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## LARGE LANGUAGE MODEL

## Definition

A **large language model (LLM)** is a deep learning algorithm that can perform a variety of natural language processing (NLP) tasks. Large language models use transformer models and are trained using massive datasets hence, large. This enables them to recognize, translate, predict, or generate text or other content.

Large language models are also referred to as neural networks (NNs), which are computing systems inspired by the human brain. These neural networks work using a network of nodes that are layered, much like neurons.

In addition to teaching human languages to artificial intelligence (AI) applications, large language models can also be trained to perform a variety of tasks like understanding protein structures, writing software code, and more. Like the human brain, large language models must be pre-trained and then fine-tuned so



that they can solve text classification, question answering, document summarization, and text generation problems. Their problem-solving capabilities can be applied to fields like healthcare, finance, and entertainment where large language models serve a variety of NLP applications, such as translation, chatbots, AI assistants, and so on.

Large language models also have large numbers of parameters, which are akin to memories the model collects as it learns from training. Think of these parameters as the model's knowledge bank.

## Transformer model

A transformer model is the most common architecture of a large language model. It consists of an encoder and a decoder. A transformer model processes data by tokenizing the input, then simultaneously conducting mathematical equations to discover relationships between tokens. This enables the computer to see the patterns a human would see where it given the same query.

Transformer models work with self-attention mechanisms, which enables the model to learn more quickly than traditional models like long short-term memory models. Self-attention is what enables the transformer model to consider different parts of the sequence, or the entire context of a sentence, to generate predictions.

## Key components of large language models:

Large language models are composed of multiple neural network layers. Recurrent layers, feedforward layers, embedding layers, and attention layers work in tandem to process the input text and generate output content.



**ABHISHEK GOEL**  
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**The embedding layer** creates embeddings from the input text. This part of the large language model captures the semantic and syntactic meaning of the input, so the model can understand context.

**The feedforward layer (FFN)** of a large language model is made of up multiple fully connected layers that transform the input embeddings. In so doing, these layers enable the model to glean higher-level abstractions — that is, to understand the user's intent with the text input.

**The recurrent layer** interprets the words in the input text in sequence. It captures the relationship between words in a sentence.

**The attention mechanism** enables a language model to focus on single parts of the input text that is relevant to the task at hand. This layer allows the model to generate the most accurate outputs.

## There are three main kinds of large language models:

**Generic or raw language models** predict the next word based on the language in the training data. These language models perform information retrieval tasks.

**Instruction-tuned language models** are trained to predict responses to the instructions given in the input. This allows them to perform sentiment analysis, or to generate text or code.

**Dialog-tuned language models** are trained to have a dialog by predicting the next response. Think of chatbots or conversational AI.



## Working of Language Models

A large language model is based on a transformer model and works by receiving an input, encoding it, and then decoding it to produce an output prediction. But before a large language model can receive text input and generate an output prediction, it requires training, so that it can fulfill general functions, and fine-tuning, which enables it to perform specific tasks.

**Training:** Large language models are pre-trained using large textual datasets from sites like Wikipedia, GitHub, or others. These datasets consist of trillions of words, and their quality will affect the language model's performance. At this stage, the large language model engages in unsupervised learning, meaning it processes the datasets fed to it without specific instructions. During this process, the LLM's AI algorithm can learn the meaning of words, and of the relationships between words. It also learns to distinguish words based on context. For example, it would learn to understand whether "right" means "correct," or the opposite of "left."

**Fine-tuning:** In order for a large language model to perform a specific task, such as translation, it must be fine-tuned to that particular activity. Fine-tuning optimizes the performance of specific tasks.

### Large language models use cases

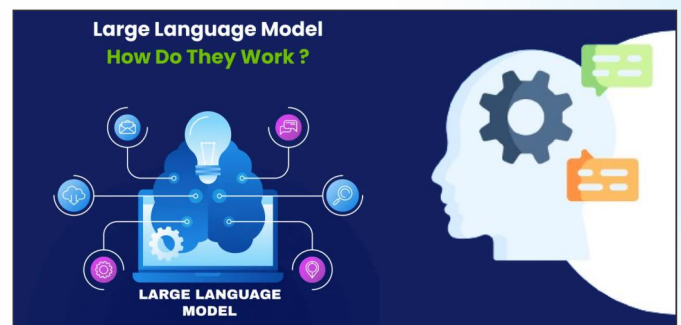
Large language models can be used for several purposes:

- **Information retrieval:** Think of Bing or Google. Whenever you use their search feature, you are relying on a large language model to produce information in response to a query. It's able to retrieve information, then summarize and communicate the answer in a conversational style.
- **Sentiment analysis:** As applications of natural language processing, large language models enable companies to analyse the sentiment of textual data.
- **Text generation:** Large language models are behind generative AI, like ChatGPT, and can generate text based on inputs. They can produce an example of text when prompted. For example: "Write me a poem about palm trees in the style of Emily Dickinson."
- **Code generation:** Like text generation, code generation is an application of generative AI. LLMs understand patterns, which enables them to generate code.
- **Chatbots and conversational AI:** Large language models enable customer service chatbots or conversational AI to engage with customers, interpret the meaning of their queries or responses, and offer responses in turn.

In addition to these use cases, large language models can complete sentences, answer questions, and summarize text.

With such a wide variety of applications, large language applications can be found in a multitude of fields:

- **Tech:** Large language models are used anywhere from enabling search engines to respond to queries, to assisting developers with writing code.
- **Healthcare and Science:** Large language models have the ability to understand proteins, molecules, DNA, and RNA. This position allows LLMs to assist in the development of vaccines, finding cures for illnesses, and improving preventative care medicines. LLMs are also used as medical chatbots to perform patient intakes or basic diagnoses.
- **Customer Service:** LLMs are used across industries for customer service purposes such as chatbots or conversational AI.
- **Marketing:** Marketing teams can use LLMs to perform sentiment analysis to quickly generate campaign ideas or text as pitching examples, and much more.
- **Legal:** From searching through massive textual datasets to generating legalese, large language models can assist lawyers, paralegals, and legal staff.
- **Banking:** LLMs can support credit card companies in detecting fraud.



## Benefits of Large Language Models

With a broad range of applications, large language models are exceptionally beneficial for problem-solving since they provide information in a clear, conversational style that is easy for users to understand.

**Large set of applications:** They can be used for language translation, sentence completion, sentiment analysis, question answering, mathematical equations, and more.

**Always improving:** Large language model performance is continually improving because it grows when more data and parameters are added. In other words, the more it learns, the better it gets. What's more, large language models can exhibit what is called "in-context learning." Once an LLM has been pretrained, few-shot prompting enables the model to learn from the prompt without any additional parameters. In this way, it is continually learning.

**They learn fast:** When demonstrating in-context learning, large language models learn quickly because they do not require additional weight, resources, and parameters for training. It is fast in the sense that it doesn't require too many examples.

### Limitations and Challenges of Large Language Models

Large language models might give us the impression that they understand meaning and can respond to it accurately. However, they remain a technological tool and as such, large language models face a variety of challenges.

**Hallucinations:** A hallucination is when a LLM produces an output that is false, or that does not match the user's intent. For example, claiming that it is human, that it has emotions, or that it is in love with the user. Because large language models predict the next syntactically correct word or phrase, they can't wholly interpret human meaning. The result can sometimes be what is referred to as a "hallucination."

**Security:** Large language models present important security risks when not managed or surveilled properly. They can leak people's private information, participate in phishing scams, and produce spam. Users with malicious intent can reprogram AI to their ideologies or biases and contribute to the spread of misinformation. The repercussions can be devastating on a global scale.

**Bias:** The data used to train language models will affect the outputs a given model produces. As such, if the data represents a single demographic, or lacks diversity, the outputs produced by the large language model will also lack diversity.

**Consent:** Large language models are trained on trillions of datasets — some of which might not have been obtained consensually. When scraping data from the internet, large language models have been known to ignore copyright licenses, plagiarize written content, and repurpose proprietary content

without getting permission from the original owners or artists. When it produces results, there is no way to track data lineage, and often no credit is given to the creators, which can expose users to copyright infringement issues.

They might also scrape personal data, like names of subjects or photographers from the descriptions of photos, which can compromise privacy. LLMs have already run into lawsuits, including a prominent one by Getty Images<sup>3</sup>, for violating intellectual property.

**Scaling:** It can be difficult and time- and resource-consuming to scale and maintain large language models.

**Deployment:** Deploying large language models requires deep learning, a transformer model, distributed software and hardware, and overall technical expertise.

### Examples of Popular Large Language Models

Popular large language models have taken the world by storm. Many have been adopted by people across industries. You've no doubt heard of ChatGPT, a form of generative AI chatbot.

#### Other popular LLM models include:

**PaLM:** Google's Pathways Language Model (PaLM) is a transformer language model capable of common-sense and arithmetic reasoning, joke explanation, code generation, and translation.

**BERT:** The Bidirectional Encoder Representations from Transformers (BERT) language model was also developed at Google. It is a transformer-based model that can understand natural language and answer questions.

**XLNet:** A permutation language model, XLNet generated output predictions in a random order, which distinguishes it from BERT. It assesses the pattern of tokens encoded and then predicts tokens in random order, instead of a sequential order.

**GPT:** Generative pre-trained transformers are perhaps the best-known large language models. Developed by OpenAI, GPT is a popular foundational model whose numbered iterations are improvements on their predecessors (GPT-3, GPT-4, etc.). It can be fine-tuned to perform specific tasks downstream. Examples of this are Einstein GPT, developed by Salesforce for CRM, and Bloomberg's Bloomberg GPT for finance.

#### SIX KEY ADVANTAGES OF LARGE LANGUAGE MODELS FOR MODERN BUSINESSES

- 1 Language understanding
- 2 Faster information retrieval
- 3 Automation of routine tasks
- 4 Multilingual communication
- 5 Creative content generation
- 6 24/7 Customer Support



**Lego celebrates space with a drone show showcasing kid-designed spacecraft**

**Highlights**

- *Lego launches Artemis 5 and Milky Way sets, celebrating with the NYC(New York City) drone show.*
- *86% of kids aged 4-14 show strong interest in space, Lego survey finds.*
- *Kids' spacecraft designs built and displayed by drones, featuring creative themes.*



- **Space and Lego have always gone together** – both in the form of more realistic sets, with the Icons and Ideas collections, and in a creative realm, with City and Friends. That's part of the wonderful trick of a Lego brick or any other piece, which can be used to build whatever you imagine.
- **Approaching the launch of two new space sets** – Artemis 5 and the Milky Way – The Lego Group is sharing some new data on a study that the toy company conducted. Lego found that 86% of children between the ages of four and fourteen are interested in space, showing a renewed interest over previous years.
- To celebrate, Lego asked kids to design a spacecraft to get them one day from Earth to the great unknown.
- Out of all the submissions, Lego narrowed it down to six. Their designs were turned into proper builds by Didac Perez Soriano, an Associate Master Builder at Lego House. Then, the vessels were shown off high in the sky. How? A drone show, with New York City's skyline acting as the backdrop. The winning six vessels were animated by a drone display, ranging from a T-Rex (Tyrannosaurus rex) with a jetpack to a bed with wings.
- On hand at the event were Dan Meehan, Creative Lead for Lego Space, and Kellie Gerardi, an astronaut, citizen scientist, and one of the first 100 women in space. TechRadar caught up with both to unpack the resurgence in space excitement from Generation Alpha, the drone show, and Gerardi's space journey.
- On the survey's findings, Gerardi noted that "Hearing statistics about Generation Alpha and knowing that enthusiasm for space is only growing, is really exciting. I'm someone who believes that space is our shared past and shared future, and so I'm really excited to see that innate curiosity about it exists." She said Lego is meeting those kids where they're at with a platform that inspires creativity, both from this contest and with various sets.
- On the winner's vessels, Gerardi shared that "we tend to think of space sometimes as this very academic or sterile environment," but she views it as "the human story." Elaborating: "to see children be able to apply that human lens to things like space, creativity, and design is really cool."
- Mehan took the time to unpack the Lego Space theme. Space was one of the original Lego themes, alongside Castle and City,



which meant the past, present, and future were covered. Initially, sets were more creative than true-to-life, but "in recent times, we've done a lot more factual, science, and realistic space sets." He called out the Artemis Space Launch System, a collaboration with NASA (National Aeronautics and Space Administration).

- **Considering the new data showing that 86% of kids want to discover new planets, stars, or galaxies; and 77% want to travel to space**, Mehan shared, "It's all about going to space, but maybe a little more fantastical than what [Lego] had been doing in recent years." It's about catering to different audiences, potentially adults and children, with various sets.
- One thing that is new for 2024, and a first for Lego, is a common element across different themes – City, Friends, and Technic all feature an alien design. Building elements allow the sets from across themes to connect. This theme even extends from the most basic Lego Duplo all the way up to the latest space art set design for older builders. Mehan shared there's a clue "hidden in the Milky Way art SKU (Stock Keeping Unit)."
- We also discussed Gerardi's spaceflight. As a payload specialist on the Virgin Galactic's Galactic 05 research mission in November 2023, Gerardi shared "it was an intensely emotional experience. I was really well prepared for the science [as] I've been doing astronautics research for a decade in microgravity, parabolic flights here on earth."
- Gerardi says that nothing truly prepared her for seeing Earth from space with her own eyes. "They coined it the overview effect, that cognitive shift in perspective," she says it made her even more motivated to help other people see that view.
- **Like many of us** – this author included – Gerardi has been around Lego for a while, and she says one of her favourite sets was a Space Shuttle that she still has. The various details of the shuttle helped her "understand exactly what the vehicle was and what it might be like for someone who was working or living on it."
- Gerardi also works as a citizen scientist and is still actively conducting and contributing to various research projects, including diabetes research focused on using continuous glucose monitors in space.

## Ransomware attacks hijack Windows Quick Assist feature

### Highlights

- Hackers use Quick Assist to deploy Black Basta ransomware via spam and IT (Information Technology) support scams.
- Attackers flood victims' inboxes and impersonate tech support to gain Quick Assist access.
- Tools like Qakbot and Cobalt Strike were used for lateral movement before deploying Black Basta.
- Attackers steal login credentials during fake updates and exfiltrate them via SCP.

Hackers have been observed combining spam, a classic IT tech support scam, and Windows built-in remote control and screen-sharing tool, Quick Assist, to deploy the Black Basta ransomware variant.

Reports from both Microsoft, and cybersecurity researchers Rapid7 outlined how the attack is also quite creative and not something that's often seen in the cybercrime space.

Before the actual attack, the threat actors (which Microsoft identified as Storm-1811) need to obtain two things: the victim's email address, and phone number.

### Deploying Black Basta

After that, the attackers will sign the victim up for countless email subscription services. As a result, the victim's inbox will get absolutely hammered with newsletters, email notifications, and similar unwanted messages.

Then, they will call them on the phone, and impersonate either a Microsoft IT technician, or the IT help desk of the company the victim works for. They will offer to help sort out the problem, and will ask the victim to grant them access to their Windows devices through Quick Assist. Once the victims grant access, it's practically game over:

"Once the user allows access and control, the threat actor runs a scripted CURL (Client Uniform Resource Locator) command to download a series of batch files or ZIP files used to deliver malicious payloads," Microsoft said. "In several cases, Microsoft Threat Intelligence identified such activity leading to the download of Qakbot, RMM (Remote Monitoring and Management) tools like Screen Connect and Net Support Manager, and Cobalt Strike."

These tools help the attackers

move laterally throughout the target network, map it out, and ultimately - deploy the Black Basta ransomware variant.

Besides deploying Black Basta, Rapid7 added that the attackers would also steal as many login credentials from the victim as they can.

"The credentials are gathered under the false context of the 'update' requiring the user to log in. In most of the observed batch script variations, the credentials are immediately exfiltrated to the threat actor's server via a Secure Copy command (SCP)," Rapid7's researchers said.

**"In at least one other observed script variant, credentials are saved to an archive and must be manually retrieved."**



## The Tiny Pod turns the Apple Watch into a hybrid iPod-iPhone gadget

### Highlights

- *TinyPod transforms the Apple Watch into a strapless mini iPod with a click wheel.*
- *TinyPod teaser describes it as "your phone away from phone" for less distraction.*
- *TinyPod combines iPhone and iPod features in a pocket-sized, wearable gadget.*



As you'll see from our Apple Watch 9 review and Apple Watch Ultra 2 review, Apple's smartwatch is a powerful little computer and you don't necessarily have to wear it on your wrist, as a new hardware project called the TinyPod proves.

and less stress-inducing alternative to your actual iPhone. It might suit times when you don't need a full phone with you.

Now there's still a lot we don't know about the TinyPod, not least how much it's going to cost or when we'll be able to buy it (it's apparently coming in the summer in the US). From what we've seen so far though, it's a promising idea.

This isn't actually the first project we've seen to try and turn the Apple Watch into something else: there's also the Cake gadget, which looks a lot like the Rabbit R1, and which is currently at the prototype stage.

### A phone away from phone

In one of the TinyPod teaser trailers that's already appeared, the device is described as "your phone away from phone", which gives you some idea of how it's being targeted. It's like a secondary device to complement your phone (as is the Apple Watch itself).

Perhaps everything this mini-phone can't do browse the web, scroll through social media, play videos helps it be a less distracting and less stress-inducing alternative to your actual iPhone. It might suit times when you don't need a full phone with you.

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**As announced on social media (via 9to5Mac) as "coming soon", the TinyPod puts a strapless Apple Watch inside a case that looks like a miniature iPod. There's even a click wheel on the front for controlling apps and actions.**

If you think about everything you can do with the Apple Watch, it's essentially a smaller and more limited version of the iPhone: you're able to make calls, send texts, listen to music, take down notes, and plenty more besides.

Add in the iPod-inspired hardware design and a pair of the best Air Pods, and you've got something that mixes the ideas of an iPhone and an iPod together – all in a little gadget that comfortably slips in your pocket or straps to your clothing.

### A phone away from phone

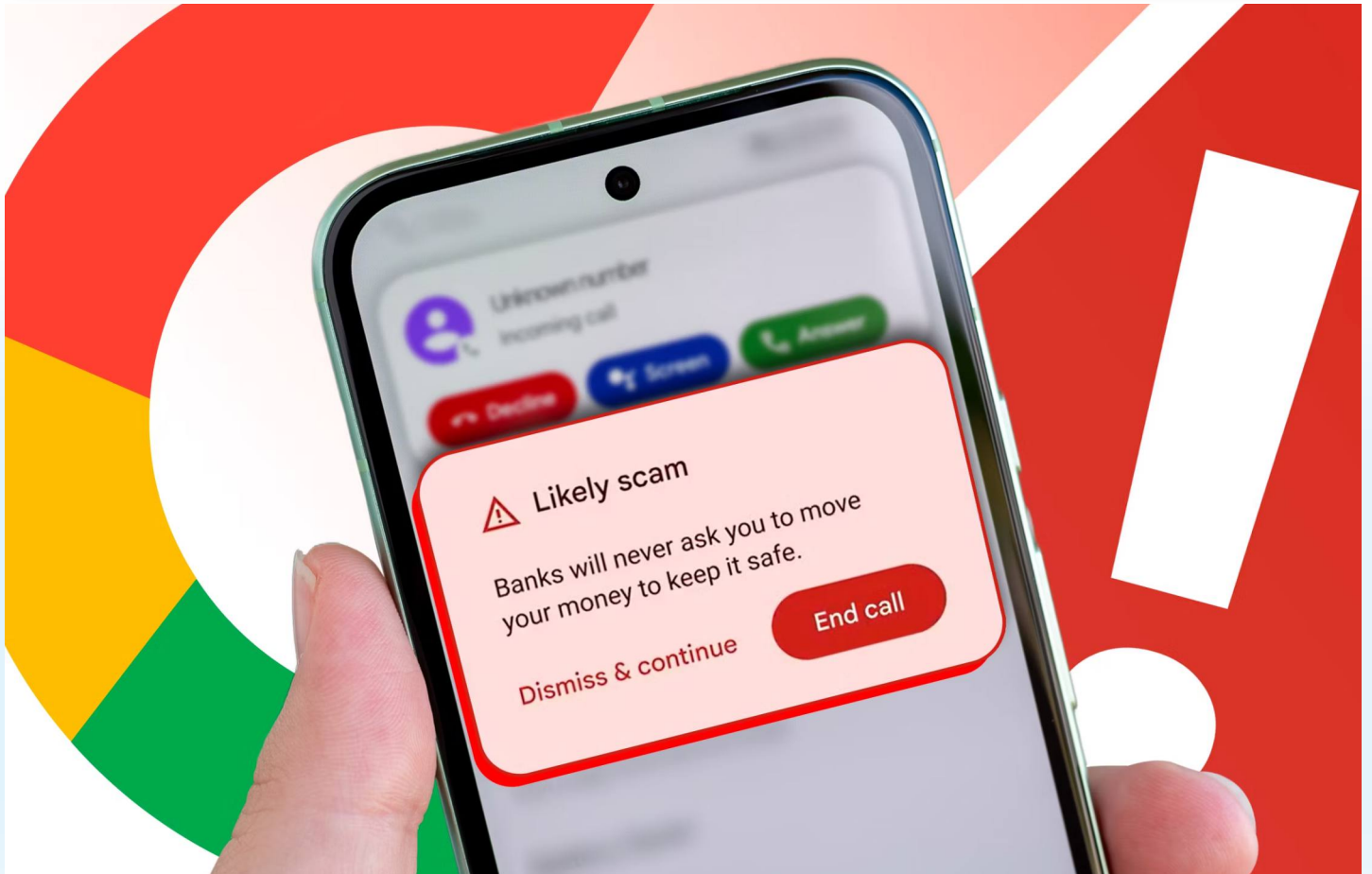
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Perhaps everything this mini-phone can't do browse the web, scroll through social media, play videos helps it be a less distracting

## Google will now protect you against fraud with new scam call detection feature for Android: Here's how

### Highlights

- Google unveiled AI scam call detection at Google I/O 2024, analyzing calls in real-time.
- Users opt-in for privacy-focused proactive security, prompting termination of suspicious calls.



### Gemini Nano: The Power behind the Protection

The feature, powered by Gemini Nano, a streamlined version of Google's large language model tailored for Android devices to operate locally and offline, scrutinizes conversations for fraudulent language and patterns commonly associated with scams. Real time alerts are issued to users if such indicators are identified.

Google emphasized the importance of privacy by highlighting that all processing occurs on the user's device, ensuring the confidentiality of conversations monitored by Gemini Nano. This proactive measure is crucial in the wake of escalating scam activities globally.

### When Will The Feature Release?

While a specific release date for the scam call detection feature has not been disclosed, Google confirmed that users must opt-in to utilize this tool. The company plans to share more details about its availability later this year.

The demonstration during the conference showcased scenarios where callers posing as "bank representatives" requested sensitive information like PINs or urged urgent fund transfers, red flags that would trigger the AI's alert mechanism.

Addressing concerns about compatibility, Google clarified that Gemini Nano is currently supported on flagship models like the Google Pixel 8 Pro and Samsung S24 series, potentially expanding to more devices in the future.

Google's initiative aligns with the escalating challenges posed by scam activities, with recent reports highlighting significant financial losses due to fraudulent schemes. The integration of AI-driven security measures reflects Google's aim to enhance user protection in an increasingly digital landscape.

As Google continues to advance AI capabilities, users can anticipate more features like Circle to Search and expanded functionalities of Gemini AI across various Google services.



Qualcomm unveils Snapdragon X Elite, X Plus chipsets for Windows PCs

Highlights

- Qualcomm introduces Snapdragon X Elite and X Plus processors for Windows PCs.
- These chipsets offer high performance, longer battery life, and AI integration.
- PC models featuring these processors to be released globally by major brands.
- Enhanced graphics, AI capabilities, and power efficiency highlight their key features.



Besides Microsoft's Surface Pro and Surface Laptop PCs, Lenovo, Asus, Acer, Lenovo, Dell, HP and Samsung have announced at least 30 new Windows computers with Snapdragon X Elite and X Plus processors and soon to hit stores globally in the coming

operations per second. The new X Elite can deliver the highest NPU performance per watt for laptops, up to 2.6X better compared to the Apple M3 silicon and up to 5.4X than Intel's Core Ultra 7 155 h series.



PCs with Snapdragon X Elite can generate photorealistic synthetic images in less than a second on gen AI-powered photo generator apps.

PCs with the Snapdragon X Elite **consume 60 per cent less power** compared to any rival branded computers in its class.

Snapdragon X Elite allows PC makers to offer up to 64GB RAM on the device.

PCs with Snapdragon X Elite **can deliver up to 22 hours of battery life.**

weeks.

The new Snapdragon X Elite and X Plus chipsets. Photo Credit: Qualcomm Semiconductor major Qualcomm has announced a new line of Snapdragon X Elite and X Plus chipsets exclusive to Windows OS-based computers.

Key aspects of Snapdragon X Plus: -

It houses a 4nm architecture-based 10-core Qualcomm Oryon CPU and can clock a whopping 3.4GHz CPU speed. It is also enough to perform video editing and support on-device gen AI-based multimedia content generation and more. And, it can deliver 28 per cent faster performance compared to other branded computers in its class.

The new Snapdragon X Elite and X Plus will enable computers to work smoothly and consume less power to perform heavy-duty tasks. The new Snapdragon chipsets allow computer makers to integrate generative Artificial Intelligence (gen AI) Large Language Models (LLMs) such as ChatGPT deeper into several on-device applications such as search engines, multimedia editing tools (Paint), Microsoft's Copilot digital assistant, and more to improve the user experience. The upcoming new computers with Snapdragon X Elite and X Plus will be called Copilot plus PCs.

**Adreno Graphics Processing Unit (GPU) integrated with the X Plus processor silicon can perform 3.8 TeraFLOPS (floating-point operations per second).**

Hexagon Neural Processing Unit (NPU), which comes paired with Snapdragon X Elite chipset can perform **45 trillion operations per second.**

Here are key aspects of Snapdragon X Elite: –

**PCs with Snapdragon X Plus consume 39 percent less power compared to any rival branded computer in its class.**

It houses a 4nm (nanometer) architecture-based 12-core Qualcomm Oryon CPU and can clock a whopping 4.2GHz CPU speed. **It is more than enough to perform any heavy-duty tasks such as 4K video editing, on-device gen AI-based multimedia content generation and more.**

Like the Elite version, the Snapdragon X Plus also allows PC makers to offer up to 64GB RAM on the device.

Adreno Graphics Processing Unit (GPU) integrated with the X Elite silicon can perform 4.6 Tera FLOPS (floating-point operations per second).

PCs with Snapdragon X Plus can also deliver up to 22 hours of battery life.

Hexagon Neural Processing Unit (NPU), which comes paired with the Snapdragon X Elite chipset, can perform 45 trillion

Besides Microsoft's Surface Pro and Surface Laptop PCs, Lenovo, Asus, Acer, Lenovo, Dell, HP and Samsung have announced at least 30 new Windows computers with Snapdragon X Elite and X Plus processors and soon hit stores globally

Elon Musk's xAI raises staggering \$6Bn from a16z, Sequoia, others

Highlights

- xAI secures \$6 billion Series B funding, valuing it at \$18 billion.
- Investors include Valor Equity, Vy Capital, Andreessen Horowitz, Sequoia, among others.
- Funding to launch AI products, potentially competing with established solutions.
- Focus on R&D to advance AI capabilities, led by flagship model Grok.



The race for dominance in AI has reached a fever pitch. Elon Musk's xAI startup, founded last year, has now secured a total of massive \$6 billion in Series B funding, according to an official blog post on the matter. xAI's pre-money valuation amounted to \$18 billion.

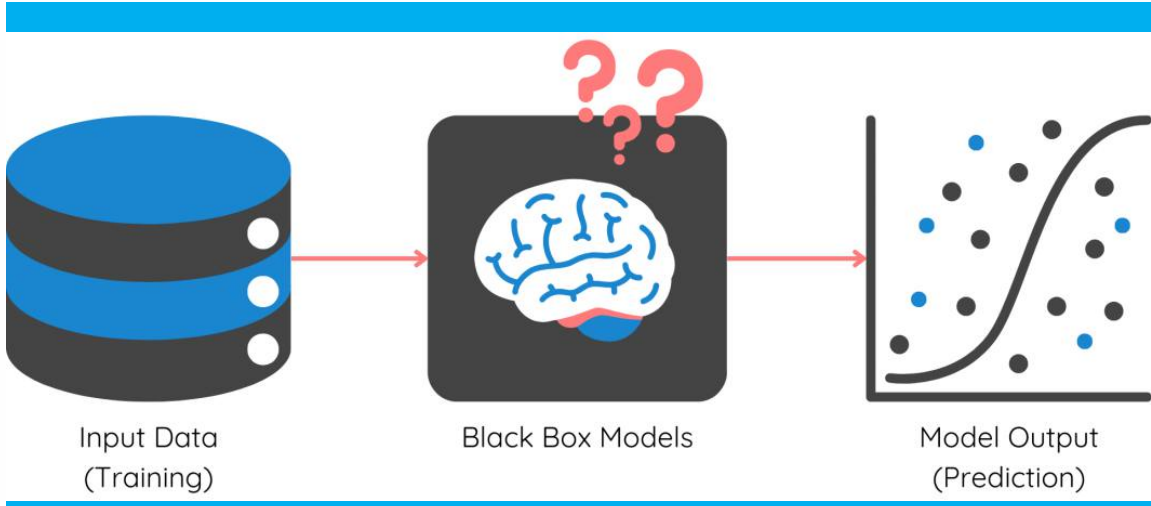
The \$6 billion funding round was one of the largest Series B investments ever witnessed in the AI space, and included the participation of the likes of Valor Equity Partners, Vy Capital, Andreessen Horowitz, Sequoia Capital, and others. With established players like OpenAI boasting popular offerings like ChatGPT, xAI plans to deploy the funding to bring its first AI products to market. This could involve launching a suite of AI-powered tools or services that compete directly with existing solutions.

Furthermore, a portion of the funding is likely earmarked for acquiring and developing powerful infrastructure like graphics processing units (GPUs). The funding will also fuel further research and development (R&D) efforts. This allows xAI to push the boundaries of AI capabilities and stay ahead of the curve in this rapidly evolving field.

This funding round marks a significant return for Musk to the world of AI. He was a co-founder of OpenAI in 2015, but later parted ways due to disagreements over its direction, particularly its shift towards closed-source models. Musk has been a vocal critic of bias in AI technologies developed by tech giants, raising concerns about their potential negative impact. "There will be more to announce in the coming weeks," Musk said in another post on X.

Since its inception in July 2023, xAI has been aggressively developing its flagship AI model, Grok. This large language model (LLM) is designed with a distinct philosophy – to be "truthful, competent, and maximally beneficial for all of humanity." xAI claims that Grok outperforms some established LLMs on industry benchmarks like GSM8K and HumanEval. Since then, Grok has undergone several iterations, each boasting improved capabilities. Grok 1.5 introduced enhanced reasoning and problem-solving abilities, allowing it to tackle complex questions and tasks more effectively. Grok 1.5V added multimodality, a crucial feature that enables it to understand information not just from text but also from images and documents.

"xAI will continue on this steep trajectory of progress over the coming months, with multiple exciting technology updates and products soon to be announced. The funds from the round will be used to take xAI's first products to market, build advanced infrastructure, and accelerate the research and development of future technologies. xAI is primarily focused on the development of advanced AI systems that are truthful, competent, and maximally beneficial for all of humanity. The company's mission is to understand the true nature of the universe," xAI said in its blog post.



## Google's Chromebook Plus devices get new suite of AI features

### Highlights

- Google integrates AI into Chromebook Plus, adding "Help me write" for text rewriting across PDFs and websites.
- Chromebook Plus introduces AI-generated custom wallpapers via text prompts for personalized backgrounds.
- Hyperlinks Magic Editor, previously exclusive to Pixel, now available on Chromebook Plus for advanced photo editing.
- Gemini chatbot pre-installed on Chromebook Plus with a free 12-month Google One AI Premium plan subscription.

Google is powering ahead with AI integration across its entire tech ecosystem, and Chromebook laptops are up next. Google has announced a suite of AI-powered features that will be coming to its Chromebook Plus line, which was announced last October. These would be part of the ChromeOS 125 release.

**Chromebook Plus now features a system-wide "Help me write" tool. This functionality goes beyond the basic Chrome browser integration, allowing you to rewrite text across PDFs, websites, and web apps.** Whether you need to rephrase a sentence, shorten a paragraph, or inject a more formal tone, this AI assistant is here to help. This is accompanied by AI-Generated custom wallpapers and backgrounds on your Chromebook Plus, where users need to provide a text prompt specifying their desired themes to ensure that AI creates an image tailored to their preferences. By right-clicking on the desktop and navigating to "Set wallpaper & style," users can create unique wallpapers through AI.

"Starting with, new Google AI and gaming features are available on Chromebook Plus. You can now write like a pro with Help me write, supercharge your ideas with Gemini, edit photos in a snap with Magic Editor, and more — all on Chromebook Plus laptops, starting at \$350 USD. All Chromebooks will also have new tools and Google integrations to help make it easier to get things done. And with our wide range of devices, including a few new ones this spring, you can find the best Chromebook for you," Google noted in its official blog post on the matter. To be precise, the "new ones" teased here refer to Google's new Chromebook Plus models from manufacturers such as HP, Acer, and Asus.

Previously exclusive to Google Pixel devices and accessible through Google One subscriptions, the powerful Magic Editor is now available on Chromebook Plus laptops. This tool enables users to manipulate photos with ease, allowing them to move or resize objects, adjust the sky, erase parts of a photo and apply contextual

presets such as Sky and Golden hour, and more, all within a user-friendly interface. Furthermore, Google's AI-powered chatbot, Gemini, is now pre-installed on Chromebook Plus devices. This not only provides easy access to Gemini's capabilities but also sweetens the deal for Chromebook Plus buyers who receive a free 12-month subscription to the Google One AI Premium plan. This premium plan unlocks advanced Gemini features within Gmail, Docs, Sheets, Slides, and other Workspace apps. For users who previously subscribed to Google One, this offer still applies, providing significant value through advanced AI capabilities and 2TB of cloud storage.



Google has also rolled out several practical updates to improve overall functionality. The Calendar widget in the Shelf now includes integration with Google Tasks, providing a comprehensive view of appointments and to-do items. The screen recorder feature has been upgraded to support GIF creation, a popular format for quick and shareable content. For

gaming enthusiasts, the new Game Dashboard introduces features like Game Capture, which allows users to record gameplay and webcam footage simultaneously. Furthermore, the screen recorder gains the ability to capture footage in GIF format, offering a convenient way to create short, animated snippets for various purposes.

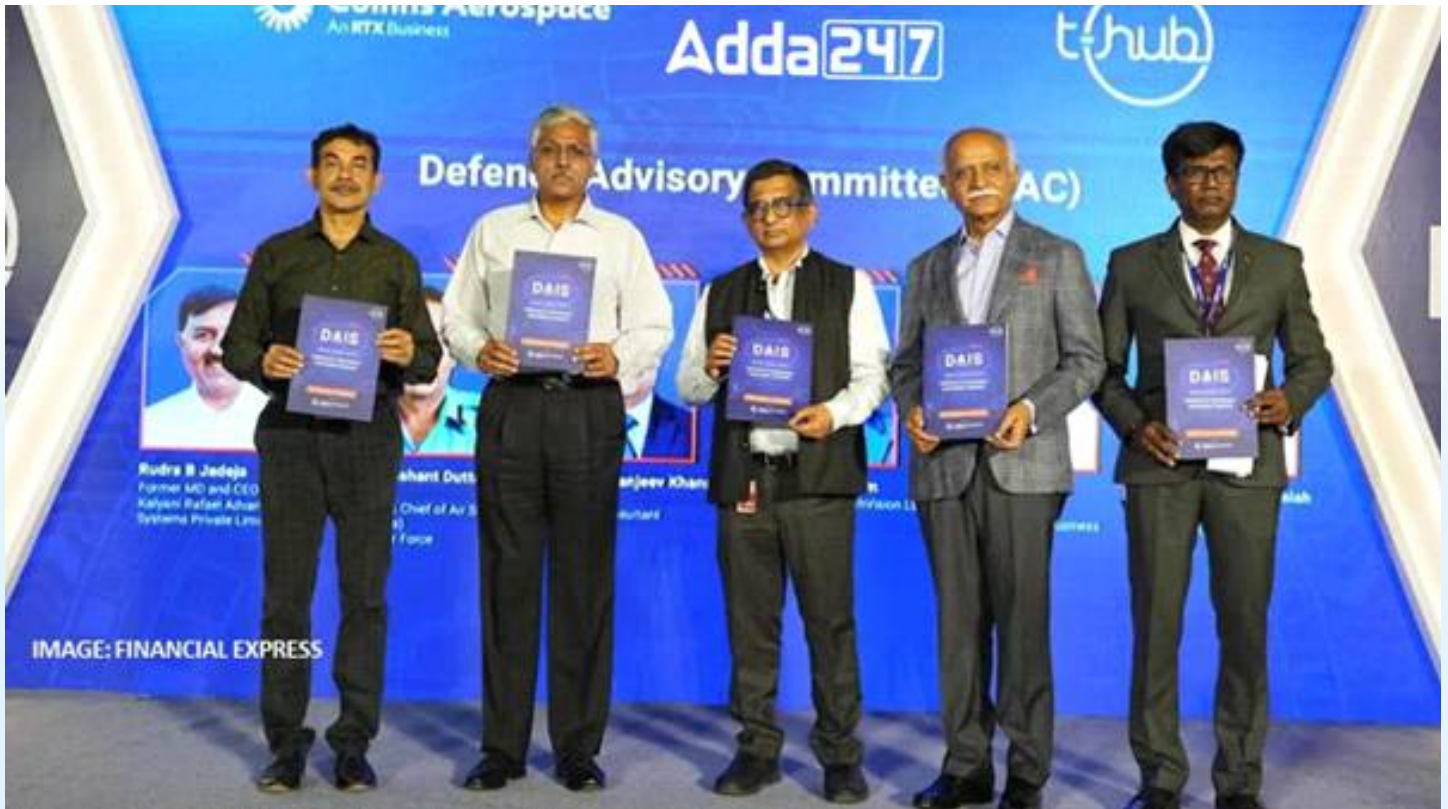
Setting up a new Chromebook Plus has also become easier, especially for users with Android phones. By scanning a QR code, users can effortlessly transfer Wi-Fi credentials and Google Account information to their Chromebook, streamlining the setup process. Looking ahead, Google has teased several upcoming features. Among these is the Gemini-powered "Help me read" feature, which offers summaries of web pages, documents, and PDFs, along with the ability to ask follow-up questions. Google is also developing a new focus tool that integrates Google Tasks and YouTube Music with a countdown timer, alongside several others.



DRDO and IIT Bhubaneswar Collaborate on Defence Technology Projects

Highlights

- Developing advanced systems to protect national security interests.
- Innovating reliable and efficient power systems for diverse defence operations.
- Improving radar technology for precise and long-range detection capabilities



DRDO and IIT Bhubaneswar join forces to advance defence technology research in electronics warfare, AI surveillance, power systems, and radar systems.

The Defence Research and Development Organization (DRDO) and the Indian Institute of Technology (IIT) Bhubaneswar have initiated a partnership aimed at advancing research in electronics warfare, AI-driven surveillance, power systems, and radar systems. DRDO has sanctioned nine projects from the Electronics and Communication Systems (ECS) Cluster to IIT Bhubaneswar, with an additional seven projects awaiting approval, backed by ₹18 crore in funding.

**Collaboration Announcement**

Director of IIT Bhubaneswar, Prof. Shreepad Karmalkar, highlighted the significance of the collaboration, stating that it signifies a shift from knowledge generation to practical application, entrepreneurship, and producing skilled professionals. He sees this partnership as a pathway to excellence in defence research and technology.

**Research Focus**

Head of the School of Electrical Sciences at IIT, Prof S.R.

Samantaray, emphasized that the collaboration is aligned with the evolving needs of defence applications, contributing to the vision of 'Atma Nirbhar Bharat' (Self-reliant India). He believes this collaboration will bolster defence research programs, fostering sustainability and contributing to the national ecosystem.

**Common Cause**

Director General of the ECS Cluster at DRDO, Dr. Binay K. Das, expressed the intent behind the collaboration, emphasizing its goal to address the future needs of the nation in defence technology. The partnership aims to work collectively towards advancing defence capabilities and strengthening India's position in the field of defence research and development.





Microsoft's AI and Cloud Boost: €4 Billion Investment in France

Highlights

- This is Microsoft's largest investment in France to date, aimed at bolstering the country's AI and cloud infrastructure.
- Microsoft is committed to powering these data centers with 100% renewable energy by 2025. The first power purchase agreement (PPA) for renewable energy in France has already been executed, with 100 MW of new projects expected online by the end of 2024

Microsoft Corp. has announced plans to invest a staggering €4 billion (approximately \$4.3 billion) in building cloud and AI infrastructure in France.

In a move that underscores its commitment to artificial intelligence (AI) and cloud computing, tech giant Microsoft Corp. has announced plans to invest a staggering €4 billion (approximately \$4.3 billion) in building cloud and AI infrastructure in France. This latest investment highlights the company's continued focus on advancing its AI capabilities and expanding its cloud services globally.

Nurturing AI Talent and Supporting Startups

Microsoft's investment aims to create a vibrant AI ecosystem in France. The company aims to train a million people and provide support to 2,500 startups by 2027. This initiative aligns with France's strategic focus on developing AI as a key area of growth and innovation.

Collaboration with French AI Startup Mistral AI

Earlier this year, Microsoft unveiled a partnership with Mistral AI, a Parisian startup competing in the AI realm. The collaboration included a €15 million investment from Microsoft, further solidifying the company's commitment to fostering AI innovation in France.

Supporting France's AI and Tech Ambitions

Microsoft's announcement coincides with President Emmanuel Macron's "Choose France" summit, which aims to attract foreign companies and position France as a financial hub for the European Union. The investment is part of a broader effort to promote France's AI and technology ambitions, with other tech giants like Amazon.com Inc. also committing significant investments in infrastructure and

computing.

Global AI and Cloud Investments

Microsoft's investment in France is part of the company's broader strategy to accelerate spending on its Azure cloud and related AI tools. Earlier this year, the company announced a similar €3.2 billion investment in Germany, and in April, it invested \$1.5 billion in the Abu Dhabi AI firm G42.

Regulatory Scrutiny and Antitrust Concerns

While Microsoft continues to make significant investments in AI and cloud computing, the company is facing increasing antitrust scrutiny over its cloud business and AI investments, including the more than \$10 billion it has invested in OpenAI.

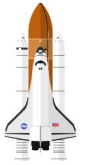
As the race for AI supremacy intensifies, Microsoft's investment in France underscores the company's commitment to staying at the forefront of this rapidly evolving technology landscape while fostering innovation and collaboration with local partners.



Sunita Williams: Indian-Origin Astronaut Set for Third Space Mission

Highlights

- Collaboration between healthcare providers and community organisations can improve care coordination and address social determinants.
- Williams spent 322 days in space and holds the female spacewalk record of 50 hours.



This flight is part of NASA's Commercial Crew Program, which aims to provide the United States with independent access to space through commercial partnerships with Boeing and SpaceX. Successful certification of the Starliner will ensure that NASA has multiple options for sending astronauts to the ISS (Devdiscourse).

Significance of the Mission

NASA considers this launch a crucial milestone, as the success of the mission is vital for the safety of the astronauts. Following two unmanned orbital flight tests, this will be Starliner's first



Williams has previously spent 322 days in space over two missions and holds the record for total cumulative spacewalk time by a female astronaut with 50 hours and 40 minutes. She was selected as a NASA astronaut in 1998 and has extensive experience in space exploration and spacecraft development

Indian-origin astronaut Sunita Williams, accompanied by Butch Wilmore, launches on Starliner's maiden crewed flight. Scheduled for May 7, the mission tests the spacecraft's systems. Indian-origin astronaut Sunita Williams, alongside colleague Butch Wilmore, is embarking on her third space mission to the International Space Station (ISS). This mission marks the inaugural crewed flight of the Starliner spacecraft, designed to test its systems from launch to landing.

Launch Details

The launch is scheduled for May 7, 8:04 am IST, aboard Boeing's Starliner spacecraft atop an Atlas V rocket from Cape Canaveral. After docking, the astronauts will spend approximately a week aboard the ISS.

crewed trip and third orbital flight test.

Williams' Background and Achievements

Williams, a former United States Navy officer, was selected as an astronaut by NASA in 1998. She holds the record for the total cumulative spacewalk time by a female astronaut, with a total of 322 days spent in space across her two previous missions.

Previous Missions

During her previous missions, Williams set records for the most spacewalks by a female astronaut and conducted crucial repairs and maintenance aboard the ISS. She is a pioneer in space exploration, contributing significantly to scientific research and advancements.

