

SANJAY BHARGAV DHARAVATH

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Date of Birth: 4 March 2001

Address: Vindhya A4, CVIT, IIT Hyderabad, Gachibowli, Telangana, India
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RESEARCH SUMMARY

Developing pose-free Gaussian Splatting for multi-agent autonomous driving scenarios. Focus on cross-platform 3D reconstruction (car, drone, scooter) where extreme viewpoint baselines expose systematic failures in existing pose-estimation pipelines. Building MV² multi-vehicle dataset and evaluation framework to benchmark and improve geometric robustness in dynamic scene rendering.

EDUCATION

Integrated Bachelor's + Master's of Science (Five-Year Dual Degree)

July 2019 – July 2024

Physics

Indian Institute of Technology Kharagpur, India

Advisors: [Prof. Pragya Shukla](#)

Thesis: Entanglement Dynamics in Monitored Quantum Circuits with Multi-Parametric Unitary Evolution

SELECTED PUBLICATIONS

Accepted Conferences

[C1] Dam T, **Dharavath S**, Alam S, Lolith N, Maiti A, Chakraborty S, and Feroskhan M, “SaViD: Spectravista Aesthetic Vision Integration for Robust and Discerning 3D Object Detection in Challenging Environments”, *IEEE ICRA 25, Atlanta, USA*.

<https://ieeexplore.ieee.org/document/11128252>

[C2] Dam T, **Dharavath S**, Alam S, Lolith N, Chakraborty S, and Feroskhan M, “AYDIV: Adaptable Yielding 3D Object Detection via Integrated Contextual Vision Transformer”, *IEEE ICRA 24, Yokohama, Japan*.

<https://ieeexplore.ieee.org/abstract/document/10610908>

[C3] **Dharavath S**, Dam T, Chakraborty S, Roy P, Maiti A, “Quantum Inverse Contextual Vision Transformers (Q-ICVT): A New Frontier in 3D Object Detection for AVs”, *ACM CIKM 24, Idaho, USA*.

<https://dl.acm.org/doi/abs/10.1145/3627673.3679984>

EXPERIENCE

Research Fellow

August 2024 – Present

CVIT Lab, International Institute of Information Technology Hyderabad (IIITH)

- Developing a **real-time driving simulator** that uses synchronized data from **car, two-wheeler, and drone cameras** to model complex Indian traffic scenes [sample_video_1](#), [sample_video_2](#).
- Created an **annotation tool** based on epipolar geometry to fix errors in camera poses from GLOMAP.
- Built Multi-View Multi-Vehicle (MV²) Dataset with synchronized car, scooter, and drone cameras producing extreme cross-agent baselines (C→S, D→C) that expose systematic pose-estimation failures. Created epipolar geometry-based evaluation framework for geometric diagnosis. [sample_images](#).
- Working on a **real-time system** that predicts and renders **moving objects and dynamic scenes**, allowing realistic and interactive simulation.
- Supervised by [Prof . C. V. Jawahar](#), [Dr . Zakaria Laskar](#), and [Dr . Shankar Gangisetty](#).

Computer Vision Research Internship

April 2023 – May 2024

Saab-NTU Joint Lab, Nanyang Technological University (NTU), Singapore

- Developed advanced multi-modal fusion and few-shot learning models for 3D object detection using RGB and LiDAR data. Proposed scalable feature alignment for seamless class generalization in autonomous driving.
- Published three papers at **ICRA 2024, 2025 and CIKM 2025**, all with open-source code and benchmarks.
- Supervised by **Prof Mir Feroskhan** and **Dr. Tanmoy Dam**.

Deep Learning Research Internship

March. 2022–July. 2022

Indian Institute of Technology, Kharagpur.

- Developed innovative methods for seismic inversion using Orthogonal Multi-scale Frequency Domain U-Net with Attention, hybrid attention mechanisms, and Graph Attention Networks.
- Supervised by **Prof. Aurobinda Routray**.

ACADEMIC PROJECTS

AI in Self Driving Cars

January 2022 - May 2022

Center of Excellence in Artificial Intelligence, IIT Kharagpur — Research Project

RESEARCH INTERESTS

Neural Rendering • 3D Gaussian Splatting • Multi-View Geometry • SLAM and Pose-Free Localization • AR/VR Scene Understanding • Sensor Fusion (LiDAR, Camera, IMU) • Quantum-assisted Rendering • Continual Learning.

TECHNICAL SKILLS

Programming Proficient in Python, Working knowledge of MATLAB and C++
Frameworks PyTorch, PyTorch3D, TensorFlow, OpenCV, COLMAP, Nerfstudio

AWARDS AND HONORS

- Qualified JEE Mains and Advanced (Top 1% nationwide), one of the most competitive entrance exams in the world.
- Member, Indian Air Force National Cadet Corps (NCC).
- Student Participation Travel Grant for IEEE ICRA, 2024
- Student Participation Travel Grant for IEEE ICRA, 2025

REFERENCES

- **Prof. C. V. Jawahar** — Professor, CVIT, IIIT Hyderabad
Email: jawahar@iiit.ac.in
- **Prof. Aurobinda Routray** — Professor, Electrical Engineering, IIT Kharagpur
Email: aroutray@ee.iitkgp.ac.in