

Gopi Krishna Erabati

SOFTWARE ENGINEER, PERCEPTION | PHD

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“Arise, awake and stop not till the goal is reached.” -Swami Vivekananda

Experience

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SOFTWARE ENGINEER, PERCEPTION

Berlin, Germany

Jan. 2025 - Present

- Lead ML/Data initiatives for the perception stack of off-highway autonomous vehicles in harsh environments
- Developed a multimodal, multitask semantic occupancy prediction network from scratch using LiDAR/Radar-Camera fusion data
- Enhanced network performance and throughput by 15% while reducing data-loading latency by 20%

Institute of Systems and Robotics (ISR)

RESEARCHER

Coimbra, Portugal

Jan. 2019 - Dec. 2024

- Designed novel algorithms for *Scene Understanding for Autonomous Driving*
- Improved performance (3× speedup) and robustness in adverse weather for small-object detection by developing novel LiDAR-based and LiDAR-camera fusion 3D object detection approaches
- Achieved real-time inference (112 FPS) on NVIDIA Jetson edge GPU for panoptic driving perception and developed LiDAR-based 3D semantic segmentation, improving accuracy for distant objects in sparse LiDAR point clouds using retention

Laboratory for Analysis and Architecture of Systems (LAAS - CNRS)

RESEARCH INTERN

Toulouse, France

Feb. 2018 - July 2018

- Designed a novel approach for 3D object detection and relative localization using a 3D sensor embedded on a mobile robot and Integrated the proposed module with ROS
- Designed a novel approach for forest fire mapping from low altitude aerial imagery

Skills

Areas	Machine Learning, Computer Vision, 3D Perception, Deep Learning (CNNs, Transformers, VLMs)
Libraries	PyTorch, Keras, TensorFlow, OpenCV, PCL, NumPy, Scikit-learn, ONNX, TensorRT, ROS, mmdetection
Programming & Tools	Python, C++, MATLAB, VHDL, LaTeX, Git, Docker, CI/CD
Languages	English, Telugu, Hindi, Portuguese (Elementary)

Education

University of Coimbra

DOCTOR OF PHILOSOPHY (PHD)

Coimbra, Portugal

Sept. 2019 - Feb. 2025

- Thesis: *Learning to Perceive: Scene Understanding for Autonomous Driving*
- Part of EU H2020 Marie Skłodowska-Curie Actions Innovative Training Network ACHIEVE
- Supervisor: Prof. Helder Araujo

Université de Dijon

MASTER OF SCIENCE IN COMPUTER VISION (ERASMUS VIBOT)

Le Creusot, France

Sept. 2016 - Aug. 2018

- Thesis: *3D object detection and relative localization using a 3D sensor embedded on a mobile robot*
- Courses: Visual Perception, Machine Learning, Probabilistic Robotics, Autonomous Robotics
- Grade: 15.0/20.0 (Rank: 2/16)

Kakatiya University

BACHELOR OF TECHNOLOGY IN ELECTRONICS AND INSTRUMENTATION ENGINEERING

Warangal, India

Oct. 2009 - June 2013

- Thesis: *Development of quadcopter for search and rescue in natural disasters*
- Grade: 89.8 % (Rank: 1/66)
- Received Gold Medal for excellence in academics

Projects and Training

PROJECTS (Click here for more details)

- Human Activity Recognition in Videos
- Mapping, Autonomous Navigation and Localization of Turtlebot using ROS
- Development of Computer Vision Toolbox in C++ and MATLAB using OpenCV
- Development of 3D Scanner using Kinect and PCL
- Development of Face Recognition software using PCA

TRAINING

- Attended **Oxford Machine Learning Summer School** (OxML 2023) at University of Oxford, UK
- Deep Learning Specialization taught by Prof. Andrew Ng on Coursera
- Attended AI-DLDA 2020 International Summer School on Artificial Intelligence at Università di Udine, Italy
- Presented at ICRA 2025, WACV 2023, ICPRW 2022, ROBOVIS 2024, RECPAD 2021, DICTA 2020, ICDSC 2019

Publications

SCAM-P: Spatial Channel Attention Module for Panoptic Driving Perception

G. K. Erabati, H. Araujo

2025 IEEE International Conference on Robotics and Automation (ICRA), 2025

RetFormer: Embracing Point Cloud Transformer with Retentive Network

G. K. Erabati, H. Araujo

IEEE Transactions on Intelligent Vehicles (IEEE T-IV), 2024

SRFDet3D: Sparse Region Fusion based 3D Object Detection

G. K. Erabati, H. Araujo

Neurocomputing 593, 2024

RetSeg3D: Retention-based 3D Semantic Segmentation for Autonomous Driving

G. K. Erabati, H. Araujo

Computer Vision and Image Understanding (CVIU), 2024

Li3DeTr: A LiDAR Based 3D Detection Transformer

G. K. Erabati, H. Araujo

IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), 2023

MSF3DDETR: Multi-Sensor Fusion 3D Detection Transformer for Autonomous Driving

G. K. Erabati, H. Araujo

ICPR 2022 workshop on Deep Learning for Visual Detection and Recognition (DLVDR), 2022

DeLiVoTr: Deep and light-weight voxel transformer for 3D object detection

G. K. Erabati, H. Araujo

Intelligent Systems with Applications 22, 2024

DDet3D: Embracing 3D Object Detector with Diffusion

G. K. Erabati, H. Araujo

Applied Intelligence, 2024

DAFDeTr: Deformable Attention Fusion Based 3D Detection Transformer

G. K. Erabati, H. Araujo

Robotics, Computer Vision and Intelligent Systems (ROBOVIS), 2024

SL3D - Single Look 3D Object Detection based on RGB-D Images

G. K. Erabati, H. Araujo

2020 Digital Image Computing: Techniques and Applications (DICTA), 2020

MOSNet: A lightweight Moving Object Segmentation Network for Autonomous Driving

G. K. Erabati, H. Araujo

RECPAD 2021 - 27th Portuguese Conference on Pattern Recognition, 2021

Dynamic Obstacle Detection in Traffic Environments

G. K. Erabati, H. Araujo

13th International Conference on Distributed Smart Cameras, 2019

Object Detection in Traffic Scenarios - A Comparison of Traditional and Deep Learning Approaches

G. K. Erabati, N. Gonçalves, H. Araujo

9th International Conference on Advanced Information Technologies and Applications (ICAITA 2020), 2020

Honors & Awards

2021	FCT PhD Scholarship Grant , Fundação para a Ciência e a Tecnologia	Portugal
2019	Marie Skłodowska-Curie Fellowship Grant , European Commission	Portugal
2014	Junior Research Fellowship Grant , Defence Research and Development Organization	India
2013	Gold Medalist , Kakatiya University	India
2013	Featured in the Roll of Honor Board , Kakatiya Institute of Technology and Science	India