”  
J. Zhang, M. Ahamed, **A. Imran**.  
*Radiological Society of North America (RSNA), Scientific Assembly and Annual Meeting*, Chicago, IL, USA, 2024.
8. “Organ-aware, scout-based approach for scout segmentation and prospective, personalized organ CT dose estimation.”  
M. Medrano, **A. Imran**, S. Wang, A. Wang.  
*Radiological Society of North America (RSNA), Scientific Assembly and Annual Meeting*, Chicago, IL, USA, 2023.
9. “FFCL: Forward-Forward contrastive learning for improved medical image classification.”  
M. Ahamed, J. Chen, **A. Imran**.  
*Short paper track – Medical Imaging with Deep Learning (MIDL)*, Nashville, TN, USA, Jul 2023.
10. “Transforming radiology workflows: Pretraining for automated chest X-ray report generation.”  
Y. Jiang, S. Gupta, **A. Imran**.  
*Short paper track – Medical Imaging with Deep Learning (MIDL)*, Nashville, TN, USA, Jul 2023.
11. “Pay attention for COVID-19 detection with efficient convolution.”  
H. Jahan, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Kolkata, India, 2022.
12. “Real-time, personalized estimation of CT organ dose from scout images.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, B. Patel, E. Zucker, A. Wang.  
*Radiological Society of North America (RSNA), Scientific Assembly and Annual Meeting*, Chicago, IL, USA, 2021.
13. “Fast Monte Carlo simulation of non-isotropic x-ray source for CT dose calculation.”  
S. Wang, **A. Imran**, D. Pal, E. Zucker, A. Wang.  
*American Association of Physicists in Medicine (AAPM) Annual Meeting*, Columbus, OH, USA, 2021.
14. “End-to-End fully automatic segmentation of scoliotic vertebrae from spinal X-ray images.”  
**A. Imran**, C. Huang, Tang, W. Fan, K. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*Medical Imaging Meets NeurIPS*, Vancouver, BC, Canada, Dec 2019.
15. “Bipartite distance for shape-aware landmark detection in spinal X-rays.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, K. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*Medical Imaging Meets NeurIPS*, Vancouver, BC, Canada, Dec 2019.
16. “Selection of parameters for computer model of breast anatomy through human observer experiments.”  
D. Pokrajac, Z. Radovanovic, T. Milosavljevic, V. Stokanovic, S. Weinstein, **A. Imran**, A. Maidment, P. Bakic.  
*European Congress of Radiology (ECR)*, Vienna, Austria, 2018.
17. “Creation of realistic structured backgrounds using adipose compartment models in a test object for breast imaging performance analysis.”  
L. Cockmartin, H. Bosmans, K. Bliznakova, D. Pokrajac, **A. Imran**, N. Marshall, A. Maidment, P. Bakic.  
*Radiological Society of North America (RSNA), Scientific Assembly and Annual Meeting*, Chicago, IL, USA, 2016.
18. “Spatial distribution of adipose compartment size, shape and orientation in CT breast Images of a mastectomy specimen.”  
**A. Imran**, D. Pokrajac, P. Bakic.  
*IEEE Signal Processing in Medicine and Biology (SPMB)*, Philadelphia, PA, USA, 2015.

## Dissertations

1. “From fully-supervised, single-task to scarcely-supervised, multi-task deep learning for medical image analysis.”  
**A. Imran**.  
*Ph.D. Dissertation*, Computer Science Department, University of California, Los Angeles, CA, USA, June 2020.
2. “Estimation of breast anatomical descriptors from mastectomy CT images.”  
**A. Imran**.  
*M.S. Dissertation*, Department of Computer Science, Delaware State University, Dover, DE, USA, August 2016.

3. “Automatic extraction of road networks from high-resolution satellite images.”

**A. Imran.**

*B.S. Dissertation*, Department of Computer Science and Engineering, Rajshahi University of Engineering and Technology, Rajshahi, Bangladesh, September 2012.

#### Creative Works: Cover Illustrations, Etc:

1. “Lung fissures.”

**A. Imran**, A. Hatamizadeh, S. Ananth, X. Ding, N. Tajbakhsh, D. Terzopoulos.

*Color image on the cover of the journal Computer Methods in Biomechanics and Biomedical Engineering (CMBBE): Imaging & Visualization*, 9(5–6), December 2020.

#### Other Selected Publications:

1. “Protecting and preserving protest dynamics for responsible analysis.”

C. Archbold, U. Hassan, N. Sakib, S. Cheung, **A. Imran.**

*arXiv preprint arXiv:2604.05256*, 1–21, April 6, 2026.

2. “CAP-IQA: Context-aware prompt-guided CT image quality assessment.”

K. Rifa, J. Zhang, **A. Imran.**

*arXiv preprint arXiv:2601.01613*, 1–18, January 4, 2026.

3. “ABFR-KAN: Kolmogorov-Arnold networks for functional brain analysis.”

T. Ward, **A. Imran.**

*arXiv preprint arXiv:2601.00416*, 1–21, January 1, 2026..

4. “Class-N-Diff: Classification-induced diffusion model can make fair skin cancer diagnosis.”

N. Munia, **A. Imran.**

*arXiv preprint arXiv:2510.16887*, 1–6, October 19, 2025.

5. “A probabilistic segment anything model for ambiguity-aware medical image segmentation.”

T. Ward, **A. Imran.**

*arXiv preprint arXiv:2509.05809*, 1–6, September 6, 2025.

6. “Differential attention for multimodal crisis event analysis.”

N. Munia, J. Zhu, O. Nasraoui, **A. Imran.**

*arXiv preprint arXiv:2507.05165*, 1–9, July 7, 2025.

7. “Autoadaptive medical segment anything model.”

T. Ward, M. Owen, O. Coleman, B. Noehren, **A. Imran.**

*arXiv preprint arXiv:2507.01828*, July 2, 2025.

8. “Scout-Dose-TCM: Direct and prospective scout-based estimation of personalized organ doses from tube current modulated CT exams.”

M. Medrano, S. Wang, L. Sun, **A. Imran**, J. Cao, G. Stevens, J. Tse, A. Wang.

*arXiv preprint arXiv:2506.24062*, 1–20, June 30, 2025.

9. “Detection of breast cancer lumpectomy margin with SAM-incorporated forward-forward contrastive learning.”

T. Ward, B. McFarland, M. Ahamed, S. Nozad, T. Arshad, H. Nebbache, J. Chen, X. Wang, **A. Imran.**

*arXiv preprint arXiv:2506.21006*, 1–19, June 26, 2025.

10. “Domain and task-focused example selection for data-efficient contrastive medical image segmentation.”

T. Ward, A. Moseley, **A. Imran.**

*arXiv preprint arXiv:2505.19208*, 1–14, May 25, 2025.

11. “Improving brain disorder diagnosis with advanced brain function representation and Kolmogorov-Arnold Networks.”

T. Ward, **A. Imran.**

*arXiv preprint arXiv:2504.03923*, April 4, 2025.

12. “Prompting medical vision-language models to mitigate diagnosis bias by generating realistic dermoscopic images.”

N. Munia, **A. Imran.**

*arXiv preprint arXiv:2504.01838*, 1–6, April 2, 2025.

13. “EarthScape AI dataset.”

M. Massey, **A. Imran.**

*Kentucky Geological Survey, ser. 14, research data*, 2025.

14. “DermDiff: Generative Diffusion Model for Mitigating Racial Biases in Dermatology Diagnosis.”

N. Munia, **A. Imran.**

*arXiv preprint arXiv:2503.17536*, 1–11, March 21, 2025.

15. “EarthScape: A Multimodal Dataset for Surficial Geologic Mapping and Earth Surface Analysis.”  
M. Massey, **A. Imran**.  
*arXiv preprint arXiv:2503.15625*, 1–17, March 19, 2025.
16. “Annotation-efficient task guidance for medical segment anything.”  
T. Ward, **A. Imran**.  
*arXiv preprint arXiv:2412.08575*, 1–6, December 11, 2024.
17. “Scout-Net: Prospective personalized estimation of CT organ doses from scout views.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, B. Patel, E. Zucker, A. Wang.  
*arXiv preprint arXiv:2312.15354*, 1–33, December 23, 2023.
18. “Forward-Forward contrastive learning.”  
M. Ahamed, J. Chen, **A. Imran**.  
*arXiv preprint arXiv:2305.02927*, 1–4, May 4, 2023.
19. “Semi-supervised relational contrastive learning.”  
A. Purpura-Pontoniere, D. Terzopoulos, A. Wang, **A. Imran**.  
*arXiv preprint arXiv:2304.05047*, 1–10, June 13, 2023.
20. “Single image internal distribution measurement using non-local variational autoencoder.”  
Y. Sarker, **A. Imran**, M. Ahamed, R. Chakraborty, M. Ryan, S. Das.  
*arXiv preprint arXiv:2204.01711*, 1–10, April 2, 2022.
21. “Generalized multi-task learning from substantially unlabeled multi-source medical image data.”  
A. Haque, **A. Imran**, A. Wang, D. Terzopoulos.  
*arXiv preprint arXiv:2110.13185*, 1–25, October 25, 2021.
22. “MultiMix: Sparingly supervised, extreme multitask learning from medical images.”  
A. Haque, **A. Imran**, A. Wang, D. Terzopoulos.  
*arXiv preprint arXiv:2010.14731*, 1–5, October 28, 2020.
23. “Bipartite distance for shape-aware landmark detection in spinal X-ray images.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, K.M.C. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*arXiv preprint arXiv:2005.14330*, 1–3, May 28, 2020.
24. “Progressive adversarial semantic segmentation.”  
**A. Imran**, D. Terzopoulos.  
*arXiv preprint arXiv:2005.04311*, 1–9, May 8, 2020.
25. “Partly supervised multitask learning.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, Y. Xiao, D. Hao, Z. Qian, D. Terzopoulos.  
*arXiv preprint arXiv:2005.02523*, 1–10, May 5, 2020.
26. “Analysis of scoliosis from spinal X-ray images.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, K.M.C. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*arXiv preprint arXiv:2004.06887*, 1–6, April 15, 2020.
27. “Semi-supervised multi-task learning with chest X-ray images.”  
**A. Imran**, D. Terzopoulos.  
*arXiv preprint arXiv:1908.03693*, 1–11, August 10, 2019.
28. “Multi-adversarial variational autoencoder networks.”  
**A. Imran**, D. Terzopoulos.  
*arXiv preprint arXiv:1906.06430*, 1–15, June 14, 2019.
29. “Automatic segmentation of pulmonary lobes using a progressive dense V-network.”  
**A. Imran**, A. Hatamizadeh, S.P. Ananth, X. Ding, D. Terzopoulos, N. Tajbakhsh.  
*arXiv preprint arXiv:1902.06362*, 1–8, February 18, 2019.

#### Selected Posters:

1. “Class-N-Diff: Classification-induced diffusion can make fair skin cancer diagnosis.”  
N. Munia, **A. Imran**.  
*International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Copenhagen, Denmark, 2025.
2. “Task-focused knowledge transfer from natural images for CT image quality assessment.”  
K. Rifa, M. Ahamed, J. Zhang, **A. Imran**.  
*SPIE Medical Imaging: Image Perception, Observer Performance, and Technology Assessment*, 2025.

3. “Context-aware contrastive pretraining for improved medical image segmentation.”  
A. Moseley, **A. Imran**.  
*Commonwealth Computational Summit (CCS): Artificial Intelligence*, Lexington, KY, USA, October 2023.
4. “Frequency-domain image-to-image translation: A study on breast cancer immunohistochemical imager.”  
C. Archbold, **A. Imran**.  
*Commonwealth Computational Summit (CCS): Artificial Intelligence*, Lexington, KY, USA, October 2023.
5. “Deep learning-based optimization of CT acquisition technique for pediatric examinations.”  
M. Ahamed, J. Song, J. Zhang, **A. Imran**.  
*Commonwealth Computational Summit (CCS): Artificial Intelligence*, Lexington, KY, USA, October 2023.
6. “Forward-Forward contrastive learning.”  
M. Ahamed, J. Chen, **A. Imran**.  
*Medical Imaging with Deep Learning (MIDL)*, Nashville, TN, USA, July 2023.
7. “Transforming radiology workflows: Pretraining for automated chest X-ray report generation.”  
Y. Jiang, S. Gupta, **A. Imran**.  
*Medical Imaging with Deep Learning (MIDL)*, Nashville, TN, USA, July 2023.
8. “Breast cancer lumpectomy specimen margin prediction on radiography.”  
B. McFarland, M. Ahamed, X. Wang, J. Chen, **A. Imran**.  
*Markey Cancer Center Research Day Program*, Lexington, KY, USA, May 2023.
9. “Multimodal contrastive learning for prospective personalized estimation of CT organ doses.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, E. Zucker, A. Wang.  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Singapore, 2022.
10. “Pay attention for COVID-19 detection with efficient convolution.”  
H. Jahan, **A. Imran**.  
*IEEE International Symposium on Biomedical Imaging (ISBI)*, Kolkata, India, 2022.
11. “Personalized CT organ dose estimation from scout images.”  
**A. Imran**, S. Wang, D. Pal, S. Dutta, E. Zucker, A. Wang.  
*Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Strasbourg, France, 2021.
12. “Self-supervised, semi-supervised, multi-context learning for the combined classification and segmentation of medical images.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, Y. Xiao, D. Hao, Z. Qian, D. Terzopoulos.  
*AAAI Conference on Artificial Intelligence*, New York, NY, USA, 2020.
13. “End-to-End fully automatic segmentation of scoliotic vertebrae from spinal X-ray images.”  
**A. Imran**, C. Huang, Tang, W. Fan, K. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*Medical Imaging Meets NeurIPS*, Vancouver, BC, Canada, 2019.
14. “Bipartite distance for shape-aware landmark detection in spinal X-rays.”  
**A. Imran**, C. Huang, H. Tang, W. Fan, K. Cheung, M. To, Z. Qian, D. Terzopoulos.  
*Medical Imaging Meets NeurIPS*, Vancouver, BC, Canada, 2019.

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## RESEARCH MENTORING

### Current Students

- ◊ Nusrat Munia (PhD, CS, UK)  
Reliable multimodal AI for diagnostic and disaster decision-making
- ◊ Tyler Ward (PhD, CS, UK)  
Promptable segmentation for adaptive and data-efficient medical image analysis
- ◊ Nishat Nayla (PhD, CS, UK)  
Continual multimodal learning for longitudinal cancer risk analysis

### Former Students/Mentees

- ◊ Matthew Massey (MS, DS, UK)
- ◊ Kazi Ramisa Rifa (PhD, CS, UK)
- ◊ Cohen Archbold (PhD, CS, UK)
- ◊ Md. Atik Ahamed (PhD, CS, UK)
- ◊ Daniel Song (MS, CS, UK)

- ◇ Aaron Moseley (Undergrad, CS, UK)
- ◇ Milin Shah (Undergrad, CS & Finance, UK)
- ◇ Seif Naqvi (K-12, Paul Laurence Dunbar High School)
- ◇ Samantha Kelly (Undergrad, BME, UK)
- ◇ Isabel Berny (BS, CS, Stanford)
- ◇ Ayaan Haque (K-12, Saratoga High School)
- ◇ Attiano Purpura-Pontoniere (MS, CS, UCLA)
- ◇ Husne Jahan (AI Engineer)
- ◇ Steffen Jung (PhD, Max Planck Institute for Informatics)
- ◇ Mahdiah Shabanian (MS, BME, UTHSC)
- ◇ Ali Momennasab (Undergrad, Cal Poly Pomona)

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#### GRADUATE STUDENT ADVISORY COMMITTEE

- Chair, Matthew Massey, MS, Data Science, UK, 2025  
Thesis: “Exploring multimodal AI techniques to support surficial geologic mapping”
- Member, Clifford Parker, PhD, CS, UK, 2024  
Thesis: “Flexible attenuation fields: Tomographic reconstruction from heterogeneous datasets.”
- Member, Ethan Coots, MS, CS, UK, 2024  
Thesis: “Tractor front-end loader image classification using CNNs”
- Member, Riley Sheridan, MS, CS, UK, 2026  
Thesis: “One-shot prompted extraction of initial game state information from Super Smash Bros. Melee using ChatGPT”
- Member, Halil Ismail Helvaci, PhD in progress, EE, UK
- Member, Ankan Bhattacharyya, PhD in progress, CS, UK
- Member, Usman Hassan, PhD in progress, EE, UK
- Member, Cohen Archbold, PhD in progress, CS, UK
- Member, Xiaohui Chen, PhD in progress, CS, UK
- Member, Qin Su, PhD in progress, CpE, UK
- Member, Naser Alqseer, PhD in progress, ME, UK

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#### TEACHING EXPERIENCE

##### **Assistant Professor**

University of Kentucky, Lexington, KY, USA

- ◇ AI in the World (Spring 2025, Fall 2025)
- ◇ Machine Learning (Spring 2024, Spring 2025, Spring 2026)
- ◇ Graphics and Multimedia (Fall 2023)
- ◇ Advanced Computational Methods for Biomedical Imaging (Spring 2023, Fall 2024, Fall 2025)
- ◇ Independent Study: Generative Models for Geology (Summer 2024)
- ◇ Independent Study: Continual Multimodal Learning (Spring 2026)

##### **Teaching Assistant**

University of California, Los Angeles, CA, USA

- ◇ Computational Methods for Medical Imaging (Spring 2020)
- ◇ Introduction to Computer Science I (Fall 2018–Winter 2020)

##### **Lecturer**

North South University (NSU), Dhaka, Bangladesh

- ◇ Discrete Mathematics (Spring 2017–Summer 2017)

- ◊ Theory of Computation (Spring 2017–Summer 2017)
- ◊ Management of Information Technology (Summer 2017)
- ◊ Programming Language I (Spring 2017–Summer 2017)
- ◊ Data Structures & Algorithms (Spring 2017)

Ahsanullah University of Science & Technology (AUST), Dhaka, Bangladesh

- ◊ Network Programming (Fall 2013–Spring 2014)
- ◊ Information Systems Design & Software Engineering (Fall 2013)
- ◊ Data Structures (Fall 2013)

Northern University Bangladesh (NUB), Dhaka, Bangladesh

- ◊ Algorithms Design (Summer 2013)
- ◊ Numerical Methods (Spring 2013–Summer 2013)
- ◊ Neural Networks (Spring 2013)
- ◊ Statistics & Queuing System (Fall 2012)

#### Guest Lecturer

- ◊ Advanced Data Mining graduate class, Utah State University (Feb 2021)  
*Effective deep learning in medical imaging*
- ◊ Deep Learning graduate class, New Mexico State University (Oct 2020)  
*Effective deep learning from limited labeled medical image data*

#### PROFESSIONAL SERVICE

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##### Reviewer/ Program Committee

- ◊ Book Chapters
  - Deep Learning for Computer Vision (DLCV)
- ◊ Conferences
  - American Association of Physicists in Medicine (AAPM) Annual Meeting 2022, 2024–2026
  - European Conference on Computer Vision (ECCV) 2024, 2026
  - IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023–2026
  - IEEE International Symposium on Biomedical Imaging (ISBI) 2020, 2025–2026
  - International Conference on Advances in Electronics Engineering (ICAEE) 2017
  - International Conference on Computer Vision (ICCV) 2023, 2025
  - International Conference on Learning Representations (ICLR) 2022–2023, 2026
  - IEEE International Symposium on Computer Based Medical Systems (CBMS) 2023, 2025
  - Machine Learning for Health (ML4H) 2021
  - Medical Image Computing & Computer Assisted Intervention (MICCAI) 2021–2025
  - Medical Imaging and Computer-Aided Diagnosis (MICAD) 2022
  - Neural Information Processing Systems (NeurIPS) 2022, 2025, 2026
- ◊ Journals
  - ACM Transactions on Computing for Healthcare (HEALTH)
  - IEEE Access
  - IEEE Journal of Translational Engineering in Health and Medicine (JTEHM)
  - IEEE Transactions on Artificial Intelligence (TAI)
  - IEEE Transactions on Medical Imaging (TMI)
  - IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

- Knowledge-Based Systems (KBS)
- Medical Physics
- Patterns–Cell Press

### Grant Reviewing

- ◊ NSF CISE Division of Information and Intelligent Systems (IIS) Review Panel, 2026
- ◊ NIH Imaging Technology Development (ITD) Study Section Review, 2025
- ◊ U.S. Department of Energy Advancements in Artificial Intelligence for Science, 2024
- ◊ Neuroscience Research Priority Area Pilot Grant, University of Kentucky, 2023
- ◊ NIH Early Career Reviewer program, Center for Scientific Review, 2024

### Committee/Editorial Experience

- ◊ Senior Program Committee, AAAI 2023-2025
- ◊ Area Chair, Medical Image Computing and Computer Assisted Intervention (MICCAI) 2025–2026
- ◊ Area Chair, Medical Imaging with Deep Learning (MIDL) 2025–2026
- ◊ Best Poster Committee, MIDL 2025
- ◊ Associate Editor, Medical Physics Journal, 2022
- ◊ UK Computer Science Committee on Higher Degrees, 2022–present
- ◊ Advisor, Bangladesh Student Association at UK, 2022–2024
- ◊ Review Editor, Frontiers in Radiology: Artificial Intelligence in Radiology, 2021–present
- ◊ Council Member, RSL Trainee Council, Stanford Medicine, 2021–2022
- ◊ Stanford RSL Seminar Coordinator and Career Development Co-Lead, 2021–2022
- ◊ Stanford Radiology Diversity Committee 2021–2022
- ◊ AAPM Expanding Horizons Review Board–Unit 63, 2021
- ◊ Organizer, Online Machine Learning Journal Club, 2021
- ◊ Program Committee, AI for Healthcare (AI4HC) in Bangladesh, 2020
- ◊ Reviewer, UCLA Engineering Scholarship, 2020

### Professional Memberships

- ◊ Association for Computing Machinery (2025–present)
- ◊ American Association of Physicists in Medicine (2020–present)
- ◊ Association for the Advancement of Artificial Intelligence (2020–2021)
- ◊ IEEE Engineering in Medicine and Biology Society (2020–present)
- ◊ Medical Image Computing and Computer Assisted Intervention (2019–present)
- ◊ Society of Photo-Optical Instrumentation Engineers (2024–present)

### SELECTED TALKS

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<i>Image quality through informatics</i> Pediatric Radiology Informatics Course, Society of Pediatric Radiology (SPR 2025)	October 2025
<i>Development of a deep learning-based CT acquisition technique for radiation dose and image quality</i> UK Igniting Research Collaborations Symposium	February 2024
<i>Privacy preserving protest dynamics with social media images</i> UK Igniting Research Collaborations Symposium	February 2024
<i>Self-supervised learning for effective upstream and downstream medical imaging</i> AI Seminar Series, Keck Data Science Institute at Pepperdine University	April 2023
<i>Task-aware self-supervised learning for CT imaging</i> Invited talk at the University of Louisville	April 2023

<i>Self-supervised learning in medical imaging: effectiveness &amp; relatedness</i> UK Computer Science Keeping Current Seminar	March 2023
<i>On effectiveness of upstream and downstream AI for medical imaging</i> Invited talk at Janssen R&D	June 2022
<i>Effective upstream and downstream AI for medical imaging</i> Invited talk at the University of Colorado Anschutz	May 2022
<i>Domain generalization without domain-specific data for medical image segmentation</i> Invited talk at Siemens Healthineers	May 2022
<i>Effective upstream and downstream AI for medical imaging</i> Invited talk at the University of Nebraska–Lincoln	February 2022
<i>Effective upstream and downstream AI for medical imaging</i> Invited talk at Drexel University	February 2022
<i>Effective upstream and downstream AI for medical imaging</i> Invited talk at the University of Alabama at Birmingham	February 2022
<i>Effective upstream and downstream AI for medical imaging</i> Invited talk at Saint Louis University	January 2022
<i>Effective AI for medical imaging: upstream and downstream</i> Invited talk at the University of Kentucky	January 2022
<i>On effectiveness of upstream and downstream AI for medical imaging</i> Invited talk at Florida International University	December 2021
<i>Upstream AI for CT image acquisition</i> RSL seminar at Stanford	June 2021
<i>SSIQA: Multi-task learning for non-reference CT image quality assessment ...</i> Conference talk at IEEE ISBI 2021	April 2021
<i>Partly supervised multi-task learning</i> Conference talk at IEEE ICMLA 2020	December 2020
<i>Self-supervised learning in medical imaging</i> Joint group meeting at Stanford	September 2020
<i>Emerging biomedical imaging technologies</i> Webinar keynote at RUET	September 2020
<i>Fully-automated analysis of scoliosis from spinal X-Ray images</i> Conference talk at IEEE CBMS 2020	July 2020
<i>Data efficient AI for medical imaging</i> Invited talk at AI for Healthcare (AI4HC) 2020	June 2020
<i>Multi-adversarial variational autoencoder networks</i> Conference talk at IEEE ICMLA 2019, Boca Raton, FL	December 2019
<i>Automatic segmentation of pulmonary lobes using a progressive dense V-network</i> Conference talk at MICCAI DLMIA 2018, Granada, Spain	September 2018
<i>Finite automaton: DFA and NFA</i> Open lecture at California State Polytechnic University, Pomona, CA	November 2016
<i>Estimation of breast anatomical descriptors from mastectomy CT images</i> MS thesis final presentation	June 2016
<i>Monte Carlo testing and verification of numerical algorithm implementations</i> Conference talk at IEEE TELSIS 2015, Nis, Serbia	October 2015
<i>Diagnosis of brain tumor using MRI scan incorporated adaptive neuro-fuzzy inference system</i> 42nd Annual honors day presentation, DSU, Dover, DE	April 2015