

# Nahid Ul Islam

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[Webpage](#) | [LinkedIn](#) | [Google Scholar](#) | [GitHub](#)

## SUMMARY

- Authored **5** conference papers, **2** journal articles, and hold **2** granted patents with **5** more pending.
- Research experience in **Machine Learning**, **Computer Vision**, and **Image Processing**.
- Skilled in developing and applying state-of-the-art deep learning models for computer vision.
- Completed a **six-month internship** in Machine Learning and Computer Vision at **Intel Corporation**.
- Proficient in advanced Programming, Algorithms, Data Structures, and Database Design.
- Experienced in **Java**, **C/C++**, **MATLAB**, and **Python**.

## EDUCATION

- **Doctor of Philosophy (Ph.D.) in Computer Science** 2018 – Present  
Arizona State University, USA  
Supervisor: Dr. Jianming Liang  
GPA: 4.00/4.00  
Research Area: Computer Vision, Deep Learning, Medical Image Analysis
- **Master of Science (M.Sc.) in Computer Science** 2015 – 2017  
University of Texas at San Antonio, USA  
Supervisor: Dr. Qi Tian  
GPA: 3.90/4.00  
Research Area: Computer Vision, Machine Learning, Image Processing
- **Bachelor of Science (B.Sc.) in Computer Science** 2010 – 2014  
BRAC University, Bangladesh  
Supervisor: Rubel Biswas  
GPA: 3.07/4.00  
Research Area: Image Processing

## EXPERIENCE

- **Arizona State University** Tempe, AZ  
Graduate Research Assistant Aug 2018 – Present  
– Published **five** conference papers and **two** journal papers, contributing novel insights to the fields of Computer Vision and Medical Image Analysis.  
– Hold **two** granted and **five** pending patents, demonstrating a strong commitment to groundbreaking research and technological progress in the field.
- **Internship in Machine Learning and Computer Vision** Hillsboro, OR  
Graduate Technical Intern at **Intel Corporation** (*Client Computing Group*) May 2017 – Aug 2017  
– Introduced deep learning and computer vision approach for obstacle detection/classification and collision prediction for moving objects using different deep neural network implementations (i.e. R-CNN, Fast RCNN, Faster RCNN, Mask RCNN).  
[Python]  
– Investigated and analyzed the results from the experiments and presented findings as well as data to the team towards pathfinding/technical readiness.
- **Internship in Machine Learning and Computer Vision** Hillsboro, OR  
Graduate Software Engineering Intern at **Intel Corporation** (*Client Computing Group*) Feb 2017 – May 2017  
– Researched the application of Deep Learning technologies to recognize Human Activities from video, with application to novel peace-of-mind Smart Home usages.  
– Developed a human activity recognition system based on computer vision and deep learning technology, starting with an established deep learning network framework, and adapting it to the project requirements by configuring metadata, customizing scripts, iteratively making changes, and checking results to improve the accuracy/results etc. Used different deep learning and computer vision frameworks/algorithms such as CAFFE, convolutional neural network, optical flow.  
[Python]  
– Enhanced the direction of the different phases of the project by thoroughly analyzing the data collected by the iterative experiments. Moreover, data analysis was done for evaluating results of multiple methods and comparison between them.

## THESIS

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- **Arizona State University**

**Ph.D. Thesis:** Towards Generalizable Annotation-Efficient Medical Image Analysis via Classification, Localization, and Segmentation Supervision.

- Research on developing foundation models for medical image analysis via large-scale pretraining across multiple datasets and tasks. Leveraging diverse annotations spanning classification, localization, and segmentation within a single end-to-end framework, while designing strategies that ensure synergy across tasks. Aiming to build annotation-efficient frameworks that enable scalable and generalizable models, lower annotation costs, and improve clinical reliability.

- **University of Texas at San Antonio**

**M.Sc. Thesis:** Human Face Detection Following by Gender and Age Estimation Using Patch Based Discrete Cosine Transformation and Histogram Oriented Gradients.

- Worked on Face Detection, Gender Classification and Age Estimation classification algorithm enhancement using Discrete Cosine Transformation, Histogram of Oriented Features as Feature Extraction and Convolutional Neural Network and Support Vector Machine as Machine Learning techniques.

- **BRAC University**

**B.Sc. Thesis:** Automated Parking Lot Management for Bengali License Plates Using Hough Transformation and Image Segmentation.

- Worked on Automated parking lot management system for Bengali Language, by using Connected Component labeling, Bounding Box, Canny Edge Detection & Hough Transformation for license plate localization and used OCR for pattern recognition following by database to store as well as manipulating the system.

## PUBLICATIONS

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### Peer-refereed Journal Publication

1. [Islam, N. U.](#), Zhou, Z., Gehlot, S., Gotway, M. B., & Liang, J. (2024). *Seeking an optimal approach for Computer-aided Diagnosis of Pulmonary Embolism*. Medical Image Analysis, 91, 102988.
2. Guo, Z., [Islam, N. U.](#), Gotway, M. B., & Liang, J. (2024). *Stepwise incremental pretraining for integrating discriminative, restorative, and adversarial learning*. Medical Image Analysis, 103159.

### Peer-refereed Conference Full Publications

1. [Islam, N. U.](#), Ma, D., Gotway, M. B., & Liang, J. (2026). *A Generic 3D Foundation Model Utilizing 2D and 3D Annotations for Classification, Localization, and Segmentation in CT Pulmonary Angiography*. In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV). **[Under Review]**
2. [Islam, N. U.](#), Ma, D., Pang, J., Senthil Velan, S., Gotway, M. B., & Liang, J. (2025). *Foundation X: Integrating Classification, Localization, and Segmentation through Lock-Release Pretraining Strategy for Chest X-ray Analysis*. In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV).
3. [Islam, N. U.](#), Gehlot, S., Zhou, Z., Gotway, M. B., & Liang, J. (2021). *Seeking an optimal approach for computer-aided pulmonary embolism detection*. In Machine Learning in Medical Imaging: 12th International Workshop, MLMI 2021, Held in Conjunction with MICCAI 2021, Strasbourg, France, September 27, 2021, Proceedings 12 (pp. 692-702). Springer International Publishing.
4. Guo, Z., [Islam, N. U.](#), Gotway, M. B., & Liang, J. (2022, September). *Discriminative, restorative, and adversarial learning: Stepwise incremental pretraining*. In MICCAI Workshop on Domain Adaptation and Representation Transfer (pp. 66-76). Cham: Springer Nature Switzerland.
5. Pang, J., Haghighi, F., Ma, D., [Islam, N. U.](#), Hosseinzadeh Taher, M. R., Gotway, M. B., & Liang, J. (2022, September). *POPAR: Patch Order Prediction and Appearance Recovery for Self-supervised Medical Image Analysis*. In MICCAI Workshop on Domain Adaptation and Representation Transfer (pp. 77-87). Cham: Springer Nature Switzerland.
6. Ma, D., Hosseinzadeh Taher, M. R., Pang, J., [Islam, N. U.](#), Haghighi, F., Gotway, M. B., & Liang, J. (2022, September). *Benchmarking and boosting transformers for medical image classification*. In MICCAI Workshop on Domain Adaptation and Representation Transfer (pp. 12-22). Cham: Springer Nature Switzerland.

### Publicly Released Software

1. Foundation X, an end-to-end model integrating classification, localization, and segmentation tasks [\[GitHub\]](#)
2. Achieving discriminative, restorative, and adversarial learning via stepwise incremental pretraining [\[GitHub\]](#)
3. Benchmarking and boosting transformers for medical image classification [\[GitHub\]](#)
4. Restoring patch order and appearance for Self-supervised Medical Image Analysis [\[GitHub\]](#)
5. Evaluating and optimizing deep learning methods for computer-aided diagnosis of pulmonary embolism [\[GitHub\]](#)

PATENTS

Granted

- 1. **Nahid UI Islam**, Shiv Gehlot, Zongwei Zhou, Jianming Liang. U.S. Patent No. US12236592B2, “Systems, methods, and apparatuses for systematically determining an optimal approach for the computer-aided diagnosis of a pulmonary embolism” issued Feb 25, 2025.
- 2. DongAo Ma, Jiaxuan Pang, **Nahid UI Islam**, Mohammad Reza Hosseinzadeh Taher, Fatemeh Haghighi, Jianming Liang. U.S. Patent No. US12394186B2, “Systems, methods, and apparatuses for implementing self-supervised domain-adaptive pre-training via a transformer for use with medical image classification” issued Aug 19, 2025.

Pending

- 1. **Nahid UI Islam**, DongAo Ma, Jiaxuan Pang, Shivasakthi Senthil Velan, Jianming Liang. U.S. Provisional Patent Application No. 63/744,744, “Integrating Classification, Localization, and Segmentation through Lock-Release Pretraining Strategy for Chest X-ray Analysis” filed Jan 13, 2025 (patent pending).
- 2. Madhumitha Saravan, **Nahid UI Islam**, Jiaxuan Pang, Jianming Liang. U.S. Provisional Patent Application No. 63/766,286, “Benchmarking and Boosting of 3D Segmentation Models” filed Mar 3, 2025 (patent pending).
- 3. Zuwei Guo, **Nahid UI Islam**, Jianming Liang. U.S. Patent Application No. US20250029372A1, “Systems, methods, and apparatuses for implementing stepwise incremental pre-training for integrating discriminative, restorative, and adversarial learning into an AI model” filed July 17, 2024 (patent pending).
- 4. Zuwei Guo, **Nahid UI Islam**, Jianming Liang. U.S. Patent Application No. US20240078434A1, “Systems, methods, and apparatuses for implementing discriminative, restorative, and adversarial (DiRA) learning using stepwise incremental pre-training for medical image analysis” filed Sept 1, 2023 (patent pending).
- 5. Jiaxuan Pang, Fatemeh Haghighi, DongAo Ma, **Nahid UI Islam**, Mohammad Reza Hosseinzadeh Taher, Jianming Liang. U.S. Patent Application No. US20240078666A1, “Systems, methods, and apparatuses for implementing patch order prediction and appearance recovery (popar) based image processing for self-supervised learning medical image analysis” filed Sept 1, 2023 (patent pending).

AWARDS AND HONORS

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| • Received the prestigious <b>President’s Award for Innovation</b> , Arizona State University<br><u>Project Title:</u> ‘Annotation-efficient Deep Learning for Computer-aided Diagnosis in Medical Imaging’ | Dec 2024 |
| • Certificate of Graduate and Professional Student Association (GPSA) Travel Grant Reviewer   | May 2024 |
| • Certificate of Graduate and Professional Student Association (GPSA) Travel Grant Reviewer   | May 2023 |
| • Travel Grant, MICCAI 2022, by Graduate and Professional Student Association, Arizona State University   | Aug 2022 |
| • Travel Grant, CVPR 2022, by Graduate and Professional Student Association, Arizona State University   | Apr 2022 |
| • Awarded prestigious <b>Doctoral Fellowship</b> at Arizona State University  | Aug 2018 |
| • Honored by VC’s List Award for securing highest GPA (4.0 out of 4.0) in the last semester   | Dec 2014 |

TECHNICAL SKILLS

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| • <b>Programming Languages</b><br>Python, MATLAB, C/C++, Java                    | • <b>Scripting Language</b><br>PHP, HTML, CSS, XML, JavaScript |
| • <b>Machine Learning Framework/Library</b><br>PyTorch, Karas, TensorFlow, Caffe | • <b>Operating System</b><br>Windows, Linux                    |

TALKS AND PRESENTATIONS

- Presented GPU utilization for Deep Learning and Computer Vision, guiding peers on workflows for large-scale training.
- Delivered findings from published research in graduate-level seminars, including:
  - *Seeking an Optimal Approach for Computer-aided Diagnosis of Pulmonary Embolism* (Medical Image Analysis, 2024)
  - *Foundation X: Leveraging Annotations for Comprehensive Multi-Task Learning in Chest X-ray Analysis* (WACV, 2025)
- Facilitated peer learning and discussions on applications of state-of-the-art deep learning frameworks in medical image analysis.

SERVICES, LEADERSHIP AND TEAM-WORK

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|---|-------------|
| • <b>Travel Grant Reviewer</b> at Graduate and Professional Student Association, Arizona State University | 2020 – 2024 |
| • Elected as <b>Cultural &amp; Sport Secretary</b> at ASU – Bangladesh Student Association                | 2019 – 2020 |
| • Elected as <b>Executive Committee Member</b> at UTSA - Bangladesh Student Association                   | 2016 – 2017 |
| • Ranked as <b>Supernova</b> for being an award-winning performer in Cultural Club in BRAC University     | 2011 – 2012 |