Asim Manna

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EDUCATION

Indian Institute of Technology Kharagpur, Kharagpur [*August 2021 - Present*]
Doctor of Philosophy, Department of Artificial Intelligence Overall GPA: 8.5/10

Indian Statistical Institute, Kolkata [*July 2019 - July 2021*]
Master of Technology, CSRU Overall Percentage: 73.55%

University of Calcutta, Kolkata [*August 2017 - June 2019*]
Master of Science, Department of Pure Mathematics Overall Percentage: 67.6%

The University of Burdwan, Bardhaman [*June 2014 - July 2017*]
Bachelor of Science, Department of Mathematics, Bankura Sammilani College Overall Percentage: 70.75%

SKILLS & EXPERTISE

- **Programming Languages:** Python, MATLAB, C, SQL
- **Frameworks & Libraries:** PyTorch, TensorFlow, OpenCV, scikit-learn, ASTRA Tomography
- **Software & Tools:** Git, TensorRT, ONNX, NVIDIA CUDA, Linux

PhD WORKS

Medical Image Retrieval Using Deep Neural Hashing | **PhD Thesis** | **Dr. Debdoot Sheet** [*August 2021 - Present*]

- Develop a method to retrieve images with respect to organs and associated pathology towards achieving EBM. ()
- Develop a structured Deep Neural Hashing method to retrieve images with respect to various attributes. ()
- Design a framework for multimorbidity image retrieval to access the similarity between different symptoms occurring in chest X-rays. ()

Generating High Dynamic Range Images | **Class Project** | **Dr. Debdoot Sheet**

- Generate a single high dynamic range (HDR) image by fusing multiple exposure-bracketed images through radiance map reconstruction, followed by tone mapping and gamma correction.

EXPERIENCES

Scientist | **Mahanim Indian Private Limited** [*September 2025 - Present*]

- Working on a complete end-to-end solution for versatile image compression across various application domains.

Research Intern | **Samsung R&D Institute India-Bangalore** [*February 2025 - August 2025*]

- Designing a deep learning-based framework for RAW image fusion, including multi-frame alignment, multi-exposure frame fusion, demosaicing, and generating HDR images from multi-exposure inputs.
- Participated in the NITRE Challenge 2025 for the image denoising task and secured 5th rank worldwide.
- Co-inventor of two patents (filed) on multi-exposure fusion techniques for HDR image reconstruction.

Teaching Assistant | **NPTEL** [*January 2025 - April 2025, January 2023 - April 2023*]

- *Deep Learning for Visual Computing*: Oversee more than 1000 students, design assignments, create questions, and evaluate students' understanding of deep learning concepts.

Research Intern | **IIT Bhilai** [*January 2021 - July 2021*]

- Implemented the difference and value phase of target difference algorithm on S-box of Keccak and Ascon hash function.

RESEARCH INTEREST

- Computer Vision
- Image Processing
- Hash Learning
- Computed Tomography
- Deep Learning
- Linear Algebra
- Generative AI

PUBLICATIONS

- Varna, R., **Manna, A.**, Koundinya, K., Khandelwal, G., 2025. System and Method for Revival of Overexposed Reference Frame During Multi-Exposure Fusion. (Patent Filed No.- 202541088227)
- **Manna, A.**, Varna, R., Koundinya, Harsh., Khandelwal, G., 2026. RawMEF: Multi-Exposure Fusion for RAW Bayer HDR Reconstruction via Histogram Enhancement and Frequency Alignment, ICASSP.
- **Manna, A.**, Sista, R., Sheet, D., 2025. Deep neural hashing for content-based medical image retrieval: A survey, Computers in Biology and Medicine, 196, p.110547.
- **Manna, A.**, Dewan, D. and Sheet, D., 2025. Structured hashing with deep learning for modality, organ, and disease content sensitive medical image retrieval. Scientific Reports, 15(1), p.8912. (GitHub)
- **Manna, A.**, Sathish, R., Sethuraman, R. and Sheet, D., 2025. OPHash: learning of organ and pathology context-sensitive hashing for medical image retrieval. Journal of Medical Imaging, 12(1), pp.017503-017503. (GitHub)
- **Manna, A.** and Sheet, D., 2025. Learning Neural Networks for Multi-label Medical Image Retrieval Using Hamming Distance Fabricated with Jaccard Similarity Coefficient. In International Conference on Pattern Recognition (pp. 251-266). Springer, Cham.(GitHub)
- Dewan, D., **Manna, A.**, Srivastava, A., Borthakur, A. and Sheet, D., 2025. MeDiANet: A Lightweight Network for Large-scale Multi-disease Classification of Multi-modal Medical Images Using Dilated Convolution and Attention Network. In International Conference on Pattern Recognition (pp. 170-184). Springer, Cham. (GitHub)
- Sun, Lei, et al. The tenth ntire 2025 image denoising challenge report. In Proceedings of the Computer Vision and Pattern Recognition Conference (pp. 1342-1369).
- Borthakur, A., Kasliwal, A., **Manna, A.**, Borthakur, A., Kasliwal, A., Manna, A., Dewan, D. and Sheet, D., 2024, September. FedERA: Framework for Federated Learning with Diversified Edge Resource Allocation. In 2024 2nd International Conference on Federated Learning Technologies and Applications (FLTA) (pp. 47-54). IEEE. (GitHub)
- Deep Neural Hashing for Medical Image Retrieval (OpenVINO Toolkit) (GitHub).

AWARDS & ACHIEVEMENTS

- Reviewer at Scientific Reports
- Received travel Grant to attend The Fourth Indian Symposium on Machine Learning (IndoML) 2023.
- Served as Plenary Chair at the Kharagpur Digital Health Symposium and Roundtable 2023.
- Quallified in CSIR-UGC NET Lectureship on 2019 (June) with AIR-94.
- NBHM-2018 (Scholarship) – Written Qualified.
- NBHM-2019 (Fellowship) – Written Qualified.
- Swami Vivekananda Merit-cum-Means Scholarship 2017.