Knowledge Representation in Artificial Intelligence

Yizheng Zhao
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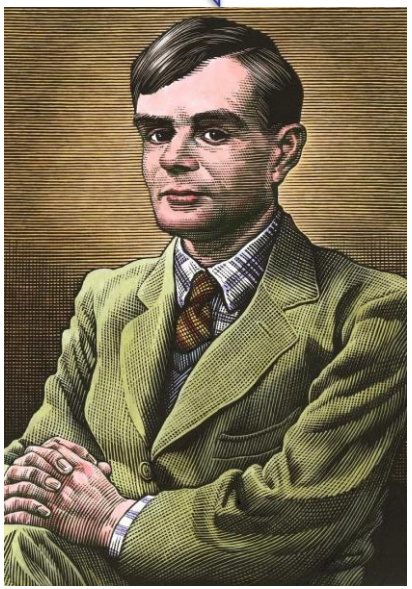
Artificial Intelligence

Can machines think (like humans)?

Intuitively, a machine has human intelligence if it

1. **thinks humanly**, and
2. **acts humanly**



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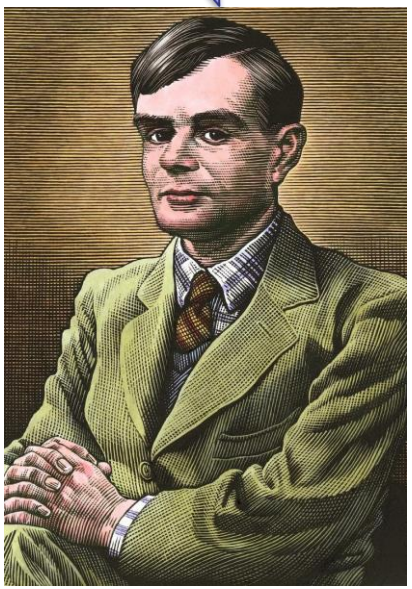
Can machines think (like humans)?

To let a machine **think humanly**, we need to get inside the actual workings of human minds



This can be done via:

Introspection(自想): to catch our own thoughts as they go by

Psychological experiments: to observe a person in action

Brain imaging: to observe the brain in action

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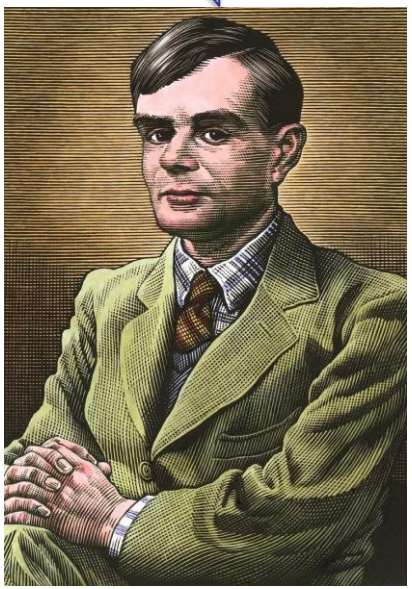
Cognitive Science: necessarily based on experimental investigation of humans or animals.



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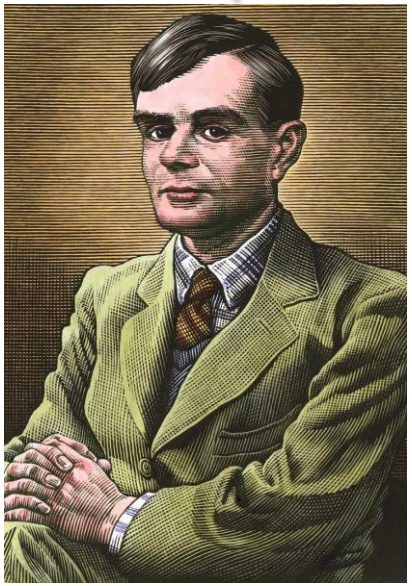
Yes, I posed questions but I proposed insights too!

To determine whether a machine can **act humanly**, Turing proposed the Turing Test



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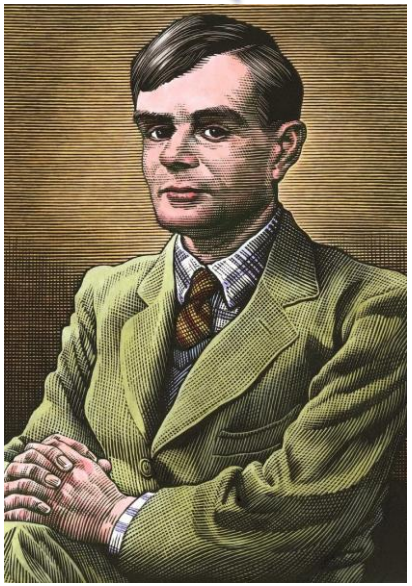

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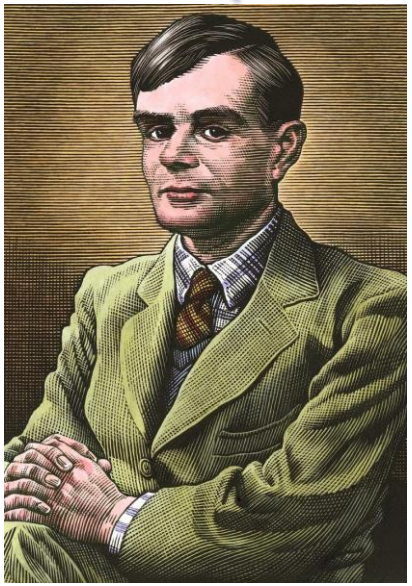

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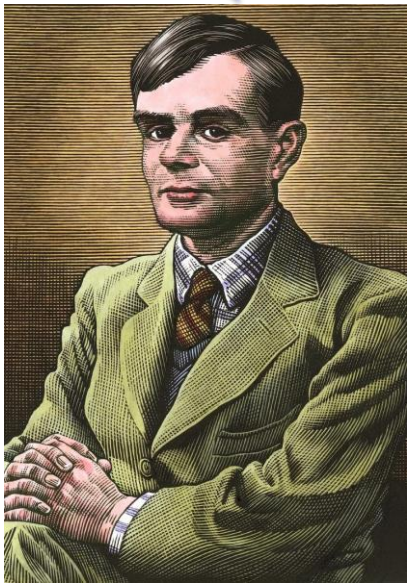

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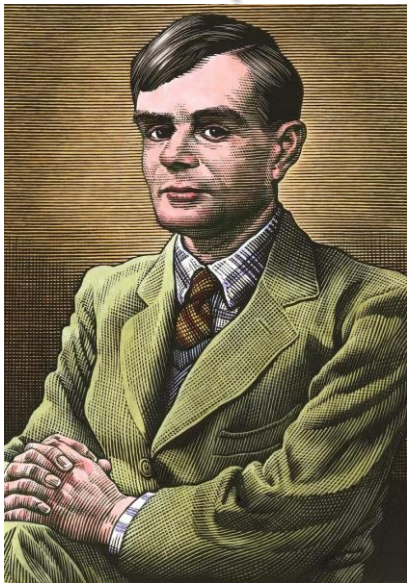
To pass the Turing Test, a machine must possess (at least) the following capabilities:



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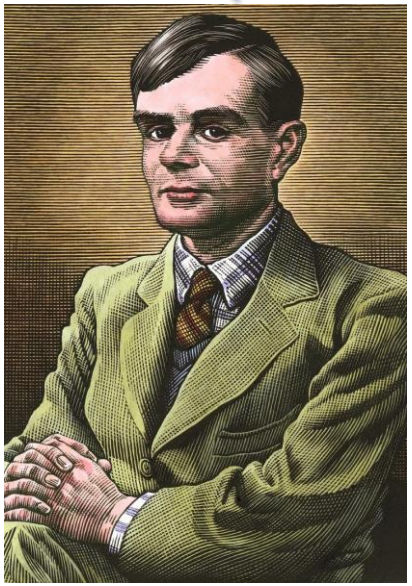

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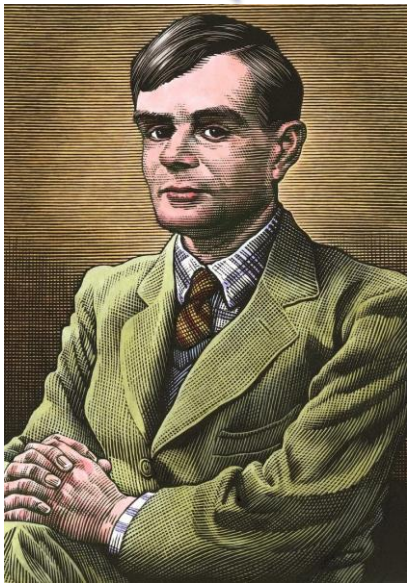

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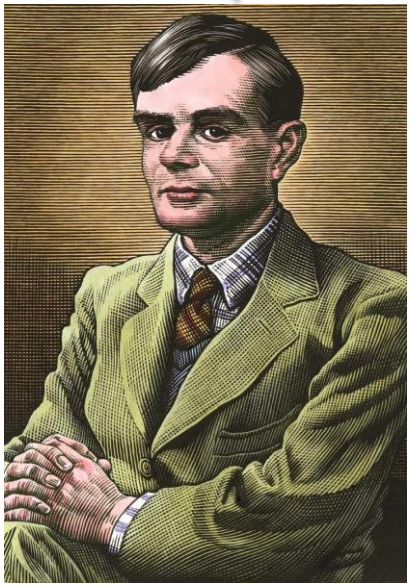

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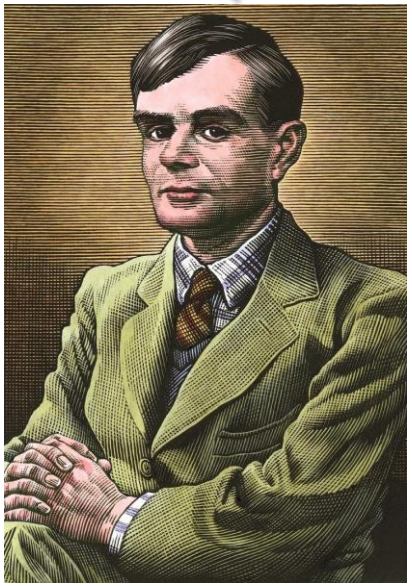
4. to store what it knows (knowledge representation)



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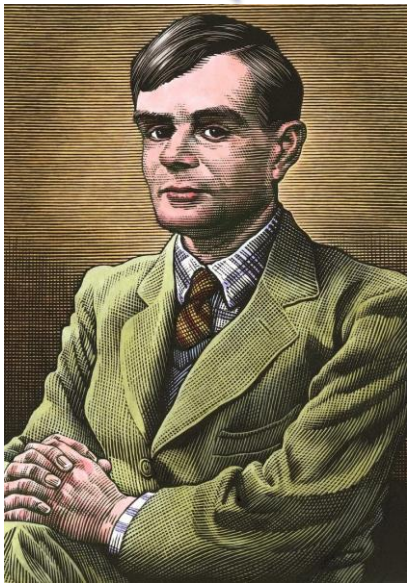

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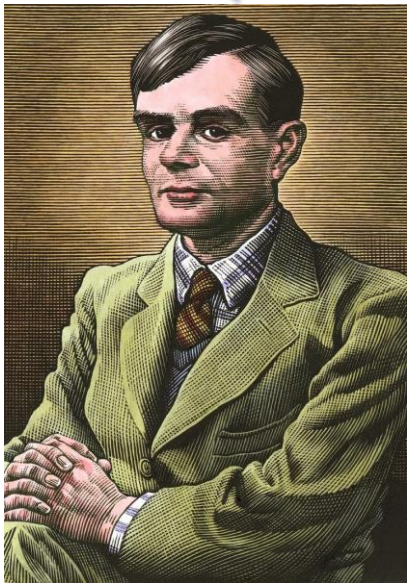
6. to adapt to new circumstances and to detect and extrapolate patterns (machine learning)



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