Abhijit Das

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About — Abhijit is an AI researcher interested in building models that can reason, discover, and work reliably in the real world. His experience spans medical imaging, machine learning, and computer vision, with more than three years of turning research ideas into systems deployed at scale. He currently works on world models, autonomous agents for scientific discovery and personalized medicine, trustworthy AI, and efficient model deployment.

Skills

Research Areas
1. **Scientific Foundation Models** and **World Models** (**pretraining** and **post-training**, causal **reinforcement learning**, visual chain-of-thought, **test-time adaptation** for **multimodal LLMs**, and **diffusion models**)
2. **Autonomous Scientific Discovery** for Personalized Medicine (**self-evolving multi-agent systems RL-tuned** on logged expert workflows, for drug discovery, wellness, vitality)
3. **AI for AI** (**alignment**, deployment-time **safety evaluation** and **behavioral drift**, **mechanistic interpretability**)
4. **AI Scalability** (**inference optimization** and serving, streaming **speech recognition (ASR)**, **edge/on-device models**, agent-native memory, **knowledge distillation**)

Languages & Frameworks Python, C++, TypeScript, Node.js; PyTorch, TensorFlow, vLLM, Hugging Face, SkyPilot.

Infra & Deployment Model compilation & serving, Auto-scaling, Docker, GCP, AWS, FastAPI.

Education

Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), UAE **Aug 2026 (Incoming)**
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)
- Scientific Foundation Models (SciFMs) and world models: pre-training, post-training, causal RL, and visual CoT.
- Autonomous scientific discovery.
- Inference optimization, domain adaptation, and edge computing.
- Self-evolving agents, AI safety (drift, consciousness cluster), and interpretability.

MedOS Limited (medos.tech) **March 2026 – Present**
Co-Founder & CTO (UAE)
- Building world models for a complete clinical AI assistant stack.

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.
- Real-time automatic speech recognition (ASR) pipelines using open-source foundation models, focusing on robustness, domain adaptation, and sub-second latency streaming.
- Small-LLM inference optimization for low-end CPUs, developed for SPARK Radiology app.

Wipro GE Healthcare **Feb 2025 – June 2025**
AI Researcher (Onsite- BLR, India)
- LLM finetuning for MR/CT Radiology Information System (RIS) interpretation.
- Neuro-symbolic AI on multi-view RGB streams, object oriented image inpainting (controlled diffusion processes).

OnFinance AI **June 2024 – Oct 2024**
AI Engineer- Founding Team (Onsite- BLR, India)
- 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 and complementary geometric representations 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.
– Built a real-time polyp detection system (76 FPS) for endoscopy videos.

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**, **A***). [***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**, **A**).
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**, **A**).
4. N. Wasalathilaka*, **Abhijit Das***, 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**, **A**). [***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**, **A**). [***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**, **A**).
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**).

Tools

14. **ShapeKit-Pro**: Anatomy-aware, evidence-gated repair of vertebra labels in CT segmentations. A non-parametric tool.
15. **DocBerry**: Extract structured Markdown, tables, figures, and equations from scientific PDFs with proper reading order. This tool surpass the output quality of highly popular method Docling as well.

Few Notable works in progress

16. **Abhijit Das**, Eran Segal, Imran Razzak, Phenotype for ALL: Autonomous Biomarker and Pathways Discovery Engine for Multi-omic Phenotypes.
A self-evolving agentic system that automates multi-omic study with experts in the loop, shifting autonomous discovery from a coding-assistant-style algorithm to a scholarly research framework: agents are RL-tuned on real logged workflows from researchers across biostatistics, epidemiology, and classical machine learning. The system runs entirely inside a sandboxed private VM, keeping highly sensitive multi-omic data secure within the organization.

17. **Abhijit Das**, Imran Razzak, Measuring Behavioral Drift in Self-Personalizing Autonomous Agents.
Agents that iteratively rewrite their own identity documents show no broad personalization loophole, but a large non-adversarial drift driven by persona content. Identity documents diverge while behavior stays stable, so document audits are an unreliable proxy for agent audits. Replicated across model families. **Note**: At NurIPS-2026 4 of my papers got an average score above 4, hope those will be accepted soon.

Patents

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