Email (+4915752499760)
Github

# Shrinidhi Bhat

Personal portfolio
Aachen, Germany

## Work Experience

**Forschungszentrum Jülich** — Aachen, Germany
*Researcher – Computer Vision* — *Jan 2025 – Present*
- Building a complete in-house **CV tech stack** for model training and deployment on **4D-STEM** datasets.

**BMW Autonomous Driving** — Munich, Germany
*Master Thesis – Computer Vision* — *Mar 2024 – Jul 2024*
- Pioneered a novel image compression pipeline using **attention based masking**, improving storage by **30%**; Implemented **VAEs** for diffusion based image generation.
- Reduced bandwidth by **70%** by **finetuning** and integrating **Mask2Former** using **distributed training**.

**Bosch Center for AI** — Renningen, Germany
*Research Intern – Robotics & Perception* — *Sep 2023 – Feb 2024*
- Developed a **3D multi-view segmentation** pipeline in **ROS2** for geometric perception using **RGB-D** data.
- Integrated **SAM** & **GLIP** for prompt-based segmentation that were deployed with **Docker** using **ROS2 service**.

**Aptiv PLC** — Wuppertal, Germany
*Working Student – Embedded AI* — *Sep 2022 – Aug 2023*
- Developed the **Netron** app for optimizing **edge AI models**; enabled efficient **ONNX/TVM** model analysis.
- Built **CI/CD pipelines** with **Docker**; Used **Github actions** to automate **testing** and **deployment** workflows.

**Western Digital** — Bangalore, India
*Engineer – Firmware* — *Jul 2019 – Sep 2021*
- Designed **command prioritization algorithms** using **data structures** (Queues, Graphs, HashMaps).
- Led development across **Agile/SAFe** environments; supported **customer-facing failure** analysis.

## Projects

- **Amenity Detection and Description System**: An end-to-end system for identifying and describing amenities in real estate images using **VLMs** (LLaVA). Designed a modular architecture with components for **detection**, **data storage (SQLite/CSV)** and **natural language generation**. Integrated with **hydra** for configuration management and deployed a **web application**
- **3D Bounding Box Prediction**: Developed an **end-to-end deep learning pipeline** for **3D bounding box prediction** using a **transformer** based model while also developing **custom loss functions**. Used **Weights and Biases** for detailed experiment tracking.
- **Monocular Visual Odometry on KITTI Dataset (C++)**: Built a **monocular visual odometry** pipeline using **FAST** feature detection, 5-point essential matrix estimation, and **RANSAC**. Estimated camera pose across frames. Emphasized **modular C++ design**, version control with **Git**, and clean code structure for scalability.

## Education

**RWTH Aachen University** — Aachen, Germany
*M.Sc. in Robotics Systems Engineering, Grade: 1.8* — *Oct 2021 – Sep 2024*
- **Coursework**: Machine learning, Computer Vision, Robotic kinematics and Dynamics, Numerical optimization etc.

**Manipal Institute of Technology** — Manipal, India
*B.Tech. in Mechatronics Engineering, CGPA: 9.06/10.0(**Minor: Robotics and Automation**) July 2015 – May 2019*

## Skills

**Communicative Languages**: English (C2), German (B1), Kannada & Hindi (Native)

**Programming Languages**: Python, C++, JavaScript, C, SQL, Bash

**Technologies & Frameworks**: PyTorch, TensorFlow, OpenCV, ROS, Flask, FastAPI, Node.js, React, Streamlit, Hydra, Docker, Git, Linux

## Involvement, Honors & Awards

- **Head of Incoming, IAESTE Aachen (Volunteering)**: Board member at IAESTE LC Aachen. Guided and consulted 11+ international interns over 2 years for internships in Aachen.
- **Academic Excellence Award**: Secured 3rd rank among 81 peers in the 3rd academic year. Awarded by Manipal Institute of Technology for consistent academic performance.
- **Himalayan Trek Expedition**: Successfully scaled a peak at 18,300 feet in the Himalayan range as part of a high-altitude training camp, demonstrating resilience and team endurance.