# What is ChatGPT and why is AI suddenly a big deal?

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The latter part of 2022 and the early part of 2023 have seen many developments around 'generative AI'. The big story recently concerns the ChatGPT system. Conceptually, there is a prompt, and then the system can come up with text to match the prompt. ChatGPT has 'gone viral' in that many people have delighted in experimenting with different prompts to see what comes up. It's also the case that other systems have also recently been developed where the output may be a picture or a video. Broadly, these systems are taking a prompt and then using their training data in order to predict something that makes sense against the prompt as an output. The world hasn't seen these capabilities until now, so there are many speculations as to what it means in terms of intelligence or what types of business models will make sense to build against it.

**More than just a craze: the real-world applications of AI**

A tool like ChatGPT is training on large amounts of data to make predictions. People use it now as a novelty—it can predict the next likely word in a string of text within the context of a prompt. It can, however, be trained to predict other things, and these predictions, if they are accurate, could be valuable. There are tools already in existence that help software developers with coding, predicting the likely 'next line of code' for them to write. It will be interesting to see how Microsoft, a major investor in OpenAI, the company behind ChatGPT, looks to integrate the technology into something like Microsoft Office 365, which would mean nearly instant exposure to billions of users. It's really only when you expose billions of people to a given piece of technology that you really start to see all the various potential use cases.

During 2022, DeepMind unveiled new results from its AlphaFold system, which is designed to predict the shape of proteins. The system had come up with outputs specifying the predicted shape of more than 200 million proteins, and a significant percentage of these predictions were viewed as being as accurate as experimental results. Predicting the shape in which a given protein will fold, by itself, means nothing, but it becomes exciting when you start to consider that frequently the shape of the protein encodes the function of the protein, and the function could relate to many distinct therapeutic outputs that could then be used to fight diseases and other health problems.

**Who stands to gain?**

It is difficult to predict which industry or company will benefit the most from AI applications because it's possible that any company or industry that uses data could benefit. It is natural to think of the large technology companies—Amazon, Apple, Meta, Alphabet, Microsoft to name a few—and you can see how

AI is being used to directly enhance the experience of their customers. Amazon and Microsoft, in particular, offer AI services through their cloud computing platforms.

However, it's also true that pharmaceutical companies could benefit in drug discovery, insurance companies could benefit from better predictions - the list is endless. We find it exciting to think about how different developments can build on each other. Take fusion power as an example. We have already seen that different machine learning systems may unlock novel ways to manage the reactions and control the system. If we can combine machine learning with certain quantum computing capabilities, maybe the calculations can broaden in scope and advance in speed in ways to allow further developments beyond what is possible today. AI depends on data, and quantum computing may allow certain types of calculations to occur in parallel, taking on more data and having flexibility to instantly adjust. One thing we remind people of is that, 20 years ago, many of us didn't have regular internet access—certainly not high speed. Can we really predict where we'll be 20 years from now?

**AI against the macroeconomic backdrop**

If we are looking at the world in March 2023, the biggest near-term catalyst is most likely the macroeconomic backdrop as viewed through 1) announcements from the US Federal Reserve (Fed) 2) data on the US labour market 3) data on the path of inflation and 4) anything related to whether or not there is a recession. Many of these announcements have directions that are either 'more positive' or 'more negative' for the companies that represent the AI landscape. For example, a Fed that is less likely to be raising interest rates further is better for AI stocks than a Fed that believes that many more rate hikes are necessary to fight inflation.

2022 was a tough year for equities, especially technology stocks. Within artificial intelligence, the companies that were newer and that did not yet have positive earnings in established businesses saw their valuations decline. Part of this is natural, in that higher interest rates and expected positive earnings far in the future combine into an entity with an overall lower valuation. Additionally, we consider many specific semiconductor companies to be heavily exposed to artificial intelligence. Many of these companies have seen share prices drop due to declining demand for smartphones and personal computers, which means the demand for chips has been lower in light of increasing supplies and capital spending projects.

**What next for AI?**

Artificial intelligence is a megatrend that has a chance to impact every sector and nearly every other megatrend. Currently, there is a viral excitement around 'generative AI.' ChatGPT is the key example of this concept. Even if articles abound on the expected valuation for OpenAI, the company behind ChatGPT, it is not yet clear how generative AI will create revenues and profits in the near term. The giant cloud computing platforms, like Microsoft Azure and Amazon Web Services, allow many users to take advantage of AI and machine learning and may be best positioned to drive revenue from the theme.

Either way, artificial intelligence is a growing landscape and recent developments have once again brought AI conversations to the fore. Whilst a software like ChatGPT may, at first glance, be dismissed as a 'novelty'

it is clear that applying the power of AI to different industries (from manufacturing to healthcare) could have a genuinely transformative effect on the world we live in.

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