

Abhijit Das

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About — Incoming PhD student and AI Research Engineer **based in the UAE**, with three years of experience developing and deploying computer-vision, multimodal, and real-time inference systems. Built vision pipelines operating at 76 FPS, sub-second streaming ASR systems, and scalable model-serving infrastructure using PyTorch, C++, Docker, and cloud platforms. Interested in efficient deep learning, hardware-aware optimization, and production deployment on resource-constrained devices.

Skills

Efficient ML Real-time inference, model compilation, latency/throughput optimization, resource-constrained deployment.

Research Foundation-model pretraining, simulative world models, conformal prediction & uncertainty/risk control, test-time/OOD adaptation, faithful multimodal reasoning & hallucination mitigation, mechanistic interpretability.

ML Frameworks PyTorch, TensorFlow, Hugging Face, vLLM.

Systems Python, C++, Docker, FastAPI, AWS, GCP, WASM, WebGPU.

Model Optimization Quantization, pruning, knowledge distillation, mixed-precision inference, ONNX/TensorRT/TFLite.

Education

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), UAE

Fall 2026 Enrolled

Ph.D. in Machine Learning

Maulana Abul Kalam Azad University of Technology, India

Bachelor of Technology in Computer Science and Engineering (Graduated in 2023)

Bachelor's Thesis: Attention Capsules for Robust Medical Imaging (Score- 100/100)

Thesis TL;DR- Adding attention inside vanilla CapsNet's routing helps to achieve faster routing and robust performance at scale.

GPA: 9.2/10 (View Transcript)

Experience

MBZUAI

Jan 2026 – Present

Research Engineer I (Onsite- Abu Dhabi, UAE)

- Faithful reasoning and hallucination control in medical vision-language and foundation models via counterfactual, anatomy-guided, and contrastive decoding (PCCD – ECCV 2026; CAST – MICCAI 2026; Transductive Conformal Decoding – NeurIPS 2026 under review).
- Risk-controlled, uncertainty-aware adaptation for trustworthy clinical deployment: atlas-aware and open-vocabulary conformal prediction with online OOD detection (CARTA, OpenCP – NeurIPS 2026 under review; PROTON – MICCAI 2026).
- Annotation- and data-efficient learning under distribution shift for medical imaging: structured active learning under correlated outputs and black-box foundation-model prompting (Structured Active Learning – NeurIPS 2026 under review; Prompt-and-Probe – MICCAI 2026).
- Mechanistic interpretability of VLMs and self-improving agentic systems for automated evaluation and tool use (State Blindness – AAAI 2027; ViTA, GEM – NeurIPS 2026 under review). - AI Safety, a followup work solving the open questions from **Anthropic's** latest research done on Consciousness Cluster led by James Chua.

MedOS Limited (medos.tech)

March 2026 – Present

Co-Founder & CTO (UAE)

- Founding technical lead setting the AI research and engineering direction for a clinical AI platform.
- Building the first dedicated clinical AI assistant (FDA approval on priority).

Innovxcare AI

June 2025 – Jan 2026

AI Engineer (Onsite- BLR, India)

- Developed Spark App for real-time radiology reporting in an expert-in-the-loop framework, aligning textual dictations with imaging data to improve diagnostic accuracy and reduce reporting latency.
- Built real-time automatic speech recognition (ASR) pipelines using open-source foundation models, focusing on robustness, domain adaptation, and sub-second streaming latency.
- Optimized and packaged inference pipelines using C++, WASM, and WebGPU backends for deployment in resource-constrained clinical environments; benchmarked latency, throughput, and memory usage across target hardware.

Wipro GE Healthcare

Feb 2025 – June 2025

AI Researcher (Onsite- BLR, India)

- Designed a Quantum-inspired Convolutional Neural Network (QCNN) architecture, demonstrating improved robustness to correlated noise for CT/MR image denoising.
- LLM finetuning for MR/CT Radiology Information System (RIS) series descriptions understanding and reasoning.
- Symbolic regression to detect and localize internal organ spans from external landmarks in multi-view RGB streams.

OnFinance AI

June 2024 – Oct 2024

AI Engineer- Founding Team (Onsite- BLR, India)

- Built in-house VLM for financial chart and reasoning based on GLM vision model.
- Team lead of ‘Voice-2-Compliance’ project, India’s first generative AI-powered voice-based compliance solution for BFSI, adopted by the National Stock Exchange.

Jio Institute

May 2023 – May 2024

Research Assistant (Onsite- Navi Mumbai, India)

- Label-efficient neural networks.
- Complementary geometric representations (spectral and Euclidean spaces) in CNNs.

Feinberg School of Medicine - Northwestern University

Dec 2023 – May 2024

Research Fellow (Remote)

- Worked on AI for liver health (HCC, cirrhosis, interventional therapy) supervised by Dr. Ulas Bagci.
- Developed a real-time endoscopy polyp-detection system achieving 76 FPS on [hardware], with [latency] and [model size] while maintaining [accuracy metric].

Publications

Google Scholar

1. **Abhijit Das***, Dwarikanath Mahapatra*, Manish Pandey, Joy Dhar, Sudipta Roy, Zongyuan Ge, Behzad Bozorgtabar, Imran Razzak; Proximity-Constrained Counterfactual Decoding for Hallucination-Robust Medical VQA (PCCD), European Conference on Computer Vision (**ECCV 2026**). [*Equal contribution]
2. **Abhijit Das**, Dwarikanath Mahapatra et. al.; EnTrust: Modeling Inter-Modal Conflict for Trustworthy Multimodal Medical Image Analysis, Medical Image Computing and Computer Assisted Intervention (**MICCAI 2026**).
3. **Abhijit Das**, N. Wasalathilaka, Y. Lu, A. Dukre, D. Mahapatra, S. Khan, I. Razzak; PROTON: Prototype-Based Test-Time Online OOD Detection for Medical VLMs, Medical Image Computing and Computer Assisted Intervention (**MICCAI 2026**).
4. **Abhijit Das***, N. Wasalathilaka*, I. Razzak, D. Mahapatra; Graph-of-Differences: Anatomy-Structured Difference Alignment for Medical Image Re-Identification, Medical Image Computing and Computer Assisted Intervention (**MICCAI 2026**). [*Equal contribution]
5. **Abhijit Das**, S. Dutta; Weight-Decay Turns Transformer Loss Landscapes Villani: Functional-Analytic Foundations for Optimization and Generalization, arXiv preprint arXiv:2605.06599, 2026. (ICIP 2026)
6. D. Mahapatra*, **Abhijit Das***, S. Roy, M. Pandey, J. Dhar, N. Zaidi, Z. Ge, B. Bozorgtabar, M. Reyes, I. Razzak; Prompt and Probe: Data-Efficient Adaptation of Black-Box Foundation Models via Unified Active Visual Prompting, Medical Image Computing and Computer Assisted Intervention (**MICCAI 2026**). [*Equal contribution]
7. Y. Lu, A. Dukre, **Abhijit Das**, Z. Zou, H. Yang, Y. Xie, I. Razzak; Counterfactual Anatomy-guided Spatial-Temporal Decoding for Annotation-Free Hallucination Mitigation in Medical VLMs (CAST), Medical Image Computing and Computer Assisted Intervention (**MICCAI 2026**).
8. D. Jha, G. Durak, **Abhijit Das**, J. Sanjotra, O. Susladkar, S. Sarkar, A. Rauniyar, et al.; Ethical Framework for Responsible Foundational Models in Medical Imaging, **Frontiers in Medicine**, vol. 12, 2025, (Q1).
9. **Abhijit Das**, V. Gorade, K. Kumar, S. Chakraborty, D. Mahapatra, S. Roy; Confidence-guided Semi-supervised Learning for Generalized Lesion Localization in X-ray Images, Medical Image Computing and Computer Assisted Intervention (**MICCAI 2024**).
10. **Abhijit Das**, V. Gorade, D. Jha, K. Biswas, P. Raj, U. Bagci; ProFONet: Prototypical Feature Space Optimized Network for Few-shot Classification, International Conference on Pattern Recognition (**ICPR 2024**), (CORE B).
11. **Abhijit Das**, V. Gorade, D. Mahapatra, S. Roy; SEANet: Rethinking Skip-Connections Design in Encoder-Decoder Networks via Synergistic Spatial-Spectral Fusion for LDCT Denoising, International Conference on Pattern Recognition (**ICPR 2024**), (CORE B).
12. **Abhijit Das**, Debesh Jha, Vandan Gorade, Koushik Biswas, Hongyi Pan, Zheyuan Zhang, Daniela P. Ladner, Yury Velichko, Amir Borhani, Ulas Bagci; PAM-UNet: Shifting Attention on Region of Interest in Medical Images, International Conference of the IEEE Engineering in Medicine and Biology Society (**EMBC 2024**).
13. **Abhijit Das**, Debesh Jha, Nikhil Tomar, Neethi Dasu, Mark Geissler, Dayang Wang, Mena Bakhit, Kirti Dasu, Tyler Berzin, Ulas Bagci; Enhancing Colonoscopy Outcomes with DAPoDet-based AI for Real-time Sessile Serrated Polyp Detection, **Gastrointestinal Endoscopy Journal**, (Q1).
14. **Abhijit Das**, Eran Segal, Imran Razzak, Phenotype for ALL: Autonomous Biomarker and Pathways Discovery Engine for Multi-omic Phenotypes, **Nature Medicine (Submitted)**

This is a co-scientist that discovers new pathways, biomarkers, phenotypical associations on its own keeping experts on the loop. We are also building a n8n like tool to make multi-omic study simple and scalable for fast-adoption in precision medicine.

15. **Abhijit Das**, James Chua, Imran Razzak., Measuring Behavioral Drift in Self-Personalizing Autonomous Agents, (ICLR 2027- Ongoing)
Modeling state of a conversation-driven dynamical system to measure deployment-time safety evaluation beyond static-prompt assumption. This is followup to **Anthropic's** latest research on consciousness cluster in LLM agents.

Patents

16. **Abhijit Das** et al., Quantum-Inspired Convolutional Neural Network for Imaging: Bridging Quantum Physics and Deep Learning. [US Patent — Submitted]
17. **Abhijit Das** et al., Detect Internal Organ Spans in 3D from External Landmarks Using Symbolic Regression. [US Patent — Submitted]

Awards and Achievements

1. **Featured at Digestive Disease Week 2024:** Recognized for our excellent contribution to real-time sessile serrated polyp detection on videos using the proposed model *DAPO-Det*.