Dhruvi Koshiya

Contact

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Location Dortmund, Germany

Education

Oct 2023 – Current **Master - Automation & Robotics**, *Technical University Dortmund*, Germany.
Pursuing*

July 2018 – May 2022 **Bachelor - Instrument & Control Engineering**, *Dharmsinh Desai University*, India.
GPA: 1.9 (on a 1.0 to 5.0 scale, where 1.0 is highest).

June 2015 – March 2018 **Secondary and Higher Secondary School**, *Tapovan Vidhyalaya*, India.
GPA: 1.5 (on a 1.0 to 5.0 scale, where 1.0 is highest).

Work Experience

June 2024 – Current **Student Research Assistant**, *Ihri-TU Dortmund*, Germany.
- Developing a digital-twin for the Stretch3 Robot—a mobile manipulator—with a focus on manipulation, perception, navigation, and automatic hand-over between two robots
- Diagnosed Human-Robot Interaction Using Reachy: For Manipulation and Teleoperation of Humanoid Robot using VI and AI.

Aug 2022 – Oct 2023 **Technical Project Manager**, *Reliance Industries Limited*, Jamnagar, India.
- Collaborated with senior management on strategic planning and lead the execution of instrumentation activities based on technical drawings and specifications.
- Conducted inspections for quality & progress in the petro-chemical refinery.

Dec 2021 – March 2022 **Project Intern**, *Nutron Systems Pvt Ltd*, India.
- Data fetching, Monitoring and Transmission from different PLCs (Mitsubishi, Siemens, Allen Bradley) and Modbus enabled devices using standalone configurable system NoxVIEW.

May 2021 – June 2021 **Project Intern**, *Advance Circuit & Development Centre (ACDC)*, India.
- Studied and worked with various Microcontrollers, Sensors, and Simulation platforms.
- Completed projects on a Safety Monitoring Device & Contactless Hand Sanitizer - Dispensing System.

Academic Projects

Current **MASTER THESIS: AI-Enhanced Adaptive Guidance in Mixed Reality for Intuitive Teleoperation of Mobile Manipulators**.

Developing an AI-assisted Mixed Reality (MR) teleoperation framework for the Hello Robot Stretch 3 that combines immersive interaction with adaptive autonomy. The system integrates a ROS2–Unity communication bridge, real-time motion planning (MoveIt2), and MR control via the Meta Quest 3 for intuitive head, hand, and joystick-based operation. For further implementation of AI-driven adaptive guidance modules for reachable workspace visualization, collision risk alerts, and object-aware interaction, enhancing task efficiency and user safety.

GLIDE: Gamified Latency-Induced Dynamics in Teleoperated Air Hockey Environment, *GitLab Link*.

The impact of network latency on teleoperated systems using an air hockey setup (two UFactory xArm 6 and a touch-screen gameboard) visualizes latency metrics and control adjustments induced by the vSTING module. By integrating a web-based controller, robotic movements, and wireless communication degradation, GLIDE provides key insights into latency management for applications in healthcare, autonomous vehicles, remote manufacturing, and rescue robotics.

ROS-Controlled Robotic Arm Motion Planning and Simulation with MATLAB.

This project aims to create a robust control system for a UR10 robotic arm, leveraging MATLAB and ROS for precise trajectory planning and execution. The primary objective is to integrate inverse kinematic control, simulation in Gazebo, and communication with ROS to enable users to specify end-effector poses and execute smooth motion trajectories while monitoring real-time joint states and velocities.

Mobile-Robots-Motion-Planning Autonomous Robot Navigation, *GitHub Link*.
The primary focus is on path planning and optimization utilizing the Rapidly-exploring Random Tree (RRT) algorithm for global planning and the Timed Elastic Band (TEB) algorithm for local path optimization and obstacle avoidance.

BACHELOR THESIS: Data fetch and transmission from heterogenous make control system using standalone configurable software NOXVIEW.
Configuration and troubleshooting of NoxVIEW Scada configurator which is connected with LabVIEW that can fetch and interface data of different hardware devices and networks using software drivers such as Serial Modbus master, TCP IP Modbus master, Mitsubishi TCPIP, Siemens S7 TCPIP etc. through CSV, ODBC, NoxVIEW-IIOT, AWS gateways.

Skills and Abilities

Programming Languages	C++, C#, Python, MATLAB (Using PyTorch, OpenCV)
Simulation Platforms	Unity, ROS, Gazebo, SCADA Automation, LabVIEW, Proteus / Fritzing
Configuration Platforms	PLC Ladder Logic Programming, Arduino IDE, ESP 32, Raspberry Pi
Robots	Stretch3, Reachy, ufactory Xarm 6, Turtlebot3
Management Skills	SAP, SAP ERP Management, MS Office, Git, Docker, Notion

Languages

English	Fluent user (IELTS-C1)
German	Intermediate user (B1)
Gujarati & Hindi	Native

Conferences and Competitions

Sep 2025 **Mench und Computer Conference(MUC), Student Volunteer**.
- Assisted in the execution of an academic conference.

April 2025 **Pre Human-Computer Interaction Conference(CHI)**.
- Participated in an academic conference sessions.

July 2021 **e-Yantra Robotics Competition, IIT-Bombay**.
- Qualified for second level of the comepetetion.

Extra Curricular

May – Sep 2025 **ISP Buddy Programme**.
- Supported international students to settle in and feel the home at TU Dortmund.

April 2024 – Current **DLAB cohort**, *DLAB - TU Dortmund University*.
- Participated in Start-up seminars and Worked on market analysis for AutoStore & ItemPiQ at Swisslog.

July 2018 – Sep 2020 **Volunteer of Anurakti Foundation admitted by Rotary International**.
- Provided education and raised awareness about health among underprivileged children.

Publications & Courses

Publication	"Contactless Hand Sanitizer", Article (Nov, 2021), EFY - Electronics For You.
Certificates	Embedded System and Robotics (IIT, Bombay), Python Language (University of Michigan, Coursera), Google Project Management (Google, Coursera), Introduction to AI (IBM, Coursera).