

Muhammad Ibtsaam Qadir

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Education

Ph.D. Biomedical Engineering

Purdue University, West Lafayette, IN, USA

Dissertation: Multimodal deep learning across the pancreatic cancer continuum.

May 2024 – Present

GPA: 3.87/4.00

Master of Science in Biomedical Engineering

Purdue University, West Lafayette, IN, USA

Aug 2024 – Aug 2026

GPA: 3.87/4.00

Graduate Certificate in Regulatory Affairs and Regulatory Science for Medical Devices

Purdue University, West Lafayette, IN, USA

Aug 2026

Bachelor of Electrical Engineering

National University of Science and Technology (NUST), Islamabad, PK

Sep 2019 – Jun 2023

GPA: 3.72/4.00

Relevant Coursework: Machine Learning, Signal Processing, Probability, Numerical Methods, Computer Vision.

Research Experience

Graduate Research Assistant

Translational Medical Image Computing (TMIC) Lab, Weldon School of Biomedical Engineering, Purdue University, US

- Developed **multimodal AI models** for pre-operative prediction of disease trajectories in pancreatic diseases using **3D medical imaging and clinical data**.
- **Curated and preprocessed large-scale multimodal datasets** including 3D medical imaging and clinical data for treatment planning and dynamic risk management in pancreatic surgery.
- Collaborating with international regulatory experts to analyze and **compare international regulatory guidelines for early-phase clinical investigations**.

May 2024 – Present

Research Assistant

NUST-Coventry Internet of Things Lab (NCIL), School of Electrical Engineering and Computer Science, NUST, PK

- Curated **large-scale datasets** and developed **AI predictive models to enhance environmental monitoring** accuracy.
- Drafted research proposals for international and national funding calls (Horizon Europe, UKRI).

July 2023 – April 2024

Undergraduate Research Assistant

COGNET Research Lab, School of Electrical Engineering and Computer Science, NUST, PK

- Designed a smart freight system integrating microcontrollers, Web 3.0, and automation for secure logistics operations.

Feb 2020 – Feb 2021

Publications

Journal Publications

1. **Qadir M. I.**, Wober J., McDonnell A., et al. (2026). "EU's Fragmented Early-Stage Medical Device Study Requirements Need Reform" *Nature Biomedical Engineering*.
2. Zhang, Z., **Qadir, M. I.**, Carstens, M., et al. (2026). Prompt injection attacks on vision-language models for surgical decision support. *npj Digital Surgery*.
3. Moshin, M., Umer, M., Bilal, A., Memon, Z., **Qadir, M. I.**, et al. (2026). "On the Fundamental Limits of LLMs at Scale." *Transactions on Machine Learning Research*.
4. **Qadir M. I.**, Baril J.A., Yip-Schneider M. T., et al. (2025). "Artificial Intelligence in pancreatic intraductal papillary mucinous neoplasm imaging: A systematic review." *PLOS Digital Health*.
5. **Qadir, M. I.**, Hira, R. S., & Kolbinger, F. R. (2025). "From Marginal Gains to Clinical Utility: Machine Learning-Based Percutaneous Coronary Intervention Risk Prediction Models." *European Heart Journal-Digital Health*.
6. **Qadir, M. I.**, Mumtaz, R., Manzoor, M., et al. (2024). "Unmanned surface vehicle for intelligent water quality assessment to promote sustainable human health." *Water Supply*.

Conference Publications

7. **Qadir M. I.**, Hughes A.J., Ellis R.J., et al. (2026). "PanVasc: A Shape-Aware Framework for Peripancreatic Vascular Invasion Assessment in Pancreatic Ductal." *Shape in Medical Imaging MICCAI 2026*.
8. Moshin, M., Umer, M., Bilal, A., **Qadir, M. I.**, et al. (2025). Channel Prediction under Network Distribution Shift Using Continual Learning-based Loss Regularization. *ICASSP 2026*.

Preprints

9. **Qadir, M. I.**, Schonlau, D., Dydak U., Kolbinger, F. R. (2025). Field strength-dependent performance variability in deep learning-based analysis of magnetic resonance imaging. *arXiv*

Conference Presentations

1. Americas Hepato-Pancreato-Biliary Association (AHPBA) Annual Meeting 2026 (Talk). Prediction of Textbook Outcome after Distal Pancreatectomy Using Multimodal Artificial Intelligence Model.
2. Radiological Society of North America (RSNA) 111th Annual Meeting 2025 (Poster). “Beyond Tesla: Evaluating Deep Learning Generalization Across 1.5 T and 3.0 T MRI Scanners.”
3. IUSCCC Cancer Research Day 2025 (Poster). “Towards personalized management of intraductal papillary mucinous neoplasms with multimodal artificial intelligence.” (2nd Place for Best Poster Presentation)

Teaching Experience

Undergraduate Teaching Assistant

Sept 2022 – Jan 2023

School of Electrical Engineering and Computer Science (SEECs), NUST, Islamabad, PK

Course: CS114 – Fundamentals of Programming

Industry Experience

Technology Development Intern

Oct 2022 – Mar 2023

Synaptic Delver, SG

- Developed methods for exploring and analyzing bio-signals for improved signal interpretation.
- Implemented Web 3.0 solutions for secure storage of neurological signals, enhancing data privacy and security.

Printed Circuit Board Design Intern

July 2021 – Sep 2021

RADAR Lab, School of Interdisciplinary Engineering & Science (SINES), NUST, PK

- Designed digital printed circuit boards using Altium Designer and Saturn PCB Toolkit, including a DC-DC 5V converter with Intel Enpirion IC, optimized for thermal efficiency.

Grants

IUSCCC Trainee Pilot Grant, for the project titled “Radiologist-AI Collaboration for Early Detection of Pancreatic Cancer: Optimizing Interaction in IPMN Management”

Awards and Honors

1. Computational Biomedicine Professional Development Award, 2026.
2. Leslie Bottorff Fellowship Awardee, 2025.
3. Purdue Graduate Student Government Travel Award, 2025
4. 2nd Place for Best Poster Presentation, IUSCCC Cancer Research Day, 2025.
5. Prototype Development Grant, Finding Innovation & Creative Solutions (FICS) Competition, 2024.
6. Winner, COMMPEC 20th Edition, 2023.
7. Merit Scholarship, Fazaia Educational Welfare Scheme, PK, 2019–2023.
8. Merit Award, Federal Board of Intermediate and Secondary Education, PK, 2017–2019, 2019–2023.

Mentorship

Graduate Student Research Mentor

Aug 2024 – Present

TMIC Lab, Weldon School of Biomedical Engineering, Purdue University

Mentees: *Steven Kiss (Undergrad)*, *Maria Moreano (Undergrad)*, *Madison Loiselle (Undergrad)*, *Saloni Jajoo (Undergrad)*, *Maksymilian Mroczkowski (Summer Undergraduate Research Fellow-Imperial College of London)*

Professional Memberships

Trainee Member

Sept 2024 – Present

Indiana University Melvin and Bren Simon Comprehensive Cancer Center (IUSCCC), Indianapolis, IN, USA

Peer Review

Journals

Radiology: Artificial Intelligence, Radiology: Imaging Cancer, International Journal of Surgery, npj Precision Oncology, Scientific Data, PLOS Digital Health, Journal of Magnetic Resonance Imaging, European Radiology

Conferences

Caption Workshop MICCAI 2026, Medical Image Understanding and Analysis (MIUA) Conference (2024, 2025).