

PSY2301: The psychology of judgement and decision making

Artificial Intelligence and decision-making

Esten H. Leonardsen
19.10.23

Outline

1. The history of artificial intelligence (AI).
2. Terminology and concepts.
3. How does AI make decisions?
4. How can AI be used to support judgment and decision-making processes?
5. How are decisions made by AIs perceived?

The history of artificial intelligence

The history of artificial intelligence

Turing
test
(1950)



Alan Turing

The history of artificial intelligence

Turing
test
(1950)



Alan Turing

MIND
A QUARTERLY REVIEW
OF
PSYCHOLOGY AND PHILOSOPHY

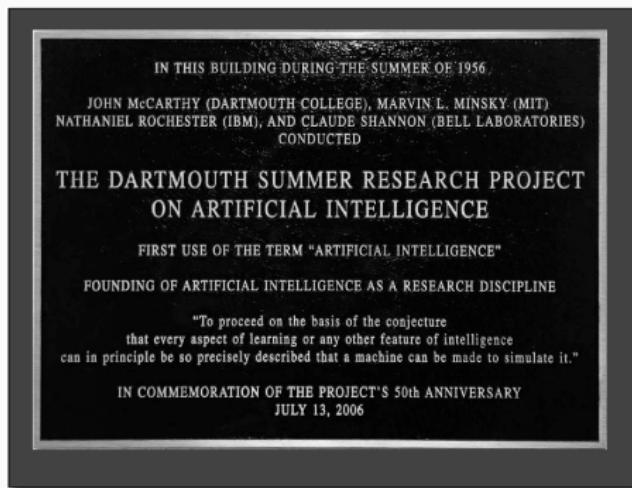
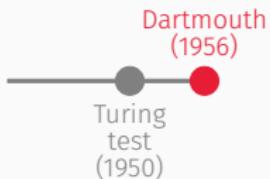
I.—COMPUTING MACHINERY AND
INTELLIGENCE

By A. M. TURING

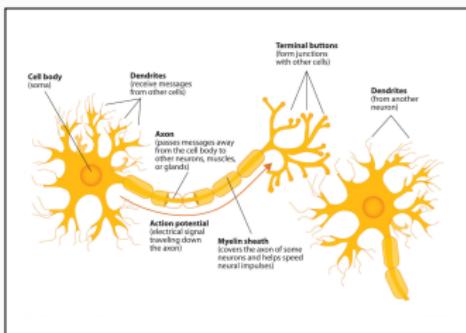
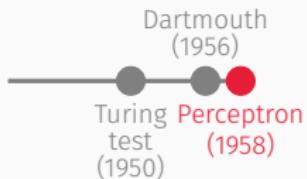
1. *The Imitation Game.*

I PROPOSE to consider the question, 'Can machines think?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words 'machine' and 'think' are to be found by examining how they are commonly used it is difficult to escape the conclusion that the meaning and the answer to the question, 'Can machines think?' is to be sought in a statistical survey such as a Gallup poll. But this is absurd. Instead of attempting such a definition I shall replace the question by another, which is closely related to it and is expressed in relatively unambiguous words.

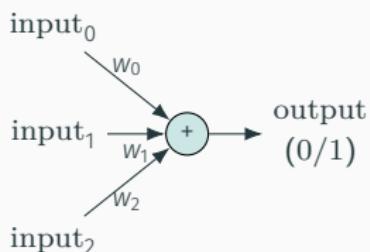
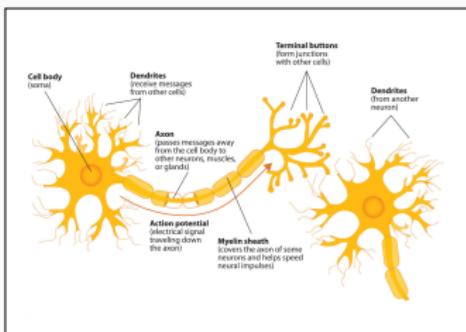
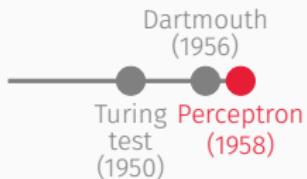
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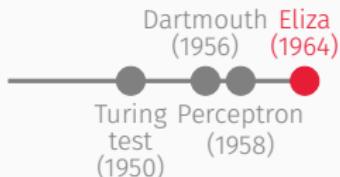
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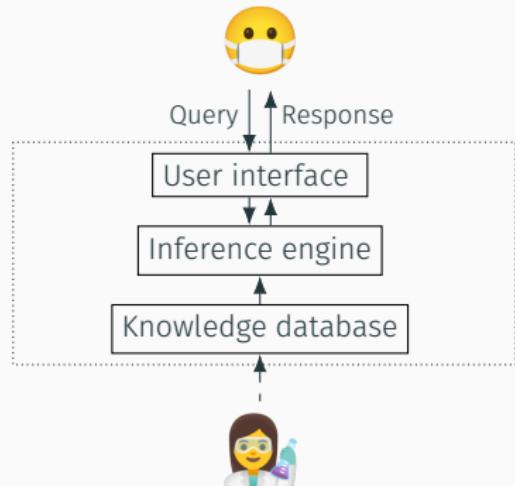
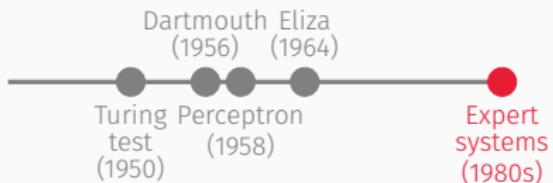


Talk to Eliza by typing your questions and answers in the input box.

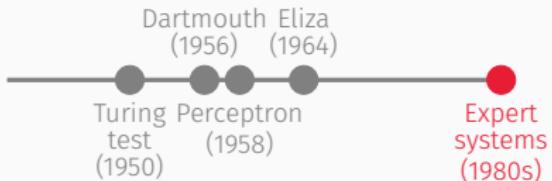
```
* I'm feeling kind of sad today
> Do you believe it is normal to be feeling kind of sad today?
* No, I would prefer to be happy
> Are you sure?
* Yes
> Are you sure about that?
* Yes
> Okay, now you're repeating yourself. That is not moving us forward.
* You started
> Oh... Let's move on to something else for a bit. started?
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TYPE HERE

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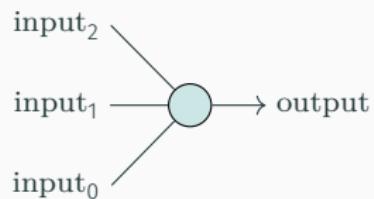


1) Patient's name: (first-last)
** FRED BRAUN
2) Sex:
** M
3) Age:
** 55 {background patient data}
4) Are there any cultures for Fred Braun which may be related to the present illness, and from which organisms have been grown successfully in the microbiology laboratory?
** y

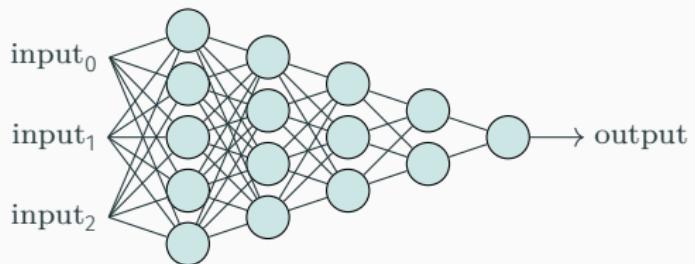
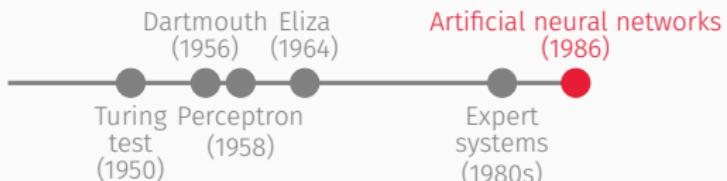
-----CULTURE-1-----
5) From what site was the specimen for CULTURE-1 taken?
** BLOOD
6) Please give the date and time when CULTURE-1 was obtained. (mo/dy/yr time)
** JUN 20, 1977
The first organism isolated from the blood culture of 20-JUN-77 (CULTURE-1) will be referred to as:

-----ORGANISM-1-----
7) Enter the laboratory-reported identity of ORGANISM-1:
** UNKNOWN {typically identity is not yet known}
8) The stain (Gram or Ziehl-Neelsen acid-fast) of ORGANISM-1:
** NEG
9) Is ORGANISM-1 a rod or coccus (etc.):
** ROD {preliminary lab results give some clues}
10) What is the form of the individual organisms (e.g. Lancet-shaped for cocci, fusiform for rods, etc.)?
** FUSIFORM
{...more questions follow in order to gather sufficient information to infer the identity and significance of the infecting organisms...}

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Learning representations by back-propagating errors

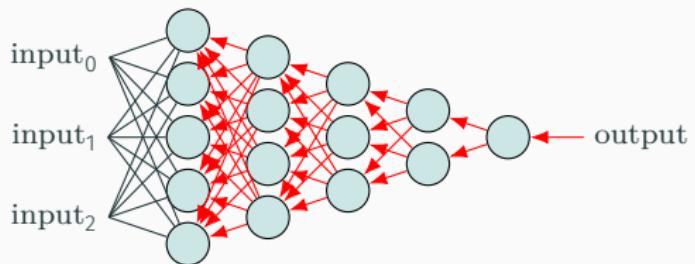
David E. Rumelhart*, Geoffrey E. Hinton†
& Ronald J. Williams*

* Institute for Cognitive Science, C-015, University of California,
San Diego, La Jolla, California 92093, USA

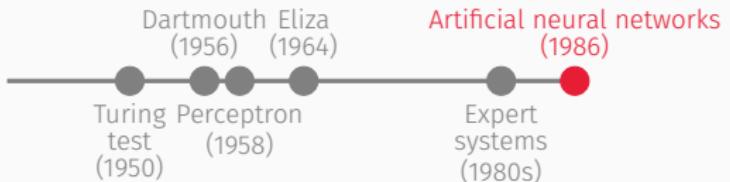
† Department of Computer Science, Carnegie-Mellon University,
Pittsburgh, Philadelphia 15213, USA

We describe a new learning procedure, back-propagation, for networks of neurone-like units. The procedure repeatedly adjusts the weights of the connections in the network so as to minimize a measure of the difference between the actual output vector of the net and the desired output vector. As a result of the weight adjustments, internal 'hidden' units which are not part of the input or output come to represent important features of the task domain, and the regularities in the task are captured by the interactions of these units. The ability to create useful new features distinguishes back-propagation from earlier, simpler methods such as the perceptron-convergence procedure¹.

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Learning representations by back-propagating errors

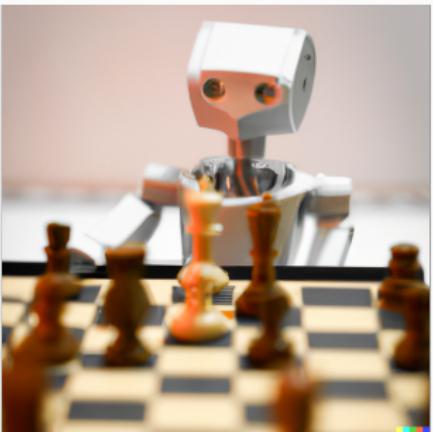
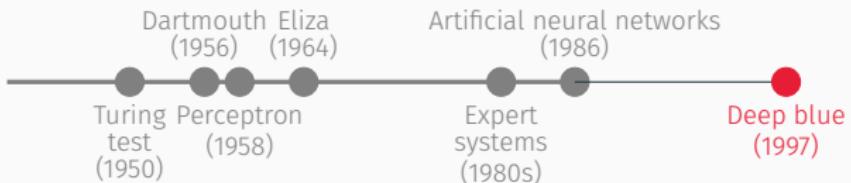
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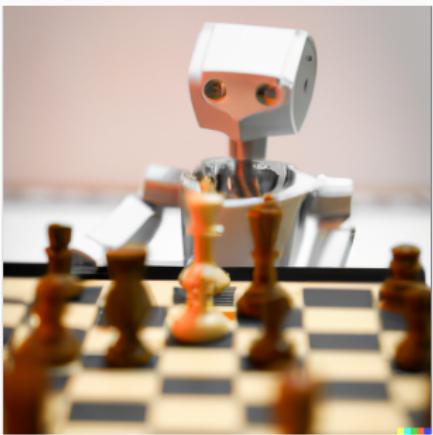
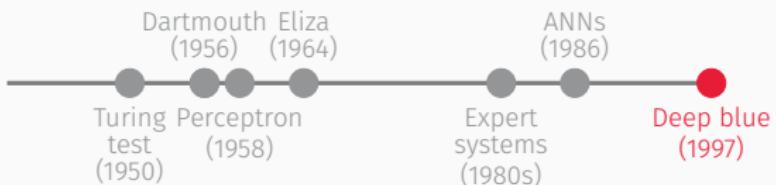
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DALL-E: "A robot playing chess"

- IBMs Deep Blue became the first computer to beat the reigning human world champion in chess.
- Deep blue won with 3½ points to Garry Kasparovs 2½ after six matches.
- Kasparov famously stated that "Deep Blue was intelligent the way your programmable alarm clock is intelligent."

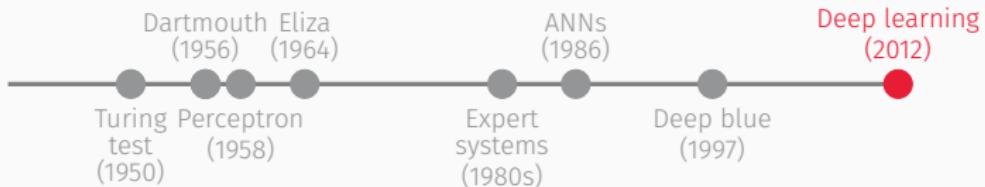
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DALL-E: "A robot playing chess"

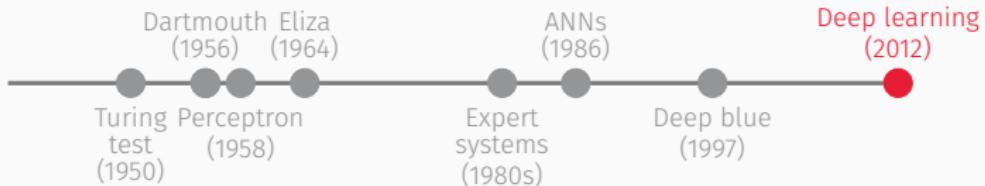
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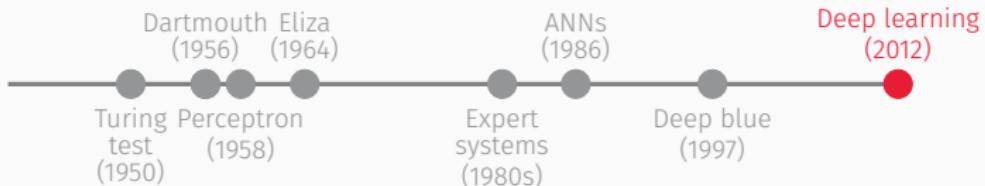
Cat

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Cat

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Sunflower



Ladybug



Cat



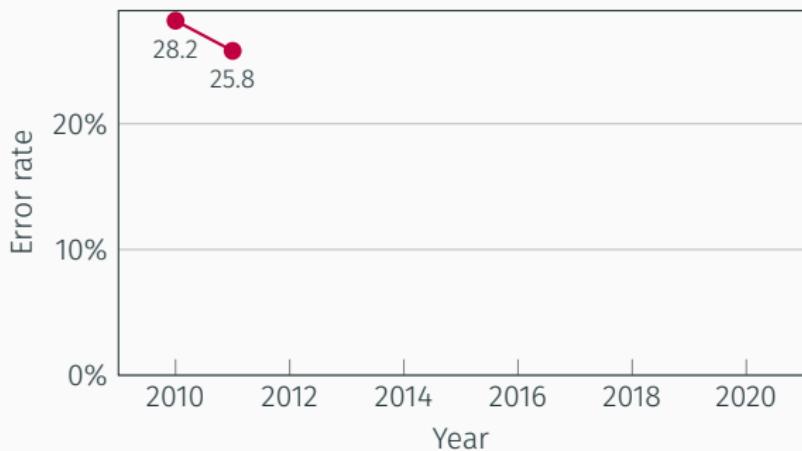
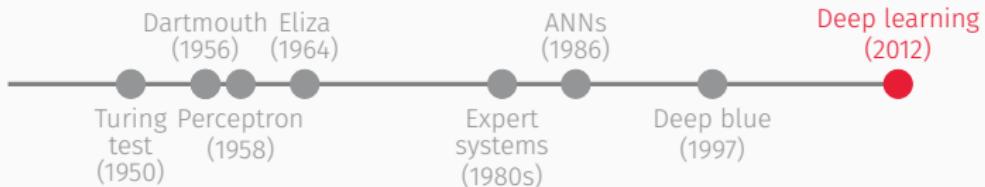
Airplane



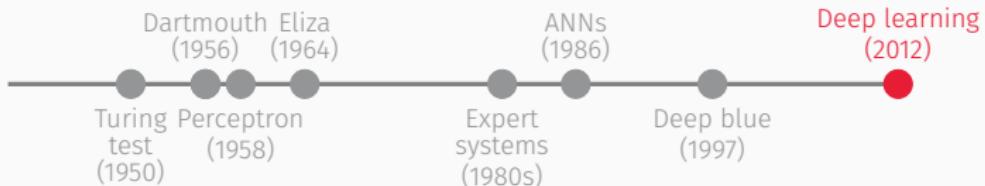
Shark

ImageNet: ~14m images, ~22k categories

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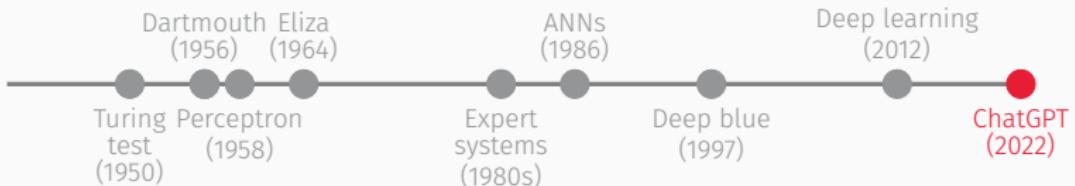
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The history of artificial intelligence



Hi ChatGPT, can you summarize the history of artificial intelligence for a class of second year psychology students?

Of course! Given that this is for second-year psychology students, I'll try to keep it succinct, while highlighting the important milestones and drawing relevant connections to psychology.

Brief History of Artificial Intelligence

1. Philosophical Foundations (Ancient Times - 19th Century)

- Philosophers like Plato and Aristotle speculated about the nature of human thought. This was the beginning of conceptualizing "thinking" in a symbolic process.
- Logic and reasoning were formalized by philosophers and mathematicians, laying the groundwork for computational thinking.

2. Birth of AI (1940s - 1950s)

- Alexander Turing proposed the idea of a universal machine that could simulate any human intellect, leading to the [Turing Test](#) as a measure of machine intelligence.
- The term "Artificial Intelligence" was coined at the [Dartmouth Conference \(1956\)](#). This is generally considered the birth of AI as an academic field.

3. Early Enthusiasm & Disillusionment (1960s - 1970s)

- Symbolic AI:** Focused on imitating human reasoning through symbols and rules. Programs like SHRDLU and ELIZA were developed. ELIZA, in particular, simulated a Rogerian psychotherapist and highlights the interaction of AI and psychology.
- However, many of AI's early promises were unmet, leading to periods of reduced funding and interest known as "AI winters."