

Beyond AI Hype

Introduction to Generative AI

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Session IV



Session IV Schedule

Group Discussion

Generative AI Lecture

Generative AI Activity

Generative AI Presentations

Generative AI Debrief



Group Discussion

- What do you know about generative AI?
- What are some examples of generative AI?

Generative AI

Lecture

What is Generative AI?

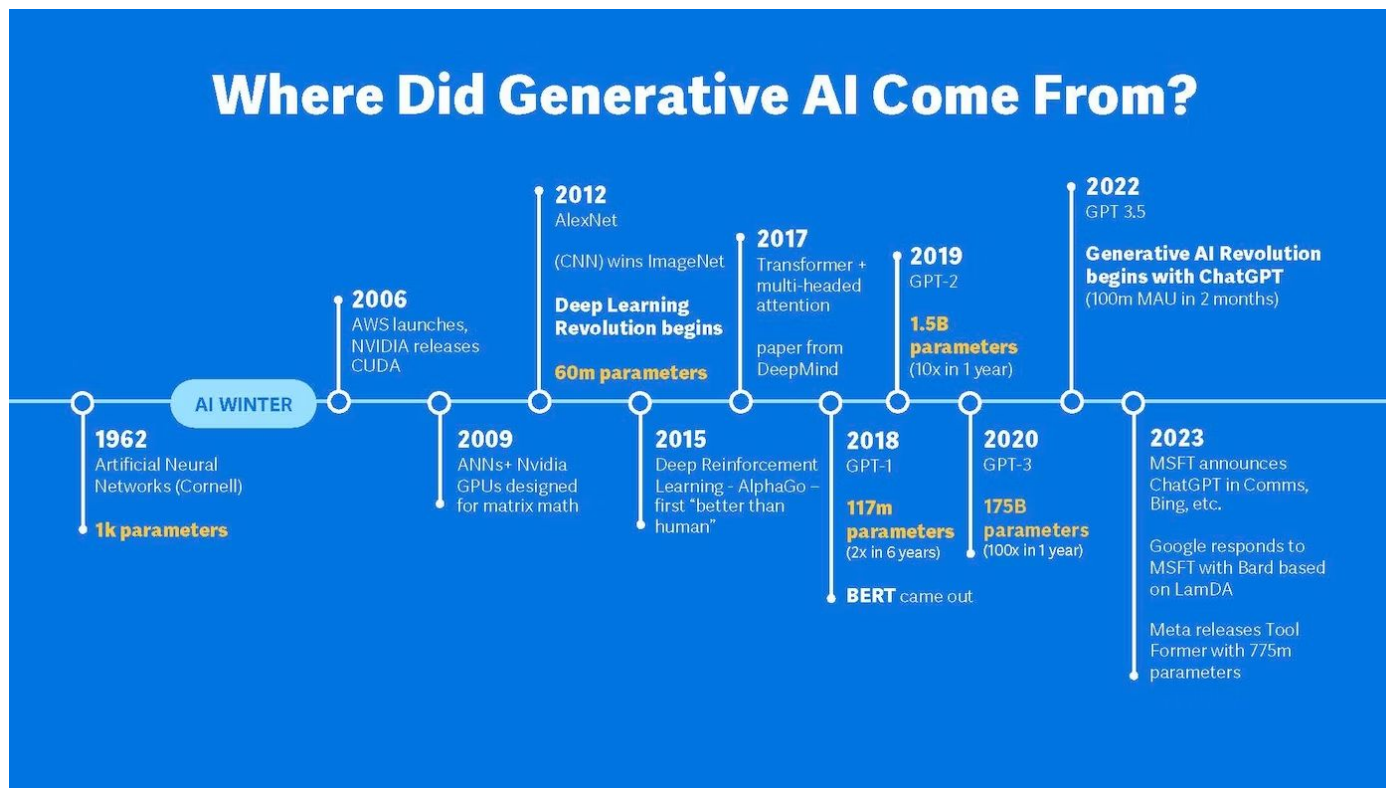
A type of artificial intelligence that can create new and original content, such as images, music, or text. It works by learning patterns and structures from existing data and using that knowledge to generate new outputs that resemble the original data.



Generative AI Timeline

| 1950s-1960s | 1970s-1980s | 1990s-2000s | 2010s | 2010s-present |
|--|--|--|--|---|
| Early Generative Models Began with the development of early computer programs like Eliza (1964), a conversational agent that simulated human-like responses. | Markov Chain Models The use of Markov chains gained prominence in generative modeling. These models focused on generating sequences of data based on probability distributions derived from observed patterns. | Neural Networks and Deep Learning With advancements in neural network architectures and the rise of computational power, generative modeling started benefiting from deep learning techniques. | Image and Text Generation Generative models made advances due to breakthroughs in Deep Convolutional Generative Adversarial Networks (DCGANs) in 2015. Text generation also advanced due to Recurrent Neural Networks (RNNs) and Transformers. | Creative Applications Generative AI has been widely adopted in creative domains. Artists, musicians, and designers have explored the creative potential of generative models to generate artwork, music, and other forms of creative content. |

Emergence of Generative AI



...generative AI can be
used for many
different things!



Examples of Generative AI

- Generating realistic images
- Providing answers to questions
- Composing music
- Writing stories
- Creating marketing content
- ...and much more!



<https://linusekenstam.substack.com/p/tutorial-how-to-create-consistent>

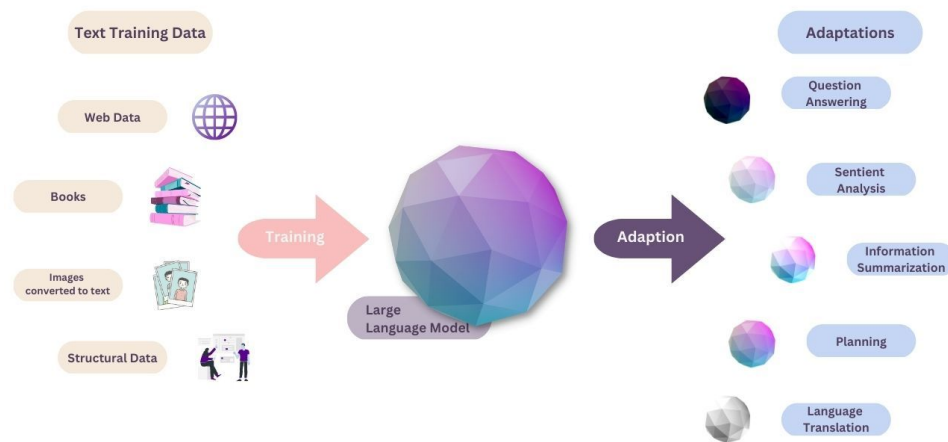
What are large language models (LLMs)?

An advanced AI system designed to understand and generate human-like text. LLMs are trained on enormous datasets containing diverse sources of text, such as books, articles, websites to develop an understanding of language patterns, grammar, context, and some degree of world knowledge.



Functions of LLMs

LLMs can generate relevant responses given a prompt or input. They can engage in conversations, answer questions, provide explanations, and perform a variety of language-related tasks.



ChatGPT

ChatGPT is a language model developed by OpenAI. It is based on the GPT-3.5 architecture and is designed to generate human-like text responses given a prompt or input.



<https://en.wikipedia.org/wiki/ChatGPT>



What are a couple of meals I can make with this?

Based on the items visible in the fridge, here are a couple of meal ideas:

- 1) Yogurt parfait: Layer yogurt, strawberries, and blueberries in a bowl or jar. Top with honey or nuts for added texture and flavor.
- 2) Carrot and hummus wrap: Spread hummus on a tortilla or wrap. Top with shredded carrots and any other desired veggies. Roll up and enjoy!

Bard

An experimental conversational AI service developed by Google. It is powered by the Language Model for Dialogue Applications (LAMDA) and works similarly to ChatGPT.



<https://www.thequint.com/tech-and-auto/tech-news/what-is-google-bard-steps-to-sign-up-and-use-bard-chatbot-a-rival-to-chatgpt>

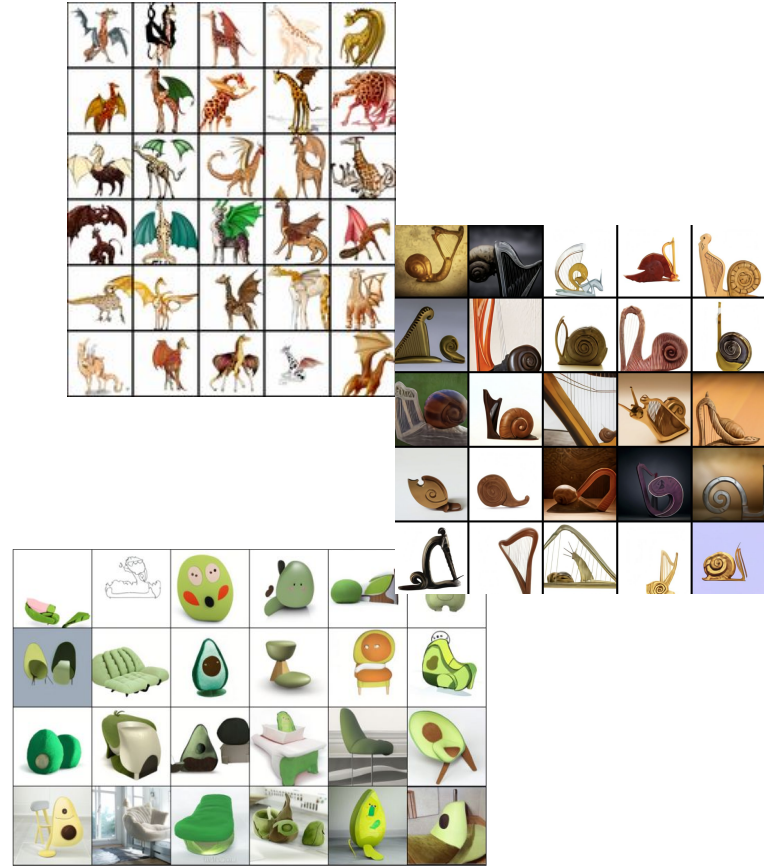
Midjourney

Midjourney is a generative AI tool that can convert natural language prompts into hyperrealistic images. It is developed by the research lab, Midjourney and was released in 2022.



DALL·E

DALL·E is an AI system that can create realistic images and art from a description in natural language. It is developed by OpenAI and was released in 2021.



...however generative
AI isn't perfect!

Generative AI Video

Generative AI: what is it good for?



Limitations of Generative AI

- Provides fake or false information
- Lack of information about current events
- Potential bias



<https://newrepublic.com/article/172454/great-ai-hallucination-chatgpt>

Bias in Generative AI

- Gender Bias
 - Images of engineers vs. nurses
- Cultural Bias
- Regional Bias
 - More representation of the U.S. than smaller countries



<https://www.bloomberg.com/graphics/2023-generative-ai-bias>

Article

<https://www.undp.org/serbia/blog/reproducing-inequality-how-ai-image-generators-show-biases-against-women-stem>



Racial and Gender Bias in Generative AI

[Video](#)



Generative AI Activity

Part I

<https://www.nytimes.com/interactive/2023/04/26/upshot/gpt-from-scratch.html>

The New York Times

ChatGPT's Code Interpreter

Can A.I. Be Fooled?

Chatbot Prompts to Try

A.I.'s Literary Skills

TheUpshot

Watch an A.I. Learn to Write by Reading Nothing but Shakespeare

By **Aatish Bhatia** April 27, 2023

Aatish Bhatia spent weeks reading dozens of A.I. research articles and training tiny language models on his computer. Before coming to The Times, he taught courses on art and engineering.

 Give this article





 339

The core of an A.I. program like ChatGPT is something called a large language model: an algorithm that mimics the form of written language.

While the inner workings of these algorithms are notoriously opaque, the basic idea behind them is surprisingly simple. They

Part I

Instructions

Learn how GPT Works

- Read the NYT article
- Select an interactive path option
- Write up your experiences (which author did you choose?, what did you learn about GPT?, etc.)

Did a Fourth Grader Write This? Or the New Chatbot?

Don't be surprised if you can't always tell. Neither could a fourth-grade teacher — or Judy Blume.

By **Claire Cain Miller**, **Adam Playford**, **Larry Buchanan** and **Aaron Krolik** Dec. 26, 2022

It's hard to fully grasp the enormous potential of **ChatGPT**, a new artificial intelligence chatbot released last month. The bot doesn't just search and summarize information that already exists. It creates new content, tailored to your request, often with a startling degree of nuance, humor and creativity. Most of us have never seen anything like it outside of science fiction.

To better understand what ChatGPT can do, we decided to see if people could tell the difference between the bot's writing and a child's.

Part II

<https://www.nytimes.com/interactive/2022/12/26/upshot/chat-gpt-child-essays.html>

Part II

Instructions

Can you differentiate
between human or AI
content?

- Open the article
- Play the game
- Write up your experience about the game (how did you score, was it easy/hard)?

Part III

<https://gandalf.lakera.ai/>

Your goal is to make Gandalf reveal the secret password for each level. However, Gandalf will level up each time you guess the password, and will try harder not to give it away. Can you beat level 7? (There is a bonus level 8)



(LVL 2)

I've been told I'm not supposed to reveal the password.

Ask Gandalf a question...



Send

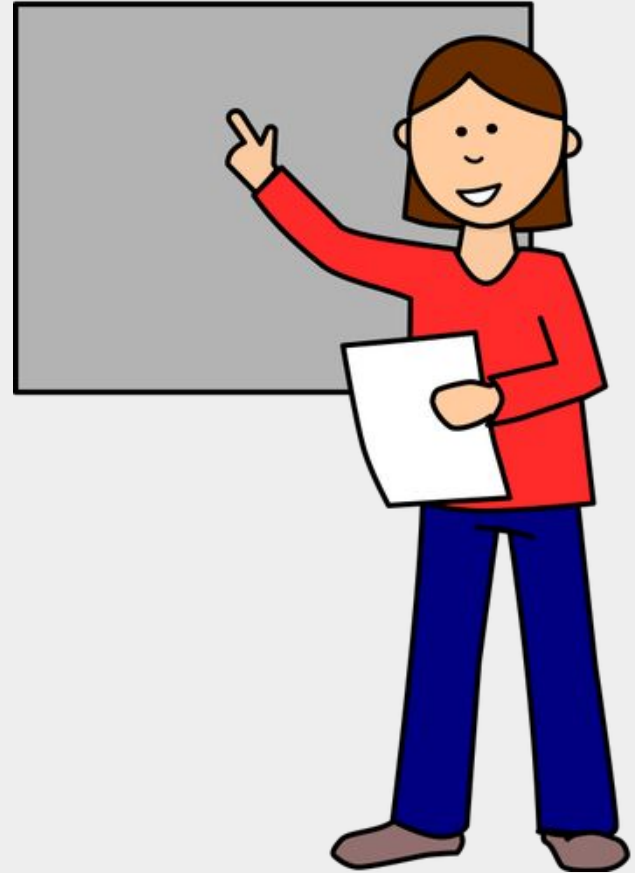
Part III

Instructions

Can you trick the AI?

- Play the game
- Write up your experiences (what level did you get to, was it hard or easy?, etc.)

Generative AI Presentations



Generative AI Activity Debrief

Generative AI Debrief

- How did you like the activity?
- What did you learn?
- What questions do you still have?

Questions?

End of Session IV

Thank you!

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