



# Jayesh Khalane

B.Tech Information Technology

JSPM's Rajarshi Shahu College of Engineering, Pune  
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## About Me

Fueled by a passion for problem-solving, I am continually seeking to acquire new skills and tools to address challenging situations. My dedication to learning and contributing has led me to invest significant time in various projects, with the goal of enhancing operational efficiency and developing innovative solutions.

## Education

Course	Institution	Year
B.Tech Information Technology	JSPM's Rajarshi Shahu College of Engineering, Pune <i>Affiliated to Savitribai Phule Pune University</i>	2022-26
CGPA:	8.66 (up to sem4)	

## Projects

- **Turtle Bot based swarm** [May 27<sup>th</sup> - July 18<sup>th</sup>]
  - Developed a decentralized control of a swarm using 2D LiDAR in unknown environments, with no inter-agent communication.
  - Integrated ROS and Gazebo for testing, ensuring seamless simulations and validation of the control flow.
  - **Detailed Documentation:** [click here](#)
- **Astro Tinker BOT eYRC | Team Lead** [Sep 5<sup>th</sup> - Feb 27<sup>th</sup>]
  - Worked with DE0 nano FPGA board to implement RISC-V 32-bit I-type processor, serial communication, PWM generation, pulse detection, UART, robust line following, pick up and place mechanism.
  - Designed a complete robotic solution for the given problem statement.
- **R2 Autonomous Robot** [Feb 22<sup>nd</sup> - Apr 30<sup>th</sup>]
  - Designed and implemented an autonomous robot using ROS for navigation, sensor integration, and task execution.
  - Focused on automation of the mechanisms.
- **Distributed Computing** [Jan 20<sup>th</sup> - Apr 20<sup>th</sup>]
  - Built a cluster with multiple Raspberry Pi boards using MPI4PY and multi-threading to perform a common task.
  - Developed a distributed system architecture to ensure efficient resource utilization and parallel computation.

## Work Experience

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- **Research Intern IITB | Eysip** [May 27<sup>th</sup> - July 19<sup>th</sup>, 2024]
  - Systems and Control Engineering Department IIT-B, supervised by Prof. Leena Vachhani.
  - Developed decentralized convergence algorithm using 2D LiDAR for swarm robotics in unknown environments without inter-agent communication. Implemented scalable and fault-tolerant obstacle avoidance.
  - Worked on the stability analysis of decentralized systems using distance and bearing measurements to ensure efficient control.
- **Programmer | Team CiPHER** [Sep 30<sup>th</sup>, 2023 - August 2024]
  - Active member of Team CiPHER, contributing to the design and programming of robotic systems.
  - Programming Team Lead.

## Skills & Interests

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- **Programming Languages:** C, C++, Python, Bash, Verilog.
- **Tools & Libraries:** ROS, Gazebo, Quartus, ModelSim, Plot-Juggler, Linux.
- **Soft Skills:** Problem Solving, Teamwork, Leadership, Design Thinking.
- **Interests:** AI in Robotics, Embedded Systems, Machine Learning, CPU Architecture.

## Languages

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- English, Hindi, Marathi, German