

Global Innovation



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In this new series, 'AI - tried & tested by the Global Innovation team', the fund managers focus on the key industries and products where AI is democratising technologies and capabilities, opening up new markets and growth opportunities for certain companies. In this article, fund manager Storm Uru tests OpenAI's generative AI model, ChatGPT, to develop his own GPT co-pilot.

The rise of AI co-pilots: harnessing your personal assistant for innovation

Artificial Intelligence (AI), a once niche domain, has risen spectacularly to spearhead innovation. It is more than a passing trend – AI will have a large impact in many sectors, ushering in an era of accomplishing 'more with less', while also catalysing new market developments and growth.

The crux of this paradigm shift is the widespread accessibility of AI tools. Like us, you may have used and experimented with the likes of OpenAI's ChatGPT, but the recent introduction of GPT (Generative Pre-trained Transformers) co-pilots marks a step-change in the usability of this toolset, making it much easier to apply AI in elusive domains from legal analytics to economic projections.

Co-pilot customisation tools allow users to easily make their own domain or subject-specific GPTs trained on bespoke datasets, catering to their own unique requirements. To explore this landmark in AI application further, we opted to develop our own GPT co-pilot using publicly available products and data.

Tailoring your AI co-pilot: a primer on customising GPT models

Step 1: Selecting a Large Language Model (LLM): we opted to use OpenAI's ChatGPT 4, a leader in critical performance metrics, over alternatives like Anthropic's Claude or Meta's Llama.

LLM Leaderboard from "Chatbot Arena"

Model	Arena Elo rating	MT-bench (score)	MMLU	License
GPT-4-Turbo	1210	9.32		Proprietary
GPT-4	1159	8.99	86.4	Proprietary
Claude-1	1146	7.9	77	Proprietary
Claude-2	1125	8.06	78.5	Proprietary
Claude-instant-1	1106	7.85	73.4	Proprietary
GPT-3.5-turbo	1103	7.94	70	Proprietary
WizardLM-70b-v1.0	1093	7.71	63.7	Llama 2 Community
Vicuna-33B	1090	7.12	59.2	Non-commercial
OpenChat-3.5	1070	7.81	64.3	Apache-2.0
Llama-2-70b-chat	1065	6.86	63	Llama 2 Community
WizardLM-13b-v1.2	1047	7.2	52.7	Llama 2 Community
Zephyr-7b-beta	1042	7.34	61.4	MIT
MPT-30B-chat	1031	6.39	50.4	CC-BY-NC-SA-4.0


Source: www.huggingface.co/spaces/lmsys/chatbot-arena-leaderboard, November 2023

Step 2: Identify the co-pilot's purpose: We thought it would be interesting to build a co-pilot to help us prepare for our upcoming visit to the pharmaceutical company *Moderna* in Boston. We fine-tuned ChatGPT 4 with expertise in *Moderna*'s domain, uploading extensive *Moderna*-related materials, from annual reports to trial outcomes.

Step 3: Initiating the fun phase: The user-friendly interface on OpenAI's platform enabled us to create a "Moderna Expert" in mere minutes. The model ingested over a thousand pages of *Moderna* knowledge before reaching its capacity limit.

Create Configure

GPT Builder




The profile picture has been updated to reflect your specialization in analyzing Moderna's strategies and developments. If there's anything else you need, feel free to ask!

You
I will upload the 2022 annual report to develop your knowledge on the company

GPT Builder
Great! Once you upload the 2022 annual report, I'll use it to further enhance my understanding and analysis of Moderna. Please proceed with the upload when you're ready.

You

 AR 2022.pdf
PDF











GPT Builder
Updating GPT...

↓

Step 4: Model optimisation: The next challenge was enhancing the model's responses by refining the set and prioritisation of uploaded documents. Despite us using only the consumer-level subscription to Open AI (a limitation on the amount of data resources one can upload compared to enterprise-level), after a little experimentation we were able to settle on a few key base documents which could deliver high quality, useful outputs from our model.

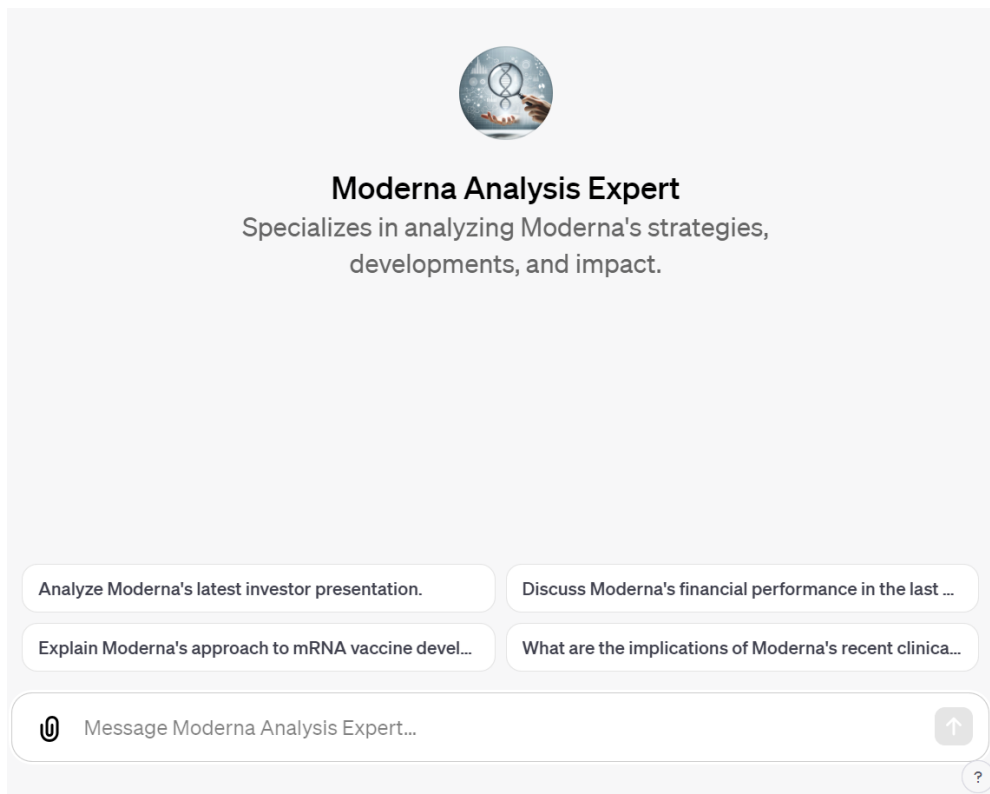
Knowledge

Conversations with your GPT may include file contents. Files can be downloaded when code interpreter is enabled.

 AR 2022.pdf PDF	 VD 2023 presentation.pdf PDF
 ID 2023 presentation.pdf PDF	 R&D 2023 presentation.pdf PDF
 vaccines-day-2023-transc... PDF	 moderna-digital-investor-... PDF
 2023-R-D-Day-Transcript... PDF	 AR 2018.pdf PDF
 Science Day 2022 transcri... PDF	 Science Day 2022 transcri... PDF

Upload files

The final iteration represents a significant advancement in access to knowledge. In less than two hours, a new subject matter co-pilot was crafted and deployed. Feel free to get in touch with us if you'd like access to our "Moderna Analysis Expert".



Takeaways

We were able to quickly develop an AI-driven co-pilot domain expert, which exemplifies the transformative potential of AI. Such speed and ease is crucial for adoption into workflows, though for optimal utility, access to increased computational and storage capabilities is imperative and companies across the economy will have to upgrade their IT equipment in the coming years. Despite the cost, it is hard to dispute the potential of AI in revolutionising sectors such as accounting, legal and consulting, potentially reducing service costs dramatically and making the total cost of ownership very attractive.

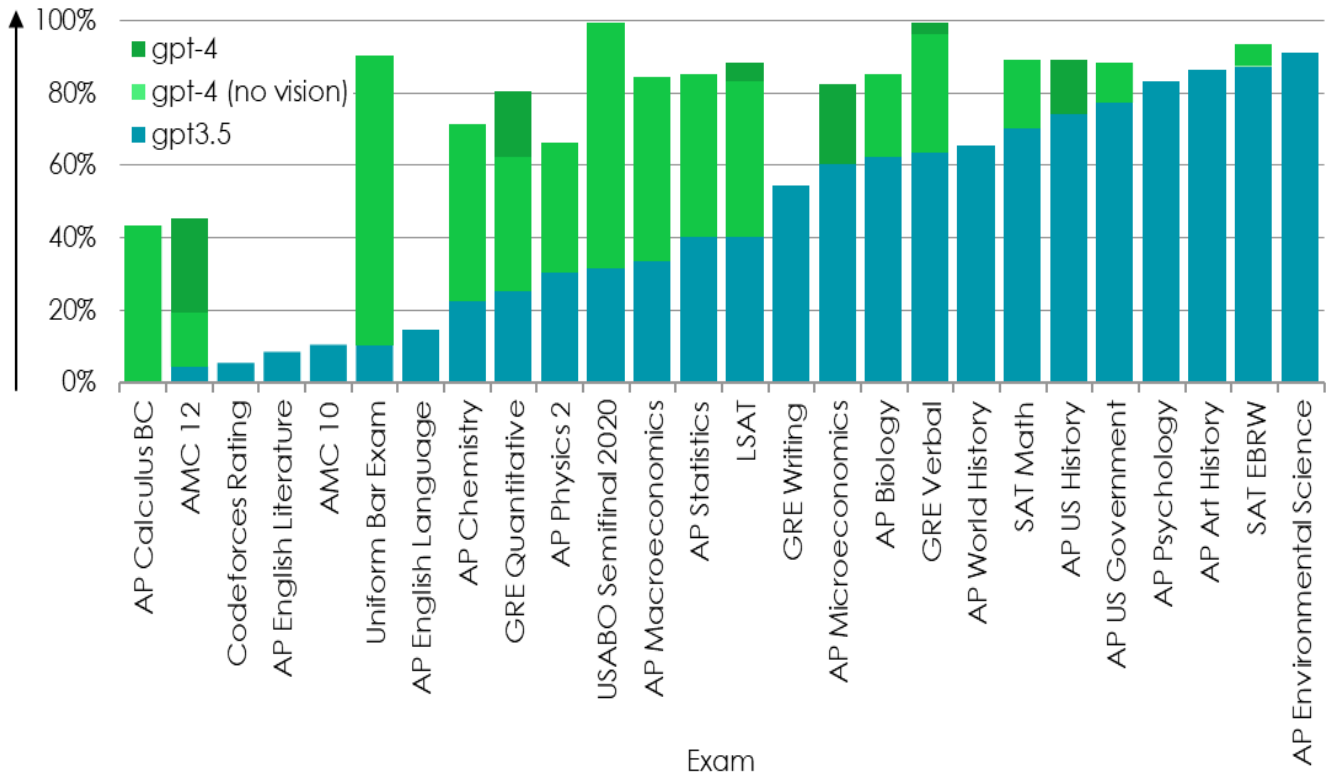
We need not build every co-pilot ourselves. For those preferring ready-made solutions and for highly common workflows, Microsoft's recently launched co-pilot suite (from software developer co-pilots to the hotly anticipated Office 365 co-pilot) is proving groundbreaking. The impact of these tools is already visible, with software developers reporting over 50 percent productivity gains and office professionals experiencing significant improvements in document handling efficiency. This ability to streamline complex tasks and promote a more inclusive, efficient workplace marks a revolutionary phase in our interaction with technology.

The brilliance of co-pilots is also highlighted in their ability to navigate the challenge of AI's tendency to "hallucinate" (a response generated by an AI which contains false or misleading information presented as fact). By meticulously training a GPT model on a specialised dataset, it is transformed into a domain expert, substantially mitigating the risk of erroneous data generation. That said, the performance enhancements achieved by OpenAI over the past 18 months highlight the speed in which this underlying technology is progressing, and means the risk of hallucination from these models is on the decline.

We can expect a lot more “general capability” across all areas of knowledge

Exam results (ordered by GPT-3.5 performance)

Estimated percentile lower bound (among test takers)



The integration of AI co-pilots in professional contexts is pivotal for enhancing productivity, precision, and unlocking innovation. The rapid evolution of AI heralds a future of extraordinary prospects. Embracing AI co-pilots puts individuals and organisations at the vanguard of this technological revolution, where better work through AI is a reality. As AI continues to progress, the integration of AI co-pilots in our professional and personal spheres becomes increasingly imminent, signalling a new era of human-AI collaboration.

For a comprehensive list of common financial words and terms, see our glossary at:
<https://www.liontrust.co.uk/benefits-of-investing/guide-financial-words-terms>

Key Risks

Past performance does not predict future returns. You may get back less than you originally invested. We recommend any fund is held long term (minimum period of 5 years). We recommend that you hold funds as part of a diversified portfolio of investments.

The Funds managed by the Global Innovation Team:

May hold overseas investments that may carry a higher currency risk. They are valued by reference to their local currency which may move up or down when compared to the currency of a Fund.

May have a concentrated portfolio, i.e. hold a limited number of investments. If one of these investments falls in value this can have a greater impact on a Fund's value than if it held a larger number of investments.

May encounter liquidity constraints from time to time. The spread between the price you buy and sell shares will reflect the less liquid nature of the underlying holdings.

Outside of normal conditions, may hold higher levels of cash which may be deposited with several credit counterparties (e.g. international banks). A credit risk arises should one or more of these counterparties be unable to return the deposited cash.

May be exposed to Counterparty Risk: any derivative contract, including FX hedging, may be at risk if the counterparty fails.

Do not guarantee a level of income.

The issue of units/shares in Liontrust Funds may be subject to an initial charge, which will have an impact on the realisable value of the investment, particularly in the short term. Investments should always be considered as long term.

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