



# Sai Bharadhwaj Matha

Male | 10.06.1999 | Single | INDIAN | Kothmaissling 37, 93413, Cham, Germany.

bharadhwaj2299@gmail.com | +49 155 108 59066 | [github.com/Bharadhwajsaimatha](https://github.com/Bharadhwajsaimatha)

[linkedin.com/in/saibharadhwajmatha](https://www.linkedin.com/in/saibharadhwajmatha) | <https://bharadhwajsaimatha.github.io/portfolio/>

## Professional Summary

AI and Embedded Systems Engineer with 3+ years of cross-disciplinary experience in embedded systems, 3D computer vision, and intelligent robotics, including work in real-world UAV systems and advanced deep learning models. Proven track record in developing semantic occupancy prediction pipelines, SLAM-based UAV navigation, and multi-modal perception frameworks. Seeking to leverage expertise in 3D computer vision, AI for autonomous systems, and agentic frameworks to drive innovation in robotics and intelligent perception.

## Education

|                                     |                                                                                                                                                                                                                                      |
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| 2022 – 2025<br>Cham, Germany        | <b>Master of Engineering in Artificial Intelligence for Smart Sensors and Actuators</b><br><i>Technische Hochschule Deggendorf.</i><br>GPA: 1.4 / 5.0<br>Thesis: Real-world Semantic Occupancy Prediction for Advanced Air Mobility. |
| 2016 – 2020<br>Rourkela, India      | <b>Bachelor of Technology in Electrical Engineering</b><br><i>National Institute of Technology Rourkela.</i><br>CGPA: 8.72 / 10.0<br>Thesis: Wireless Power Transfer and Its Application in Solar Power Harvesting.                  |
| 2014 – 2016<br>Visakhapatnam, India | <b>Higher Secondary Education</b><br><i>Board of Intermediate Education Andhra Pradesh.</i><br>Percentage: 98.4                                                                                                                      |

## Professional Experience

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| 2024 – present<br>Ingolstadt, Germany | <b>Research Assistant</b><br><i>Fraunhofer IVI</i> <ul style="list-style-type: none"><li>Designed a novel 3D semantic and panoptic scene completion data pipeline for UAVs.</li><li>Generated 50K+ sample dataset with RGB, thermal, depth, and 3D occupancy GT.</li><li>Conducted ablations on Symphonize 3D and CGFormer to inform novel 3D architecture.</li></ul>                            |
| 2023 – 2024<br>Ingolstadt, Germany    | <b>Internship</b><br><i>Fraunhofer IVI</i> <ul style="list-style-type: none"><li>Built a 3D semantic point cloud pipeline using COLMAP, Metashape from images.</li><li>Cut external annotation costs by 82% via image subset optimization.</li></ul>                                                                                                                                             |
| 2020 – 2022<br>Mumbai, India          | <b>Embedded Systems Engineer</b><br><i>Full-time, Ideaforge Technology Private Limited.</i> <ul style="list-style-type: none"><li>Headed the development of the propulsion system, ensuring reliable performance.</li><li>Engineered an FOC-based ESC for BLDC motors and a Li-ion battery pack charger.</li><li>Developed embedded HW/SW for GPS-denied UAV navigation via ORB-SLAM3.</li></ul> |
| 2019 – 2019<br>Pune, India            | <b>Internship</b><br><i>Hachimichi Technology Private Limited.</i> <ul style="list-style-type: none"><li>Firmware for automation and heart-rate monitoring of a toilet seat.</li></ul>                                                                                                                                                                                                           |

## Key Technical Projects

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|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 06.2025 – present | <b>PlanMyTrip - Let our agents plan your trip!</b> <ul style="list-style-type: none"><li>Architected an agentic AI system with fine-tuned LLMs using ReAct, RAG, and dynamic tool orchestration for real-time multi-destination itinerary generation.</li><li>Optimizing inference pipeline via model cascading to reduce latency and costs.</li></ul>                               |
| 05.2025 – present | <b>MonoSpatial: Agent-Based Spatial Distance Estimation in Monocular RGB Images</b> <ul style="list-style-type: none"><li>Developing an agentic reasoning pipeline to select and orchestrate vision models for spatial queries dynamically. Fine-tuning vision models for aerial scenes.</li><li>Evaluating the Diffusion-based approach for estimating camera intrinsics.</li></ul> |
| 04.2025 – 05.2025 | <b>NKD Image Synthesis for Fashion Products Using LoRA-Tuned Diffusion Models</b> <ul style="list-style-type: none"><li>Scaled dataset by 82x using text-to-image models and multi-source augmentation, achieving German prompt to fashion image synthesis dataset.</li><li>Fine-tuned SDXL with LoRA, improving CLIP score by 35.7% and FID to 14.7.</li></ul>                      |

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| 03.2025 – 06.2025 | <b>Multi-Modal 3D Object Detection in Adverse Weather Conditions</b> <ul style="list-style-type: none"> <li>Design and train a deep autoencoder for 2D feature extraction in adverse weather.</li> <li>Implemented early-fusion for multi-modal synthetic data generated in CARLA.</li> </ul>                                                                                                                                                                                                                                                                                                                             |
| 01.2025 – 02.2025 | <b>Novel Aerial View Synthesis using 3D Gaussian Splatting</b> <ul style="list-style-type: none"> <li>Applied 3D Gaussian Splatting to synthesize high-fidelity novel aerial views from monocular images captured using DJI Phantom 4 and DJI M3T drones.</li> <li>Leveraging Metashape to output sparse reconstruction in COLMAP format.</li> </ul>                                                                                                                                                                                                                                                                      |
| 06.2024 – 12.2024 | <b>Semantic Occupancy Prediction for Advanced Air Mobility</b><br><i>Master Thesis (expected release and submission: CVPR 2026)</i> <ul style="list-style-type: none"> <li>A novel benchmark semantic occupancy dataset for UAS, ran ablations on SOTA SSC models, and working on a novel geometry-aware model architecture for aerial scenes.</li> <li>Developed a large-scale dataset with monocular RGB + thermal aerial imagery.</li> <li>Designed a data-generation pipeline that integrates 3D reconstruction, pose estimation, semantic fusion, mesh generation, voxelization, and voxel densification.</li> </ul> |

Skills

|                                                |                                                        |
|------------------------------------------------|--------------------------------------------------------|
| <b>Python</b> — Proficient                     | <b>Machine Learning and Deep Learning</b> — Proficient |
| <b>Computer Vision(2D/3D)</b> — Proficient     | <b>PyTorch</b> — Proficient                            |
| <b>Generative AI</b> — Competent               | <b>Agentic AI, MCP</b> — Competent                     |
| <b>Kubernetes, Git</b> — Competent             | <b>Docker</b> — Competent                              |
| <b>C++</b> — Competent                         | <b>SQL</b> — Competent                                 |
| <b>Robot Operating System(ROS)</b> — Competent | <b>STM32, RTOS</b> — Competent                         |
| <b>Linux</b> — Competent                       | <b>Data Structures</b> — Competent                     |

Languages

|                                                                  |                                                             |
|------------------------------------------------------------------|-------------------------------------------------------------|
| <b>English</b> — Native/Bilingual<br><i>IELTS score: 8.0/9.0</i> | <b>German</b> — Conversational<br>CEFR Level B1             |
| <b>Telugu</b> — Native/Bilingual<br><i>Mother Tongue</i>         | <b>Hindi</b> — Native/Bilingual<br><i>National Language</i> |

Courses & Certificates

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|--------------------------------------------------------------------------|------------------------------------------------------|
| <b>Big Data</b><br><i>Issued by Coursera</i>                             | <b>Quantum Computing</b><br><i>Elective from THD</i> |
| <b>MLOps (AWS): Deploying AI &amp; ML Models</b><br><i>Issued by edX</i> | <b>AI Agents</b><br><i>Issued by Hugging Face</i>    |

Leadership and Volunteering

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|--------------------------------|----------------------------------------------------------------------|
| 2019 – 2020<br>Rourkela, India | <b>VS Hall of Residence</b><br><i>Student elected representative</i> |
| 2017 – 2020<br>Rourkela, India | <b>Plugged_IN</b><br><i>Vice President</i>                           |

References

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|-----------------------------------------------------------------------------------------------------------------------------|--|
| <b>Prof. Dr. Dmitrii Dobriborsci</b> , <i>Professor</i> , Technische Hochschule Deggendorf<br>dmitrii.dobriborsci@th-deg.de |  |
| <b>Henri Meess</b> , <i>M.Sc., Manager</i> , Fraunhofer IVI<br>henri.meess@ivi.fraunhofer.de, +49 1725169897                |  |

Interests

|                        |                        |
|------------------------|------------------------|
| • Cooking and blogging | • eFootball and gaming |
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Declaration

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| I affirm that all information provided is true and accurate to the best of my knowledge. |                              |
|                                                                                          | <i>M. Sai Bhaskaradhwaj.</i> |
|                                                                                          | Kothmaissling, 01.08.2025    |