THIRULOK SUNDAR MOHANRASU

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EDUCATION

Indian Institute of Technology (ISM) Dhanbad *Dec 2021 - Present*
Undergraduate Overall GPA: 8.19/10
Department of Electrical Engineering
Member of CyberLabs - Machine Learning

TECHNICAL STRENGTHS

Computer Languages	Python, C++, MATLAB
Skills & Tools	Machine Learning, Deep learning, Computer Vision, PyTorch, Tensorflow, OpenCV, AWS, Linux, Git, ROS

RESEARCH EXPERIENCE

Carnegie Mellon University June 2024 - Present
Research Intern

· Working with Dr. Arun Balajee Vasudevan to create a benchmark fake-audio dataset and train an audio model to identify fake data.

University of Central Florida Feb 2024 - Present
Research Intern

· Working with Prof. Yogesh Rawat on mitigating activity hallucinations exhibited by recent Video-LLMs. We introduce a novel video-activity dataset with extensive annotations.

Indian Institute of Technology Delhi Nov 2023 - Feb 2024
Research Assistant

· Research on novel methods for traffic sign detection under hazardous conditions (rain, haze, fog, etc.).
· Worked on methods using Attention-Based Convolutional Neural Networks and GANs.

WORK EXPERIENCE

Mowito Mar 2023 - July 2023
Robotics Software Intern

· Implemented perceptual hashing technique to remove very similar images in training dataset categorised date-time wise to enhance and improve the training of the model.
· Implemented a Dataset class that can load and visualize multiple annotations such as instance, picking and crate annotations and integrated it into the existing code-base.
· Implemented an algorithm to calculate the time taken for an order to be completed by the robot and human after receiving it given resource and other constraints.
· Implemented a Leiden-clustering-based algorithm to group items into appropriate crates to optimize order fulfillment.

Maxtap Feb 2022 - Apr 2022
Computer Vision Intern

· Implemented a Computer Vision model (from Caffe) to detect moving vehicles in a given video
· Implemented a deep learning model to detect the category of dress worn by people in a video using Tensorflow

Global Cert Pvt. Ltd. Jan 2022 - Feb 2022
Deep learning Internship

· Implemented Perceptron and Convolutional Neural Network models from scratch on given image data for a classification task and Facial Emotion Recognition.

PROJECTS

Implementation of various MPPT control techniques using Arduino
Final Year Thesis

· Working on the implementation of Perturb and Observe control and Incremental Conductance control for solar panels using MATLAB and Arduino

Challenges in Multi-view 3D Scene Reconstruction

· Studied the limitations and determined failure cases of MASt3R in MVS reconstruction by creating a small scene dataset with images captured under challenging conditions

Image Classification using Few-Shot Graph Neural Networks

· Worked on optimizing and improving state-of-the-art Few-Shot Graph Neural Networks for classification tasks.
· Procured dataset with different fruit diseases.
· Developed training pipeline and implemented node feature extraction methods to compute adjacency matrix using various deep learning models.

Bar-Code Detection using OpenCV

· Implemented an algorithm using traditional computer vision techniques to detect bar codes in grocery items and predict bounding-boxes of the items in different colours based on whether the bar code is readable, present but not readable or not available.

Traffic light Detection

· Implemented a YOLOV3 and YOLOV7 model using Darknet framework to detect traffic lights in a given video in real time.

RELEVANT COURSES

Indian Institute of Technology (ISM) Dhanbad

· Data Structures and Algorithms — Probability and Statistics — Advanced Algorithms — Object-Oriented Programming — Microprocessors and Microcontrollers — Computer Programming — Automation and Control — Control Systems Engineering — Modern Control

Online Courses

· Self-Driving Specialization- Univeristy of Toronto — Deep Learning Specialization - DeepLearning.AI — Machine Learning with Python - University of Michigan — Machine Learning - Stanford University — CS231N (Stanford) - Deep Learning for Computer Vision — Reinforcement Learning - DeepMind

ACHIEVEMENTS

- Among the top 25 teams to be selected in the Smart India Hackathon 2024 - We implemented a webpage for disaster notification using a NLP model to extract and filter relevant news.
- Ranked 54th in All-India in Amazon ML Challenge 2023 - We implemented FAISS (search algorithm) to predict dimensions of products.
- Represented IIT (ISM) Dhanbad in the Inter-IIT Tech meet 2022 - We implemented a NLP model to answer questions based on a given paragraph.
- Secured second prize in the AI of God - Deep learning/ Computer Vision inter-college Kaggle competition held as a part of the annual tech fest of our college IIT (ISM) Dhanbad.
- Won second prize in Winter of Code - Machine learning division held by CyberLabs - official tech club of IIT (ISM) Dhanbad.

USEFUL LINKS

- Personal Webpage - https://thiruloksundar.github.io/
- Github Profile - https://github.com/Thiruloksundar
- LinkedIn Profile - https://www.linkedin.com/in/thirulok-sundar-mohanrasu/
- Challenges in Multi-view 3D Scene Reconstruction review paper - https://shorturl.at/c1xcE
- Audio-FakeBench Presentation - https://shorturl.at/pcKNM