

Introductory Course

Transformers and Generative AI Tools

Introduction : Open AI, GPT-3 and ChatGPT

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What is OpenAI?

What is GPT3 ?

What is ChatGPT ?

What is OpenAI ?

- OpenAI is an American **AI research laboratory**
- OpenAI conducts AI research to **promote and develop friendly AI in a way that benefits all humanity**
- The organization was founded in **San Francisco in 2015** by Sam Altman, Reid Hoffman, Jessica Livingston, Elon Musk, Ilya Sutskever, Peter Thiel and others, who collectively pledged US\$1 billion
- Microsoft provided OpenAI LP a \$1 billion investment in 2019 and a second multi-year investment in January 2023, reported to be \$10 billion
- OpenAI's research tend to focus on Reinforcement Learning (RL)



OpenAI Products ?

Following are some of the Products and Applications by the Company:

- **Generative models** : GPT, GPT 2, GPT 3, GPT 4, ChatGPT, ChatGPT Plus
- **AI Based Other Products**: API, DALL-E, CLIP, Microscope, Codex, Gym, RoboSumo, Debate Game 2018, Dactyl
- **AI Based Music Products** : OpenAI's MuseNet (2019); OpenAI's Jukebox (2020); Whisper
- **Video game bots and Benchmarks**: OpenAI Five, GYM Retro

What Is GPT-3: How It
Works and Why You
Should Care



What is GPT3 ?

GPT-3 (Generative Pretrained Transformer 3) is a state-of-the-art language model developed by OpenAI. Released in **June 2020** and made available for public in **October 2020**

It is one of the largest and most advanced language models to date, with over **175 billion parameters**

Trained on a diverse corpus of text data, including books, articles, and web pages, allowing it to perform a wide range of **natural language processing (NLP)** tasks, including language generation, translation, summarization, question answering, and more.

Key Innovation in GPT-3 is its use of the **transformer architecture**, which allows it to model the dependencies between words in a sentence and **generate context-aware responses**

A model that **generates highly human-like responses**, with some reports indicating that it is capable of passing the turing test in some cases

GPT-3 has received significant **attention in the research and development community**, and has been used in a variety of applications, including chatbots, virtual assistants, and even creative writing

Why GPT3 has become Popular?

GPT represents a **revolution** in the way AI-generated text content is created

GPT models with learning parameters ranging in the hundreds of billions **are incredibly smart** and have a considerable edge over all previous versions of language models



Uses of GPT3

Content creation: From 18th-century poetry to SQL queries, GPT models can be fed any kind of prompt and they will start to produce coherent and humanlike text results

Text summarization: By being able to generate fluent, humanlike text. This is useful for condensing long volumes of data for more effective insight gathering and analysis

Answering questions: capacity to understand speech, including questions. It can provide precise answers or detailed explanations, depending on the needs of the user

App creation: GPT-like AI models may become capable of creating apps with minimal human feedback. It is possible that they create plugins and software with just a description

Machine translation: Language translation tasks handled by GPT-powered software are instant and accurate. By training AI on large datasets of already translated material, its accuracy and fluency can be improved. In fact, GPT can do more than translate from one language to another. GPT AI models can even take legal speech and turn it into simple natural language

AI-powered safety: Because GPT AI is capable of text recognition, it can be used to identify any form of language. This capability can be used to identify and flag certain types of communication. So toxic Internet content can be more effectively identified and dealt with

Conversational AI: Chatbot technology developed using GPT software can become incredibly smart. This allows the creation of machine-learning virtual assistants, capable of aiding professionals to perform their tasks regardless of industry. For instance, a conversational AI in the power sector can be used to analyze Utilities data to suggest a certain pattern of customer electricity usage

Source: <https://botpress.com/blog/gpt-3-vs-gpt-4-whats-the-difference>



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Limitations of GPT3

Data Biases

A Lack of Contextual
Understanding

Sensitivity to Inputs

GPT3 Competitors

BERT, Developed by
Google

ELMo, Developed by
the Allen Institute
for Artificial
Intelligence

XLNet, Developed by
Carnegie Mellon
University and
Google

RoBERTa, Developed
by Facebook AI

These are just a few examples of the models that compete with GPT-3 in the field of NLP. Each of these models has its own strengths and weaknesses, and the choice between them will depend on the specific requirements of a project.

What Can You Do With ChatGPT?

Will ChatGPT Replace You at Work?

Does ChatGPT Store Your Conversations?

FREAKING ABOUT ChatGPT

Can ChatGPT write my next research paper ?

What Is ChatGPT?

Is ChatGPT Safe?

How Accurate Is ChatGPT?

PREDICTIONS BY MEDIA

 Mid-Day

IT experts predict successful cyberattacks via ChatGPT within year

According to a BlackBerry report, nearly 71 per cent believe that foreign states are likely to already be using the technology for malicious...




 Fortune

We asked ChatGPT which jobs it thinks it will replace—and it's not good news for data entry professionals or reporters

The ChatGPT fear is real. The A.I. is already outstripping human candidates on job applications, and top economists have said it will take...



 CEOWORLD magazine

Ever Heard of ChatGPT for Executives? Better Update Your ...

It's a new branch of AI, unlike traditional AI, which looks for patterns and trends in data pools to make all-important predictions.



- ChatGPT is a trained **Language Models** by OpenAI which interacts in a conversational way using Machine Learning; launched on 30 November 2022
- A dialogue format “**Chatbot**” that understands and **conversation with the user** and makes it possible to answer follow up questions, admit its mistakes, challenge incorrect premises, and reject inappropriate requests
- Trained on large amount of text from books, news stories, online sources, software code etc.
- Generates text responses based on input; feels like human
- Uses old data (Sept 2021) but learns from users
- Recently OpenAI has Introduced **ChatGPT Plus** and they have **launched** a pilot subscription plan for the same. As per reports, this will be a an advanced version of ChatGPT

ChatGPT



As per news articles
ChatGPT is developed by
Mira Murati, CTO, OpenAI

+ New chat

ChatGPT Definition



New chat

"ISUW23 Transformer Models

LinkedIn Profile Access Denied

New chat



What is ChatGPT?



ChatGPT is a language model developed by OpenAI. It is a conversational AI model trained on a large corpus of text data and designed to generate human-like responses to a given prompt. The model uses the GPT-3 architecture, which is a transformer-based neural network that can generate text, perform various NLP tasks such as question answering, translation, summarization, and more. ChatGPT is typically used for building conversational AI applications, such as chatbots, virtual assistants, and customer service bots, among others.



Why Everyone is talking about ChatGPT?

ChatGPT ~ A Game Changer?

Responses are more **human-like**; not like computers

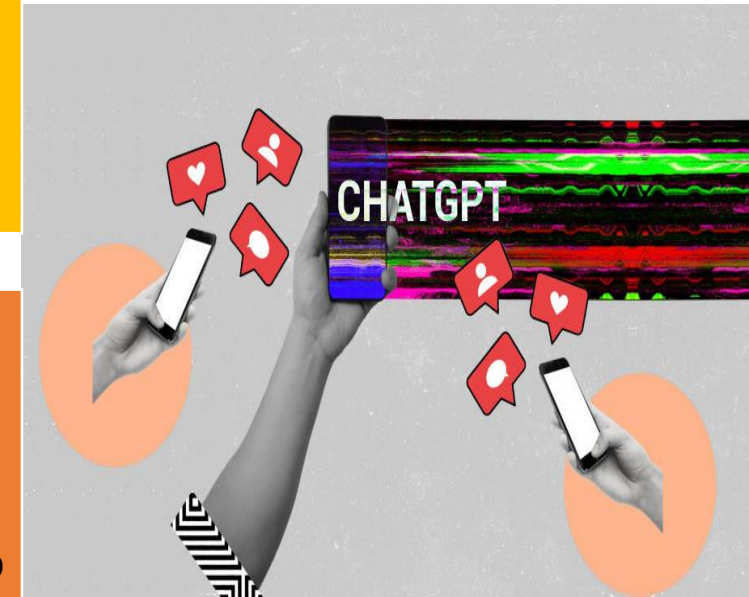
Log **context from users' earlier messages** in a thread and use it to form responses later in the conversation

No generative AI application has quite managed to achieve the **kind of influence** and virality

Subject of countless memes and the **talk in business communities**

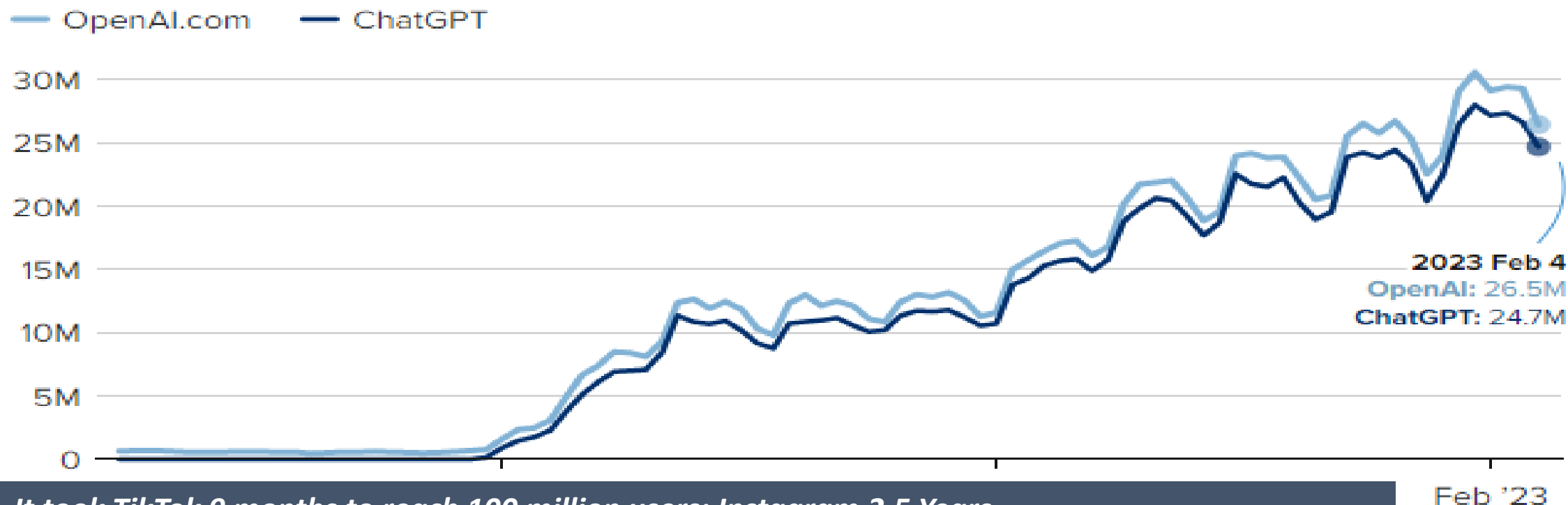
Microsoft collaborated with OpenAI to **reinventing search with AI-powered Microsoft Bing and Edge** using ChatGPT

On Jan 31 – ChatGPT recorded **28 million daily visits**, according to data from Similarweb. That was up 165% from a month ago



Daily worldwide visits to OpenAI's website and its ChatGPT platform

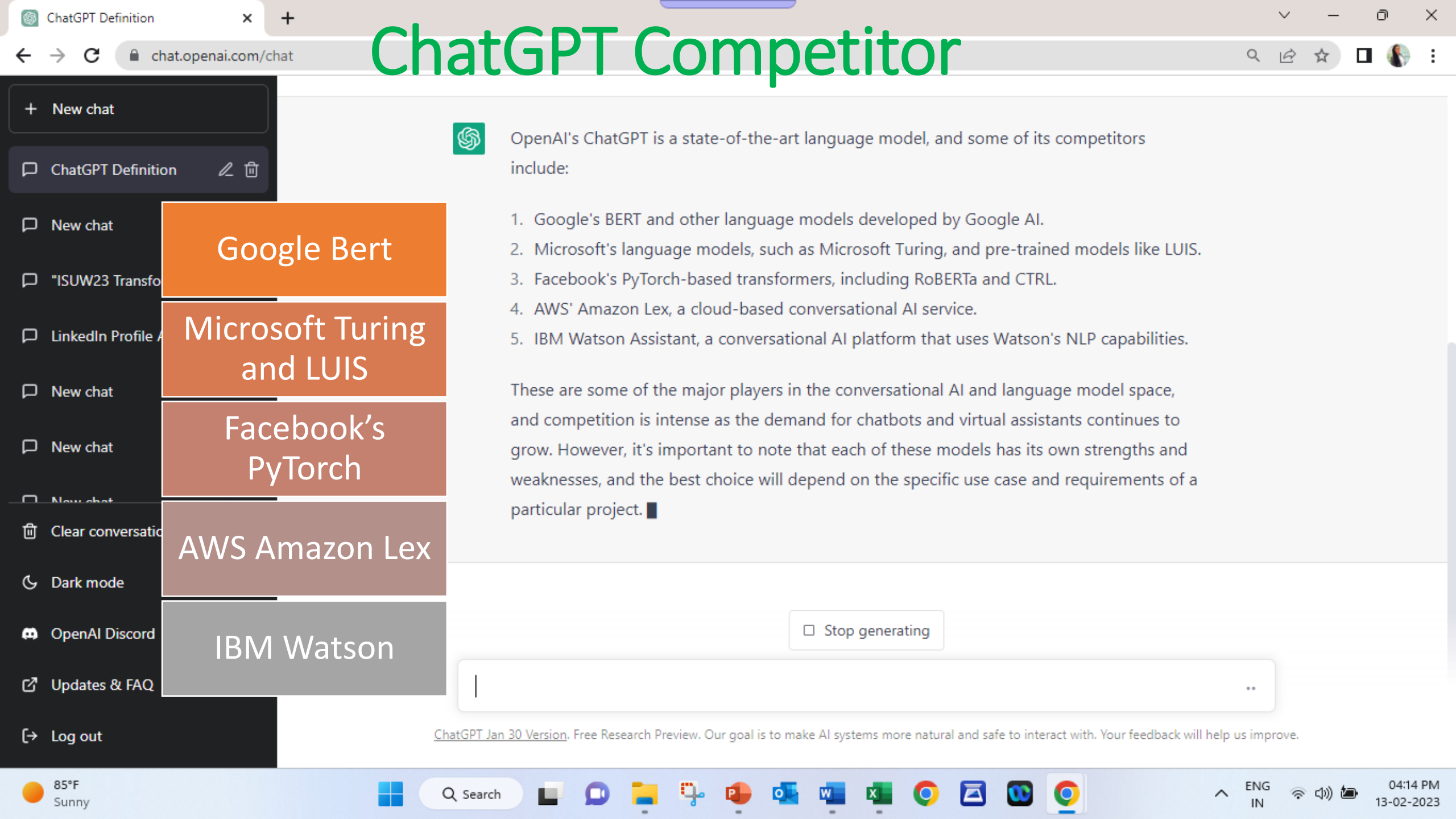
November 2022 to February 2023



- It took TikTok 9 months to reach 100 million users; Instagram 2.5 Years
- **ChatGPT had amassed 100 million monthly active users only 2 months into its launch, making it the fastest-growing consumer application in history**

Source: CNBC.com





ChatGPT Competitor



OpenAI's ChatGPT is a state-of-the-art language model, and some of its competitors include:

1. Google's BERT and other language models developed by Google AI.
2. Microsoft's language models, such as Microsoft Turing, and pre-trained models like LUIS.
3. Facebook's PyTorch-based transformers, including RoBERTa and CTRL.
4. AWS' Amazon Lex, a cloud-based conversational AI service.
5. IBM Watson Assistant, a conversational AI platform that uses Watson's NLP capabilities.

These are some of the major players in the conversational AI and language model space, and competition is intense as the demand for chatbots and virtual assistants continues to grow. However, it's important to note that each of these models has its own strengths and weaknesses, and the best choice will depend on the specific use case and requirements of a particular project. ■

☐ Stop generating

| ..

[ChatGPT Jan 30 Version](#). Free Research Preview. Our goal is to make AI systems more natural and safe to interact with. Your feedback will help us improve.

ChatGPT in the Power Sector

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Assist customers with their inquiries, such as **billing questions, power outages**, and more. This can help reduce the workload on human customer service representatives and provide customers with a more convenient way to get their questions answered

Customer service

Can be used to develop virtual energy management assistants that can provide energy usage recommendations and energy-saving tips to customers, based on their specific energy usage patterns

Energy management

Can be used to build virtual maintenance and operations assistants that can assist field technicians and engineers with troubleshooting & maintenance tasks, by providing them with real-time access to technical information and procedures

Maintenance and operations

Can be used to provide information and support for RE initiatives to help customers understand the benefits and challenges of these technologies, and to assist with their implementation

Renewable energy

- These are just a few examples of how ChatGPT can be applied in the power sector.
- As a conversational AI model, ChatGPT can be adapted and customized to meet the specific requirements of a wide range of applications in the energy sector.

ChatGPT Limitations

Data Bias: ChatGPT is trained on a large corpus of text data, which can contain biases and stereotypes. This can result in the model generating biased responses or perpetuating harmful stereotypes

Lack of Contextual Understanding: ChatGPT generates responses based on patterns in the training data, and does not have a deep understanding of the context of the conversation. This can **lead to the model generating irrelevant or nonsensical responses**

Sensitivity to Inputs: ChatGPT is a machine learning model and is therefore sensitive to the inputs it receives. If the **input is misspelled or unclear, the model may generate an incorrect response**

Lack of Common Sense: ChatGPT does not have a sense of **common knowledge or general understanding of the world**. This can result in the model generating responses that are not accurate or that violate basic common sense principles

- These limitations highlight the importance of carefully evaluating and fine-tuning language models like ChatGPT before deploying them in real-world applications
- It is also crucial to continue to improve and advance the technology to overcome these limitations in the future

What's the Future?



Virtual Assistants

Helping users to accomplish tasks and find information



Customer Service

Can provide 24/7 customer service, answering questions, resolving issues, and providing support



Education

Can be used to create personalized and interactive educational experiences, helping students to learn at their own pace



Power Sector

Can be used to provide basic information, support, and even help to reduce the burden on Utilities



Improved accessibility

Can improve accessibility for people with disabilities, making it easier for them to access information and interact with technology

These are just a few examples of how ChatGPT and conversational AI are expected to shape the future. As the technology continues to evolve and improve, it will likely have an even greater impact on a wide range of industries and applications. AI has to be regulated to avoid bad inputs

GPT3 VS ChatGPT

- ChatGPT and GPT-3 are both language models developed by OpenAI, but they have some key differences

	ChatGPT	GPT3
Purpose	ChatGPT is a conversational AI model specifically designed to generate human-like responses in a conversational setting	GPT-3 is a more general-purpose language model that can perform a wide range of NLP tasks , including language generation, translation, summarization, and more
Training data	ChatGPT is trained on a corpus of text data that includes conversational data	while GPT-3 is trained on a much larger and more diverse corpus of text data , including books, articles, and web pages
Model size	ChatGPT is a smaller model based on the GPT-3 architecture	GPT-3 is one of the largest language models to date , with over 175 billion parameters
Capabilities	ChatGPT is specifically designed for generating conversational responses and is optimized for this task	As a result of its larger size and more diverse training data, GPT-3 has a wider range of capabilities and can perform a wider range of NLP tasks than ChatGPT
summary	ChatGPT is a specialized model designed for generating conversational responses	GPT-3 is a general-purpose language model that can perform a wide range of NLP tasks

The choice between the two models will depend on the specific requirements of a project, with ChatGPT being a good choice for building conversational AI applications, and GPT-3 being a good choice for a wider range of NLP tasks.

Some AI Tools in the Marketplace

India Smart Grid Forum

28 Feb – 04 March 2023 | New Delhi

1. TensorFlow: An open-source machine learning framework developed by Google, TensorFlow is used for building, training, and deploying machine learning models. <https://www.tensorflow.org/>
2. PyTorch: An open-source machine learning library based on the Torch library, PyTorch is used for building, training, and deploying machine learning models. <https://pytorch.org/>
3. Scikit-Learn: An open-source machine learning library for Python, scikit-learn is used for building, training, and evaluating machine learning models for a wide range of applications. <https://scikit-learn.org/stable/>
4. NLTK: An open-source library for natural language processing (NLP) in Python, NLTK is used for performing tasks such as text classification, tokenization, stemming, and more. <http://www.nltk.org/>
5. Keras: An open-source neural network library written in Python, Keras is used for building, training, and evaluating deep learning models. <https://keras.io/>
6. OpenCV: An open-source computer vision library, OpenCV is used for tasks such as image and video processing, object detection, and more. <https://opencv.org/>
7. Dialogflow: A platform for building conversational AI applications, Dialogflow is used for building chatbots and virtual assistants. <https://dialogflow.com/>
8. IBM Watson: An AI platform offered by IBM, Watson provides a range of tools and services for building and deploying AI applications, including natural language processing, computer vision, and more. <https://www.ibm.com/watson>
9. Microsoft Azure: A cloud platform offered by Microsoft, Azure provides a range of AI services, including machine learning, computer vision, speech recognition, and more. <https://azure.microsoft.com/en-us/services/ai/>
10. Amazon SageMaker: A cloud-based machine learning platform offered by Amazon Web Services (AWS), SageMaker is used for building, training, and deploying machine learning models. <https://aws.amazon.com/sagemaker/>
11. Google Cloud AI: A cloud-based AI platform offered by Google Cloud, Google Cloud AI provides a range of tools and services for building and deploying AI applications, including natural language processing, computer vision, and more. <https://cloud.google.com/ai>
12. H2O.ai: An open-source platform for building and deploying machine learning models, H2O.ai provides a range of tools and services for building and deploying machine learning models, including deep learning, gradient boosting, and more. <https://www.h2o.ai/>
13. Theano: An open-source numerical computation library for Python, Theano is used for building and training neural networks and other machine learning models. <https://github.com/Theano/Theano>
14. RapidMiner: A commercial platform for building and deploying machine learning models, RapidMiner provides a range of tools for data preparation, model building, and model deployment. <https://rapidminer.com/>



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Finta: Automate your entire fundraising workflow
-> <https://lnkd.in/eNztrtXu>

Cleanvoice: Automatically edit your podcast episodes
-> <https://cleanvoice.ai/>

Podcastle: Studio quality recording
-> <https://podcastle.ai/>

Flair: Design branded content in a flash
-> <https://flair.ai/>

Illustroke: Create killer vector images from text prompts
-> <https://illustroke.com/>

Beatoven: Create unique royalty-free music
-> <https://www.beatoven.ai/>

Patterned: Generate patterns for your product using AI
-> <https://www.patterned.ai/>

Stockimg: Generate the perfect stock photo you need
-> <https://stockimg.ai/>

Copy: AI-Generated copy, that actually increases conversion
-> <https://www.copy.ai/>

Browse: Extract data from websites easily
-> <https://www.browse.ai/>

AssemblyAI: Turns audio content into transcriptions
-> <https://lnkd.in/eCa5gxPB>

CopyMonkey: Create Amazon listings in seconds
-> <http://copymonkey.ai/>

Ocoya: Create and schedule social media content
-> <https://www.ocoya.com/>

Unbounce: Write high-performing cold emails
-> <https://unbounce.com/>

Vidyo: Make short-form videos from long-form content
-> <https://vidyo.ai/>

Maverick: Generate personalized videos
-> https://lnkd.in/dmrkz_ah

Quickchat: AI chatbots that automate customer service
-> <https://www.quickchat.ai/>

Puzzle: Build an AI-powered knowledge base
-> <https://www.puzzlelabs.ai/>

Soundraw: Stop searching for the song you need. Create it.
-> <https://soundraw.io/>

Cleanup: Remove any wanted object from your pictures
-> <https://cleanup.pictures/>

Resumeworded: Improve your resume and LinkedIn profile
-> <https://lnkd.in/d9Eurcn>

Lexica: Search a massive library of curated AI images
-> <https://lexica.art/>

theresanaiforthat: Comprehensive database of AIs
-> <https://lnkd.in/dKhqaaF3>

Synthesia: Create AI videos by simply typing in text.
-> <https://www.synthesia.io/>

Descript: New way to make video and podcasts
-> https://lnkd.in/d_Kdj35E

Otter: Capture and share insights from your meetings
-> <https://otter.ai/>

inkforall: AI content
-> <https://inkforall.com/>

Thundercontent: Generate Content with AI
-> <https://lnkd.in/djFxmZsZ>

Pragma: Centralizes knowledge for easy reference
-> <https://www.pragma.ai/>

Murf: Turns your text into a human-sounding voice
-> <https://murf.ai/>

StockAI: Massive collection of free, AI-generated stock photos
-> <https://www.stockai.com/>

Lex Page: An AI-enhanced word processor
-> <https://lex.page/>

Looka: Design your own beautiful brand
-> <https://looka.com/>

Krisp: Krisp's AI removes background voices from calls
-> <https://krisp.ai/>



Thank You

For discussions/suggestions/queries email:
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