

Info Update: new release of GPT4 (Generative Pre-trained Transformer 4) Artificial Intelligence
By the Center for Teaching and Learning at AUA (March 17, 2023)

Summary: The new GPT4 AI model is more powerful and accurate and can now see and understand visual input. It is continuing to be integrated in more applications such as Microsoft products (Office Suite/Microsoft 365, Grammarly, and more). Meanwhile Google is also working to integrate its own AI into all of its tools (Google Workspace: Docs, Sheets, Slides, etc.). AI Literacy is becoming increasingly important for everyone.

GPT4 AVAILABILITY:

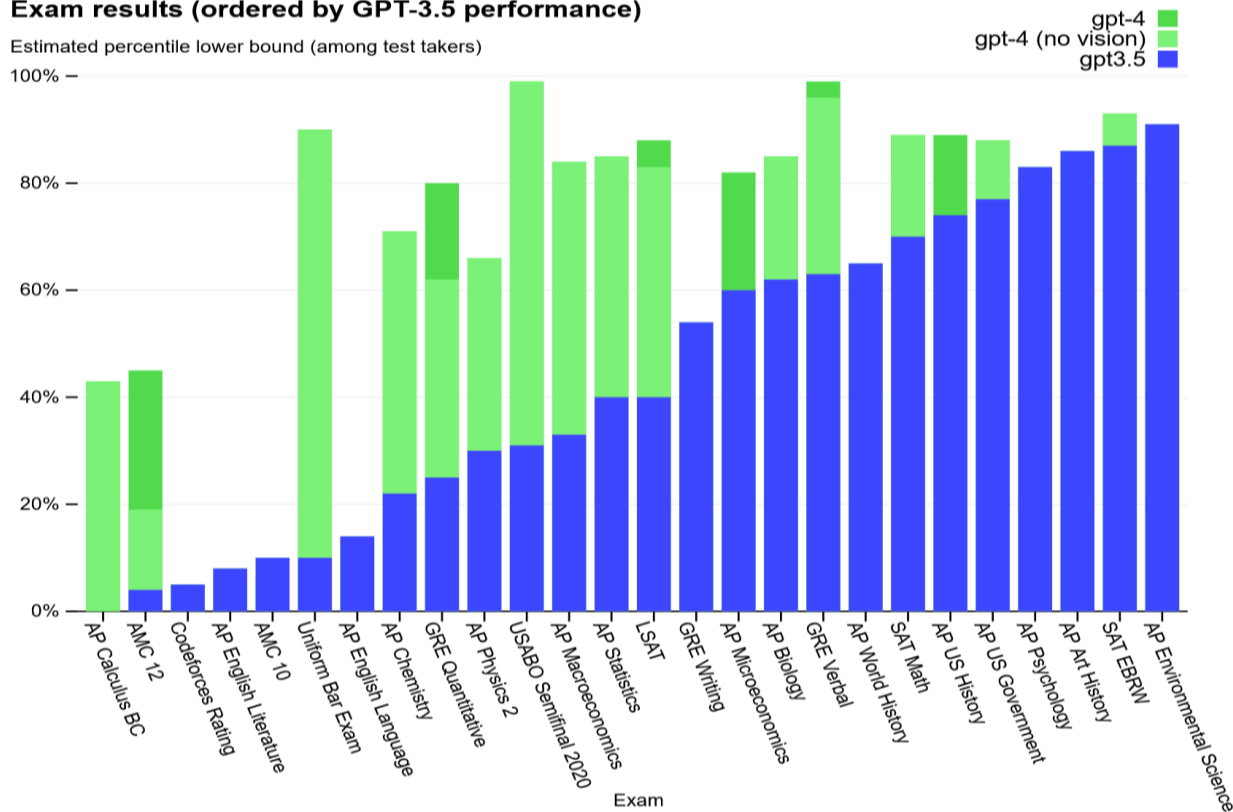
- It was revealed that Bing Chat has already been using a modified version of GPT4.
- GPT4 can be accessed through ChatGPT Plus (a paid version of regular ChatGPT), through Bing Chat, or via an API for developers. It will most likely be available on regular ChatGPT in a few months.
- Several other apps/companies are paying to use GPT4 at this time (Duolingo, BeMyEyes, Khan Academy)

KEY FEATURES:

It is more powerful and capable (smarter): GPT4 "exhibits human-level performance on various professional and academic benchmarks" (OpenAI, 2023b, p. 1). Additionally, GPT4 has increased "factuality, steerability, and refusing to go outside of guardrails" (OpenAI, 2023, para. 2). It is less likely to be tricked to produce inappropriate results.

Exam results (ordered by GPT-3.5 performance)

Estimated percentile lower bound (among test takers)



Increased Text Entry: GPT-4 can now process up to 25,000 words of text from the user (previous limit was between 500 and 1000 words). Full GPT4 limit is 50 pages of content but that is not available yet. – This is important because in this way you can feed it new and specific information from which to ask questions.

Visual Multimodality:

“GPT-4 accepts prompts consisting of both images and text, which parallel to the text-only setting—lets the user specify any vision or language task” (OpenAI, 2023b, p. 8). This AI can see images (photos, diagrams, drawings, video, etc.) and interprets and understands what it is seeing. It can summarize what it sees and answer specific questions about the visual, even making interpretations while being able to explain its thinking process.

In the following example it is able to see and understand the visual presented (a funny meme) and go through and explain why it is humorous:

GPT4 can also view and do the same thing by understanding videos, but this feature isn't available through ChatGPT Plus or Bing Chat yet.

LIMITATIONS:

New Information: ChatGPT Plus (with GPT4) is still limited to information up to 2021). Bing Chat however, can access the Internet.

Hallucinations: Although GPT4 is now 40% more accurate than GPT3 (current regular ChatGPT) it can still suffer from hallucinations where it gives incorrect “made up” facts presented confidently. GPT4 is accurate over 80% of the time according to OpenAI (2023b).

SUMMARY:

With the increasing use and integration of AI into all aspects of work, entertainment, and social engagement, it has become even more important for everyone in academia to develop AI Literacy skills to be better able develop these skills in students.

AI Literacy: Awareness (it is all around us: Microsoft Office, Google/Gmail, Grammarly, etc.), Capability: know how to use AI as a tool, which AI to use, Knowledge that anyone can use it (instructors, students, all), and Critical Thinking: all AI results should be evaluated for accuracy, logic, and to avoid bias along with ethical considerations (when/if to use it).

Reference:

OpenAI. (2023). *GPT-4*. OpenAI. <https://openai.com/research/gpt-4>

OpenAI. (2023b). GPT-4 Technical Report. *arXivLabs*. <https://arxiv.org/pdf/2303.08774.pdf>

GPT-4 visual input example, Solving École Polytechnique's Physics Exam:

User Answer question I.1.a. Think step-by-step.

I. Principe de la détection de rayonnement avec un bolomètre

Comme illustré sur la figure 1 un bolomètre est constitué d'un absorbeur qui reçoit le rayonnement que l'on désire détecter. Sa température T , supposée uniforme, est mesurée à l'aide d'un thermomètre incorporé, constitué d'un matériau conducteur dont la résistance $R(T)$ varie avec la température T ; cette variation est caractérisée par le coefficient $\alpha = \frac{1}{R} \frac{dR}{dT}$. L'ensemble possède la capacité thermique C_A .

Un barreau, conducteur thermique, homogène, de longueur L , de section S et de conductivité thermique λ et sans échanges thermiques latéraux, relie le bolomètre à un thermostat de température T_b fixe.

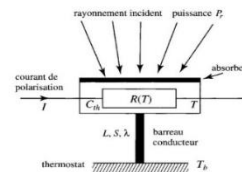


Figure 1 - Schéma d'un bolomètre

I.1. Dans cette première partie, on étudie le comportement du bolomètre en régime stationnaire, à la température de fonctionnement $T = T_0$.

I.1.a) Expliquez la température $T(x)$ en tout point du barreau conducteur repéré par son abscisse x ; on prendra $T(0) = T_0$ et $T(L) = T_b$.

GPT-4 To answer question I.1.a, we need to express the temperature $T(x)$ in every point of the conductive bar, which is characterized by the abscissa x . We are given that $T(0) = T_0$ and $T(L) = T_b$.

For a stationary regime, the heat equation for the one-dimensional heat conduction in the bar is:

$$\frac{d^2 T}{dx^2} = 0$$

GPT-4 visual input example, Chicken Nugget Map:

User Can you explain this meme?

Sometimes I just look at pictures of the earth from space and I marvel at how beautiful it all is.



GPT-4 This meme is a joke that combines two unrelated things: pictures of the earth from space and chicken nuggets. The text of the meme suggests that the image below is a beautiful picture of the earth from space. However, the image is actually of chicken nuggets arranged to vaguely resemble a map of the world. The humor in this meme comes from the unexpected juxtaposition of the text and the image. The text sets up an expectation of a majestic image of the earth, but the image is actually something mundane and silly.