Sai Bharadhwaj Matha

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About

An ingenious engineer with two years of experience in embedded systems and power electronics for UAVs and one year as a research assistant in computer vision and deep learning. I am pursuing a Master of Engineering in Artificial Intelligence, focusing my thesis on Semantic Occupancy Prediction. I am passionate about advancing my career in AI, computer vision, and intelligent robotics, striving to contribute to cutting-edge innovations.

Education

2022 – present
Cham, Germany

Master of Engineering in Artificial Intelligence for smart sensors and actuators
Technische Hochschule Deggendorf.
GPA: 1.4
Thesis: Real-world Semantic Occupancy Prediction for Advanced Air Mobility

2016 – 2020
Rourkela, India

Bachelor of Technology in Electrical Engineering
National Institute of Technology Rourkela.
CGPA : 8.72/10.0

2014 – 2016
Visakhapatnam, India

Higher Secondary Education
Board of Intermediate Education AP, India.
Percentage: 98.4

2002 – 2014
Rajam, India

Secondary Education
Board of Secondary Education Andhra Pradesh
GPA : 9.7/10.0

Professional Experience

2024 – present
Ingolstadt, Germany

Research Assistant
Fraunhofer IVI
- Working on research focused on semantic occupancy prediction for UAVs.
- Expertise in computer vision, deep learning, and UAV avionics.

2023 – 2024
Ingolstadt, Germany

Internship
Fraunhofer IVI
- Developed a pipeline for 3D semantic point cloud generation

2020 – 2022
Mumbai, India

Embedded Systems Engineer
Ideaforge Technology Private Limited.
- Aided circuit design and firmware development of UAV avionics.
- Developed an FOC-based ESC for BLDC motors.
- Developed Li-ion and Li-Po battery pack charging system.

2019 – 2019
Pune, India

Internship
Hachimichi Technology Private Limited.
- Firmware for automation of a toilet seat.
- Heart rate monitoring on a toilet seat.

Projects

06.2024 – 12.2024

Semantic Occupancy Prediction for Advanced Air Mobility
Master Thesis
- Developed a novel benchmark semantic occupancy dataset for UAVs. I am working on publishing the work to ICCV '25 and open-sourcing the dataset.
- Developed a novel data generation pipeline incorporating 3D reconstruction, pose estimation, semantic fusion, dense voxelization, and mesh generation techniques.

- Trained SOTA occupancy prediction model architectures on the generated dataset.

11.2023 – 02.2024 **3D semantic point cloud generation**
- Dense 3D point cloud generation using Structure from Motion (SfM) and Multi-View-Stereo (MVS) pipeline.
- Semantic mask generation using SOTA UperNet and SegFormer-based semantic segmentation models followed by novel fusion techniques.
- Expertise in COLMAP and Agisoft Metashape tools, OpenCV and Open3D libraries.

03.2023 – 06.2023 **Window Detection and Classification system**
- Window state classification on a live feed using YOLOv5 and a custom deep-learning model pipeline on Jetson Xavier.

09.2021 – 03.2022 **UAV SLAM (Simultaneous Localization and Mapping)**
- Contributed to developing a GPS-denied UAV navigation system employing depth and thermal cameras, with ORB-SLAM3.

Skills

Python — Proficient

Machine Learning and Deep Learning — Proficient

Computer Vision — Proficient

PyTorch — Proficient

ONNX, TensorRT — Competent

Generative AI — Competent

Kubernetes, Git — Competent

Docker — Competent

C,C++ — Competent

SQL — Competent

Robot Operating System(ROS) — Competent

STM32, RTOS — Competent

Linux — Competent

Data Structures — Competent

Languages

Telugu — Native/Bilingual
Mother Tongue

Hindi — Native/Bilingual
National Language

English — Native/Bilingual
IELTS score: *8.0/9.0*

German — Basic

Courses & Certificates

Big Data
Issued by Coursera

Quantum Computing
Elective from THD

MLOps (AWS): Deploying AI & ML Models
Issued by edX

Interests

- Cooking and blogging
- eFootball and gaming

Organisations

2019 – 2020 **VS Hall of Residence**
Rourkela, India *Student elected representative*

2017 – 2020 **Plugged_IN**
Rourkela, India *Vice President*

Declaration

I affirm that all information provided is true and accurate to the best of my knowledge.

M. Sai Bharadhwaj.

03.01.2025