

Score's PARTNERS IN SUCCESS Newsletter

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Welcome to SCORE's monthly *Partners In Success* Newsletter

Dear Reader:

SCORE's **Partners In Success** is a monthly newsletter dedicated to business owners in any industry and market sector. Its purpose is to provide insight to business owners/managers looking for a practical, innovative and a bottom line approach on how to better manage their finances, access SBA loans, leverage social media marketing, better manage human resources and access a variety of digital resources. Each issue of the newsletter will address a different topic. **This issue will follow up on developments in AI, and specifically, on Googles' advances in the development of its large language models.** As always, your feedback and input are welcome and encouraged.

Google AI

How The Tech Giant Approaches Artificial Intelligence

This year, we've seen an explosion of AI tools — with the rise of Chat GPT and pending developments in AI search. Google is one of the major players looking to bring the power of AI directly to your fingertips.

In this newsletter, we'll explore Google AI, its progress, and how the company's innovations could impact the future.



What is Google AI

Announced in 2017, [Google AI](#) is a division of the tech company that focuses on artificial intelligence. The group aims to build tools that make AI accessible.

It builds upon the company's [core mission](#) "to organize the world's information and make it universally accessible and useful."

The company published [a look back on its 2018 research efforts](#) on the Google AI blog, where it painted an extensive picture of where it has made the most progress within this realm of technology.

At the time, the company wrote, "Some consumers don't directly feel the impact of AI, even when it carries out tasks that have become an integral part of day-to-day life for so many — shedding light on common misconceptions within this category of tech."

In the five years since, AI adoption has accelerated. Google AI remains on the cutting edge of research and application.

Google published a look back at the AI announcements made at the [2023 I/O conference](#). From text-to-video generation to universal translator dubbing, Google's dive into AI technology is resulting in huge advancements.

Let's explore how the company's focus areas have developed, adapting to today's AI landscape.

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Generative AI

With the advent of ChatGPT, the focus of AI has shifted into a world where generative AI tools are widely available to consumers. The table below lists few of the available AI platforms and the function they serve.

AI Platform	Function/Positioning
Open AI (ChatGPT)	Text and image generator; speech recognition.
HubSpot AI	Content creation for bloggers and copywriters
MindMeld	Conversational AI for developing natural language processing capabilities (reminders)
Rainbird	Cloud-based decision making platform
Rasa	Conversational AI. Open source for customizing virtual assistance for business needs
Wit.ai	Conversational AI enabling interaction with products/services via voice and text
Dialogflow	Google's conversational AI platform for development of virtual agents
Google Vertex AI	For marketing analysts/marketing ops: allows development of machine language models for analysis
DataRobot AI	An end-to-end AI lifecycle platform. Building and deploying AI models and automating complex tasks.
Microsoft Azure	A portfolio of AI services for developers and data scientists. Provides access a variety of AI models: vision, speech, language, and decision making

AI technology is no longer a distant concept, invisibly built into the tools consumers use. Now, AI is set to become available for a far wider set of tasks and capabilities.

Technologists across the globe are fighting to stay at the cutting edge of these advancements, including Google.

At the [2023 Google I/O Conference](#), Google unveiled PaLM 2, its largest AI language model to date. The model features highly advanced speed and capability, powering the company's search experiments and 25 other products.

Developers also launched a new capability called "[chain-of-thought prompting](#)." This allows PaLM 2 to do more complex problem-solving. With chain-of-thought prompting, language models can break down tough problems into multiple, less difficult steps. Programs can then tackle more complex problems than a standard prompting method.

Case Study: Google's Gemini

Perhaps even more exciting was the announcement of progress in Gemini, Google's other foundational AI technology. Instead of just text, Gemini takes a multi-modal approach.

With Gemini, users could have the AI [interpret text, video, and audio](#). The program will also be able to generate text and image responses, giving Google a leg up over its text-based competitors.

Google's Pathway Language Model - PaLM, is a machine learning technique developed by Google

In May 2023, Google unveiled its latest AI advancements, product releases and innovations — including the highly anticipated launch of "PaLM 2," Google's largest AI language model to date.

PaLM 2 is Google's next generation large language model (LLM) that builds on Google's research in machine learning and responsible AI.

PaLM 2, which stands for Pathways Language Model, version 2, is a Large Language Model developed by Google AI and is a successor to PaLM, announced in 2022.

PaLM 2 has been trained on an enormous volume of data and does next-word prediction, outputting the most likely text after a prompt by humans.

Capabilities

Multilingual: PaLM 2 is more heavily trained on multilingual text, spanning more than 100 languages. This has significantly improved its ability to understand, generate and translate nuanced text — including idioms, poems and riddles — across a wide variety of languages, a hard problem to solve.

Reasoning: PaLM 2's wide-ranging dataset includes scientific papers and web pages that contain mathematical expressions. As a result, it demonstrates improved capabilities in logic, common sense reasoning, and mathematics.

Coding: PaLM 2 was pre-trained on a large quantity of publicly available source code datasets. This means that it excels at popular programming languages like Python and JavaScript.

Gemini is Google's **next-generation foundation model**. It follows PaLM 2, the current AI model behind the likes of Google's Bard chatbot and other recently announced features. Google Gemini is currently still in training mode and is expected to be a key rival to OpenAI's GPT once its completed.



According to Google, the incoming Gemini AI was built to be multimodal, with a focus on tool and API integrations. This will allow for wider collaborative efforts. It's also being created to accommodate future developments, such as improved memory and planning.

We don't know what further features Google Gemini will enable but PaLM 2-powered capabilities revealed at Google I/O included Duet AI, a tool for generated text and images within apps like Google Docs and Sheets. This kind of generation should help you to add depth to your ideas, provide more well-rounded spreadsheets as well as improved explanations of data and the like.

At Google I/O, [Help Me Write](#) (it does what it says on the tin) and new [AI-integrated search](#) were also announced, showcasing new ways of getting your essays and proposals written as well as redefining Google's biggest product, Search.

PaLM 2 also currently powers non-productivity features, like Med-PaLM2 which is trained on health research terms using medical knowledge as well as Sec-PaLM, used for cybersecurity analysis.

We'd expect Gemini to continue to build on all of these features, workplace, security, productivity and more.

But, how's it going? Google says it's being "fine-tuned and rigorously tested for safety". When complete, like PaLM 2, the Gemini foundation model will be available in different sizes and with different capabilities.

Gemini owes a debt to AlphaGo, which was developed by Google's DeepMind and became the first computer program to defeat a professional human Go player. AI history was made back in 2016 when AlphaGo beat Lee Sedol, one of the world's greatest Go players, at his own game.

Go is an abstract strategy board game for two players in which the aim is to surround more territory than the opponent. The game was invented in China more than 4,500 years ago and is believed to be the oldest board game continuously played to the present day.

The techniques used in AlphaGo would be combined with the technology that powers ChatGPT.



Gemini's multimodal capabilities, reinforcement learning, text and image generation, and access to Google's proprietary data collectively position it to outperform GPT-4.
Training data emerges as a pivotal differentiator, highlighting that the victor in the LLMs arms race will likely be determined by who trains their models on the most extensive and richest dataset.

@doubledomedm

"At a high level you can think of Gemini as combining some of the strengths of AlphaGo-type systems with the amazing language capabilities of the large models," he said.

Potential Applications For Google's Gemini

Here are some of the potential applications of Google Gemini:

Virtual assistants: Gemini could be used to create more natural and intuitive virtual assistants that can understand and respond to a wider range of commands. For example, Gemini could be used to control smart home devices, book appointments, or make reservations.

Chatbots: Gemini could be used to create more engaging and realistic chatbots that can hold conversations that are indistinguishable from those with a human. Gemini could be used to provide customer service, answer questions, or even write creative content.

- Educational tools:** Gemini could be used to create new types of educational tools that can personalize learning and provide feedback in real time. For example, Gemini could be used to create interactive textbooks, personalized learning plans, or even virtual tutors.

- Medical research:** Gemini could be used to accelerate medical research by helping scientists to analyze large datasets of medical data. For example, Gemini could be used to identify new patterns in medical data, or to develop new treatments for diseases.

Artificial creativity: Gemini could be used to create new forms of art, music, and literature that are indistinguishable from those created by humans. For example, Gemini could be used to create realistic paintings, compose music, or write novels.

Gemini, which has not yet been debuted to the public, could help create virtual assistants, chatbots, and educational tools.

A Renewed Focus on AI's Ethics and Mission

Google opened its 2018 report with the importance of ethics and mission-driven purposes within AI. Within the realm of AI ethics, Google spoke to training AI to “avoid creating or reinforcing unfair bias.”

Within the broader scope of building ethical AI, Google also emphasized building technology that has a social impact.

To that end, Google launched a course on [Machine Learning Fairness](#) and its [AI Impact Challenge](#), in which developers can submit proposals for AI projects that “help address societal challenges.”

Now, in 2023, Google is revealing the exact impact AI can have on these challenges.

For example, traffic engineers are using Google AI to improve traffic flow in cities such as Bangalore and Rio de Janeiro. The models are making traffic lights and traffic flow far more efficient.

Similarly, Google’s FloodHub feature has been expanded to 80 countries in an effort to make flooding more predictable so those affected can better plan and mitigate the impact of flooding.

Throughout all these exciting updates, Google re-emphasized its commitment to a responsible approach to AI and its incorporation into its products.

For example, the DeepMind team is a unit within Google specifically brought together to ensure safety and responsibility in the building of Google AI capabilities.

Case Study: Chirp

To explore ethical and accessible AI use, let’s explore [Chirp](#). Google’s family of AI-powered speech models, Chirp, was trained on 12 million hours of speech.

The program can automatically recognize over 100 languages. Of course, the model can understand popular languages like English and Mandarin. Developers also ensured under-resourced languages were included in the AI training.

According to Google AI, Chirp can perform automatic speech recognition in Amharic, Cebuano, and Assamese. The wide range of languages allows more people to speak directly to their technology.

This technology can now help people with different lingual backgrounds, even if they don’t speak English.

Assistive Technology

Much of Google’s AI research has focused on broadening the prevalence of technology that assists users with the execution of day-to-day tasks.

Applications can aid in people’s personal and professional lives — usually in a way that reduces the amount of time spent on mundane tasks.

Case in point: Google’s Smart Compose tool. Launched in 2018, this feature uses machine-taught AI to predict how someone might finish a sentence with suggested text in an email composition. Tools like Smart Compose reinforce that everyone should have access to and benefit from AI.

Google has built upon that message with a suite of advanced tools. These experiments can help people do more than generate text. You can generate new content to supplement the skills that you already have.

What is Google Gemini: Google’s next generation AI

Emerging from Google’s AI division, Google Gemini represents the next-generation, multimodal artificial intelligence (AI) systems. This advanced AI model is engineered with the ability to concurrently process and generate an impressive array of data types (voice, text, images...) and tackle an extensive variety of tasks.

Whether it’s interpreting written text, visualizing images, deciphering audio signals, analyzing video streams, generating intricate 3D models, or making sense of complex graphs, Gemini does it all—often simultaneously, making it a powerhouse of multi-tasking capabilities.

What is Multimodality

Multimodal AI is a new AI paradigm that combines various data types (image, text, speech, numerical data) with multiple intelligence processing algorithms to achieve higher performances. It is a type of artificial intelligence that has the ability to process and understand inputs from different modes or modalities, including text, speech, images, and videos. Multimodal AI often outperforms single modal AI in many real-world problems.

Multimodal AI systems train with and use video, audio, speech, images, text and a range of traditional numerical data sets. Most importantly, multimodal AI means numerous data types are used in tandem to help AI establish context and better interpret context, something missing in earlier AI.

AI models are the algorithms that define how data is learned and interpreted, as well as how responses are formulated.

The Future of Search

If you're using ChatGPT, you can ask it a question.

For example, you might ask, "***Why is exercise part of a healthy lifestyle?***" The system will give me a list of the benefits of exercising.

However, when you ask for recent statistics, the system is stumped. That's because ChatGPT-3.5 is trained on information from 2021. The AI does not have access to more recent information.

That's where Google's Bard chatbot shines. Google's Bard is able to pull information directly from the web, giving it access to more recent and up to date information.

When you ask Bard for recent exercise stats, it will be able to send you relevant information.

Google plans to expand these capabilities beyond a chat-style interface. Soon, AI will change how we search for information.

Case Study: AI-Powered Search

Google plans to expand the availability and functionality of Bard, making it available to 120 countries across 40 languages.

Bard will also be expanded directly into Google search results, with an AI pop-up included alongside traditional results to answer a user's search query.

In the future, you'll be able to type a specific query into Google's search bar. Generative AI will write an answer within a few paragraphs. It will also provide links with more information that you can click on.

From there, you'll be able to ask a follow-up question or click on a suggested followup generated by AI.

Innovation in the World of AI

Innovation in AI is driving groundbreaking advancements across industries. Google is just one major player shaping the future. Soon, how we search, the way we interact with technology, and what we can create will be augmented with artificial intelligence.