

TECHNICAL SEMINAR

Robotics and Automation



Machines that sense, decide and act

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Agenda

01

Introduction

02

Architecture

03

Trends

04

Adoption

01

INTRODUCTION



**Robots take on the dull,
dirty and dangerous work.**

Why it matters



Overview

- Robots combine sensors, controllers and actuators
- Automation ranges from simple arms to autonomous vehicles
- Used in factories, warehouses, hospitals and homes
- Safety and reskilling are key considerations

KEY IDEA

Collaborative robots now work safely beside people.

02

ARCHITECTURE



How it works

01

Sense

Cameras and sensors

02

Plan

Path and task planning

03

Act

Motors and grippers

04

Learn

Improve with data



Core components

01

Mechanics

Arms, wheels and grippers.

02

Electronics

Sensors and controllers.

03

Software

Control, vision and AI.



Tools and options

Layer	Popular choices	Notes
Controllers	Microcontrollers, PLCs	Real-time control
Software	ROS, simulation tools	Open-source frameworks
Sensors	Lidar, cameras, IMUs	Perception stack

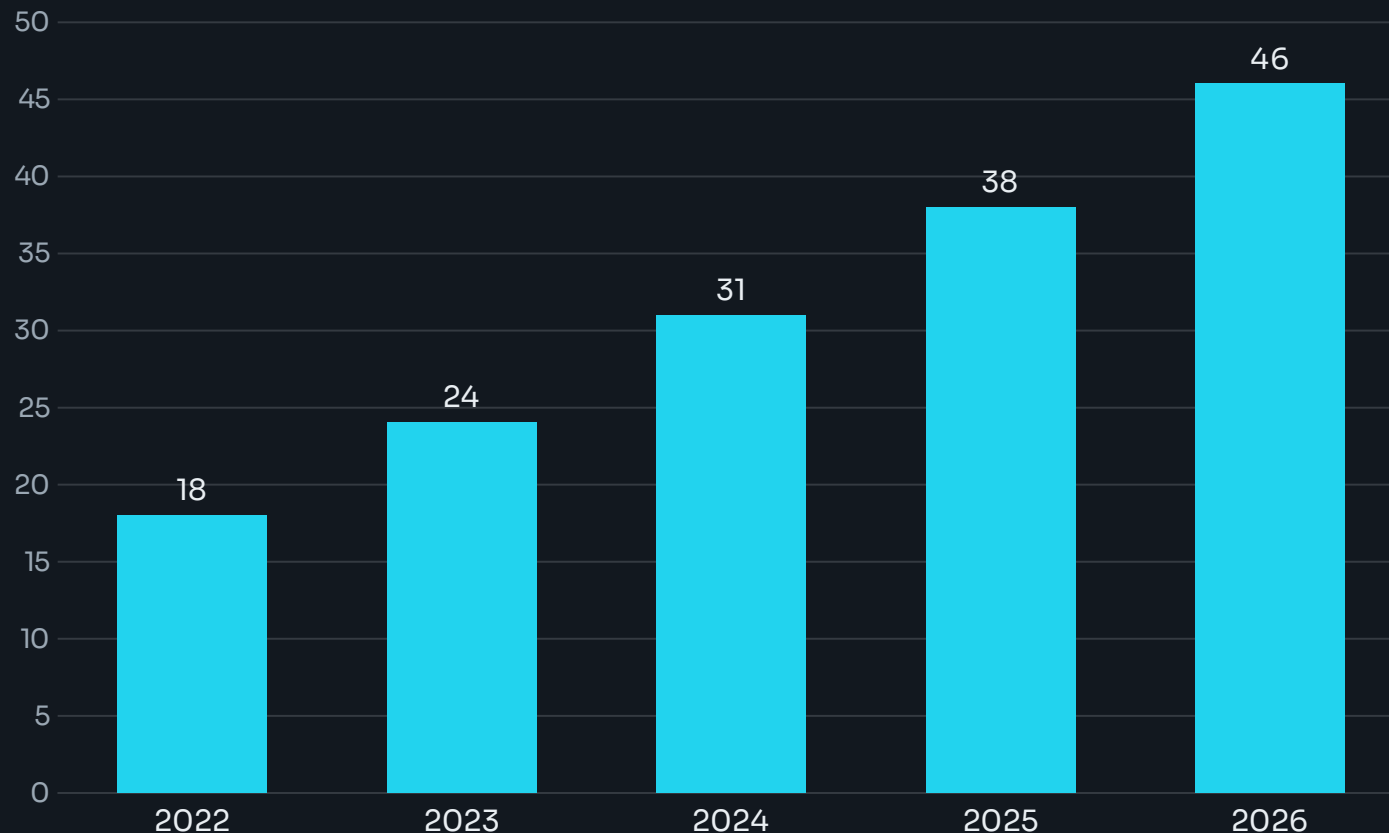
Generic examples; pick what fits your project.

03

TRENDS



Adoption over time



Adoption keeps rising as tools mature (sample data).

Sample data for illustration — replace with your own figures.



Use cases



Image 1

Manufacturing

Welding and assembly



Image 2

Warehouses

Picking and sorting



Image 3

Healthcare

Surgical assistance

04

ADOPTION



Benefits and risks

Benefits

- ✓ Consistent quality
- ✓ Works 24×7
- ✓ Safer for dangerous tasks

Risks

- High upfront cost
- Job displacement fears
- Maintenance needs



Best practices

01

Start small

Automate one task.

02

Design for safety

Guards and sensors.

03

Reskill people

Train operators.



Getting started roadmap

Week 1

Learn

Core concepts and a tutorial

Week 3–4

Pilot

One real use case

Week 2

Prototype

Small proof of concept

Month 2

Scale

Standards, monitoring, training

Questions?

Thanks for your time.

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