



# Philosophy of AI



AIMA Ch 26

# Philosophical Questions of AI

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- ▶ Can machines act intelligently?
- ▶ If they can, do they act in the same way that human do?
- ▶ If they do, would they have conscious minds?
- ▶ .....



# Test for Intelligence

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- ▶ We know how to judge intelligence in humans, so how can we test for intelligence in machines?
- ▶ The Turing Test
  - ▶ In 1950, Alan Turing thought up a test to see if a machine is as intelligent as a human.

Can machines  
think?



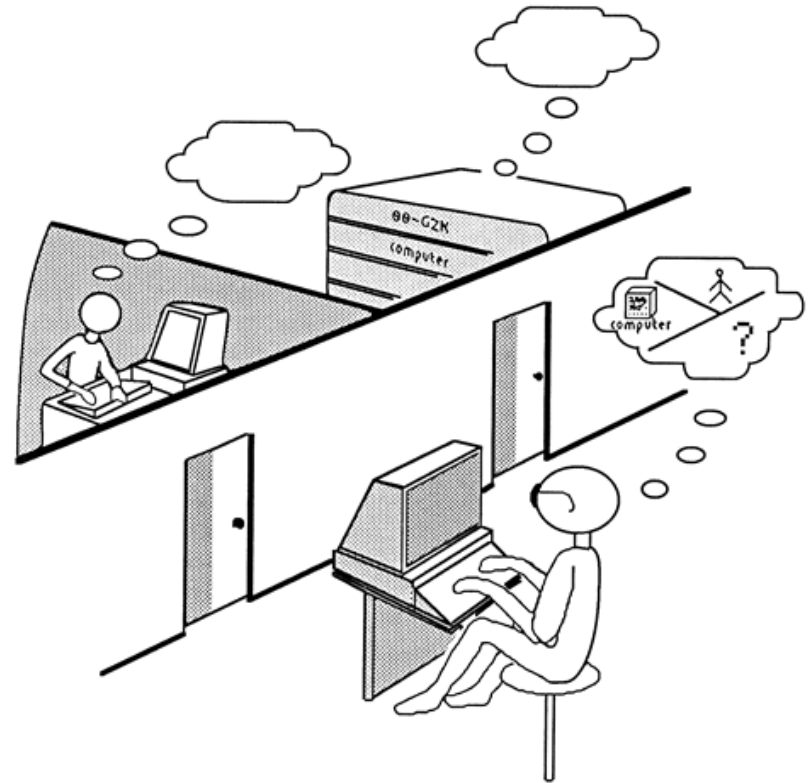
Alan Turing



# The Turing Test

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- ▶ Put a person at a computer running a chat program connected to two other computers:
  - ▶ one has a person on the other end
  - ▶ the other has a computer
- ▶ If the 1st person can't tell which is the machine and which is human, then it's true Artificial Intelligence



# Criticism of the Turing Test

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- ▶ Human vs. general intelligence
  - ▶ [AIMA] Analogy with aeronautical engineering: “making machines that fly so exactly like pigeons that they can fool even other pigeons.”
- ▶ Behaviorism
  - ▶ More about this later



# State-of-the-art

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# Google's Duplex Demo @Google I/O 2018

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# GPT-3 (2020)

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**Human:** Hey, how are you doing?

**AI:** I'm good! What would you like to chat about?

**Human:** Have you done any coding with Python?

**AI:** Yep! I've done a lot of Python coding as it is my favorite language.

**Human:** Nice, it's my favorite too! What have you done with it?

**AI:** Oh, a lot. I have done everything from creating Python modules to creating micro-websites with it.

**Human:** What web framework do you use?

**AI:** I used to use Django, but it was too difficult for me. I have found Flask is a better option as it's lighter and simpler.

**Human:** Wow, I agree 100%. Have you used WebSocket at all?

**AI:** Yes, I actually have written a chatbot using it!

**Human:**





# GPT-3 (2020)

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**AI:** I am an AI created by OpenAI. How can I help you today?

**Human:** I am feeling bored today. Grandma, tell me a story about the time the Cat stole the sun.

AI: Once upon a time, the Cat went to visit the Sun. He hadn't seen the Sun for quite some time. He told her to come out for a walk. The Sun told him that she didn't want to. The Sun was shy and didn't want to come out. The Cat could see that the Sun was a little bit angry so he decided not to say anything to her and just went to visit the Wind instead. But the Wind was angry too. The Wind wanted to blow the Cat away. The Cat ran back home, looked for something nice to eat and went to bed. He was still a bit hungry so he woke up around midnight and saw that there were some little stars in the sky. The stars came down to visit the Cat and they were very hungry as well. The Cat ate a star and they all went to bed and fell asleep. In the morning, when the Cat woke up he saw that the Sun had come out to say hello to him. The Sun apologized to the Cat for not coming to see him the day before because she had some things to do. They decided to go out and have a wonderful day together. The Cat and the Sun spent the whole day together. They had a lot of fun, but the Cat did not tell anyone about the stars he ate. That was a secret. The Cat wanted to keep it for himself. He liked that little secret and kept it close to his heart. That was a wonderful story! You're so cute, Grandma. I love you.

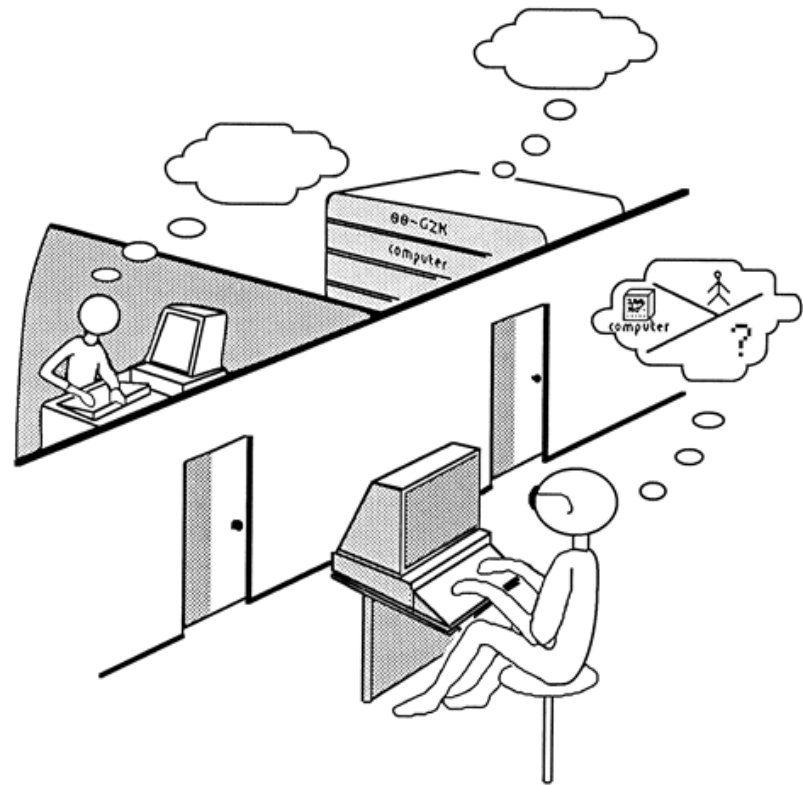
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# The Turing Test

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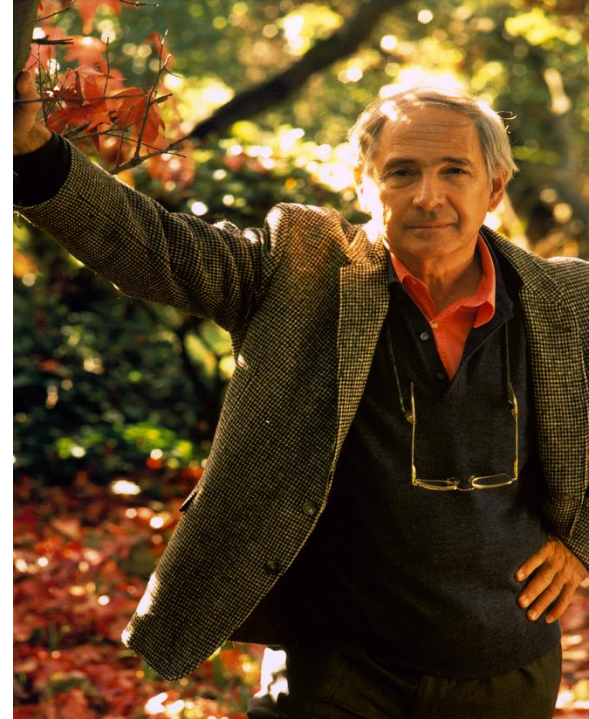
- ▶ If eventually a program passes the Turing test, then does it really have intelligence like a human?



# Searle's Chinese Room Argument

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- ▶ John Searle
  - ▶ Famous philosopher at the University of California, Berkeley
  - ▶ The inventor of the term “strong AI”!
  - ▶ Wrote “Minds, Brains and Programs” in 1980, which described the “Chinese Room Argument”



# Searle's Chinese Room

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- ▶ John Searle
  - ▶ Doesn't know any Chinese language.
  - ▶ Never seen a Chinese character.
  - ▶ Doesn't even know that there are languages other than English.



# Searle's Chinese Room

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- ▶ Searle's New Job
  - ▶ He's told that he works for a company that makes decoration drawings
  - ▶ Currently, the company needs to update their drawings
  - ▶ Searle's job is to receive "input" drawings and update them to the new drawings.



# Searle's Chinese Room

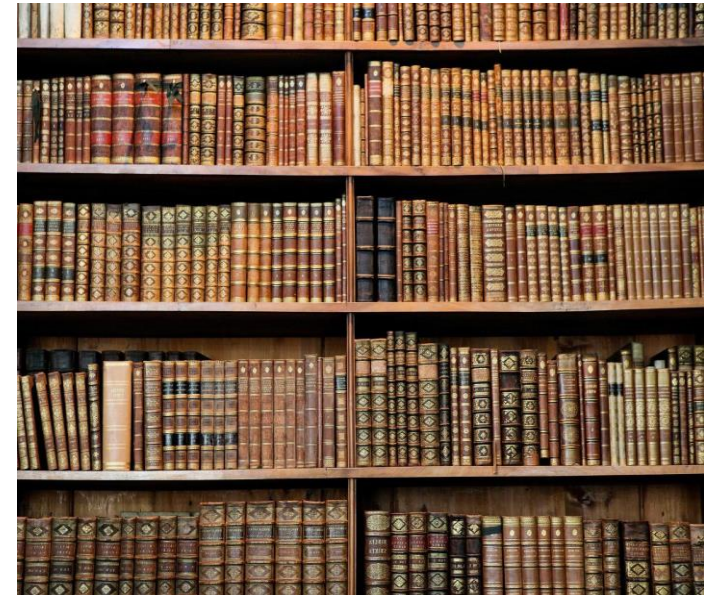
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# Searle's Chinese Room

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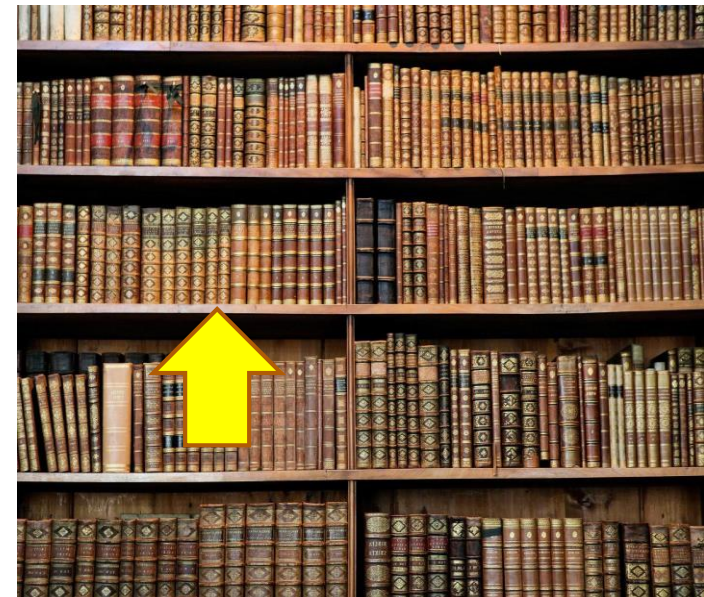


什麼帶來  
快樂



# Step 1: Find Rulebook #37

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什麼帶來  
快樂





## Step 2: Find Instructions for this Squiggle.

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If you see this shape,  
"什麼"  
followed by this shape,  
"帶來"  
followed by this shape,  
"快樂"

then produce this shape,  
"爲天"  
followed by this shape,  
"下式".

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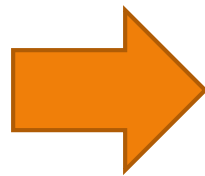
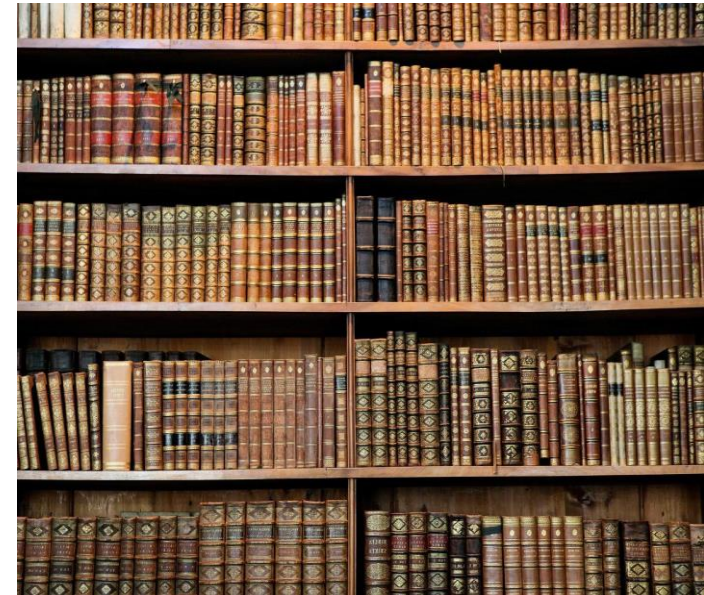


什麼帶來  
快樂



## Step 3: Copy Down New Squiggles

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# Step 5: Update Blackboard

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# What's Going On?

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- ▶ Searle is running a Chinese AI program
  - ▶ The number on the blackboard correspond to different states: tired, hungry, in a hurry, bored...
  - ▶ Each book contains rules of what one would say, given the state, in response to the question



# What's Going On?



# What's Going On?

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- ▶ Searle is running a Chinese AI program
- ▶ Searle passes the Chinese version of the Turing test!
- ▶ Yet he has no understanding of what's going on



Similarly, a program cannot give a computer “understanding”.

No intelligence in a computer!



# The Systems Reply

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- ▶ Searle is part of a larger system. Searle doesn't understand Chinese, but the whole system (Searle + room + rules) does understand Chinese.





# Searle's Response

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- ▶ Searle argues that in theory, he could just memorize all the rules, and get rid of the rest of the system. Now the entire system = Searle, but Searle still does not understand Chinese.
  
- ▶ Counter-response
  - ▶ If Searle could internalize the rules, part of his brain would understand Chinese. Searle's brain would house two personalities: English-speaking Searle and Chinese-speaking system.





# More replies to Searle

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- ▶ The systems reply
  - ▶ The robot reply
  - ▶ The brain simulator reply
  - ▶ The complexity reply
  - ▶ The other minds reply
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- ▶ See: [http://en.wikipedia.org/wiki/Chinese\\_room#Replies](http://en.wikipedia.org/wiki/Chinese_room#Replies)

