

Asim Manna

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EDUCATION

Indian Institute of Technology Kharagpur, Kharagpur Doctor of Philosophy, Department of Artificial Intelligence	[August 2021 - Present] Overall GPA: 8.5/10
Indian Statistical Institute, Kolkata Master of Technology, Cryptology and Security Research Unit	[July 2019 - July 2021] Overall Percentage: 73.55%
University of Calcutta, Kolkata Master of Science, Department of Pure Mathematics	[August 2017 - June 2019] Overall Percentage: 67.6%
The University of Burdwan, Bardhaman Bachelor of Science, Department of Mathematics	[June 2014 - July 2017] Overall Percentage: 70.75%
West Bengal Council of Higher Secondary Education Class XII	[2012 - 2014] Overall Percentage: 81.4%
West Bengal Board of Secondary Education Class X	[2010 - 2012] Overall Percentage: 75.71%

RESEARCH INTEREST

Computer Vision, Deep Learning, Image Retrieval, Medical Imaging, Linear Algebra, Retrieval-Augmented Generation

SKILLS AND EXPERTISE

- **Programming Languages:** Python, MATLAB, C, SQL
- **Library/Framework:** Pytorch, OpenCV, Pandas, Matplotlib, Plotly, Scikit-Learn, Torchmetrics, ASTRA

PROJECTS

Medical Image Retrieval Using Deep Neural Hashing PhD Thesis Dr. Debdoot Sheet	[August 2021 - Present]
<ul style="list-style-type: none">• Develop a method to retrieve images with respect to organs and associated pathology towards achieving EBM. [Github Link]• 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.	
Computed Tomography Sinogram Denoising Project Sponsored by GE Healthcare	[August 2023 - Present]
<ul style="list-style-type: none">• Dual-domain denoising for low-dose CT using sinogram total variation and multi-scale Curvelet filtering.• A dataset has been constructed based on sparse views and varying levels of noise in low-dose sinograms.• Noise distributions according to X-ray dose variations are modeled and noisy sinograms are generated.• Employed U-Net architecture-based diffusion model with different time levels for the reconstruction of low-dose CT images.	
Investigating Applications of the Target Difference Algorithm in Keccak & Ascon M.Tech Thesis Dr. Dhiman Saha	[January 2021 - June 2021]
<ul style="list-style-type: none">• Implemented the difference phase and value phase of target difference algorithm on S-box of Keccak and Ascon hash function.	

EXPERIENCES

Teaching Assistant NPTEL
<ul style="list-style-type: none">• <i>Deep Learning for Visual Computing:</i> Oversee more than 1000 students, design assignments, create questions, and evaluate students' understanding of deep learning concepts.

PUBLICATIONS

- **Manna, A.** and Sheet, D. 2024. Learning Neural Networks for Multi-label Medical Image Retrieval Using Hamming Distance Fabricated with Jaccard Similarity Coefficient. *International Conference on Pattern Recognition (ICPR)*.
- **Manna, A.** and Sheet, D. 2024. Research Reproducibility Paper: Medical Image Retrieval Using Hamming Distance Fabricated with Jaccard Similarity Coefficient. *Fifth workshop on Reproducible Research in Pattern Recognition*. ([Github Link])
- Dewan, D., **Manna, A.**, Srivastava, S., Borthakur, A. and Sheet, D. 2024. MeDiANet: A Lightweight Network for Large-scale Multi-disease Classification of Multi-modal Medical Images using Dilated Convolution and Attention Network. *International Conference on Pattern Recognition (ICPR)*.
- Borthakur, A., Kasliwal, A., **Manna, A.**, Dewan, D. and Sheet, D., 2023. FedERA: Framework for Federated Learning with Diversified Edge Resource Allocation. *IEEE International Conference on Federated Learning Technologies and Applications*. ([Github Link])
- **Manna, A.**, Sista, R., Sheet, D., 2024. Deep neural hashing for content-based medical image retrieval: A survey. Authorea Preprints.
- **Manna, A.**, Sathish, R., Sethuraman, R., and Sheet, D. 2024. OPHash: Learning of Organ and Pathology Context Sensitive Hashing for Medical Image Retrieval. *Journal of Medical Imaging*. (Submitted)
- Deep Neural Hashing for Medical Image Retrieval (OpenVINO Toolkit) ([Github Link]).

AWARDS and ACHIEVEMENTS

- Qualified in CSIR-UGC NET Lectureship on 2019 (June) with AIR-94.
- NBHM-2018 (Scholarship) – Written Qualified.
- NBHM-2019 (Fellowship) – Written Qualified.

REFERENCE

Dr. Debdoot Sheet

Associate Professor

Department of Electrical Engineering

Indian Institute of Technology, Kharagpur