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Exploring Robotics

A nontechnical introduction to robotic automation

FA-0613 · 1 day

Automation, RPA & Power Platform

Understand robot types, applications and social implications, then outline a simple robotic-automation concept.

Introduction

This one-day introduction is designed for people without an engineering or programming background. It explores how robots sense, act and use control systems, with examples from manufacturing, healthcare, agriculture and services.

Talks, visual examples and group discussion lead to a concept-design exercise. Participants consider intended users, benefits, constraints and safety questions; the course does not include building, programming or commissioning a robot.

The source schedule allocates approximately six and a half hours to learning activities, with lunch and short breaks across the day.

Learning outcomes

The course teaches participants to:

- Explain basic robotics concepts and identify sensors, actuators and control systems.
- Distinguish industrial, service and humanoid robot examples.
- Describe key historical developments and separate science-fiction ideas from established capabilities.
- Discuss uses, potential benefits, limitations and social or ethical concerns.
- Recognise why collaborative applications still require task-specific safety assessment.
- Outline and present an illustrative robotics solution, including user needs and practical constraints.

Prerequisites

No robotics, engineering or programming knowledge is required. Participants should be comfortable taking part in group discussions and a simple concept-design activity.

Training outline

1. Introduction — 30 minutes

- Welcome and course overview
- Icebreaker activity: Participants share their experiences or perceptions of robotics

2. Understanding Robotics — 45 minutes

- Definition and key concepts of robotics
- Types of robots: Industrial, service, and humanoid
- Components of a robot: Sensors, actuators, and control systems
- Slide discussion: Examples of robots in different industries

3. A Brief History of Robotics — 45 minutes

- Early automata and the origins of robotics
- Key milestones in robotics development
- The role of science fiction in shaping the field of robotics
- Slide discussion: Timeline of major robotics innovations

4. Applications Across Industries — 1 hour

- Manufacturing and assembly lines
- Healthcare and medical robotics
- Agriculture and farming
- Service robots for retail, hospitality, and delivery
- Discuss illustrative application scenarios, including implementation constraints rather than unsupported claims of success.

5. Societal and Ethical Implications — 1 hour

- Potential contributions to efficiency, safety and accessibility; results depend on the task and implementation.
- Ethical considerations: Job displacement and privacy concerns
- Balancing the advantages and challenges of robotics integration
- Slide discussion: The role of policy and regulation in shaping the future of robotics

6. Emerging Technologies and Directions — 1 hour

- Robotics and artificial intelligence (AI)
- Collaborative robots: human-robot working arrangements and the need for application-specific risk assessment and safeguards.
- Soft robotics and bio-inspired designs
- Opportunities, practical limitations and uncertainties in robotics development.
- Discuss possible research directions; distinguish informed exploration from a prediction of the next breakthrough.

7. Group Activity: A Robotics Concept — 1 hour

- Groups outline a robotics concept for an illustrative everyday or workplace problem; no physical construction is required.
- Present the concept, intended users, potential value, limitations and safety or privacy questions.

8. Review and Questions — 30 minutes

- Key takeaways from the course
- Q&A session

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