Winograd Schema “Common Sense” Challenge
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Winograd Schemas (Levesque et al., 2011)

I poured water from the bottle into the cup until it was full.

I poured water from the bottle into the cup until it was empty.

What was full?

What was empty?
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Winograd Schemas  (Levesque et al., 2011)

The steel ball hit the glass table and it shattered.

What shattered?

The glass ball hit the steel table and it shattered.

What shattered?
State-of-the-art AI: ~60% (vs. 50% with random guessing)

Humans: 100% (if paying attention)
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Humans: 100% (if paying attention)

“When AI can’t determine what ‘it’ refers to in a sentence, it’s hard to believe that it will take over the world.”

— Oren Etzioni, Allen Institute for AI
Paul Allen invests $125 million to teach computers common sense


Common sense is the everyday knowledge that virtually every person has but no machine does.

https://allenai.org/alexandria/
Teaching Machines Common Sense Reasoning

DARPA program seeks to articulate and encode humans’ basic background knowledge for intelligent systems

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10/11/2018
Today’s machine learning systems are more advanced than ever, capable of automating increasingly complex tasks and serving as a critical tool for human operators. Despite recent advances, however, a critical component of Artificial Intelligence (AI) remains just out of reach – machine common sense. Defined as “the basic ability to perceive, understand, and judge things that are shared by nearly all people and can be reasonably expected of nearly all people without need for debate,” common sense forms a critical foundation for how humans interact with the world around them. Possessing this essential background knowledge could significantly advance the symbiotic partnership between humans and machines. But articulating and encoding this obscure-but-pervasive capability is no easy feat.

“The absence of common sense prevents an intelligent system from understanding its world, communicating naturally with people, behaving reasonably in unforeseen situations, and learning from new experiences,” said Dave Gunning, a program manager in DARPA’s Information Innovation Office (I2O). “This absence is perhaps the most significant barrier between the narrowly focused AI applications we have today and the more general AI applications we would like to create in the future.”
Allen AI Institute Common Sense Challenge

• Which factor will most likely cause a person to develop a fever?  (A) a leg muscle relaxing after exercise (B) a bacterial population in the bloodstream (C) several viral particles on the skin (D) carbohydrates being digested in the stomach
Allen AI Institute Common Sense Challenge

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• Lichens are symbiotic organisms made of green algae and fungi. What do the green algae supply to the fungi in this symbiotic relationship? (A) carbon dioxide (B) food (C) protection (D) water
Allen AI Institute Common Sense Challenge

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• When a switch is used in an electrical circuit, the switch can (A) cause the charge to build. (B) increase and decrease the voltage. (C) cause the current to change direction. (D) stop and start the flow of current.
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• Which of the following is an example of an assistive device? (A) contact lens (B) motorcycle (C) raincoat (D) coffee pot
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• Rocks are classified as igneous, metamorphic, or sedimentary according to (1) their color (2) their shape (3) how they formed (4) the minerals they contain
https://leaderboard.allenai.org/
From Andrej Karpathy’s Blog, Oct. 22, 2012:

“The State of Computer Vision and AI: We are Really, Really Far Away.”

What knowledge do you need to understand this situation?

http://karpathy.github.io/2012/10/22/state-of-computer-vision/
Microsoft CaptionBot.ai: “I can understand the content of any photograph and I’ll try to describe it as well as any human.”
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I think it's a group of people standing in a room.