

The Future is Now

Textbook

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Robotics: Beyond the Factory Floor

Robots are no longer limited to building cars or assembling products in factories. Today's robots are designed to work in hospitals, homes, restaurants, and even farms. These robots can clean floors, deliver meals, help doctors in surgeries, or assist people with disabilities. Thanks to advancements in sensors and artificial intelligence, modern robots can detect their surroundings, make decisions, and complete tasks with very little human help. As robotics continues to improve, we can expect even more jobs and tasks to be supported—or fully done—by robots.

Smart Technology at Home, Work, and On the Go

Technology is becoming more "intelligent" in many places where we live and work. Smart homes have thermostats that adjust the temperature automatically, lights that respond to voice commands, and security systems that alert you to movement. In the workplace, machines are being used to help workers do

difficult or dangerous tasks more safely. Even cars and trucks are changing—some can park themselves or avoid crashes by detecting nearby obstacles. These features make daily life more efficient, comfortable, and safe.

Powerful Features in Today's Devices

Smartphones, tablets, and smartwatches now do much more than just call, text, or tell time. These devices use built-in sensors, machine learning, and wireless connections to do things like recognize faces, track fitness goals, and connect with other smart devices. Smart speakers like Alexa or Google Assistant can answer questions, play music, and control your lights or thermostat. Cars with smart features can help drivers navigate, detect dangers, or even drive themselves in some situations. The features we now take for granted were science fiction just a few decades ago!

How AI Helps Technology "Think"

Artificial Intelligence (AI) is what allows machines to learn from data, recognize patterns, and make decisions—almost like they're thinking. AI powers many of the smart technologies we use every day. For example, voice assistants use *speech and language understanding* to recognize and respond to what you say. Robotic vacuums use *computer vision* to map rooms and avoid bumping into furniture. AI makes it possible for machines to react to new situations and improve over time. The more data these systems receive, the better they become at doing their tasks.

Solving Real-World Problems with Smart Tech

One of the most exciting uses of smart technology is solving big problems in the world around us. In farming, drones with AI can spray crops more accurately or detect plant diseases early. In cities, smart traffic systems can reduce car crashes and make driving faster by adjusting traffic lights based on real-time traffic. Smart sensors can help detect pollution in the air or water and alert officials before people get sick. As these technologies become more advanced, they offer new ways to make life better for everyone.

Critical Thinking Questions

1. Think about a smart device you've used or seen. What makes it "smart," and how does that help people?
2. How could robotics and AI be used in the future to solve a problem in your school or neighborhood?

Questions (5)

1. What is one way robots are helping people today?

MULTIPLE CHOICE

Choose the correct answer:

- A. Teaching students how to dance
- B. Delivering food and packages
- C. Playing video games
- D. Watching television

MULTIPLE CHOICE

2. Which of the following is a smart feature of mobile devices?

Choose the correct answer:

- A. Having a colorful screen
- B. Sending mail
- C. Face recognition unlocking the phone
- D. Making loud noises

MULTIPLE CHOICE

3. What does computer vision allow a robotic vacuum to do?

Choose the correct answer:

- A. Speak out loud
- B. Turn itself off
- C. Order groceries
- D. Avoid obstacles by seeing and mapping the room

MULTIPLE CHOICE

4. What is one way AI is helping in farming?

Choose the correct answer:

- A. Flying drones to spray crops
- B. Picking fruit by hand
- C. Turning off the power
- D. Making funny videos

MULTIPLE CHOICE

5. What is one benefit of using smart technology in cities?

Choose the correct answer:

- A. It makes the sidewalks longer
- B. It helps reduce traffic with smarter traffic lights
- C. It builds more buildings
- D. It creates more noise

Answer Keys & Solutions

Questions

1. What is one way robots are helping people today?

MULTIPLE CHOICE

Correct Answer:

- | | |
|-----------------------------------|-------------|
| A. Teaching students how to dance | ✗ Incorrect |
| B. Delivering food and packages | ✓ Correct |
| C. Playing video games | ✗ Incorrect |
| D. Watching television | ✗ Incorrect |

2. Which of the following is a smart feature of mobile devices?

MULTIPLE CHOICE

Correct Answer:

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|---|-------------|
| A. Having a colorful screen | ✗ Incorrect |
| B. Sending mail | ✗ Incorrect |
| C. Face recognition unlocking the phone | ✓ Correct |
| D. Making loud noises | ✗ Incorrect |

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Correct Answer:

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