

# What is Artificial Intelligence (AI)?

A presentation by  
Theo Pavlidis

*Jefferson's Ferry, April 26, 2023*

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Artificial Intelligence (AI) has been in the news because of the elaborate answers given by the program **ChatGPT** (released last November).

The next set of slides show the answers to “What is Artificial Intelligence?” provided by Google, Yahoo, and **ChatGPT**.

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## Google Response (Part of):



IBM

<https://www.ibm.com/topics/artificial-intelligence>

### What is Artificial Intelligence (AI) ✓

At its simplest form, artificial intelligence is a **field, which combines computer science and robust datasets, to enable problem-solving**. It also encompasses ...

[Explore AI for cybersecurity](#) · [AI Ethics](#) · [Explore AI services](#)

+ numerous links to other sites

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## Yahoo Response (Part of):

### Ar·ti·fi·cial in·tel·li·gence

*/ˈɑːrdəˌfɪʃ(ə)l ənˈteləj(ə)ns/*

*noun*

1. the theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Powered by Oxford Languages

+ numerous links to other sites

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*Strange!* Visual perception requires human intelligence but (for example) solving differential equations does not?

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#### ChatGPT - 1

Artificial Intelligence (AI) refers to the ability of machines to simulate human intelligence and perform tasks that would normally require human intelligence, such as learning, problem-solving, decision-making, and natural language processing.

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#### ChatGPT - 2

AI can be classified into two main categories: **narrow or weak AI** and **general or strong AI**.

Narrow AI is designed to perform a specific task or a set of tasks, such as facial recognition, voice recognition, or language translation.

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*Strange!* Facial recognition requires human intelligence but (for example) solving differential equations does not?

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ChatGPT - 3

General AI, on the other hand, is designed to perform any intellectual task that a human can do. The main obstacle to strong AI is the lack of a comprehensive understanding of human cognition and intelligence.

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ChatGPT - 4

While significant progress has been made in developing narrow AI systems, creating an AI that can perform a wide range of cognitive tasks at a human level of intelligence requires a much deeper understanding of how the human brain works.

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We do not really have a really meaningful definition of AI. It is often used as a synonym of “relying on computers.”

**Cynical view:** AI is any problem that we do not know how to solve by computer.

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Back to hot issues:

In contrast to the **Google** and **Yahoo** answers, the answer of **ChatGPT** is ready to be submitted as an **article** to a magazine or as a **term paper** in a class.

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We should point out that while **ChatGPT** makes plagiarism very easy, it is not that hard to plagiarize from the results of Google or Yahoo:

Use copy (CTRL-C) and paste (CTRL-V) to transfer the contents of a file pointed to by the search engine into a file on your computer. (About half an hour's work.)

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The essay-style answer of **ChatGPT** is a great convenience, but it also hides problems with the sources of information that would have been seen in the links of the Google and Yahoo results.

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The “human like” quality of **ChatGPT**'s answers created a panic, as the titles of some recent *NY Times* articles show:

- \* **How **ChatGPT** Hijacks Democracy**
- \* **I'm a Congressman Who Codes. A.I. Freaks Me Out** (he proposes a government agency to regulate AI)
- \* **A.I.: Actually Insipid Until It's Actively Insidious**

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### **Things to Keep in Mind**

1. Most advances in technology have social costs, usually loss of jobs.
2. Advances in communications allow for better spread of correct information, but also of slander.
3. Human users, rather than technology itself, determine what use it will be put in.

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## Examples of (narrow) AI in use today

- \* Personal assistants, such as **Alexa** and **Siri**.
- \* Face ID logins.
- \* Speech recognition.
- \* Medical diagnostics from X-Rays or MRIs.
- \* Industrial inspection (quality control).
- \* Forrest Fire Detection.
- \* Self-driving cars. ???

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## A simple application to illustrate how an AI system (call it **Healthbot**) is constructed.

If you provide the **Healthbot** with your weight and height, it will tell you whether you are overweight or not. (Avoiding B.M.I.\*.)

\* "Is B.M.I. a Scam?" (Title of a NY Times article)

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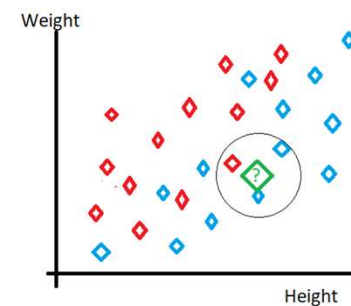
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## Building the **Healthbot**

- (1) Collect the height and weight of, say, 1000 people and for each one note whether they are in good or poor health.
- (2) Plot the data on a graph (height on the x-axis and weight on the y-axis) using **red for poor health** and **blue for good health**.

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A query is treated as a point on the graph. We answer it by returning the label of the majority of its, say, three nearest neighbors on the graph.

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Of course, we do not need to plot the data. The mathematical operations can all be done in computer memory.

The process of supplying labeled data to the program is called **Training** or **Learning**. Such a methodology is used in most **AI** applications.

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The data can be quite complex, such as pieces of text, images, sound recordings, etc.

The definition of “being near” may be different from numerical proximity. Pieces of text  $A$  and  $B$  may be said to be “near” each other, if  $AB$  makes sense.

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The **context** in which an object appears is important. The transcription of *Voicemail* on an *iPhone* illustrates this issue.

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Hello this is Long Island digestive disease consultants confirming your appointment on March 21 at 10:30 AM at our east **SI talk head** office which is located at 8 Technology Dr. please remember to bring your insurance card photo ID a copy of your **Kobe ID**

*Errors are marked in red.*

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The program does well for the most part because it relies on word (and not only phoneme) recognition. It does poorly on proper names because they may not be in its dictionary. "Setauket" is mapped into "SI talk head" and "COVID" into "Kobe ID".

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In human perception **CONTEXT RULES**  
**New York State lacks proper facilities for the mentally ill.**

**The New York Jets won Superbowl III.**

*The behavior of Machines*      *Is different from that of humans.*

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Not everything is **roses** in AI.

#### AI Snake Oil

Researchers find AI is bad at predicting GPA, grit, eviction, job training, layoffs, and material hardship



(via VentureBeat)

<https://aisnakeoil.substack.com/p/a-sneak-peak-into-the-book>

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Main reason for the success of **ChatGTP**:  
 Human Language is quite predictable.

Just look at the suggestions as you type a message on an *iPhone*.

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→ P  
P Pay Please  
Help Let Listen

→ ig  
ig if ignore  
t the this  
tweet message comment  
I It I'm  
not just going


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The reliance on a language model ensures that chatbots will produce **plausible** but not necessarily **correct** answers and, as a result, they can be quite error prone.

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 what day is today


 Today is Sunday, February 21st, 2023.


February 21 was a Tuesday in 2023.  
(It was a Sunday in 2021.)

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**ChatGPT** is very adept in messing up biographies.

 who is Theo Pavlidis

 Theo Pavlidis was a computer scientist and mathematician who was born in Greece in 1939 and passed away in 2018. He made significant contributions to the fields of computer graphics, image processing, and computer vision. Pavlidis received his Ph.D. from the Massachusetts Institute of Technology (MIT) in 1965 and went on to have a distinguished career in academia and industry.

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Inserting a date of death for people who are alive is a common error of **ChatGPT**. Probable reason:

The string of words referring to death is the most common follower of the string of words referring to birth.

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Some of the erroneous **ChatGPT** answers are close to the correct answer. Two examples from my biography.

**Year of Birth:** 1939 instead of 1934

**Alma Mater:** M.I.T. instead of U. C. Berkeley.

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To save memory space, **ChatGPT** uses category names in its database (maybe *decade* instead of *year*). Later, it picks a random member of the category for the output. (**Blurring.**)

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ANNALS OF TECHNOLOGY

## CHATGPT IS A BLURRY JPEG OF THE WEB

*OpenAI's chatbot offers paraphrases, whereas Google offers quotes. Which do we prefer?*

By Ted Chiang  
February 9, 2023

**Close-up:** OpenAI's chatbot offers paraphrases, whereas Google offers quotes. Which do we prefer?

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### Concluding Remark

*I'm reluctant to either strongly praise or condemn **ChatGPT**.*

Farhad Manjoo, NYT opinion columnist  
(12/16/2022)

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### AN EXPERT'S OPINION – PART 1

***ChatGPT** is powered by a Large Language Model which is ultimately a statistical tool used to predict language without understanding it and produce "statistically plausible" answers.*

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### AN EXPERT'S OPINION – Part 2

*The real value of **ChatGPT** is that it can definitely boost a person's productivity, but it is important to recognize when it gets things wrong.*

Yann LeCun, director of AI Research at Facebook.

**The End**

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of The New Yorker. THE NEW YORKER  
News Books & Culture Fiction & Poetry Humor & Cartoons Magazine Puzzles & Games

**The Future?**



*"To think this all began with letting autocomplete finish our sentences."*

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## *Postscript*

### **What Kind of Mind Does ChatGPT Have?**

Large language models seem startlingly intelligent. But what's really happening under the hood?

**By Cal Newport**

**New Yorker Magazine, April 13, 2023**

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**A system like ChatGPT doesn't create, it imitates.** When you send it a request to write ....., it doesn't form an original idea about this conundrum;

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It instead copies, manipulates, and pastes together text that already exists, originally written by human intelligences, to produce something that "sounds" like how a real person would talk about these topics.

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..., once we've taken the time to open up the black box and poke around the springs and gears found inside, we discover that programs like ChatGPT don't represent an alien intelligence with which we must now learn to coexist;

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instead, they turn out to run on the well-worn digital logic of pattern-matching, pushed to a radically larger scale.

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It's hard to predict exactly how these large language models will end up integrated into our lives going forward, but we can be assured that they're incapable of hatching diabolical plans and are unlikely to undermine our economy.

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**ChatGPT** is amazing, but in the final accounting it's clear that what's been unleashed is more **automaton** than **golem**.

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**S. Kapoor** and **A. Narayanan** (Computer Science dept. at Princeton University) are working on a book titled

### **AI Snake Oil**

The book is online:

<https://aisnakeoil.substack.com/p/a-sneak-peak-into-the-book>

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