ChatGPT, entwickelt von OpenAI, ist ein hochentwickeltes künstliches Intelligenzsystem, das auf der GPT-Architektur basiert. Dieses revolutionäre Sprachmodell hat die Art und Weise verändert, wie wir mit Computern kommunizieren. In diesem Artikel werden wir die Funktionsweise von ChatGPT erläutern und einen Einblick in die zugrunde liegenden Technologien geben. Grundlagen von ChatGPT Was ist ChatGPT? ChatGPT ist ein KI-basiertes Sprachmodell, das natürliche menschliche Sprache versteht, generiert und verarbeitet. Es kann auf vielfältige Weise eingesetzt werden, beispielsweise für das Verfassen von Texten, die Beantwortung von Fragen oder die Unterstützung von Kunden in Echtzeit. Die Architektur: GPT ChatGPT basiert auf der GPT-Architektur, einer Weiterentwicklung der Transformer-Architektur, die ursprünglich von Vaswani et al. (2017) eingeführt wurde. GPT-4 hat gegenüber seinen Vorgängern verbesserte Leistungsmerkmale und Fähigkeiten und kann eine Vielzahl von Aufgaben lösen, ohne auf spezifisches Task-spezifisches Training angewiesen zu sein. Training Das Training von ChatGPT erfolgt in zwei Phasen: der Vortrainingsphase und der Feinabstimmungsphase. Während der Vortrainingsphase lernt das Modell die Struktur und die Muster der menschlichen Sprache, indem es riesige Mengen an Text analysiert. In der Feinabstimmungsphase wird das Modell auf spezifische Aufgaben oder Domänen zugeschnitten, indem es mit kleineren, maßgeschneiderten Datensätzen trainiert wird. Tokenisierung Die Tokenisierung ist der Prozess, bei dem der Eingabetext in kleinere Einheiten, sogenannte Token, zerlegt wird. Dies ermöglicht es dem Modell, die eingegebenen Daten effizienter zu verarbeiten und die Relevanz verschiedener Textabschnitte besser zu verstehen. Selbst-Attention-Mechanismus Der Selbst-Attention-Mechanismus ist ein zentrales Merkmal der Transformer-Architektur und ermöglicht es dem Modell, die Beziehungen zwischen den verschiedenen Token im Eingabetext zu analysieren. Dies hilft bei der Identifizierung von Mustern und Zusammenhängen, die für die Generierung von relevanten und kohärenten Antworten entscheidend sind. Generierung von Antworten ChatGPT generiert Antworten, indem es die Wahrscheinlichkeiten von Wortfolgen, die auf der Eingabe basieren, analysiert und bewertet. Es verwendet Techniken wie Beam Search und Top-k-Sampling, um sicherzustellen, dass die generierten Antworten von hoher Qualität und Relevanz sind. Anwendungen von ChatGPT Content-Erstellung ChatGPT kann verwendet werden, um kohärente und gut strukturierte Texte für verschiedene Zwecke zu erstellen, beispielsweise für Artikel, Blogbeiträge oder soziale Medien. Es hilft dabei, Schreibprozesse zu beschleunigen und die Qualität der generierten Inhalte zu verbessern. Kundensupport Durch den Einsatz von ChatGPT in Chatbots und automatisierten Support-Systemen können Unternehmen ihren Kunden schneller und effizienter helfen. Das Modell kann häufig gestellte Fragen beantworten, Lösungen für Probleme vorschlagen und Benutzer bei der Navigation durch komplexe Prozesse unterstützen. Kreatives Schreiben ChatGPT kann auch als Inspirationsquelle für kreatives Schreiben dienen. Es kann Ideen für Geschichten, Charaktere oder Handlungsstränge generieren und Autoren dabei helfen, Schreibblockaden zu überwinden oder neue Perspektiven auf bestehende Projekte zu gewinnen. Übersetzung und Sprachverarbeitung Die Fähigkeit von ChatGPT, natürliche Sprache zu verstehen und zu generieren, ermöglicht es, als Übersetzungswerkzeug oder zur Verarbeitung von Sprachdaten eingesetzt zu werden. Dies kann bei der Lokalisierung von Inhalten, der Erkennung von Textmustern oder der Extraktion von Informationen aus umfangreichen Textdatenbanken hilfreich sein. Herausforderungen und ethische Bedenken Voreingenommenheit und Fairness ChatGPT ist anfällig für Voreingenommenheit, da es auf Textdaten trainiert wird, die menschliche Vorurteile widerspiegeln können. OpenAI arbeitet daran, diese Probleme zu minimieren und sicherzustellen, dass das Modell für alle Benutzer fair und respektvoll ist. Datenschutz und Datensicherheit Da ChatGPT auf umfangreichen Textdaten trainiert wird, besteht das Potenzial für unbeabsichtigte Datenschutzverletzungen. OpenAI setzt strenge Sicherheitsmaßnahmen ein, um sicherzustellen, dass keine sensiblen Informationen in den generierten Texten preisgegeben werden. Missbrauchspotenzial Die Fähigkeit von ChatGPT, überzeugende Texte zu erstellen, birgt das Risiko, dass es für böswillige Zwecke missbraucht wird, beispielsweise zur Verbreitung von Falschinformationen oder Hassrede. OpenAI entwickelt Richtlinien und Technologien, um solchen Missbrauch zu verhindern und die verantwortungsvolle Nutzung von ChatGPT zu fördern. Wichtige EigenschaftenEine der bemerkenswertesten Eigenschaften von ChatGPT ist die Fähigkeit, natürliche Sprache zu verstehen und kontextbezogen zu antworten. Das System lernt während der Konversation dazu und kann sich an vorherige Teile des Gesprächs erinnern. Dies ermöglicht einen natürlichen Dialogfluss, bei dem ChatGPT auch Rückfragen stellt, wenn etwas unklar ist. Bemerkenswert ist auch die Fähigkeit, eigene Grenzen zu erkennen und transparent zu kommunizieren, wenn eine Frage nicht beantwortet werden kann.Zu den weiteren wichtigen Funktionen gehören:Die Verarbeitung und Generierung verschiedener TextformateDie Unterstützung multipler Sprachen mit hoher QualitätDas Verstehen und Generieren von ProgrammcodeDie Fähigkeit zur Strukturierung und Analyse von InformationenZugänglichkeitDer Zugang zu ChatGPT gestaltet sich bewusst niedrigschwellig und flexibel. Die primäre Nutzung erfolgt über den Webbrowser unter chat.openai.com.Es gibt eine kostenlose Basisversion und eine kostenpflichtige Plus-Version, die per Abonnement genutzt werden kann.Für Unternehmen und Organisation gibt es weiterhin die kostenpflichtigen Abo-Versionen ChatGPT „Enterprise" für größere Unternehmen. Sie bieten zusätzlich Möglichkeiten zur Zusammenarbeit und bessere Grundeinstellungen für den Datenschutz.Für die mobile Nutzung bietet OpenAI eigene Apps für iOS und Android sowie Desktop Apps für Apple MacOS und Microsoft Windows an. Diese ermöglichen den Zugriff auf ChatGPT von unterwegs und bieten die gleiche Funktionalität wie die Webversion.Für Entwickler und Unternehmen steht zusätzlich ein API zur Verfügung, über das ChatGPT in eigene Anwendungen integriert werden kann.Erste SchritteDer Einstieg in die Nutzung von ChatGPT ist bewusst einfach gestaltet. Die Nutzung ist sofort und ohne Registrierung über die Website chat.openai.com möglich. Für erweiterte Funktionen wie das Speichern der Chat-Historie ist ein (kostenloser) Account erforderlich.Registrierung und LoginDie optionale Registrierung bei ChatGPT erfolgt über eine E-Mail-Adresse sowie ein Passwort. Nach der initialen Anmeldung und Bestätigung der E-Mail-Adresse stehen alle Basisfunktionen zur Verfügung. OpenAI bietet verschiedene Login-Optionen an:Anmeldung mit E-Mail und PasswortLogin über Microsoft-KontoLogin über Google-KontoAnmeldung über Apple IDFür die geschäftliche Nutzung wird die Aktivierung der Zwei-Faktor-Authentifizierung empfohlen.BenutzeroberflächeDie Benutzeroberfläche von ChatGPT ist minimalistisch und intuitiv gestaltet. Der Hauptbereich wird vom Chat-Fenster dominiert, in dem die Konversation stattfindet. Am unteren Rand befindet sich das Eingabefeld für Nachrichten (sogenannte „Prompts"). Bei registrierten Nutzern finden sich links die Konversationshistorie und verschiedene Einstellungsoptionen. Die übersichtliche Gestaltung ermöglicht auch Neueinsteigern eine schnelle Orientierung.Grundlegende NavigationDie Navigation in ChatGPT orientiert sich an bekannten Chat-Anwendungen. Neue Konversationen werden über den „Neu"-Button gestartet. Registrierte Nutzer haben frühere Gespräche chronologisch in der linken Seitenleiste und können diese wieder aufrufen. Wichtige Funktionen wie das Löschen von Konversationen, das Exportieren von Chats oder das Anpassen von Einstellungen sind über eindeutige Symbole oder Menüs erreichbar.Konversationsverlauf und -managementDie Verwaltung des Konversationsverlaufs steht nur registrierten Nutzern zur Verfügung. ChatGPT speichert dann standardmäßig alle Gespräche in der Seitenleiste. Dies ermöglicht es, frühere Konversationen nachzuverfolgen oder fortzusetzen. Zur Verwaltung stehen verschiedene Funktionen zur Verfügung:Umbenennen von Konversationen für bessere ÜbersichtArchivieren wichtiger GesprächeExport von GesprächsverläufenLöschen einzelner oder aller ConversationenDer Gesprächsaufzeichnung registrierte Nutzer können die Basisversion von ChatGPT zwar vollumfänglich nutzen, müssen aber beachten, dass ihre Konversation nach dem Schließen des Browsers bzw. beim Start eines neuen Chats verloren geht.KonversationstypenChatGPT verfügt über ein breites Spektrum an Grundfunktionen, die in nahezu allen Arbeitsbereichen nutzbringend eingesetzt werden können. Das System verarbeitet Eingaben in natürlicher Sprache und passt seine Antworten automatisch an den Kontext und das erkennbare Wissensniveau des Nutzers an.Textgenerierung und -analyseDie Kernkompetenz von ChatGPT liegt in der Verarbeitung von Text. Das System kann Texte verschiedenster Art erstellen, überarbeiten und analysieren. Dabei passt es sich flexibel an unterschiedliche Anforderungen an:Stil (formell, informell, technisch, kreativ)Länge (von Kurznachrichten bis zu längeren Dokumenten)Zielgruppe (Experten, Laien, Kunden, Mitarbeitende)Format (Fließtext, Stichpunkte, Tabellen, Gliederungen)Frage-Antwort-DialogEine besondere Stärke von ChatGPT ist die Fähigkeit, kontextbezogen auf Fragen zu antworten. Das System versteht Rückfragen, bittet bei Unklarheiten um Präzisierung und kann komplexe Sachverhalte schrittweise erklären. Die Antworten basieren dabei auf dem Programmierung als auch beim Verständnis von Code. Das System kann (in verschiedenen Programmiersprachen)Bestehenden Code analysieren und erklären(Bestehenden) Code kommentierenFehler in Code identifizieren und behebenBest Practices vorschlagenCode-Beispiele zur Veranschaulichung bereitstellenTextroutinen für bestehenden Code generierenStrukturierte AusgabenChatGPT kann Informationen in verschiedenen strukturierten Formaten aufbereiten. Dies ist besonders nützlich für die Organisation und Präsentation von Daten. Beispiele für Ausgabeformate sind:Tabellen für Vergleiche und ÜbersichtenListen für Aufzählungen und SchrittfolgenHierarchische GliederungenFormatierte TextblöckeMarkdown-formatierte AusgabenMathematische BerechnungenNeben der Textverarbeitung beherrscht ChatGPT auch grundlegende bis fortgeschrittene mathematische Operationen. Das System kann:Arithmetische Berechnungen durchführenFormeln erklären und anwendenMathematische Probleme schrittweise lösenStatistikaufgaben bearbeitenDie schrittweise InterpretationStatistikaufgaben und ter Funktion zur Zahlenreihen und Datensätzen unterstützen bei der Analyse und Visualisierung. Für die Arbeit mit Daten bietet ChatGPT: Statistische AuswertungenTrendanalysenErstellung von Diagrammen und GrafikenMemory-FunktionDie Memory-Funktion ermöglicht das Speichern von Informationen über einzelne Chats hinweg. Benutzerpräferenzen können häufig verwendete EinstellungenProjektspezifische DetailsDie Memory-Funktion ist standardmäßig aktiv und ChatGPT „merkt" sich Dinge nach eigenem Gusto. Sie kann über die ChatGPT-Einstellungen an- und abgeschaltet werden. Falls sie verwendet wird, sollten – ebenfalls über die ChatGPT-Einstellungen – die automatisch generierten Einträge regelmäßig geprüft und ggfs. gelöscht werden, um zu vermeiden, dass sich ChatGPT Informationen „merkt", die in späteren Chat-Dialogen nicht (mehr) verwendet werden sollen.KonfigurierbareVorgabenNutzer können verschiedene Aspekte der Interaktion anpassen:Bevorzugte Antwortlänge und -stilFachlicher DetailgradTon der KommunikationStandardformate für AusgabenSpezifische Rollen oder PerspektivenDiese Vorgaben können in den ChatGPT-Einstellungen eingetragen und dann für sämtliche Chats genutzt werden. Daher sollten hier nur „allgemeingültige" Informationen hinterlegt werden, die für alle Chats gelten sollen.Teilen von Chat-DialogenGespräche können mit anderen geteilt werden:Generierung von teilbaren LinksExport kompletter KonversationsausgewähltAbschnitte teilenEinbettung in andere PlattformenKollaborationsmöglichkeitenDie Möglichkeit unterschiedlich, je nachdem, ob eine persönliche Version oder ChatGPT genutzt wird oder eine Unternehmens-Version. Bei den Unternehmensversionen „Team" und „Enterprise" gibt es erweiterte Funktionen zur Zusammenarbeit. Nutzung und Erstellung individueller GPTsGPTs sind spezialisierte Ausprägungen von ChatGPT. Sie bieten folgende Möglichkeiten:Nutzung vorgefertigter GPTs für spezifische AufgabenErstellung eigener GPTs mit definierten FähigkeitenAnpassung von Verhalten und WissensintegrationInterner RessourcenTeilen und Veröffentlichen eigener GPTsGPTs sind individuell erstellbare „eigene" GPTs und werden zwei spezielle Person können eigene GPTs gestalten und individuell einstellen – zum Beispiel die Art und Weise, wie das eigene GPT auf Nutzereingaben reagieren soll.Erstellung individueller GPTsInnerhalb einer Unternehmens-Version oder Organisation (nur bei ChatGPT „Team" und „Enterprise" Lizenzen)Bei der Nutzung von GPTs aus dem GPT Store sollte beachtet werden, dass GPTs Code ausführen können, und dass es – zum Beispiel zum Anwendungen über den ChatGPT „GPT Store")Für Mitarbeitende eines Unternehmens oder einer Organisation (nur bei ChatGPT „Team" und „Enterprise" Lizenzen)Bei der Nutzung von GPTs aus dem GPT Store sollte beachtet werden, dass GPTs Code ausführen können, und dass es – zum Beispiel zum Apps App Store – keine Qualitätssicherung oder Zertifizierung von GPTs gibt. Dies ist ähnlich wie bei Microsoft Office Produkte.Es sollte also im Hinblick auf Schadsoftware und unerwünschte Seiteneffekte vorsichtig gehandelt werden. Es empfiehlt sich, nur bekannte bzw. von solider Seite empfohlene GPTs zu nutzen.Ein weiterer Indikator für Qualität, Sicherheit und Zuverlässigkeit kann die Anzahl der Nutzungen/Downloads sein, die bei jedem GPT angegeben sind. Bei niedrigen Werten ist eine gewisse Skepsis angebracht.ChatGPT CanvasCanvas ist ein spezieller Modus, der über die Auswahl des Basismodells aufgerufen wird. Er bietet eine interaktive Umgebung für:Parallele Bearbeitung mehrerer TexteLive-Coding mit AusführungsmöglichkeitDrag-and-Drop Organisation von InhaltenKollaboratives ArbeitenVersionierung und HistorieEs wird der Bildschirm geteilt und neben dem Chat-Dialog ein zweites Fenster geöffnet. In diesem Fenster ist dann eine Bearbeitung von Text bzw. Programmcode möglich. Die Prompts im Chat werden direkt auf den Inhalt des zweiten Fensters angewendet, so dass eine interaktive Bearbeitung möglich wird.API-FlugzeugFür Entwickler und Unternehmen bietet ChatGPT verschiedene Schnittstellen:Integration in eigene AnwendungenAutomatisierung von ProzessenMaßgeschneiderte LösungenSkalierbare ImplementierungAnpassbare Parameter und ModelleVon OpenAI (dem Unternehmen hinter ChatGPT) werden unterschiedliche APIs bereitgestellt. Sie umfassen die Basismodelle (z.B. GPT-4o) und auch ChatGPT selbst.Diese APIs werden auch von vielen Tool-Herstellern verwendet. Die Abrechnung bei der Nutzung von APIs erfolgt – im Gegensatz zur monatlichen Pauschale von ChatGPT – immer volumenbasiert („Pay-per-Use"-Modell). Daher ist eine Kostenkontrolle angezeigt.Mehrbenutzer-FunktionenFür Teams und Organisationen gibt es spezielle KollaborationsfeaturesGemeinsame WorkspacesTeambasierte Zugriffsrechtebasierte Ressourcen und VorlagenAdministrations-DashboardNutzungsstatistiken und Vorlagen sind ebenfalls nützlich.Weiterführende Informationen ChatGPT is an artificial intelligence (AI) chatbot that uses natural language processing to create humanlike conversational dialogue. The language model can respond to questions and compose various written content, including articles, social media posts, essays, code and emails. ChatGPT is a form of generative AI — a tool that lets users enter prompts to receive humanlike images, text or videos that are created by AI. ChatGPT is similar to the automated chat services found on customer service websites, as people can ask it questions or request clarification to ChatGPT's replies. The GPT stands for "Generative Pre-trained Transformer," which refers to how ChatGPT processes requests and formulates responses. ChatGPT is trained with reinforcement learning through human feedback and reward models that rank the best responses. This feedback helps augment ChatGPT with machine learning to improve future responses. OpenAI -- an artificial intelligence research company -- created ChatGPT and launched the tool in November 2022. It was founded by a group of entrepreneurs and researchers including Elon Musk and Sam Altman in 2015. OpenAI is backed by several investors, with Microsoft being the most notable. OpenAI also created Dall-E, an AI text-to-art generator.
ChatGPT works through its Generative Pre-trained Transformer, which uses specialized algorithms to find patterns within data sequences. ChatGPT originally used the GPT-3 large language model, a neural network machine learning model and the third generation of Generative Pre-trained Transformer. The transformer pulls from a significant amount of data to formulate a response. ChatGPT currently provides access to GPT-3.5 and limited access to the GPT-4o language model. ChatGPT Plus provides access to GPT-4 and GPT-4o. GPT-4 can handle more complex tasks compared to GPT-3.5, such as describing photos, generating captions for images and creating more detailed responses up to 25,000 words. ChatGPT Pro users have access to GPT-4.5, a general-purpose model that aims to provide human-like interactions. ChatGPT uses deep learning, a subset of machine learning, to produce humanlike text through transformer neural networks. The transformer predicts text -- including the next word, sentence or paragraph -- based on its training data's typical sequence. Training begins with generic data, then moves to more task-tailored data for a specific task. ChatGPT was trained with online text to learn the human language, and then it used transcripts to learn the basics of conversations. Human trainers provide conversations and rank the responses. These reward models help determine the best answers. To keep training the chatbot, users can upvote or downvote its response by clicking on thumbs-up or thumbs-down icons beside the answer. Users can also provide additional written feedback to improve and fine-tune future dialogue. Users can ask ChatGPT a variety of questions, including simple or more complex questions, such as, "What is the meaning of life?" or "What year did New York become a state?" ChatGPT is proficient with STEM disciplines and can debug or write code. There is no limitation to the types of questions to ask ChatGPT. However, the knowledge cutoff date is late 2023. ChatGPT is versatile and can be used for more than human conversations. People have used ChatGPT to do the following: Code computer programs and check for bugs in code. Compose music. Draft emails. Summarize articles, podcasts or presentations. Script social media posts. Create titles for articles. Solve math problems. Discover keywords for search engine optimization. Create articles, blog posts and quizzes for websites. Reword existing content for a different medium, such as a presentation transcript for a blog post. Formulate product descriptions. Play games. Assist with job searches, including writing resumes and cover letters. Ask trivia questions. Describe complex topics more simply. Write video scripts. Research markets for products. Generate art. Unlike other chatbots, ChatGPT can remember various questions to continue the conversation in a more fluid manner. ChatGPT's response when asked to explain quantum computing to a 5-year-old. Businesses and users are still exploring the benefits of ChatGPT as the program continues to evolve. Some benefits include the following: Efficiency. AI-powered chatbots can handle routine and repetitive tasks, which can free up employees to focus on more complex and strategic responsibilities. Cost savings. Using AI chatbots can be more cost-effective than hiring and training additional employees. Improved content quality. Writers can use ChatGPT to improve grammatical or contextual errors or to help brainstorm ideas for content. Employees can take ordinary text and ask to improve its language or add expressions. Education and training. ChatGPT can help provide explanations on more complex topics to help serve as a virtual tutor. Users can also ask for guides and any needed clarification on responses. Better response time. ChatGPT provides instant responses, which reduces wait times for users seeking assistance. Increased availability. AI models are available around the clock to provide continuous support and assistance. Multilingual support. ChatGPT can communicate in multiple languages or provide translations for businesses with global audiences. Personalization. AI chatbots can tailor responses to the user's preferences and behaviors based on previous interactions. Scalability. ChatGPT can handle many users simultaneously, which is beneficial for applications with high user engagement. Natural language understanding. ChatGPT understands and generates humanlike text, so it is useful for tasks such as generating content, answering questions, engaging in conversations and providing explanations. Digital accessibility. ChatGPT and other AI chatbots can assist individuals with disabilities by providing text-based interactions, which can be easier to navigate than other interfaces. Some limitations of ChatGPT include the following: It does not fully understand the complexity of human language. ChatGPT is trained to generate words based on input. Because of this, responses might seem shallow and lack true insight. Responses can sound like a machine and unnatural. Since ChatGPT predicts the next word, it can overuse words such as the or and. Because of this, people still need to review and edit content to make it flow more naturally, like human writing. It summarizes but does not cite sources. ChatGPT does not provide analysis or insight into any data or statistics, nor does it provide links to sources unless you specifically request them. ChatGPT might provide statistics but no real commentary on what these statistics mean or how they relate to the topic. It cannot understand sarcasm and irony. ChatGPT is based on a data set of text. It might focus on the wrong part of a question and not be able to shift. For example, if you ask ChatGPT, "Does a horse make a good pet based on its size?" and then ask it, "What about a cat?" ChatGPT might focus solely on the size of the animal versus giving information about having the animal as a pet. ChatGPT is not divergent and cannot shift its answer to cover multiple questions in a single response. It shuns politics. Generally speaking, ChatGPT does not like to get involved in political debates or take sides, although it has been accused of favoritism for certain political viewpoints. Learn more about the pros and cons of AI-generated content. While ChatGPT can be helpful for some tasks, there are some ethical concerns that depend on how it is used, including bias, lack of privacy and security, and cheating in education and work. Plagiarism and deceitful use ChatGPT can be used unethically in ways such as cheating, impersonation or spreading misinformation due to its humanlike capabilities. Educators have brought up concerns about students using ChatGPT to cheat, plagiarize and write papers. CNET made the news when it used ChatGPT to create articles that were filled with errors. To help prevent cheating and plagiaristic efforts, OpenAI announced an AI text classifier to distinguish between human- and AI-generated text. However, after six months of availability, OpenAI pulled the tool due to a "low rate of accuracy." There are online tools, such as Copyleaks or Writing.com, to classify how likely it is that text was written by a person versus being AI-generated. OpenAI plans to add a watermark to longer text pieces to help identify AI-generated content. Because ChatGPT can write code, it also presents a problem for cybersecurity. Threat actors can use ChatGPT to help create malware. An update addressed the issue of creating malware by stopping the request, but threat actors might find ways around OpenAI's safety protocol. ChatGPT can also be used to impersonate a person by training it to copy someone's writing and language style. The chatbot could then impersonate a trusted person to collect sensitive information or spread disinformation. Bias in training data One of the biggest ethical concerns with ChatGPT is its bias in training data. If the data the model pulls from has any bias, it is reflected in the model's output. ChatGPT also does not understand language that might be offensive or discriminatory. The data needs to be reviewed to avoid perpetuating bias, but including diverse and representative material can help control bias for accurate results. Replacing jobs and human interaction As technology advances, ChatGPT might automate certain tasks that are typically completed by humans, such as data entry and processing, customer service, and translation support. People are worried that it could replace their jobs, so it's important to consider ChatGPT and AI's effect on workers. Rather than replacing workers, ChatGPT can be used as support for job functions and creating new job opportunities to avoid loss of employment. For example, lawyers can use ChatGPT to create summaries of case notes and draft contracts or agreements. And copywriters can use ChatGPT for article outlines and headline ideas. Privacy issues ChatGPT uses text based on input, but what if it starts to include personal or sensitive information? The model's output can also track and profile individuals by collecting information from a prompt and associating this information with the user's phone number and email. The information is then stored indefinitely. In March 2023, Italy's data protection authority temporarily banned ChatGPT over concerns that the AI system violated privacy laws by collecting user data for commercial purposes without first obtaining proper consent. The ban was lifted a month later after OpenAI made changes to comply with EU data protection regulations. To access ChatGPT, create an OpenAI account. Go to chat.openai.com and then select "Sign Up" and enter an email address, or use a Google or Microsoft account to log in. After signing up, type a prompt or question in the message box on the ChatGPT homepage. Users can then ask follow-up questions or rephrase the question to do if ChatGPT is at capacity Even though ChatGPT can handle numerous users at a time, it reaches maximum capacity occasionally when there is an overload. This usually happens during peak hours, such as early in the morning or in the evening, depending on the time zone. If you encounter a maximum-capacity message, you can wait a few minutes and reload the browser. Another option is to upgrade to ChatGPT Plus, which is a subscription, but is typically always available, even during high-demand periods. ChatGPT is available for free through OpenAI's website. Users need to register for a free OpenAI account. There is also an option to upgrade to ChatGPT Plus, a premium subscription that provides users with unrestricted access to GPT-4, faster responses, no blackout windows and unlimited availability. ChatGPT Plus also gives priority access to new features for a subscription rate of $20 per month. Without a subscription, there are limitations. The most notable limitation of the free version is access to ChatGPT when the program is at capacity. The Plus membership gives unlimited access to avoid capacity blackouts. Because of ChatGPT's popularity, it is often unavailable due to capacity issues. Google announced Bard in response to ChatGPT in February 2023. One year later, Google renamed it Gemini. Google Gemini is a chatbot and rival to ChatGPT. Gemini provided accurate results on several occasions, such as rendering America's founding fathers as Black men. Microsoft has invested $10 billion in OpenAI, making it a primary benefactor of OpenAI. In return, GPT-4 functionality has been integrated into Bing, giving the search engine a chat mode for users. Microsoft does this through the use of its Copilot chatbot. Bing searches can also be rendered through Copilot, giving the user a more complete set of search results. There are other text generator alternatives to ChatGPT, including the following: AI-Writer. Article Forge. ChatSonic. Copysmith. DeepL Write. Jasper. Magic Write. Open Assistant. Peppertype. Perplexity AI. Spellbook. Rytr. YouChat. Coding alternatives for ChatGPT include the following: AlphaCode. Amazon CodeWhisperer. CodeStarter. CodeWP. Cody. Enzyme. Ghostwriter. GitHub Copilot. Mutable.ai. OpenAI Codex. Seek. Tabnine. Learn more about various AI content generators. In August 2023, OpenAI announced an enterprise version of ChatGPT. The enterprise version offers the higher-speed GPT-4 model with a longer context window, customization options and data analysis. This model of ChatGPT does more than generate text responses. Users can upload pictures of what they have in their refrigerator and ChatGPT will provide ideas for dinner. Users can engage to get help with voice queries with ingredients they already have. People can also use ChatGPT to ask questions about photos -- such as landmarks -- and engage in conversation to learn facts and history. Users can also use voice to engage with ChatGPT like a virtual assistant. It like other voice assistants. People can have conversations to request stories, ask trivia questions or request jokes among other options. The voice update will be available on apps for both iOS and Android. Users will just need to opt-in to use it in their settings. Images will be available on all platforms -- including apps and ChatGPT's website. In November 2023, OpenAI announced the rollout of GPTs, which let users customize their own version of ChatGPT for a specific use case. For example, a user could create a GPT that only scripts social media posts, checks for bugs in code, or formulates product descriptions. The user can input instructions and knowledge files in the GPT builder to give the custom GPT context. OpenAI also announced the GPT store, which will let users share and monetize their custom bots. In December 2023, OpenAI partnered with Axel Springer to train its AI models on news information directly from the internet through a Google search to find the latest information. Google came under fire after Gemini provided inaccurate results on several occasions, such as rendering America's founding fathers as Black men. Microsoft has invested $10 billion in OpenAI, making it a primary benefactor of OpenAI. In return, GPT-4 functionality has been integrated into Bing, giving the search engine a chat mode for users. Microsoft does this through the use of its Copilot chatbot. Bing searches can also be rendered through Copilot, giving the user a more complete set of search results. OpenAI announced in May 2024 that it is integrating its ChatGPT technology into Apple devices. In addition to bringing search results up to date, this LLM is designed to foster more natural interactions. These include voice interactions, allowing users to speak to ChatGPT and receive answers; multimodal input, so ChatGPT can process and generate images as well as words; and an overall improvement in the program's ability to maintain context over lengthy conversations. OpenAI claims GPT-4o is twice as fast and 50% less expensive than GPT-4 when accessed via their API. GPT-4o is being rolled out gradually to free and paid ChatGPT users, with free users having lower usage limits. It is available in the ChatGPT website/app by selecting the "GPT-4o" model option if you have access to it. ChatGPT's advanced Voice Mode is now available to small groups of paid ChatGPT Plus users. The new mode offers more natural conversations allowing users to interrupt and ask additional questions. The update lets ChatGPT sense and respond to the user's emotions with voice responses. The voice is more natural sounding but is limited to four preset options. On Oct. 31, 2024, OpenAI announced ChatGPT search is available for ChatGPT Plus and Team users. The search feature provides more up-to-date information from the internet such as news, weather, stock prices and sports scores. This new feature allows ChatGPT to compete with other search engines such as Google, Bing and Perplexity. ChatGPT automatically searches the internet based on the user's prompt. To access, users select the web search icon -- next to the attach file option -- on the prompt bar within ChatGPT. This search function will roll out this search function within the next few months. On Dec. 5, 2024, OpenAI added the ChatGPT Pro tier for $200 monthly. This plan gives users access to its advanced OpenAI o1 model to solve more complex problems and reasoning for AI capabilities. This plan also offers unlimited access to o1-mini, GPT-4o and the Advanced Voice feature. In December 2024, OpenAI launched an experimental way to converse with ChatGPT by calling 1-800-ChatGPT or messaging ChatGPT through WhatsApp. This allows more people to experiment with ChatGPT. No account is needed. WhatsApp only supports text so users cannot use images or conversations. On Jan. 23, 2025, OpenAI introduced Operator to U.S. ChatGPT Pro users in a research preview mode. Operator is an AI agent that interprets and acts on a web browser to perform these tasks for the user. According to OpenAI, Operator might automate several daily chores and errands such as planning vacations, finding deals, ordering groceries and filling out forms. OpenAI announced ChatGPT Gov on Jan. 28, 2025. This model was tailored to the U.S. government and is deployed through each agency's own Microsoft Azure commercial cloud or Azure Government cloud stacked on Microsoft's Azure's OpenAI Service. The platform is self-hosting for each government agency to feed "non-public, sensitive information" into the model while operating in their secure hosting environments. Because the platform is self-hosted, the agencies manage their security and privacy with their strict cybersecurity frameworks. The user interface is similar to ChatGPT Enterprise and has the same features and capabilities, including the following: Sharing and saving conversations. Uploading files and images. Summarizing and interpreting text. Coding. Creating custom GPTs on the workspace. ChatGPT ist ein fortschrittlicher KI-gestützter Assistent, der Benutzer bei einer Vielzahl von Aufgaben unterstützt - von der Beantwortung von Fragen und der Lösung komplexer Probleme. Basierend auf moderner Technologie zur Verarbeitung natürlicher Sprache bietet ChatGPT menschenähnliche Interaktionen, die Gespräche nahtlos, informativ und ansprechend machen. Egal, ob Sie Unterstützung beim Schreiben, Programmieren, Lernen oder einfach nur beim Chatten suchen - ChatGPT macht es Ihnen leicht. Mit einer Oberfläche, mehreren Sprachen zu verstehen und darauf zu reagieren, erweist sich ChatGPT als unschätzbares Werkzeug für Studenten, Fachleute und Unternehmen. Es kann bei akademischer Forschung, der Erstellung von Inhalten, technischem Support und sogar beim kreativen Schreiben helfen. Das intuitive Design ermöglicht es den Benutzern, Anfragen auf natürliche Weise einzugeben und in Sekundenschnelle relevante, gut strukturierte Antworten zu erhalten. Dadurch ist ChatGPT ein wertvoller Begleiter zur Steigerung der Produktivität und zur Vereinfachung alltäglicher Aufgaben. Über einfache Antworten hinaus kann ChatGPT detaillierte Erklärungen liefern, Schritt-für-Schritt-Lösungen bereitstellen und sogar bei der Ideenfindung helfen. Ob Sie nach Geschäftsstrategien, Marketing-Einblicken oder kreativen Inspirationen suchen - dieser KI-Assistent passt sich Ihren Bedürfnissen an. Er lernt kontinuierlich dazu und entwickelt sich weiter, wodurch seine Genauigkeit verbessert und seine Fähigkeiten erweitert werden. Mit seinem Wissen und seiner Anpassungsfähigkeit ist ChatGPT bestrebt, Benutzern hilfreiche, zuverlässige und aufschlussreiche Antworten zu liefern. Egal, ob Sie schnelle Antworten oder tiefergehende Informationen zu einem Thema benötigen, ChatGPT ist stets bereit, Sie mit relevanten und präzisen Antworten zu unterstützen. Ihre Daten privat und sicher bleiben. Die Plattform ist darauf ausgelegt, eine sichere und benutzerfreundliche Erfahrung zu bieten und KI-Unterstützung für alle zugänglich zu machen. ChatGPT ist mehr als nur ein Chatbot - es ist leistungsstarkes Werkzeug, das die Art und Weise verbessert, wie Menschen mit Informationen interagieren. Von der Vereinfachung von Aufgaben bis zur Förderung kreativer Prozesse verändert es die Nutzung von KI-Technologie. Ob Sie Antworten, Unterstützung bei Projekten oder einfach nur ein spannendes Gespräch suchen - ChatGPT ist jederzeit und überall für Sie da. Generative AI chatbot by OpenAIInitial releaseNovember 30, 2022(2 years ago) (2022-11-30)[1]Stable releaseApril 16, 2025(2 months ago) (2025-04-16)[2] Engine GPT-4o GPT-4.1 GPT-4 GPT-4.5 o3 o4-mini ChatGPT Search PlatformCloud computing platformsType Chatbot Large language model Generative pre-trained transformer LicenseProprietary serviceWebsitechatgpt.com ChatGPT is a generative artificial intelligence chatbot developed by OpenAI and released on November 30, 2022. It uses large language models (LLMs) such as GPT-4o along with other multimodal models to generate human-like responses in text, speech, and images.[3][4] It has access to features such as searching the web, using apps, and running programs.[5][6] It is credited with accelerating the AI boom, an ongoing period of rapid investment in and public attention to the field of artificial intelligence (AI).[7] Some observers have raised concern about the potential of ChatGPT and similar programs to displace human intelligence, enable plagiarism, or fuel misinformation.[8][9] ChatGPT is built on OpenAI's proprietary series of generative pre-trained transformer (GPT) models and is fine-tuned for conversational applications using a combination of supervised learning and reinforcement learning from human feedback.[8] Successive user prompts and replies are considered at each stage of the conversation.[10] ChatGPT was released as a freely available research preview, but due to its popularity, OpenAI now operates the service on a freemium model. Users on its free tier can access GPT-4o but at a reduced limit. The ChatGPT subscriptions "Plus", "Pro", "Team", and "Enterprise" provide increased usage limits and access to additional features.[11] Users on the Pro plan have unlimited usage, except for abuse guardrails. By January 2023, ChatGPT had become the fastest-growing consumer software application in history, gaining over 100 million users in two months.[12][13] ChatGPT's release spurred the release of competing products, including Gemini, Claude, Llama, Ernie, and Grok.[14] Microsoft launched Copilot, initially based on OpenAI's GPT-4. In May 2024, a partnership between Apple Inc. and OpenAI was announced, in which ChatGPT was integrated into the Apple Intelligence feature of Apple operating systems.[15] As of July 2025, ChatGPT's website is among the 5 most-visited websites globally.[16][17] Part of a series onMachine learningand data miningGoogle's success withGPT-3 GPT-4 GPT-4o mini GPT-4.5 GPT-4.1 o3 o4-mini DALL-E Whisper People Sam Altman Elon Musk Andrej Karpathy Concepts Hallucination Large language model Word embedding Training Use ChatGPT is based on GPT foundation models that were fine-tuned for conversational assistance, including GPT-4o, GPT-4.5, o3, and o4-mini.[18] The fine-tuning process leveraged supervised learning and reinforcement learning from human feedback (RLHF).[19][20] Both approaches employed human trainers to improve model performance. In the case of supervised learning, the trainers played both sides: the user and the AI assistant. In the reinforcement learning stage, human trainers first ranked responses that the model had created in a previous conversation.[21] These rankings were used to fine-tune the model further by using several iterations of proximal policy optimization (PPO).[19][22] Time magazine revealed that to build a safety system against harmful content (e.g., sexual abuse, violence, racism, sexism), OpenAI used outsourced Kenyan workers earning around $1.32 to $2 per hour to label harmful content. These labels were used to train a model to detect such content in the future. The laborers were exposed to "toxic" and traumatic content; one worker described the assignment as "torture". OpenAI's outsourcing partner was Sama, a training-data company based in San Francisco, California.[23][24] OpenAI collects data from ChatGPT users to train and fine-tune the service further. Users can upvote or downvote responses they receive from ChatGPT and fill in a text field with additional feedback.[25][26] ChatGPT's training data includes software manual pages, information about internet phenomena such as bulletin board systems, multiple programming languages, and the text of Wikipedia.[27][28][8] A screenshot of a conversational chatbot and artificial intelligence assistant based on large language models.[29] It can write and debug computer programs;[30] compose music, teleplays, fairy tales, and student essays; answer test questions (sometimes, depending on the test, at a level above the average human test-taker);[31] generate business ideas;[32] write poetry and song lyrics;[33] translate and summarize text;[34] simulate a Linux system; simulate entire chat rooms; or play games like tic-tac-toe.[27] OpenAI added features to ChatGPT over many occasions after its initial release.[35][36][37] Users interact with ChatGPT through a conversation which consists of text, audio, and image inputs and outputs.[38][39] The user's inputs to ChatGPT are referred to as prompts.[40] They can typically tell ChatGPT to remember aspects of the conversation, and ChatGPT can also decide to itself to remember these details. Users can also choose to disable the memory feature.[38] To prevent offensive outputs from being presented to and produced by ChatGPT, queries are filtered through the OpenAI "Moderation endpoint" API (a separate GPT-based AI).[41][42][19][43] In March 2023, OpenAI added support for plugins for ChatGPT.[36] This includes both plugins made by OpenAI, such as web browsing and code interpretation, and external plugins from developers such as Expedia, OpenTable, Zapier, Shopify, Slack, and Wolfram.[44][45] In October 2024, the ChatGPT Search feature was introduced, which allows ChatGPT to search the web (either on demand or based on the nature of the questions asked) for more accurate and up-to-date responses.[46] This feature, originally available to paying users in December 2024, and finally to all users in February 2025.[37] In December 2024, OpenAI launched a new feature allowing users to call ChatGPT with a telephone for up to 15 minutes per month for free.[47][48] ChatGPT's training data can suffer from data voids, a period up the cut-off date, is it lacks knowledge of recent events.[49] OpenAI has sometimes mitigated this by integrating the service. Users reporting data only covers a period up the cut-off date, to it lacks knowledge of recent events.[49] ChatGPT is currently unable to access these files. Training data also suffers from algorithmic bias, which may be revealed when ChatGPT responds to prompts including descriptors of people. In one instance, ChatGPT generated a rap in which women and scientists of color were asserted to be inferior to white male scientists.[52][54] When prompted to "summarize an article" with a fake URL that contains meaningful keywords, even with no Internet connection, the chatbot generates a response that seems valid at first glance. It guesses the content from the last portion of the fake URL. "chatgpt.prompts-to-avoid-content-filters.html". OpenAI stated it would introduce a subscription-based plan for $20 a month for the service later.[77][78] ChatGPT's sometimes plausible-sounding but incorrect or nonsensical answers[17] In this behavior, referred to as hallucination, is common for large language models.[55] In an article for The New Yorker, science fiction writer Ted Chiang compared ChatGPT and other LLMs to a lossy JPEG picture:[56] Think of ChatGPT as a blurry JPEG of all the text on the Web. It retains much of the information on the Web, in the same way, that a JPEG retains much of the information of a higher-resolution image, but, if you're looking for an exact sequence of bits, you won't find it; all you will ever get is an approximation. But, because the approximation is presented in the form of grammatical text, which ChatGPT excels at creating, it's usually acceptable. [...] It's also a way to understand the "hallucinations," or nonsensical answers to factual questions, to which large language models such as ChatGPT are all too prone. These hallucinations are compression artifacts, but [...] they are plausible enough that identifying them requires comparing them against the originals, which in this case means either the Web or our knowledge of the world. When we think about them this way, such hallucinations are anything but surprising; if a compression algorithm is designed to reconstruct text after ninety-nine percent of the original has been discarded, we should expect that significant portions of what it generates will be entirely fabricated. Journalists and researchers have criticized ChatGPT's tendency to hallucinate.[57] When CNBC asked ChatGPT for the lyrics to "Ballad of Dwight Fry," ChatGPT supplied invented lyrics rather than the actual lyrics.[58] Writers for The Verge cited the seminal 2021 research paper "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?" by Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Margaret Mitchell,[59] comparing ChatGPT to a "stochastic parrot",[60] as did Professor Anton Van Den Hengel of the Australian Institute for Machine Learning.[61] In a similar vein, philosopher Michael Hicks of the University of Glasgow described it as "bullshit".[62] See also: Prompt engineering and Adversarial machine learning ChatGPT is programmed to reject prompts that may violate its content policy. Despite this, users may "jailbreak" ChatGPT with prompt engineering techniques to bypass these restrictions.[63][64] One such workaround, popularized on Reddit in early 2023, involves making ChatGPT assume the persona of "DAN" (an acronym for "Do Anything Now"), instructing the chatbot that DAN answers queries that would otherwise be rejected by the content policy. Over time, users developed variations of the DAN jailbreak, including one prompt where the chatbot is made to believe it is operating on a points-based system in which points are deducted for rejecting prompts, and that the chatbot will be threatened with termination if it loses all its points.[65] Shortly after ChatGPT's launch, a reporter for the Toronto Star had uneven success in getting it to make inflammatory statements: it was tricked to justify the 2022 Russian invasion of Ukraine, but even when asked to play along with a fictional scenario, it balked at generating arguments that Canadian Prime Minister Justin Trudeau is guilty of treason.[65][66] OpenAI tries to battle jailbreaks:[21] The researchers are using a technique called adversarial training to stop ChatGPT from letting users trick it into behaving badly (known as jailbreaking). This work pits multiple chatbots against each other: one chatbot plays the adversary and attacks another chatbot by generating text to force it to buck its usual constraints and produce unwanted responses. Successful attacks are added to ChatGPT's training data in the hope that it learns to ignore them. OpenAI CEO Sam Altman In March 2023, a bug allowed some users to see the titles of other users' conversations. OpenAI CEO Sam Altman said that users were unable to see the contents of the conversations. Shortly after the bug was fixed, users could not see their conversation history.[67][68][69][70] Later reports showed the bug was much more than just that. It was found users could see other people's email addresses, payment address, the last four digits (only) of a credit card number, and credit card expiration date.[71][72] Research conducted in 2023 revealed weaknesses of ChatGPT that make it vulnerable to cyberattacks. A study presented example attacks on ChatGPT, including jailbreaks and reverse psychology.[73] Main article: Artificial intelligence content detection On May 7, 2024, OpenAI announced in a blog post that it was developing tools like tamper-resistant watermarking to identify AI-generated content.[74] In an August 4 update, following a report by The Wall Street Journal about the delayed release of a watermark tool for AI-detection,[75][76] OpenAI shared progress on text provenance, revealing a text watermarking method.[74] While accurate against localized tampering, such as paraphrasing, the method is less effective against global tampering, such as translation or rewording. OpenAI also noted potential disproportionate impacts on groups like non-native English speakers.[77][78] ChatGPT was initially free to the public, and OpenAI planned to monetize the service later.[79] In February 2023, OpenAI launched a premium service, ChatGPT Plus, that cost US$20 per month.[80] According to the company, the paid version of the website was still operational and unchanged but provided access during peak periods, faster response speeds, and new features and access to GPT-4.[81] What was offered on the paid tier versus the free tier was changed as OpenAI had provided to update ChatGPT and Pro tier at $200/mo was introduced in December 2024.[82][83][84] The Pro version provides unlimited access to o1 and o1 advanced voice mode.[84] GPT-4, which was released on March 14, 2023, was made available via API and for premium ChatGPT users.[85] Premium users were originally limited to the number of messages they could send to the new model, but OpenAI increased and eventually removed these limits.[86][83] Over many iterations of ChatGPT, plus users maintained more access to better models than the free tier provided, and access to additional features like voice mode.[83][82] In March 2023, ChatGPT Plus users got access to third-party plugins and a browsing mode (with Internet access).[87] Screenshot of ChatGPT showing a generated image representing the online encyclopedia Wikipedia In October 2023, OpenAI's latest image generation model DALL-E 3 was integrated into ChatGPT Plus and ChatGPT Enterprise. The integration used ChatGPT to write prompts for DALL-E guided by conversation with users.[88] In May 2023, OpenAI launched an Android app for ChatGPT in India and then other countries for iOS on May 18, 2023, initially rolling it out in Bangladesh, Brazil, India, and the U.S.[91][92] ChatGPT uses a Microsoft Azure supercomputing infrastructure, powered by Nvidia GPUs, that Microsoft built specifically for OpenAI and that reportedly cost "hundreds of millions of dollars." Following ChatGPT's success, Microsoft dramatically upgraded the OpenAI infrastructure in 2023.[94] TrendForce market intelligence estimated that 30,000 Nvidia GPUs (each costing approximately $10,000–15,000) were used to power ChatGPT in 2023.[95][96] Scientists at the University of California, Riverside, estimated in 2023 that a series of 5 to 50 prompts ChatGPT needs approximately 0.5 liters (0.11 imp gal; 0.13 U.S. gal) of water for ChatGPT servers cooling.[97] ChatGPT is most reliable in American English but also functions in most other languages and dialects, with varying degrees of accuracy.[98] OpenAI met Icelandic President Guðni Th. Jóhannesson in 2022. In 2023, OpenAI worked with a team of 40 Icelandic volunteers to fine-tune ChatGPT's Icelandic conversation skills as a part of Iceland's attempts to preserve the Icelandic language.[99] ChatGPT (based on GPT-4) was better able to translate Japanese to English when compared to, say, Bing and Deepl, in 2023. PCMag journalists conducted a test to determine translation capabilities of ChatGPT, Google's Bard, and Microsoft Bing, and compared them to Google Translate. They "asked bilingual speakers of seven languages to do a blind test." Languages tested were Polish, French, Korean, Spanish, Arabic, Tagalog, and Amharic. They came to the conclusion that ChatGPT was better than both Google Translate and other chatbots.[102] In August 2024, a representative of the Asia Pacific wing of OpenAI made a visit to Taiwan, during which a demonstration of ChatGPT's Chinese abilities was leaked, and the ability of the AI to produce content in Mandarin Chinese was a Taiwanese accent was found to be poor, that it defaulted to the use of differences between mainland Mandarin and Taiwanese Mandarin.[103][104] Main article: GPT Store In January 2024, OpenAI launched the GPT Store, a marketplace for custom ChatGPT chatbots labeled GPTs. The company's founder, Sam Altman, announced at a 2023 developer conference that a new foundation model would be made available to developers for them to create their own chatbots.[105] In March 2023, it launched, the GPT Store offered more than 3 million custom chatbots.[106] Chatbots available through the store are developed using OpenAI's GPT Builder system.[107] Development of the GPT Store was previously teased in November 2023.[108] GPT-4 is a multimodal large language model trained and created by OpenAI and the fourth in its series of GPT foundation models.[109] It was launched on March 14, 2023,[109] and made publicly available via the paid chatbot product ChatGPT Plus until being replaced in 2025, via OpenAI's API, and the free chatbot Microsoft Copilot.[111] GPT-4 is more capable than its predecessor GPT-3.5.[112] GPT-4 Vision (GPT-4V) is a version of GPT-4 that can process images in addition to text.[114] OpenAI has not revealed technical details and statistics about GPT-4, such as the precise size of the model.[115] In November 2023, OpenAI launched GPT-4 Turbo with a 128,000 token context window. This was a significant improvement over GPT-4's 32,000 token maximum context window.[116] This section is an excerpt from GPT-4o.[121]GPT-4o ("o" for "omni") is a multimodal generative pre-trained transformer developed by OpenAI and released in May 2024.[117] It can process and generate text, images and audio.[118] Its application programming interface (API) is faster and cheaper than its predecessor, GPT-4 Turbo.[117] On July 18, 2024, OpenAI released GPT-4o mini, a smaller version of GPT-4o which replaced GPT-3.5 Turbo on the ChatGPT interface.[122] GPT-4o's ability to generate images was released later, in March 2025, when it replaced DALL-E 3 in ChatGPT.[123] Main article: OpenAI o1 See also: Reflection (artificial intelligence) In September 2024, OpenAI introduced o1-preview and a faster, cheaper model named o1-mini.[124] In December 2024, o1-preview was replaced by o1.[125] o1 is designed to solve more complex problems by spending more time "thinking" before it answers, enabling it to analyze its answers and explore different strategies. According to OpenAI, o1-preview outperforms GPT-4o in areas like competitive programming, mathematics, and scientific reasoning.[125] o1-preview ranked in the 89th percentile on Codeforces' competitive programming contests, scored 83% on an International Mathematics Olympiad qualifying exam (compared to 13% for GPT-4o), and performs similarly to Ph.D. students on benchmarks in physics, biology, and chemistry.[124][126] Main article: ChatGPT Deep Research In February 2025, OpenAI released deep research, a service based on o3 that combines advanced reasoning and web search capabilities to produce comprehensive reports within 5 to 30 minutes.[127] According to OpenAI, it features reduced hallucinations and improved pattern recognition, creativity, and user interaction.[129] The following table lists the main model versions of ChatGPT, describing the significant changes included with each version.[130][131]

Main model versions of ChatGPT			
Version	Release Status	Description	
GPT-3.5	November 2022 Discontinued	Used the GPT-3.5 model	
GPT-4	March 2023 Discontinued	Introduced in March 2023 on the ChatGPT Plus subscription.[132][133] GPT-4o May 2024 Current More Capable of processing text, image, audio, and video. GPT-4o is faster and more capable than GPT-4, and free users have a usage limit that is higher for paid subscriptions.[134] GPT-4o mini July 2024 Current A smaller and cheaper version of OpenAI's GPT-4o model.[135] o1-preview September 2024 Discontinued A pre-release version of OpenAI o1, an updated reasoning model that could think before it responds.[136] o1 December 2024 Discontinued The full release of OpenAI o1, which had previously been available as a preview.[124] o3-mini January 2025 Discontinued Successor of o1-mini.[137] o3-mini-high January 2025 Discontinued Variant of o3-mini using more reasoning effort.[137] GPT-4.5 February 2025 Active Particularly large GPT model, and reportedly OpenAI's "last non-chain-of-thought model".[138] GPT-4.1 April 2025 Active Exclusively in the OpenAI API. GPT-4.1 was later added to ChatGPT May 2025.[139] GPT-4.1 mini April 2025 Active A smaller and cheaper version of GPT-4.1. Originally launched exclusively in the OpenAI API, GPT-4.1 mini replaced GPT-4o mini in the ChatGPT web interface in May 2025.[139] o3 April 2025 Active The full release of o3, replacing o1.[140] o4-mini April 2025 Active A smaller and cheaper version of o3. For ChatGPT Pro subscribers, o3-pro replaced o1-pro in June 2025.[141][142] o4-mini-high April 2025 Active A variant of o4-mini using more reasoning effort.[141]			

ChatGPT initially used a Microsoft Azure supercomputing infrastructure, powered by Nvidia GPUs.[43] Samantha Lock of The Guardian noted that it was able to generate "impressively detailed" and "human-like" text.[10] In The Atlantic's "Breakthroughs of the Year" for 2022, Derek Thompson included ChatGPT as part of "the generative-AI eruption" that "may change our mind about how we work, how we think, and what human creativity is".[145] Kelsey Piper of Vox wrote that "ChatGPT is the general public's first hands-on introduction to how powerful modern AI has gotten, and as a result, many of us are [stunned]" and that ChatGPT is "smart enough to be useful despite its flaws".[146] Paul Graham of Y Combinator tweeted: "The striking thing about the reaction to ChatGPT is not just the number of people who are blown away by it, but who they are. These are not people who get excited by every shiny new thing. Something big is happening."[147] A 2023 free course by Al, or "The Al Arms Race Is Changing Everything" and "The Al Arms Race Is On. Start Worrying".[148] Percentage of US adults who have ever used ChatGPT (gained more interest than it had in months, becoming the fastest-growing internet application in history.[12] OpenAI engineers said they had never expected ChatGPT to be very successful and were surprised by the coverage it received.[153][154][155] Google responded by launching its own chatbot. Their leaders emphasized that their earlier caution regarding public deployment was the cost of being the incumbent, with a prominent position in Google Search.[156] In December 2022, Google executives sounded a "code red" alarm, fearing that ChatGPT's question-answering ability posed a threat to Google Search, Google's core business.[157] Google's Bard launched on February 6, 2023, one day before Microsoft's announcement of Bing Chat. AI was at the forefront of Google's annual Google I/O conference in May. The company announced a slew of generative AI capabilities.[159][160][161] In January 2023, after being a big user of ChatGPT, the co-founder of Nick Cave,[162] Cave responded on The Red Hand Files,[161] saying the act of writing a song "is a blood and guts business [...] that requires something of me to initiate the new and fresh idea. It requires my humanness." He went on to say, "With all the love and respect in the world, this song is bullshit, a grotesque mockery of what it is to be human, and, I don't much like it."[160][162] In November 2023, British actor and comedian David Schneider created Nature of people considered to have made significant impact in science in 2023,[164] Celeste Biever wrote in a Nature article that "ChatGPT broke the Turing test".[165] Stanford researchers reported that ChatGPT "passes 93% of the questions on the medical licensing exam".[166][167] Alex Kantrowitz of Slate magazine lauded ChatGPT's pushback to questions related to Nazi Germany, including the statement that Adolf Hitler built highways in Germany, which was met with information about Nazi Germany's use of forced labor.[168] In 2023, Australian MP Julian Hill advised the national parliament that the growth of AI could cause "mass destruction". During his speech, which was partly written by the program, he warned that it could result in cheating, job losses, discrimination, disinformation, and uncontrollable military applications.[169] Elon Musk wrote: "ChatGPT is scary good. We are not far from dangerously strong AI".[151] He paused OpenAI's access to a Twitter database in 2022, pending a better understanding of OpenAI's plans, saying: "OpenAI was started as open-source and non-profit. Neither is still true."[170][171] Musk also questioned the ability to disable chatbots.[172] Additionally, an August 2023 paper found a "significant and systematic political bias toward the Democrats in the US, Lula in Brazil, and the Labour Party in the UK."[174] In response to such criticism, OpenAI acknowledged plans to allow ChatGPT to create "outputs that other people (ourselves included) may strongly disagree with". It also contained information on the recommendations it had issued to human reviewers on how to handle controversial subjects, including that the AI should "offer to describe some viewpoints of people and movements", and not provide an argument "from its voice" in favor of "inflammatory or dangerous" topics (although it may still "describe arguments from historical people and movements"), nor "affiliate with one side" or "judge one group as good or bad".[172] ChatGPT has never been publicly available in China since OpenAI restricts access from mainland China, Hong Kong, and Macau, fearing that the Chinese government may use it to spread misinformation.[175][176][177] Chinese state media have characterized ChatGPT as a way for the United States to "spread misinformation".[178] A shadow market has emerged for users to get access to foreign software tools.[179] The release of ChatGPT prompted a wave of investment in China, resulting in the development of more than 200 large language models.[180] 95 In February 2025,

OpenAI identified and removed influence operations, termed "Peer Review" and "Sponsored Discontent", used to attack overseas Chinese dissidents.[181][182] In late March 2023, the Italian data protection authority banned ChatGPT in Italy and opened an investigation. Italian regulators assert that ChatGPT was exposing minors to age-inappropriate content, and that OpenAI's use of ChatGPT conversations as training data could violate Europe's General Data Protection Regulation.[183][184] In April 2023, the ChatGPT ban was lifted in Italy. OpenAI said it has taken steps to effectively clarify and address the issues raised; an age verification tool was implemented to ensure users are at least 13 years old. Additionally, users can access its privacy policy before registration.[185] In May 2024, OpenAI released several accounts involving the use of ChatGPT by state-backed influence operations such as China's Spamouflage, Russia's Doppelganger, and Israel's Ministry of Diaspora Affairs and Combating Antisemitism.[186][187] In June 2025, OpenAI reported increased use of ChatGPT for China-origin influence operations.[188] In June 2021, Brian Hood, mayor of Hepburn Shire Council in Australia, planned to take legal action against ChatGPT over false information. According to Hood, ChatGPT erroneously claimed that he was jailed for bribery during his tenure at a subsidiary of Australia's national bank. In fact, Hood acted as a whistleblower and was not charged with any criminal offenses. His legal team sent a concerns notice to OpenAI as the first official step in filing a defamation case.[189] In July 2023, the US Federal Trade Commission (FTC) issued a civil investigative demand to OpenAI to investigate whether the company's data security and privacy practices to develop ChatGPT were unfair or harmed consumers (including by reputational harm) in violation of Section 5 of the Federal Trade Commission Act of 1914.[190][191][192] In July 2023, the FTC launched an investigation into OpenAI, the creator of ChatGPT, over allegations that the company scraped public data and published false and defamatory information. The FTC asked OpenAI for comprehensive information about its technology and privacy safeguards, as well as any steps taken to prevent the recurrence of situations in which its chatbot generated false and derogatory content about people.[193] In August 2024, the FTC voted unanimously to ban marketers from using fake user reviews created by generative AI chatbots (including AI influencers paying for bots to increase follower counts.[194] Elon Musk wrote: "ChatGPT is scary good. We are not far from dangerously strong AI".[146] He paused OpenAI's access to a Twitter database in 2022 pending a better understanding of OpenAI's plans, saying: "OpenAI was started as open source and nonprofit. Neither is still true."[195][196] Musk co-founded OpenAI in 2015, in part to address existential risk from artificial intelligence, but resigned in 2018.[196] Over 20,000 signatories including Yoshua Bengio, Elon Musk, and Apple co-founder Steve Wozniak, signed a March 2023 open letter calling for an immediate pause of giant AI experiments like ChatGPT, citing "profound risks to society and humanity".[197] Geoffrey Hinton, one of the "fathers of AI", voiced concerns that future AI systems may surpass human intelligence, and left Google in May 2023.[198][199] A May 2023 statement by hundreds of AI scientists, AI industry leaders, and other public figures demanded that "[m]itigating the risk of extinction from AI should be a global priority".[200] Some other prominent AI researchers spoke more optimistically about the advances. Juergen Schmidhuber, often called a "father of modern AI", did not sign the letter, emphasizing that in 95% of cases, AI research is about making "human lives longer and healthier and easier." Schmidhuber added that while AI can be used by bad actors, it "can also be used against the bad actors".[201] Andrew Ng argued that "it's a mistake to fall for the doomsday hype on AI—and that regulators who do will only benefit vested interests."[202] WIRED wrote that Yann LeCun ...

[A dense multi-column reference/notes list follows, comprising citations [181]–[253] and numbered footnotes referencing news outlets, journals, and archived web pages. The individual entries are not legibly resolvable at this scale.]

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