MRITUNJOY HALDER

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EXPERIENCE

Researcher
TCS Research Labs
July 2023 – Present Kolkata
- Bridging generative modeling and 3D vision to create simulators for AR/VR-driven robot training.
- Developed an algorithm to address the lack of 3D datasets in current SOTA methods.
- Enabled businesses to generate 3D environments and objects from text/audio prompts.

Research Intern
TCS Research Labs
March 2022 – May 2022 Remote
- Proposed a spatio-temporal CNN, inspired by brain cells, for anomaly detection in surveillance robots.
- Achieved 91% accuracy on a benchmark dataset and validated on a Double Robot in real-world scenarios.
- Granted patent; accepted for oral presentation at IEEE IJCNN.

Research Intern
NIT Agartala
June 2021 – May 2022 Remote
- Designed a hybrid classical and learning-based model for real-time image defogging.
- Developed a fog dilution and removal model, achieving 92% SSIM with 0.1s processing time.

Research Intern
NIT Hamirpur
June 2021 – May 2022 Remote
- Developed a transformer based system for sex, accent, and emotion recognition from speech.
- Achieved 94.62% (sex), 97.37% (accent), and 99.84% (emotion) recognition accuracy.

PUBLICATIONS

Published Journal **A Transmission Model based Deep Neural Network for Image Dehazing** at *Multimedia Tools and Application, Springer*

Published Journal **A Transmission Model based Deep Neural Network for Image Dehazing** at *Multimedia Tools and Application, Springer*

Published Conference Paper **Anomalous Activity Detection from Ego View Camera of Surveillance Robots** at *IEEE International Joint Conference on Neural Networks (IJCNN)*

Published Conference Paper **A Framework for Sex Identification, Accent and Emotion Recognition from Speech Samples** at *International Conference on Computing Communication and Networking Technologies (ICCCNT)*

Published Journal **Multi-feature based hazy image classification for vision enhancement** at *Procedia Computer Science, Elsevier*

Published Journal **A deep learning model to detect foggy images for vision enhancement** at *The Imaging Science Journal, Taylor and Francis*

Published Book Chapter **Dehazing and vision enhancement: challenges and future scope** at *IET Intelligent Multimedia Processing and Computer Vision*

PATENTS

Part of granted US Patent **Anomalous activity detection for mobile surveillance robots**

Part of published Indian Patent **System and Method For Dehaizng Real Time Dynamic Degraded Scenes Using Deep Residual Neural Networks**

WORK UNDER REVIEW

Paper titled **VOIR-Net: Vision-Optimized Image Refinement Network is under peer review at *IEEE Transactions on Image Processing***

PROJECTS

Improved Diagnosis on Low Resolution Medical Images
B.Tech Thesis
Dr. Santi Prasad Maity
- Proposed a dual GAN framework for enhancing low-resolution medical images, ensuring better diagnosis.
- Introduced a novel loss function to improve the region of interest (ROI) reconstruction.
- Achieved 91% accuracy, outperforming state-of-the-art methods.

Cartoon Emotion Recognition
PAN India Hackathon Revelation'23
IIEST Shibpur
- Developed a transformer based model for sentiment classification using a custom cartoon dataset.
- Leveraged synthetic images to train and fine-tune the model for emotion recognition.
- Achieved 95% accuracy, surpassing existing sentiment classification methods.

EDUCATION

B.Tech in Information Technology
Indian Institute of Engineering Science and Technology, Shibpur
2019 – 2023

Higher Secondary in Science
Jadavpur Vidyapith
2017 – 2019 90.2 %

Secondary from West Bengal Board
Jadavpur Vidyapith
2011 – 2017 88.28 %

QUANTITATIVE RESEARCH

- GenAI (VLM/LLM/3D)
- Computer Vision
- Computer Graphics
- Image Processing
- Deep Learning
- Machine Learning

SKILLS

- Python
- C/C++
- Blender(BPY)
- MATLAB
- LaTeX

LANGUAGE

- English
- Bengali
- Hindi