

Lab 11 - Intro to Robotics



Summarize main points from each video.

Video Title / topic _____

Video Title / topic _____

Video Title / topic _____

Topic Introduction



Summarize your understanding of each paragraph.

A robot is a machine—especially one programmable by a computer— capable of carrying out a complex series of actions automatically.

Robots can be guided by an external control device or the control may be embedded within.

Robotics is the branch of technology that deals with the design, construction, operation, and application of robots. Robotics includes computer systems for control, sensory feedback, and information processing.

Robots have replaced humans in performing repetitive and dangerous tasks which humans prefer not to do, or are unable to do because of size limitations, or which take place in extreme environments such as outer space or the bottom of the sea.

Read/Summarize Text



1. Read the passage.
2. Underline key expressions in each sentence.
3. Re-write each word (or expression) you underlined.
4. Summarize the passage.

About Robots and Robotics

Robotics is an interdisciplinary branch of engineering and science.

Robotics includes mechanical engineering, electrical engineering, computer science, and others disciplines.

Robotics deals with the design, construction, operation, and use of robots, as well as computer systems for their control, sensory feedback, and information processing.

All robots contain some level of computer programming code. A program is how a robot decides when or how to do something.

<https://en.wikipedia.org/wiki/Robotics>

Re-write words you underlined

Using a complete sentence, summarize or rephrase the passage

Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

How Robots Work

Artificial intelligence (AI) is arguably the most exciting field in robotics. It's certainly the most controversial: Everybody agrees that a robot can work in an assembly line, but there's no consensus on whether a robot can ever be intelligent.

Like the term "robot" itself, artificial intelligence is hard to define. Ultimate AI would be a recreation of the human thought process -- a man-made machine with our intellectual abilities. This would include the ability to learn just about anything, the ability to reason, the ability to use language and the ability to formulate original ideas. Roboticists are nowhere near achieving this level of artificial intelligence, but they have made a lot of progress with more limited AI. Today's AI machines can replicate some specific elements of intellectual ability.

<https://science.howstuffworks.com/robot6.htm>

Artificial intelligence and robotics

Artificial intelligence boomed this year like few other areas in tech, but despite the scientific breakthroughs, glut of funding, and new products rolling out to consumers, the field has problems that can't be ignored. Some of these, like company-driven hype and sensationalist headlines, need better communication from the media and experts. Others challenges are more nuanced and will take longer to address, such as bias in algorithms and the growing threat of tech firms becoming AI monopolies as they Hoover up data and talent.

But first, the good stuff. Artificial intelligence was everywhere in 2017, and although you're right to be skeptical when you hear this, it's positive news. Experts compare AI to electricity because it's a resource with the potential to transform a broad range of industries. Sure, there are particularly important technologies in each sector (like autonomous driving in transportation), but it's the smaller implementations of machine cleverness that may add up to have the biggest impact.

Big tech companies like Google, Apple, Microsoft, and Facebook have poured tons of money into the AI field, but it's fair to say the end-results are often small-scale. Google's put AI in a camera that automatically snaps photos of your family, and Apple's new animated emojis is powered by facial recognition. These things won't change the world, but collectively they build new efficiencies and new experiences.

<https://www.theverge.com/2017/12/30/16832164/2017-tech-recap-ai-robots-machine-learning>

Follow Instructions to Draw

BEGIN.

Place pen or pencil in the middle of the illustration area below.
Keep the writing instrument on the page. Do not lift it up.

Draw halfway up toward the top edge of the illustration box.
Draw halfway toward the left edge of the illustration box.
Draw downward until horizontally even with the initial mark.
Draw toward the initial mark and stop when reaching that mark.

Draw halfway down toward the bottom edge of the illustration box.
Draw halfway toward the right edge of the illustration box.
Draw upward until horizontally even with the initial mark.
Draw toward the initial mark and stop when reaching the mark.
Lift pen or pencil off the paper

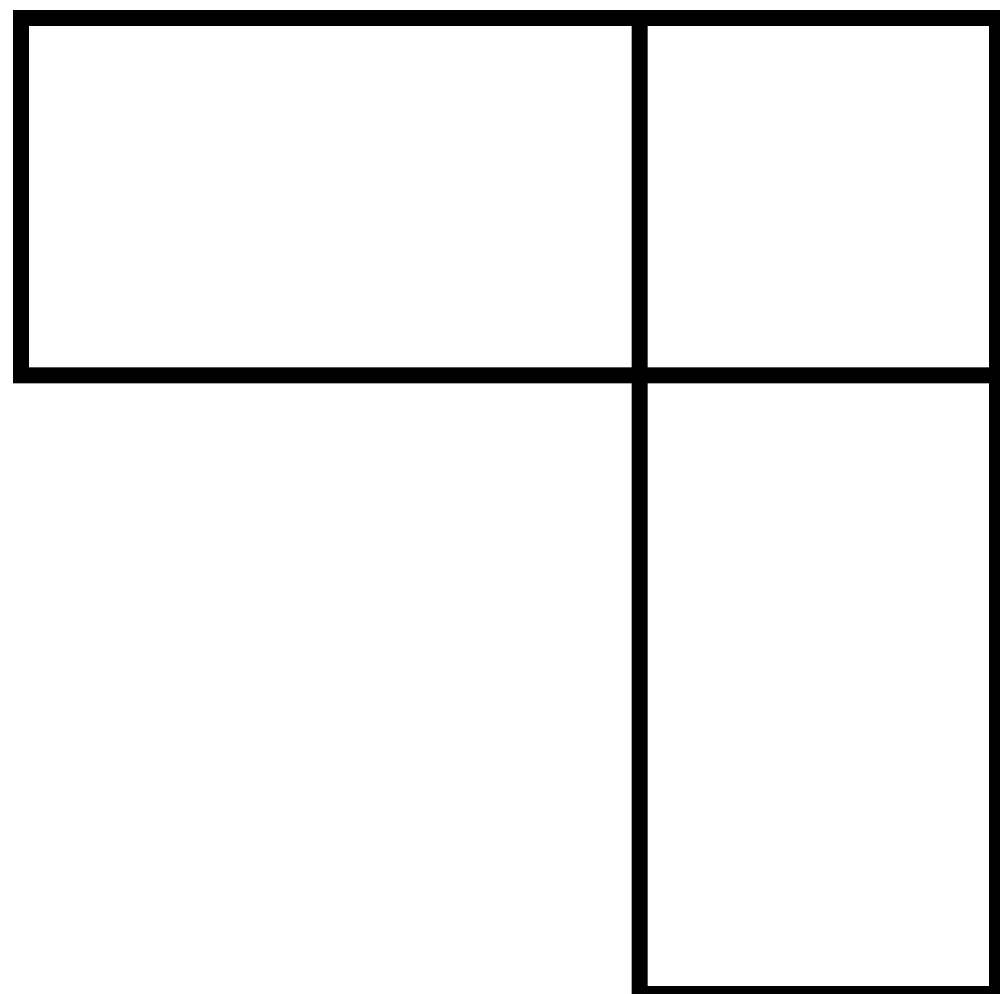
END.

Draw the Illustration Here

Write Instructions for This



Similar to the previous page, write instructions for how to draw the shape shown below. This is similar to how computer programs work – “telling” a robot how to move.



Show-Off Your Smarts!



Instructions

- Complete as an individual or small group.
- Discuss your ideas/answers/responses in a small group.
- Select one person to present your responses to the class.

Q1. How can this information be applied to a young-person's life?

Q2. How does this information apply to (or impact) communities?

Q3. When do scientists need to apply this information? How?

Q4. How would a person from 100 years ago view this information?

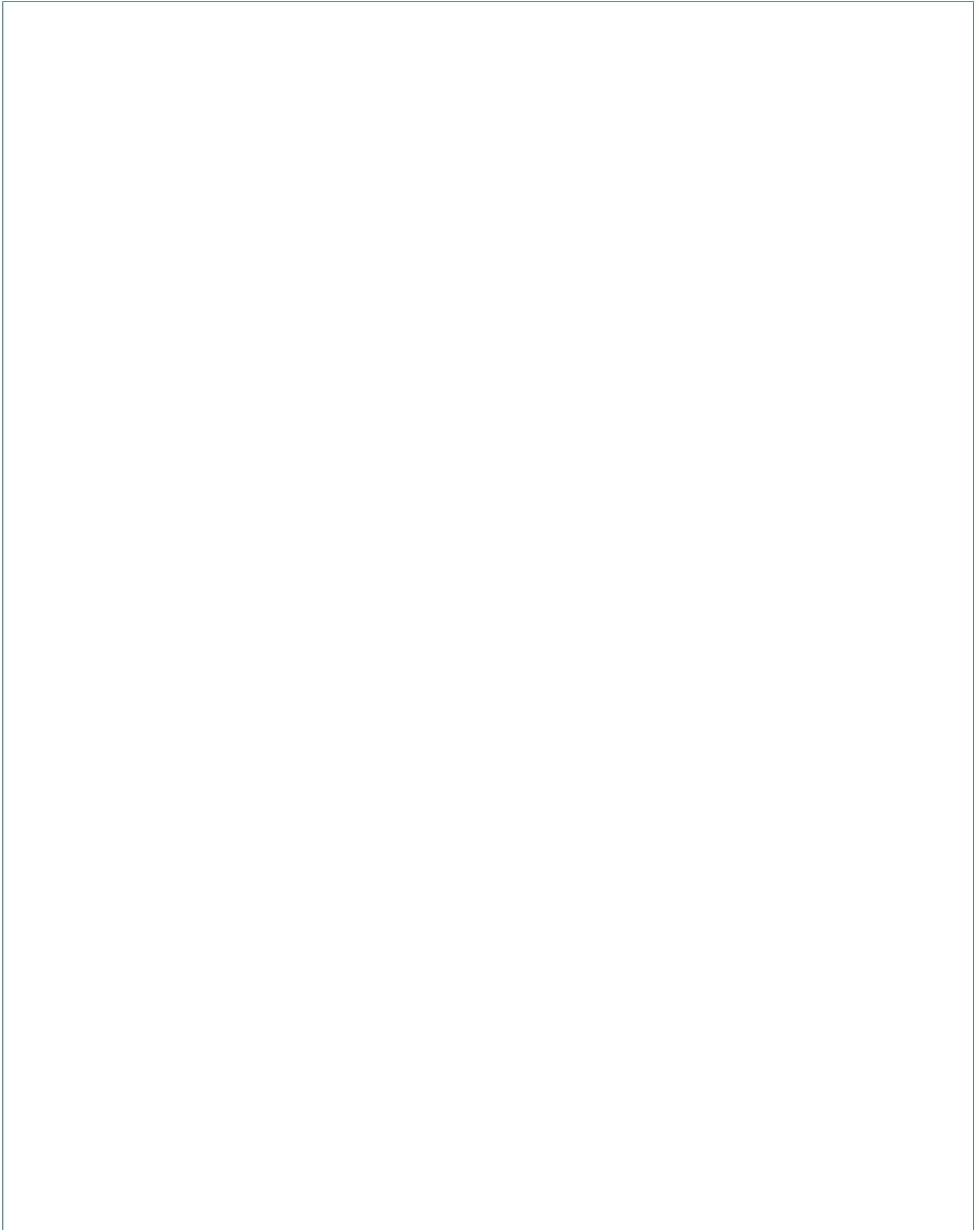
Q5. How does this topic connect to other science topics or math?

Write down at least three words introduced or covered by this topic.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic.

A large, empty rectangular box with a thin blue border, intended for the student to create a poster. The box occupies most of the page below the instructions.