DevOpsSchool

Course curriculum · November 2026

LEVEL 04 OF 04 · ADVANCED

Robotics Advanced Training

Build AI-driven robots with deep learning perception and learned control, and deploy, secure and scale them safely in real environments.

LIVE ONLINE **Max 8-10 hours**	CORPORATE (DAY-WISE) **5 days · Days 1-5**	SELF-PACED VIDEO **1-year LMS access**
BATCH SIZE **Max 10 learners**	NEXT BATCHES **1st of every month · weekends: first Saturday**	CERTIFICATE **Verifiable certificate of completion**

Foundation	Essential	Intermediate	Advanced
1 day · Included	2 days · Included	3 days · Included	5 days · This curriculum

INSIDE THIS CURRICULUM

What you will achieve	Outcomes and level focus
Who should attend	Audience and prerequisites
Agenda	45 topics · Foundation to Advanced
Hands-on labs	4 labs
Formats and fees	Live, 1:1, self-paced, corporate
Trainer and reviews	Rajesh Kumar
Enrolment	Batches, payment, contacts

WHY DEVOPSSCHOOL

- Rated 4.6 on Google
- 1,500+ verifiable certificates issued in the public registry
- Trainer Rajesh Kumar: 20 years in industry
- Small batches: max 10 learners, every session recorded

Course page: www.devopsschool.com/courses/robotics/robotics-advance-training.html
Talk to us: WhatsApp +91 99057 40781 · +1 (469) 756-6329 · contact@DevOpsSchool.com · reply within 1 hour

OUTCOMES

What you will achieve

By the end of the Robotics course path, you will be able to:

1

Build and program robots

Wire sensors, motors and controllers and program robots that react to their surroundings.

2

Develop ROS 2 robot software

Model, simulate, map and navigate robots using ROS 2, Gazebo, Nav2 and MoveIt 2.

3

Deploy intelligent robots safely

Add AI perception and learned behaviour and deploy robots securely and safely at scale.

WHAT THE ADVANCED LEVEL ADDS

AI perception, learning, fleets, safety and deployment

Hands-on: Build an autonomous mobile robot. Combine SLAM, Nav2 and a YOLO detector on edge hardware so a robot finds and approaches target objects, then package it with Docker.

WHO SHOULD ATTEND

- Experienced Robotics practitioners responsible for quality, security and scale.
- Senior engineers, architects and leads who design and troubleshoot Robotics solutions.
- Teams making Robotics an organisation-wide standard.

BEFORE YOU START

- The Intermediate level, or equivalent hands-on experience.
- You can already: Model and simulate robots, add mapping, navigation and computer vision, and control manipulators with ROS 2 tools.
- Basic computer skills and a laptop with a stable internet connection for the live sessions and labs.
- This curriculum includes every earlier level, so it is complete on its own.

AGENDA · FOUNDATION TO ADVANCED

Robotics Advanced Training agenda

45 topics. Each level builds on the one before it, so this curriculum lists every earlier level in full. Days are for corporate (day-wise) delivery; live online batches cover the same agenda in max 8-10 hours.

DAY 1 — Foundation: Robot types, components, electronics and first build

Included from Foundation

1. Introduction to robotics: sense-think-act loop, autonomy levels and where robots are used today
2. Robot types: industrial arms, collaborative robots, mobile robots, drones and humanoids
3. Robot anatomy: frames, links, joints, degrees of freedom, end effectors and power systems
4. Electronics basics: voltage, current, Ohm's law, breadboards, batteries and safe wiring
5. Actuators: DC motors, servo motors and stepper motors, gearing and motor drivers
6. Sensors: ultrasonic, infrared, limit switches, encoders and IMUs (accelerometer and gyroscope)
7. Controllers: Arduino and ESP32 microcontrollers vs Raspberry Pi single-board computers
8. Setting up: Arduino IDE installation, board and port selection and uploading a first program
9. First program: digital and analog I/O, blinking an LED and reading a sensor value
10. PWM motor control: speed and direction control through an H-bridge driver
11. Robot safety: electrical safety, moving-part hazards and emergency stops

DAY 2 — Essential: Control, communication, mobile robots and ROS 2 basics

Included from Essential

12. Feedback control: open vs closed loop, PID control and tuning P, I and D gains
13. Encoders and odometry: counting ticks, wheel speed and estimating position
14. Differential drive kinematics: wheel speeds, turning radius and velocity commands
15. Behaviours: line following, obstacle avoidance and simple state machines
16. Communication buses: UART serial, I2C and SPI for sensors and boards
17. Raspberry Pi robotics: Python GPIO control, cameras and talking to a microcontroller over serial
18. Wireless control: Bluetooth and Wi-Fi control with ESP32 and simple web or app interfaces
19. ROS 2 introduction: why ROS, distributions such as Jazzy LTS, installation on Ubuntu
20. ROS 2 core concepts: nodes, topics, messages, services, actions and parameters
21. Writing ROS 2 nodes: rclpy publishers and subscribers, colcon workspaces and packages
22. ROS 2 tools: ros2 CLI, launch files, rqt and bag recording

DAY 3 — Intermediate: Simulation, navigation, vision and manipulation

Included from Intermediate

23. Robot description: URDF and xacro, links, joints, inertial and collision properties
24. Coordinate frames: TF2 transforms, frames for base, odometry and sensors
25. Visualisation: RViz2 displays for robot models, laser scans, point clouds and maps
26. Simulation: Gazebo with ROS 2 integration, simulated sensors and worlds
27. Hardware abstraction: ros2_control controllers and hardware interfaces
28. SLAM: building maps with slam_toolbox using lidar data
29. Autonomous navigation: Nav2 localisation, path planning, costmaps and behaviour trees
30. Computer vision: OpenCV image processing, colour tracking, ArUco markers and depth cameras

31. Manipulator kinematics: forward and inverse kinematics, workspace and Denavit-Hartenberg parameters
32. Motion planning for arms: MoveIt 2 planning groups, trajectories and collision checking
33. Debugging robots: logging, ros2 doctor, topic introspection, bag replay and sensor calibration

DAYS 4-5 **Advanced: AI perception, learning, fleets, safety and deployment** — New at this level

34. Deep learning perception: object detection with YOLO, segmentation and pose estimation for robots
35. Edge AI: running models on NVIDIA Jetson with TensorRT and optimised inference
36. Reinforcement learning: training policies in simulation with Isaac Lab or Gymnasium and sim-to-real transfer
37. Learning from demonstration: imitation learning and vision-language-action model concepts
38. Sensor fusion: Kalman and extended Kalman filters with robot_localization for IMU, odometry and GPS
39. Real-time and performance: DDS quality of service, executors, real-time kernels and latency budgets
40. Multi-robot systems: fleet management, namespaces, task allocation and open-rmf concepts
41. ROS 2 security: SROS2 encryption, authentication and access control
42. Industrial integration: PLC communication, OPC UA and integrating robots into production lines
43. Safety and standards: ISO 10218 for industrial robots, ISO/TS 15066 for cobots and risk assessment
44. Deployment: containerising ROS 2 with Docker, CI for robot software and over-the-air updates
45. Capstone: build an autonomous mobile robot that maps, navigates and recognises objects end to end

PRACTICE

Hands-on labs

You build these yourself during the course, guided by the trainer.

FOUNDATION

Build a sensor-driven motor rig

Wire a microcontroller, motor driver, DC motors and an ultrasonic sensor, and program the motors to slow down and stop as an obstacle approaches.

ESSENTIAL

Build a line-following robot

Assemble a two-wheel robot that follows a line with PID control, then publish its sensor readings and accept velocity commands through ROS 2.

INTERMEDIATE

Navigate a simulated robot autonomously

Model a mobile robot in URDF, simulate it in Gazebo, build a map with SLAM and send it to goals autonomously with Nav2.

ADVANCED

Build an autonomous mobile robot

Combine SLAM, Nav2 and a YOLO detector on edge hardware so a robot finds and approaches target objects, then package it with Docker.

HOW YOU CAN LEARN

Formats and fees

The same agenda in four formats. Fees are in Indian rupees as of November 2026; the course page shows them in your currency.

FORMAT	DURATION	WHAT YOU GET	FEE
Live & interactive (online)	Max 8-10 hours	Instructor-led public batch of max 10 learners with demos, labs, Q&A and assignment review. Weekday batches start on the 1st of every month, weekend batches on the first Saturday of every month.	**INR 34,999**
1:1 live training (online)	Max 8-10 hours, one-to-one	The same agenda, taught one-to-one by the trainer. Starts immediately, without waiting for the next batch; sessions planned around your working hours, at your pace.	**INR 99,999**
Self-paced video	1-year LMS access	All four Robotics levels, plus 20+ more courses and 50+ tools, at your own pace.	**INR 833/month** billed yearly at INR 9,996
Corporate (day-wise)	5 days for this level	A private batch for your team, on demand. Foundation 1 day, Essential 2, Intermediate 3, Advanced 5 (cumulative).	**Quote on request**

ASSESSMENT AND CERTIFICATE

Your progress is checked through hands-on labs and assignments at every level. On completion you receive a DevOpsSchool certificate of completion with a unique credential ID that anyone can verify at devopsschool.com/certificates.

INCLUDED WITH EVERY LIVE BATCH

- Every live session is recorded and stays in your LMS for a year.
- Can't attend your batch? Move to next month's batch.
- Free demo class before you pay.
- Free 10-15 minute call with an advisor or the trainer to check the course fits you.

YOUR TRAINER

Learn from Rajesh Kumar

Principal Architect, trainer and mentor in DevOps, SRE, DevSecOps and platform engineering, with 20 years across 8+ software MNCs, including Staff DevOps/SRE Engineer for a leading Japanese mobile-payment platform and Principal DevOps Architect and Manager in Europe.

Profile: www.rajeshkumar.xyz · Videos: youtube.com/@TheDevOpsSchool

20 years in industry	**200+** corporate trainings
10,000+ engineers mentored	**70+** organisations coached

REVIEWS

What learners say

Rated 4.6 on Google · more reviews at devopsschool.com/testimonials and in our video testimonials.

> “Rajesh is very good trainer. Rajesh was able to resolve our queries and question effectively. We really liked the hands-on examples covered during this training program.”
>
> Indrayani, India

> “The training was very useful and interactive. Rajesh helped develop the confidence of all.”
>
> Abhinav Gupta, Pune

START YOUR ROBOTICS TRAINING

Join the next batch

Weekday batches start on the 1st of every month and weekend batches on the first Saturday of every month, with max 10 learners each. 1:1 training can start immediately; corporate batches run on demand. We reply within 1 hour.

Pay by UPI, credit and debit cards, net banking or PayPal. Before you pay, read our refund policy. All levels of this course: www.devopsschool.com/courses/robotics/

ENROL OR RESERVE A SEAT
Robotics Advanced Training

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