

Artificial Intelligence, the Future of Technology

Will Heuristics Lead to Consciousness?

By Peter Smith

Computers perform complex calculations that no human could complete. Yet, they remain unable to think for themselves. That's something **cognitive scientists** want to change. Their research focuses on two types of thinking: **case based** and **model based reasoning**. Case based reasoning compares similar problems. Model based reasoning examines cause and effect. But these different approaches have the same problem. Their **algorithms**, like most rules, aren't always right.

That's where heuristics comes in. With heuristics, computers are avoiding that problem. Instead of following rigid guidelines like regular algorithms, heuristics search for acceptable solutions. As these modified algorithms improve, **machine learning** leaps forward. Advanced computer **agents** and **robots** now find solutions independently. **Pattern recognition** has even made **computer vision** possible. The range of what robots and computers can do grows each day. The invention of a self learning computer may soon be possible.



Cause → Effect

5 model based reasoning

Get ready!

1 Before you read the passage, talk about these questions.

- 1 Do you think robots will ever think like humans?
- 2 Will artificial intelligence help or hurt business? Why?

Reading

2 Read the magazine article on Artificial Intelligence. Then, mark the following statements as true (T) or false (F).

- 1 ☐ Case and model based reasoning face different complications.
- 2 ☐ Heuristics don't have rigid guidelines like regular algorithms.
- 3 ☐ Computer vision is improving pattern recognition.

Vocabulary

3 Match the words (1-6) with the definitions (A-F).

- | | |
|--|--------------------------------------|
| 1 ☐ pattern recognition | 4 ☐ robot |
| 2 ☐ cognitive scientist | 5 ☐ heuristic |
| 3 ☐ consciousness | 6 ☐ algorithm |

- A a machine capable of independent action
 B a set of rules to solve a problem that seeks any solution
 C the process of classifying objects by appearance
 D a sense of oneself and one's surroundings
 E a rule or set of rules to solve a problem with limited solutions
 F a person who studies how the mind works

4 Write a word that is similar in meaning to the underlined part.

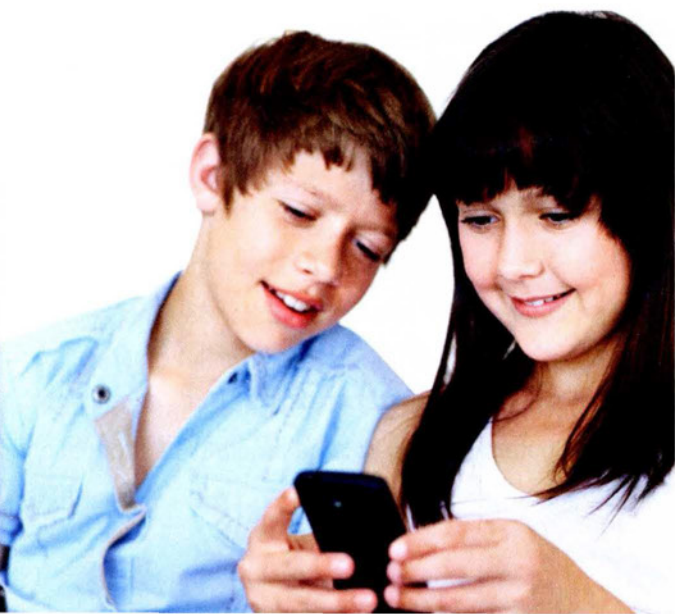
- 1 Giving machines the ability to see is improving.
c _ _ _ u _ _ _ _ i _ _ o _
- 2 Examining previous experiences to make decisions works best.
m _ _ e l _ _ b _ _ _ _ _ e _ _ o _ _ n g
- 3 I use examinations of cause and effect relationships to make decisions.
_ a _ e _ _ a _ _ _ _ r _ _ s _ n _ _ _
- 4 Peter works in the science that attempts to create thinking robots.
_ r _ _ f _ _ i _ _ _ i _ _ e _ _ i _ _ n _ _
- 5 This computer that reacts to an environment turns the heat on when it's cold.
_ g _ _ t
- 6 The field of creating algorithms that computers can learn from often uses heuristics.
m _ _ _ i _ _ _ _ _ r _ i _ g

5 Listen and read the magazine article on Artificial Intelligence again. What has made computer vision feasible?

Listening

6 Listen to a conversation between two programmers. Mark the statements as true (T) or false (F).

- 1 _ The woman published an article.
- 2 _ The man believes that cognitive scientists will harm programming.
- 3 _ An algorithm needs a perfect solution.



7 Listen again and complete the conversation.

- Programmer 1:** Jane, did you 1 _____ to read this month's Programmer?
- Programmer 2:** Yes, I saw your article on AI. So 2 _____ are getting into programming?
- Programmer 1:** Yes, and I think it'll help. Most programming is too rigid.
- Programmer 2:** Because of algorithms? I 3 _____ that part.
- Programmer 1:** Basically, an algorithm needs a 4 _____ answer.
- Programmer 2:** 5 _____ by, "needs a perfect answer"?
- Programmer 1:** They have a limited number of solutions. If one of those solutions isn't right, the algorithm doesn't work like a math problem.

Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

Yes, I saw your article on AI.

I didn't get that part.

They have a limited number of solutions.

Student A: You are a programmer. Ask Student B about:

- cognitive scientists
- algorithms

Make up a name for your colleague.

Student B: You are a programmer. Answer Student A's questions.

Writing

- 9** **ICT** Collect information about Artificial Intelligence (A.I.). Then, write a paragraph explaining what it is. You can visit this website:
http://www.alanturing.net/turing_archive.