

# A brief history of artificial intelligence and what it can teach us

*2nd Workshop on Correctness and Reproducibility for Earth System Software*

# What this talk is not

- Comprehensive
- Exhaustive
- Un-opinionated
- Going to be concerned with anything else a philosophy professor would get excited about

# What we're talking about when we talk about AI



products, generative AI, LLMs



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## Machine learning

Article Talk

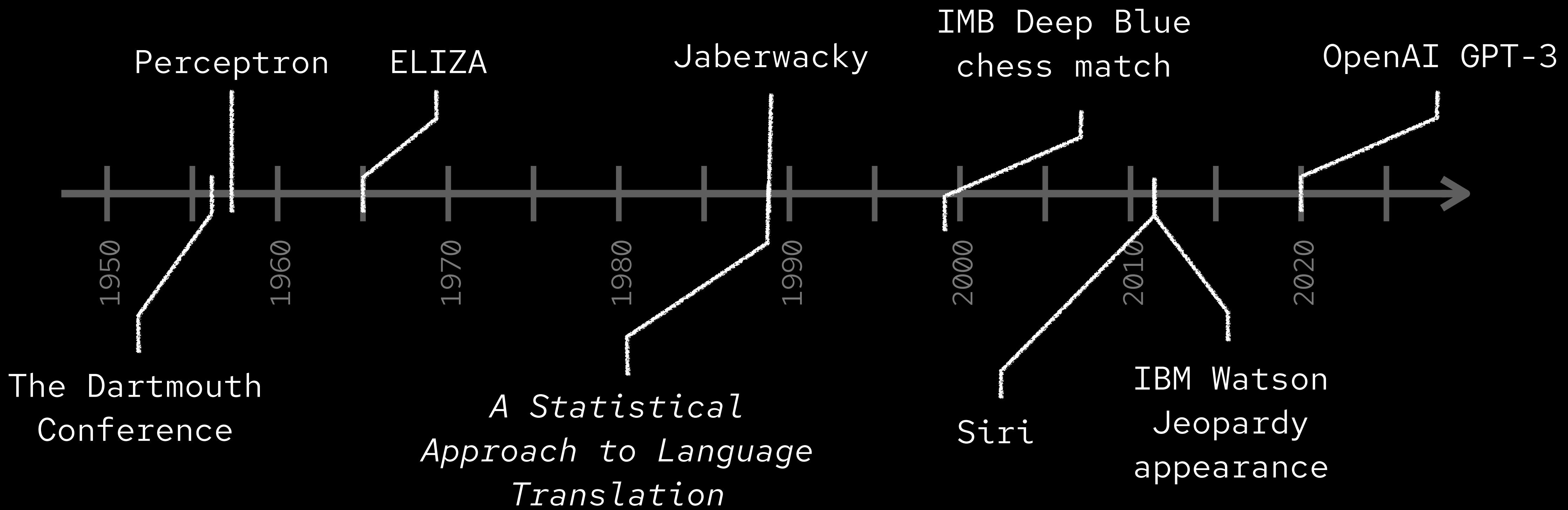
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From Wikipedia, the free encyclopedia

**Machine learning (ML)** is a [field of study](#) in [artificial intelligence](#) concerned with the development and study of [statistical algorithms](#) that can learn from [data](#) and [generalise](#) to unseen data, and thus perform [tasks](#) without explicit [instructions](#).<sup>[1]</sup> Within a subdiscipline in machine learning, advances in the field of [deep learning](#) have allowed [neural networks](#), a class of statistical algorithms, to surpass many previous machine learning approaches in performance.<sup>[2]</sup>

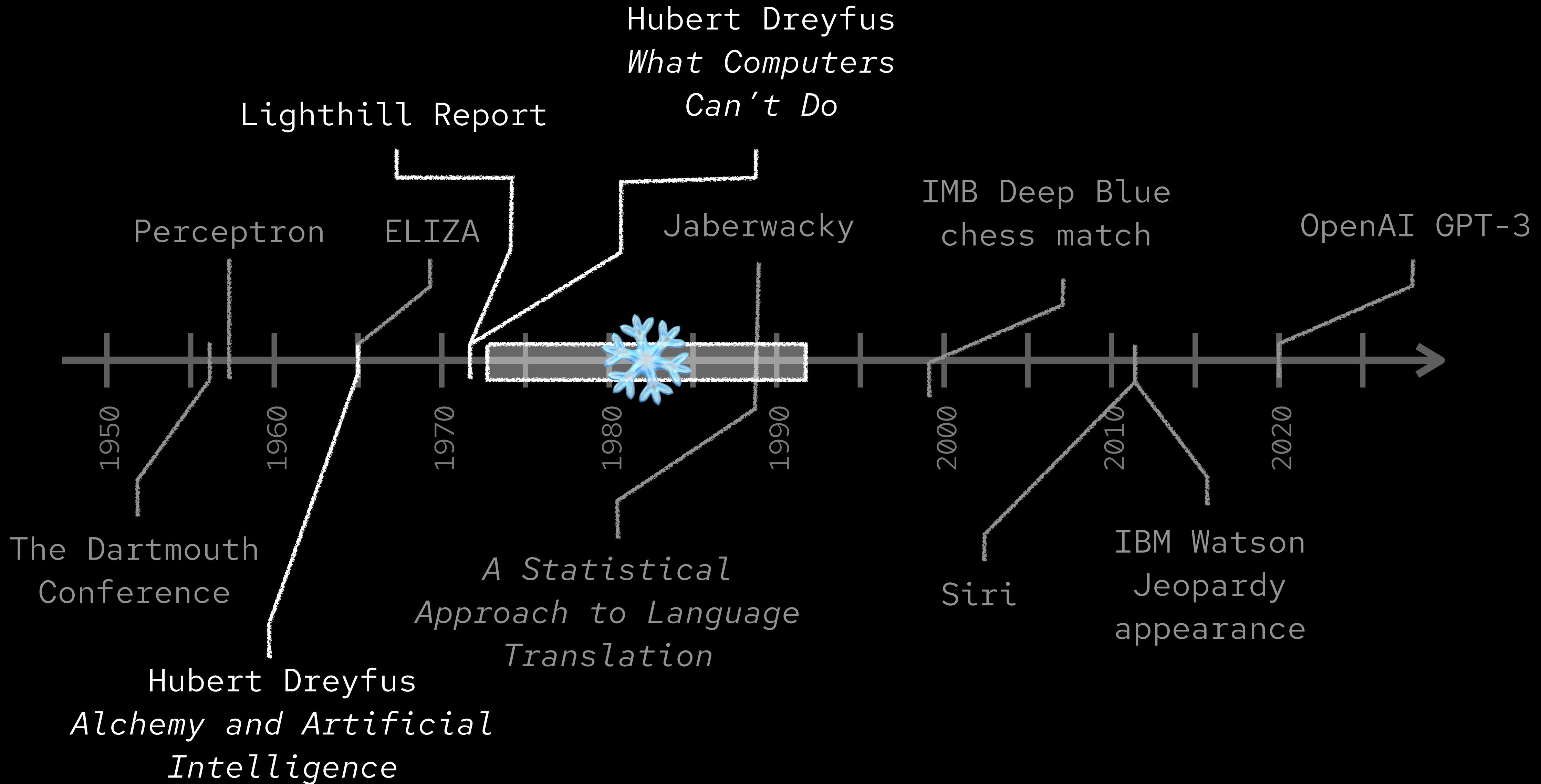
# History of AI as a field

A non-exhaustive timeline



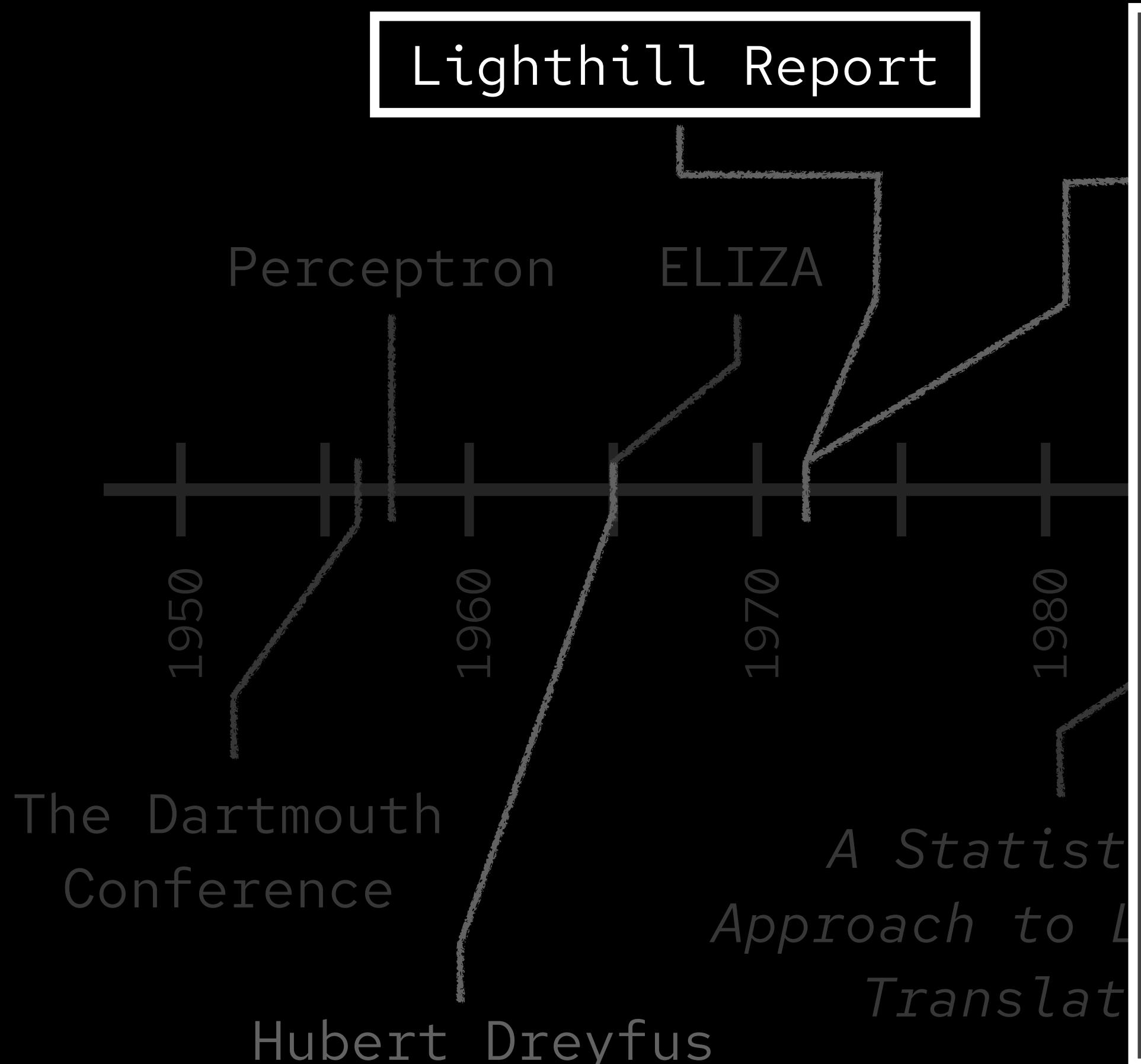
# History of AI

*significant criticism from the start*



# History of AI

*significant criticism from the start*



Hubert Dreyfus  
*What Computers*

*"Most workers in AI research and in related fields confess to a pronounced feeling of disappointment in what has been achieved in the past twenty-five years. Workers entered the field around 1950, and even around 1960, with high hopes that are very far from having been realized in 1972. In no part of the field have the discoveries made so far produced the major impact that was then promised."*

enAI GPT-3

# History of AI

*significant criticism from the start*

Lighthill Report

Hubert Dreyfus  
*What Computers  
Can't Do*

Percep

1950

The Dartmouth  
Conference

Hubert Dreyfus  
*Alchemy and Artificial  
Intelligence*

*"It is the point of Dreyfus's book that human and artificial intelligence are in fact quite different—in particular, that human intelligence is unique. Not only that, but a great misunderstanding accounts for public confusion about thinking machines, a misunderstanding perpetrated by the unrealistic claims researchers in AI have been making, claims that thinking machines are already here, or at any rate, just around the corner."*

— Pamela McCorduck, *Machines Who Think*

Approach to Language  
Translation

GPT-3

appearance

# History of AI

*significant criticism from the start*

Lighthill Report

*"No piece of equipment makes sense by itself ... What makes an object a chair is its function, and what makes possible its role as equipment for sitting is its place in a total practical context. This presupposes certain facts about human beings (fatigue, the ways the body bends), and a network of other culturally determined equipment (tables, floors, lamps), and skills (eating, writing, going to conferences, giving lectures, etc.)"*

Hubert Dreyfus  
*Alchemy and Artificial Intelligence*

Hubert Dreyfus  
*What Computers  
Can't Do*

aberrwacky

1990

cal  
nguage

translati

IMB Deep Blue  
chess match

2000

Siri

2010

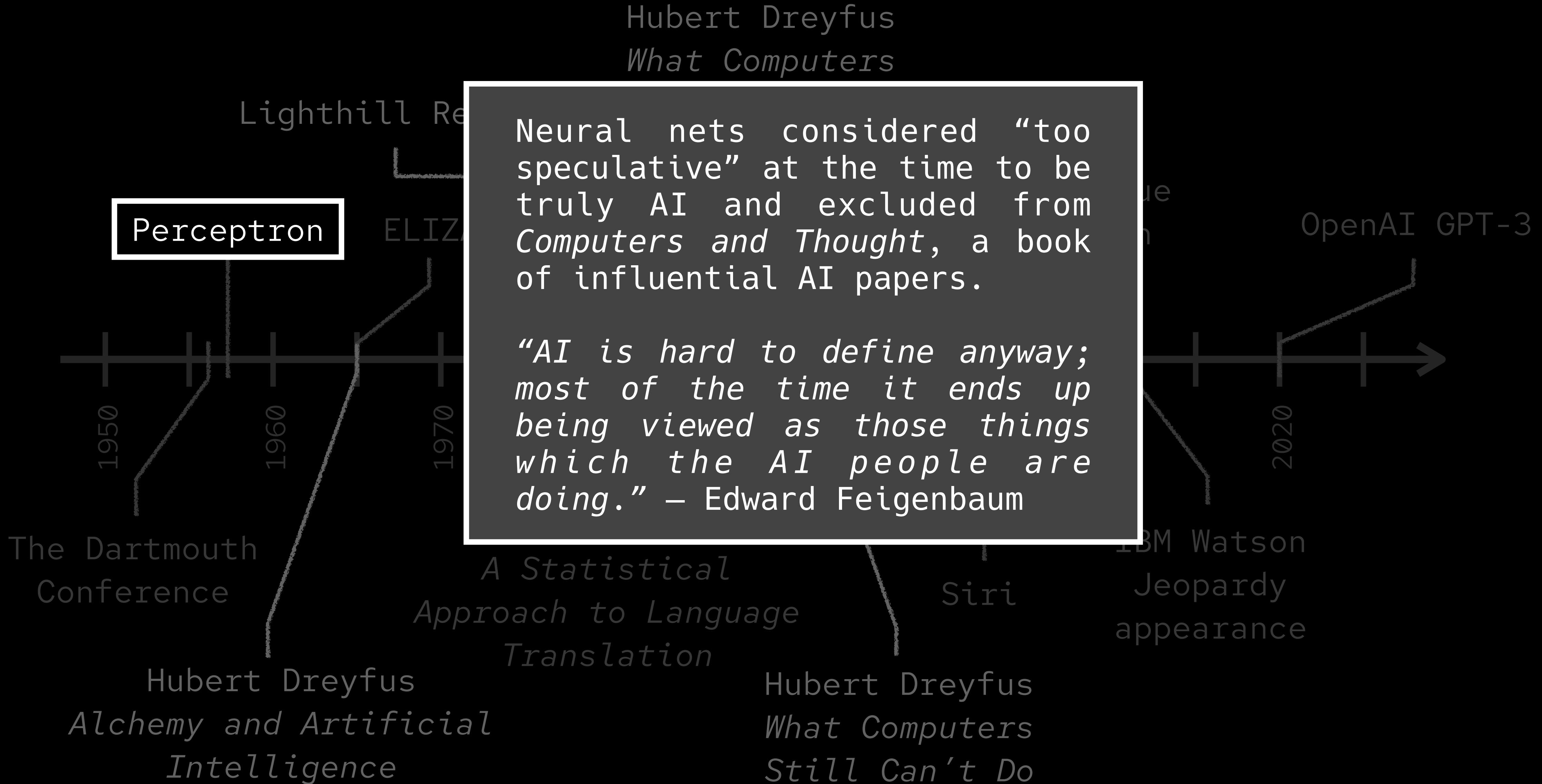
IBM Watson  
Jeopardy  
appearance

OpenAI GPT-3

Hubert Dreyfus  
*What Computers  
Still Can't Do*

# History of AI

*significant criticism from the start*



# Considerations for the AI of today

# Considerations for the AI of today

*What we mean when we talk about AI*



products, generative AI, LLMs



TensorFlow

The screenshot shows the Wikipedia article titled "Machine learning". The page header includes the Wikipedia logo, a search bar, and links for "Donate", "Create account", and "Log in". Below the header, there are tabs for "Article" (which is selected) and "Talk", along with options to "Read", "Edit", "View history", and "Tools". The main content of the article defines machine learning as a field of study in artificial intelligence concerned with the development and study of statistical algorithms that can learn from data and generalise to unseen data, performing tasks without explicit instructions. It mentions deep learning and neural networks as subdisciplines that have allowed machine learning to surpass many previous approaches.

WIKIPEDIA  
The Free Encyclopedia

Machine learning

Article Talk Read Edit View history Tools

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# Considerations for the AI of today

*What we mean when we talk about AI*

AGI



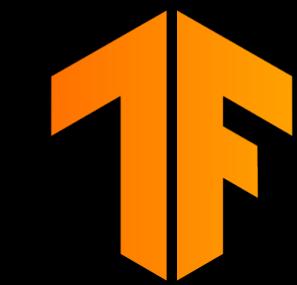
What can I help with?

Ask anything  
Attach Search Study

Voice



products, generative AI, LLMs



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## Machine learning

Article Talk

Read Edit View history Tools

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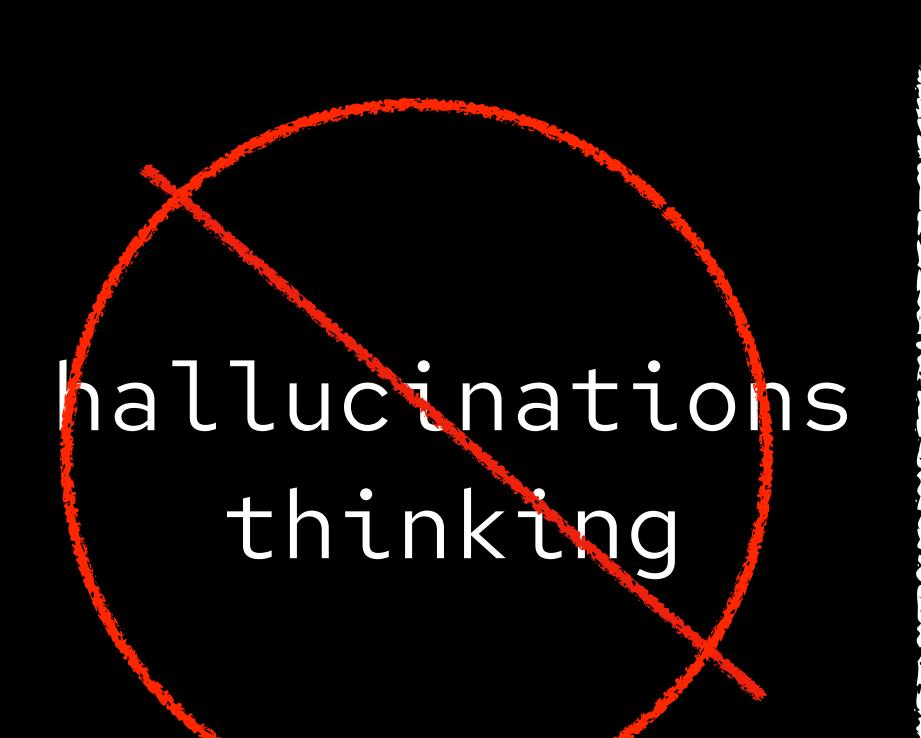
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machine learning, speech recognition,  
classification models, etc

# Considerations for the AI of today

*What we mean when we talk about AI*

AGI



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machine learning, speech recognition,  
classification models, etc

# Considerations for the AI of today

Acknowledging limitations

# Considerations for the AI of today

## Acknowledging limitations

*LLMs are not reproducible or verifiable*

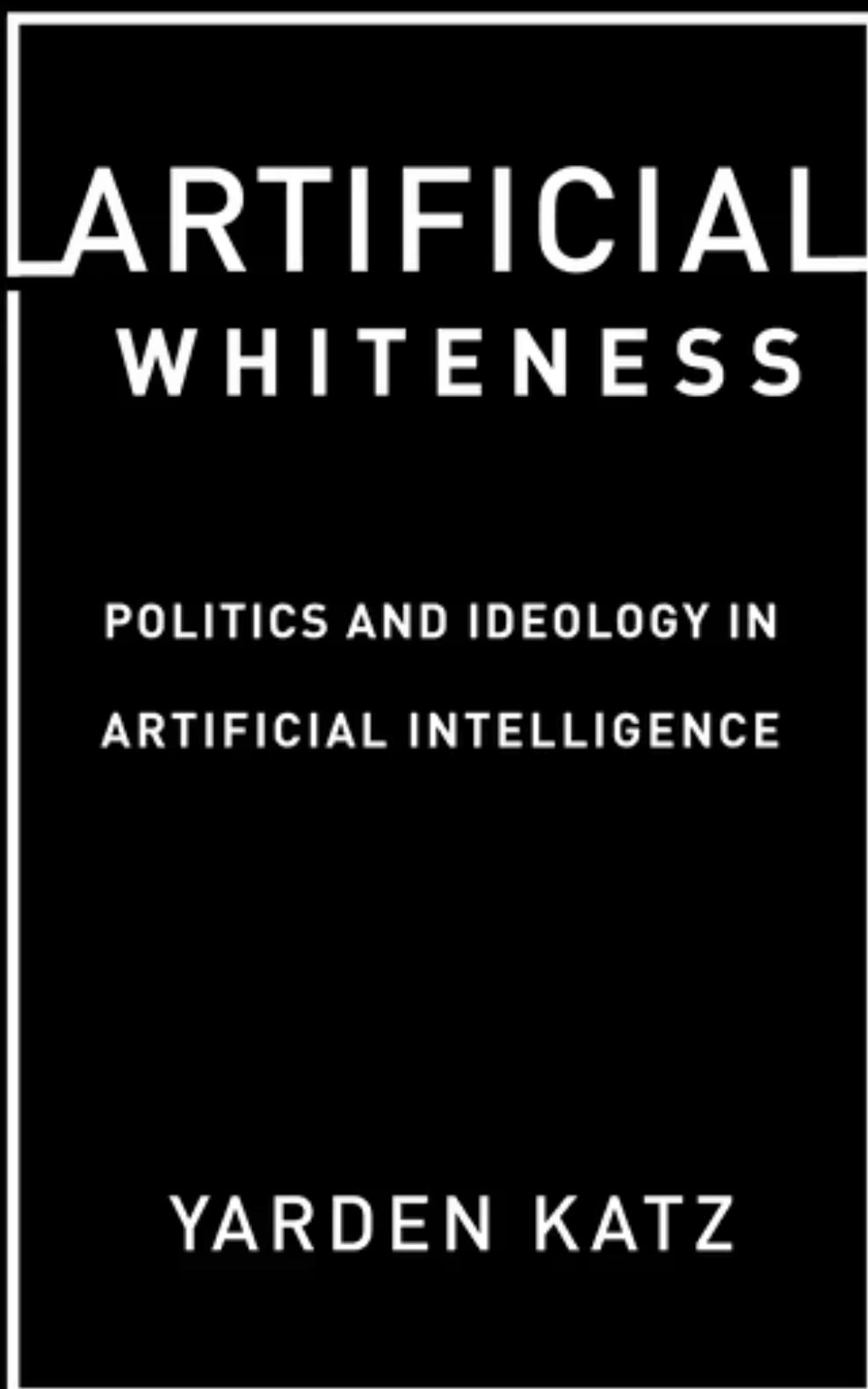
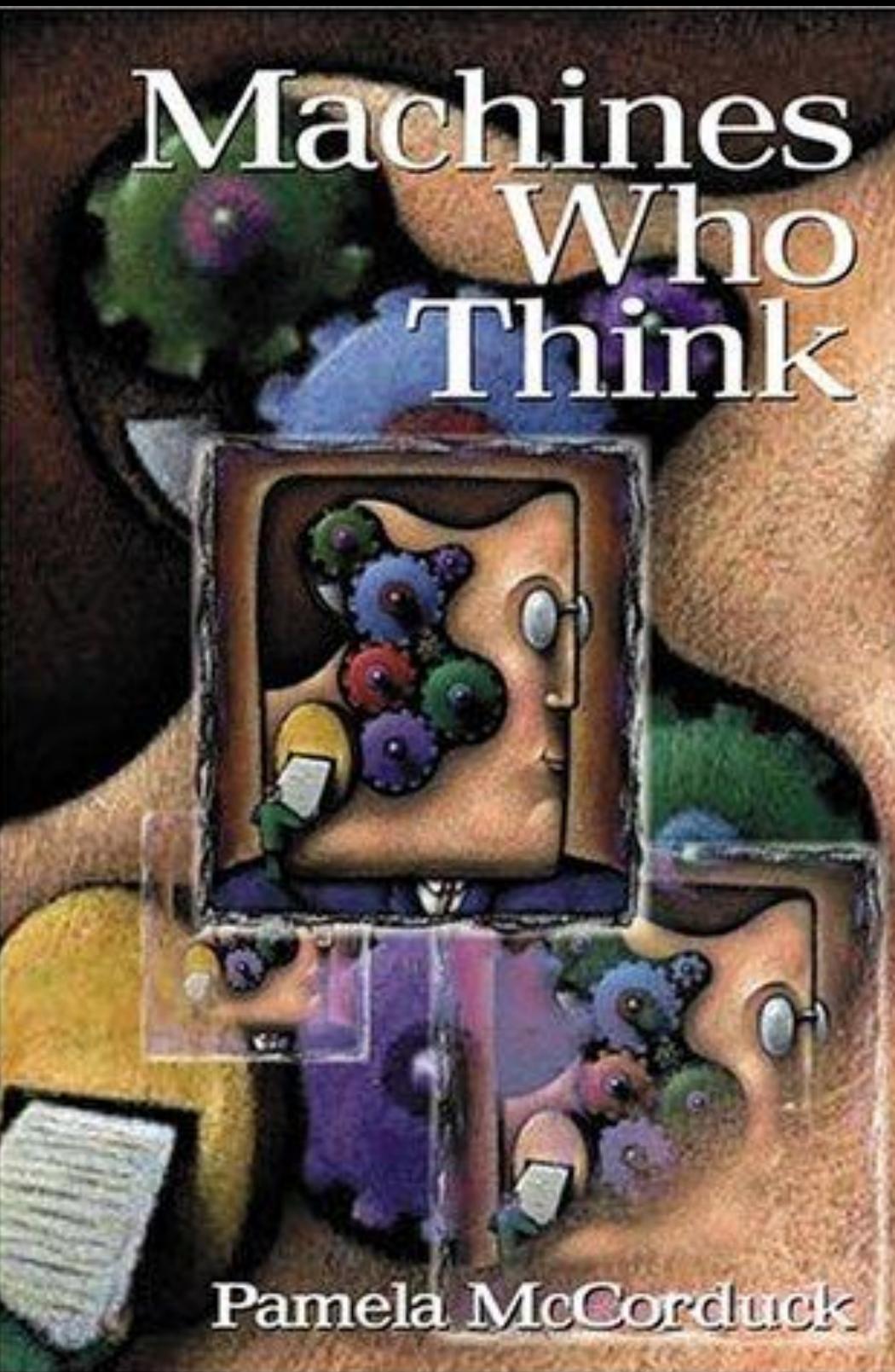
# Considerations for the AI of today

## Objectivity Bias

# Considerations for the AI of today

Inevitability

# Sources and Supplemental Reading



- IBM - The History of AI
- Lighthill Report
- Dreyfus - *Alchemy and Artificial Intelligence*
- Dreyfus - *What Computers Can't Do*