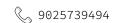
Aaryan Takayuki Panigrahi



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EXPERIENCE

SAMSUNG RESEARCH INSTITUTE | PRISM INTERNSHIP

May 2024 - Feb 2025 | Bengaluru

→ Enhanced Samsung's proprietary 360° audio and video recording technology with generative Al in collaboration with industry experts. •Achieved a 70% accuracy in inpainting masked segments of speech.

INDIAN INSTITUTE OF SCIENCE | ROBERT BOSCH CENTER FOR CYBER PHYSICAL SYSTEMS

June - July 2024 | Bengaluru

→ Researched transformer-based models for visual robot navigation. Fine-tuned and deployed the NoMaD model on a quadruped robot with ROS2. •Developed a data collection pipeline for UMI-based exoskeleton and visualized it using ReRun.

PROJECT MANAS LAB | ARTIFICIAL INTELLIGENCE SUBSYSTEM

May 2023 - Present | MIT, Manipal

→ IGVC 2024 (Intelligent Ground Vehicle Competition) -

Website

We ranked 1st internationally in the Design Challenge and 6th in AutoNav. •Researched Reinforcement Learning-based approaches for autonomous robot navigation, focusing on local motion planning.

- → SUAS 2024 Competition (Student Unmanned Aerial Systems) -
 - Worked on the development of an autonomous drone for aerial surveillance and mapping.
 - •We ranked 4th in Mission Demonstration and 8th overall.
- → Currently serving as Head of Al for the team

Aug 2024 - Present | MIT, Manipal

PROJECTS

TRAFFIC SIGN GAN | PyTorch, LSGAN, Spectral Norm, CBN

Code

- → Developed a Conditional LSGAN in PyTorch to synthesize diverse traffic signs across 43 classes from the imbalanced GTSRB dataset.
- → Employed Spectral Normalization, Conditional Batch Norm, and Projection Discriminator techniques to enhance training stability and conditioning.

ACCELERATED DWT | CUDA, C++, OPENCV, DWT

- → Implemented CUDA-accelerated multi-level 2D DWT/IDWT, achieving a 14x performance speedup over a C++ CPU baseline on 4K images.
- → Enabled real-time webcam video processing at 200 FPS using CUDA, significantly outperforming the 10 FPS CPU version.

ANTI-DERIVATIVES WITH OP-NET | PHYSICS INFORMED ML

→ Implemented a neural network to estimate the anti-derivative of any quadratic function, and achieved a R^2 score of 0.99 on unseen data.

INTELLIGENT GOAL TRACKING AGENT | REINFORCEMENT LEARNING

Code

→ Deployed a DQN-based RL agent to learn to track and navigate to a goal in a 2D environment and compared the performance with a greedy agent.

REAL-TIME TENNIS BALL TRACKING | OPENCY

Code

→ Devised a program to track a tennis ball in a video feed using several image manipulation techniques. •Implemented agglomerative clustering to rule out false positives and track the ball's trajectory.

GROUND PLANE SEGMENTATION | ROS, PCL

Code

→ Developed a package to segment the ground plane from a point cloud using PCL. • Published segmented point clouds to ROS, and visualized them in Rviz.

CHATBOOK | JAVAFX, SQL

Code

→ A clutter-free chatting application that allows users to organize chats into profiles and folders.

EDUCATION

MIT, MANIPAL

2022 - Present | Manipal

B. TECH IN COMPUTER SCIENCE SPECIALIZATION IN AI & ML

Current CGPA = 9.50, Rank 2nd

CHETTINAD VIDYASHRAM

SCHOOLING

2017 - 2021 | Chennai

• 12th - 96.6%

• 10th - 95%

Coursework

B. TECH IN CSE (AI & ML)

- → Artificial Neural Networks
- → Machine Learning
- → Big Data Analytics
- → Computer Vision
- → Object Oriented Programming
- → Data Analysis and Visualization
- → Data Structures and Algorithms

INTERESTS

- → Generative AI
- → Computer Vision
- → Large Language Models
- → Physics Informed ML
- → Robotics
- → Reinforcement Learning