

Computer Vision Engineer with expertise in object detection, 6DOF pose estimation, multi-view geometry, and 3D reconstruction. Skilled in developing AI solutions for real-world applications, with a focus on accuracy and efficiency.

## Education

- **M.Sc. Computer Science (Research)**, Saarland University, Germany. (converted GPA: 9.33/10.0) **2021 - 2024**
- **B.Eng. Electronics and Communication**, B.M.S College of Engineering, India. (GPA: 9.2/10.0) **2014 – 2018**

## Technologies and Coursework

- Languages: Python, C++, Java, JS
- Libraries: OpenCV, Pytorch, Pytorch3D, Huggingface-transformers, Sklearn, Pandas, Numpy
- Courses: Machine Learning, Neural Networks, Computer Vision, Computer Graphics, 3D Object Representation and Reconstruction with Machine Learning etc

## Publication

- **Separable 3D Reconstruction of Two Interacting Objects from Multiple Views (3DV 2025)**  
Suhas Gopal, Rishabh Dabral, Vladislav Golyanik, Christian Theobalt

## Work Experience

**Research Engineer** **Perspectiv Labs Pvt Ltd.** **August 2024 - Present**  
Bengaluru, India

- Worked on face recognition/verification using **RetinaFace + FaceNet** models converted to **ONNX** in a NodeJS environment.
- Developed a **photogrammetry pipeline** to reconstruct road surfaces from stereo capture, and estimate pothole volume to reduce the workload of road engineers.
- Built an **object counting** system for industrial screws and nuts (**1.5mm - 8mm**) using **YOLOX**, achieving **96%** accuracy on real-world data, and reducing manual inspection time from around 30 minutes to just 1-2 minutes.
  - Trained on nearly 40,000 synthetic images (Nvidia Omniverse) and fine-tuned on around 1000 real-world samples.
  - Deployed the **quantized HAILO model** on **Raspberry Pi AI Hat** for low-cost, low-power inference optimized for real-time performance.

**Research Assistant** **DFKI (German Research Center for AI)** **May 2022 – Feb 2024**  
Saarland, Germany

- Developed a 6DOF **pose estimation pipeline** for industrial containers using **YOLOv8** for object detection and **ZerbraPose** for pose estimation.
  - Achieved a test mAP(50-95) of **97%** for detection and test average recall ADD(-S) of **78%** for pose estimation.
  - Deployed as a **docker container** for real-time prediction for input from **Intel Realsense camera**.
- Built a **compressed point-cloud streaming** system for **Unity VR** with **<1s** latency at **50fps** on a consumer desktop.
- Integrated **Speech Recognition (WhisperJax)** and **LLM-based chatbot (NeuralChat-7B)** for natural interaction with humanoid robot Pepper.

- Developed custom front-end and backend features for flight reservation systems for **40+ airlines** like Air Canada, Japan Airlines, Southwest etc.
- Optimized memory usage, reducing product **RAM consumption by 10%**.
- Designed a tool for converting **XML schemas to TypeScript classes**.

## Projects

---

- **Master Thesis: Separable multi-view 3D Human-Object Reconstruction – Max Planck Institute for Informatics, Saarland**
  - Developed a novel **markerless** approach for high-quality **separable human-object 3D reconstruction** from multi-view RGB inputs; also supporting separable free-viewpoint novel view renderings.
  - Collected a video dataset of **120 views (cameras) × 30s** per sample for **3** identities and **6** objects.
  - Developed a preprocessing pipeline for scene segmentation using **GroundingDINO & Segment Anything** models.
  - This work was later accepted at the **International Conference on 3D Vision 2025**.
  - Project Page: <https://vcai.mpi-inf.mpg.de/projects/separable-recon/>
- **Automated Guided Vehicle Survey**
  - Developed an **autonomous navigation prototype** for the MIR100 robot to detect and locate predefined 3D objects.
  - Trained **Deep Object Pose** to estimate object positions and integrated it with **ROS & Unity VR** for real-time digital twin simulation.
  - GitHub: <https://github.com/Suhas-G/agv-survey>
- **RayTracer**
  - Developed a **multi-threaded CPU-based raytracer** in C++ supporting BVH acceleration, various camera models, lighting, and materials.
  - GitHub: <https://github.com/Suhas-G/RayTracer.git>
- **JdeRobot, Google Summer of Code**
  - Developed a **web-based block-programming tool for Computer Vision and Robotic applications** – that converts interconnected blocks of Python code (custom or pre-built) into a coherent multi-process application.
  - Implemented around **20 building blocks** in the tool for Sensors (using ROS topics), Control (like PID) and Image processing.
  - Demonstrated the tool's usefulness by building a demo Drone navigation application in Gazebo simulation using these blocks.
  - Github: <https://github.com/JdeRobot/VisualCircuit>

## Other Activities

---

- **Google Summer of Code 2022 - Mentor** for VisualCircuit.
- **ROS World 2021 – Speaker, Lightning Talk** on VisualCircuit ([Video](#))
- **Event Coordinator** in Phase Shift, 2016 - B.M.S College of Engineering **tech fest**.
- **iTeach Initiative – Volunteer teacher** for underprivileged students