KAIVALYA SHAH

Specializing in Computer Vision for Robotics and ROS Development
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EDUCATION

- **Pandit Deendayal Energy University (PDEU)** — Gandhinagar, Gujarat, India
  Bachelor of Technology in Computer Science & Minor in Robotics; CGPA: 8.7 — *July 2022 – Present*

EXPERIENCE

- **Sastra Robotics (Startup), IITGN** — Gandhinagar, India
  Computer Vision Intern — *Sep 2024 – Present*
  - **Robot Grasping Technique**: Developed robust grasp planning algorithms by integrating object physical properties and slip detection.

- **IITGN Robotics Lab** — Gandhinagar, India
  Research Intern under Prof Harish PM. — *May 2024 – Jul 2024*
  - **Computer Vision**: Led projects on 6D pose estimation and 3D reconstruction using advanced computer vision techniques.

- **iNav Labs (Startup), PDEU** — Gandhinagar, India
  ROS Intern — *Mar 2024 – May 2024*
  - **Autonomous Car Modulation**: Contributed to the development of autonomous car systems using Jetson Nano and ROS.

PROJECTS

- **Live Grasp Detection For multiple Objects**: Efficient 6-DoF Grasp Generation in Cluttered Scenes with realsense depth camera.
- **Object Physical Property Detection**: Implemented algorithms to detect and analyze object physical properties for robotic applications.
- **6DOF Live Pose Estimation and Tracking**: Developed a high-speed ROS package for live pose estimation using depth cameras.
- **Novel 3D Reconstruction (NeRF + LoFTR)**: Designed a pipeline for accurate 3D object reconstruction using NeRF and LoFTR models.
- **Multi-Purpose Differential Drive Robot**: Built a versatile ROS2 package integrating SLAM, RGBD vision, and point cloud generation with YOLO-V8 and Midas capabilities .
- **Gesture Controlled Car**: Developed a hand gesture controlled car using ESP32, ESP8266, and computer vision with OpenCV and MediaPipe.

SKILLS

- **Hands-On:** Computer Vision, NeRF, LoFTR, LLM, ViT, CLIP
  Libraries: PyTorch, TensorFlow, Open3D, Keras, NumPy
  Languages: C++, Python, Java, R, MATLAB

- **Technologies:** ROS, Gazebo, SLAM, Nav2, CUDA
  Hardware: Arduino, ESP32, Raspberry Pi, Jetson Nano
  Tools: Docker, Conda, Git

- **Theory:** Robotics and Control Systems
  CAD: Fusion 360