

Madhumitha Ramkumar

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EDUCATION

Masters of Science in Computer Engineering **2025 - Present**

North Carolina State University, Raleigh, NC

**Master of Technology in Computer Science and Engineering
with specialisation in Business Analytics** **2020 - 2025**

Vellore Institute of Technology, India

- Completed coursework with projects in Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, NLP and Image Analytics with A+ and A grades.

SKILLS AND INTERESTS

- Languages and Tools:** Python, PyTorch, Tensorflow, R, MS Azure, AWS, Docker.

TECHNICAL AND RESEARCH PROJECTS

Transformer-based Hybrid model for robust feature learning in MRI images for Alzheimer's detection.

- Worked on building a Classification pipeline with pre-trained ResNet, Swin transformer models and Bi-GRU to improve image representation learning.
- Explored MLOps for scalable and reproducible model building.

Cycle GANs for Medical Image Translation.

- Explored the potential of Cycle GAN for image translation of MRI images to preserve medical information.
- Prepared and pre-processed the data, and trained and evaluated the model.

Deep Learning Based Pose Recognition System for Wellness and Rehabilitation.

- Produced a structured dataset of 32 bodily joints for multiple frames from videos containing various exercise movements.
- Used Python and Google's ML kit. Cleaned and prepared the dataset and performed preliminary modelling using RNN and LSTMS.

PUBLICATIONS

- Madhumitha Ramkumar, Yash Nair, Manish Aniruddha P, Dr. Vadivel S M, Weave defect detection in jute manufacturing value chain using Artificial Intelligence and Computer Vision, International Journal of System Assurance Engineering and Management, Springer publications.
- Madhumitha Ramkumar, Manish Aniruddha P, Shruti Mishra M, Sandeep Kumar Satapthi, Machine learning for Fish freshness Detection using GLCM features, 2nd International Conference on Metaheuristics in Engineering and its Applications 2025
- Madhumitha Ramkumar, Graceline Jasmine S, Manish Aniruddha P, Deep Learning and Computer Vision based Underwater Pothole Detection for ADAS Systems. (Under Preparation).
- Madhumitha Ramkumar, Vergin Raja Sarobin M, Deep feature extractor for chemometric analysis of Spectroscopic data for application in food quality control. (Under Preparation).

WORK EXPERIENCE

Vellore Institute of Technology, India

Dec 2023 – Apr 2024

Teaching Assistant - Computer Vision

CERTIFICATION COURSES

- Microsoft Azure AI 900, AI/ML externship, Datacamp - Github, Docker (intermediate)