RUCHIT BHANUSHALI
M.ENG. INTELLIGENT ROBOTICS

Address: Regensburg, Germany
Phone: +49 15154231572
GitHub: RuchitBhanushali

Email: ruchit9898@gmail.com
Website: ruchitbhanushali.com
LinkedIn: ruchitbhanushali

SUMMARY

Robotics engineer passionate about designing and programming intelligent robotic systems combining mechanical design, embedded control, and AI-based perception. Experienced in ROS2, Gazebo, C++, and Python for motion planning, sensor fusion, and simulation. Currently pursuing M.Eng. Intelligent Robotics in Germany, developing humanoid and collaborative robotic prototypes integrating computer vision and adaptive learning.

WORK EXPERIENCE

Techno Smart Diamond Solutions – R&D Robotics Engineer — India   **Oct 2023 - Aug 2024**
- Developed automation system for precision diamond polishing using CPC 6-axis robotic arm.
- Implemented ROS-based motion control and Python-based path optimization.
- Designed hardware interfaces and vision-assisted polishing pipeline.
- Developed backend for 3d reconstruction from 2d images.

Innovix Pro – Robotics Engineer — India (Autonomous Museum Guide Robot)   **Apr 2023 - Sep 2023**
- Designed and deployed an indoor navigation robot currently operational at the Solar Dome Museum (Kolkata, India).
- Integrated SLAM, sensor fusion, and user interface modules for autonomous operation.
- Collaborated with developers, designers, and architects for mapping and interaction.
- Tools: ROS, Python, Android Studio, Arduino, STM, Nvidia Jetson Nano

VAMA Communications – Mechatronics Intern — India   **Nov 2022 - Feb 2023**
- Worked on kinetic and animatronic product prototypes using mechanical design and embedded programming.

EDUCATION

M.Eng. Robotics   **Mar 2025 - Present**
Deggendorf Institute of Technology, Germany
- Major - **Intelligent Robotics**

B.Tech. Robotics & Automation   **June 2019 - Mar 2023**
Parul University, India
- Thesis/Project - **BCI-EEG Controlled Prosthetic Arm**

SKILLS

- **Programming: Python, C++, MATLAB, Embedded C**
- **Frameworks: ROS2, MoveIt, OpenCV, PyTorch**
- **Design & Simulation: Fusion 360, SolidWorks, Gazebo, Rviz, MoJoCo, Pybullet, Isaac Sim (basic)**
- **Electronics: NXP, STM32, Arduino, PCB Design, Sensor Integration, Communication Protocols**
- **Control & Planning: PID, MPC, Kinematics, Motion Planning**
- **Tools: Git, Linux, Docker, VS Code**
- **Languages: English (Fluent C1), German (A2)**

KEY PROJECTS

Humanoid Robot Simulation (In Progress – Potential Master's Thesis)   **End - Oct 2026**
Simulating Unitree humanoid behavior to study curiosity and bonding driven adaptation for human-robot collaboration in industrial settings.
- Implementing intrinsic motivation and social feedback models.
- Exploring adaptive learning of motion and interaction patterns through multimodal sensing.
- Tools: ROS2 Humble, Webots, MuJoCo, PyTorch, OpenCV, Ubuntu

UR3e – Vision-Based Manipulation (In Progress)   **End - Jan 2026**
Implementing vision-guided control for a UR3e collaborative robot using ROS2 MoveIt and Gazebo/Rviz simulation.
- Developed inverse kinematics and trajectory planning pipeline in C++.
- Integrated 3D camera-based object localization for pick-and-place automation.
- Configured controller nodes and robot description files for dynamic model testing.
- Tools: ROS2, Gazebo, Rviz, MoveIt, C++, OpenCV, YOLOv8.

3D Vision & Anomaly Detection (In Progress)   **End - Jan 2026**
Developed a computer vision system for detecting abnormal human activity around ATM terminals using pose estimation and motion analysis, ensuring GDPR-compliant privacy preservation.
- Designing a vision system for privacy-preserving human activity and anomaly detection using pose estimation and CNN–LSTM motion modeling.
- Developing real-time tracking and feature fusion pipeline for behavior analysis in constrained environments.
- Tools: Python, PyTorch, OpenCV, TensorFlow Lite, OpenPose

EEG-Controlled Prosthetic Arm (Batchelor's Thesis)   **Oct 2022 - Mar 2023**
Built a prosthetic arm using EEG signal interpretation for real-time motor control.
- Designed STM32-based signal acquisition and filtering modules.
- Integrated custom amplifier circuits and developed Python control interface.
- Designed Prosthetic Arm with Fusion 360
- Tools: STM32, Python, MATLAB, PCB Design, Fusion 360

Robocon 2022 – National Robotics Challenge   **Nov 2021 - Jul 2022**
Led the electronics and control subsystem for an autonomous robot competing in dynamic field navigation and task automation.
- Programmed microcontroller-based motion control systems and sensor networks.
- Worked on robot design in Fusion 360
- Contributed to national top-5 finish.
- Tools: Embedded C, PCB Design, Arduino, Fusion 360, Raspberry pi

ACHIEVEMENTS

- **1st Place – Autodesk Fusion 360 Design Challenge, India**
- **Top 5 – Robocon 2022 (National Robotics Competition)**
- **Featured in university innovation exhibitions for prosthetic arm**
- **Joint Secretary – Robotics Society of India (Student Chapter)**

INTERESTS

Humanoid Robotics │ Adaptive AI Systems │ Simulation │ Human–Robot Interaction │ Biomedical Engineering │ Cognitive Learning │ Creative Automation