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Finally, the Search Engine Better Than Google

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Perplexity is an AI-powered "answer engine" that provides direct answers to queries with source citations, combining search capabilities with large language models to reduce hallucinations and increase reliability

Unlike traditional search engines, Perplexity aims to feed curiosity by offering related questions and encouraging users to dig deeper into topics, viewing itself as a discovery engine

Perplexity utilizes advanced AI techniques like retrieval augmented generation and chain of thought reasoning to improve accuracy and performance in natural language processing tasks

The future of AI may involve developing systems capable of higher-level reasoning and natural curiosity, potentially leading to breakthroughs in creating new knowledge and understanding complex truths

While AI tools like Perplexity enhance human capabilities, they should be viewed as aids to critical thinking and creativity rather than replacements for uniquely human attributes

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In the video above, computer scientist and AI researcher Lex Fridman interviews Aravind Srinivas, CEO of Perplexity, an AI-powered "answer engine." Unlike typical search engines, which require you to sort through pages of results to find the information you need, Perplexity provides a real-time answer to your query.

One of the pitfalls of current AI technologies like ChatGPT is the tendency to hallucinate or fabricate information on occasion. To minimize this risk, you can ask it to provide source links and verify the accuracy of the information given. However, Perplexity addresses this issue from the start, and while it can still hallucinate, it has a factual grounding.

> "[Perplexity] aims to revolutionize how we humans get answers to questions on the internet. It combines search and large language models, LLMs, in a way that produces answers where every part of the answer has a citation to human-created sources on the web," Fridman says.
>
> "This significantly reduces LLM hallucinations, and makes it much easier and more reliable to use for research, and general curiosity-driven late night rabbit hole explorations that I often engage in."[1]

Part Search Engine, Part Question-Answering Platform

Fridman describes Perplexity as part search engine — a software system designed to search for information on the internet — and part LLM. LLM is a type of artificial intelligence system trained on vast amounts of text data to understand and generate human-like text. LLMs can perform various language-related tasks such as answering questions, generating content, translating languages and more.

Unlike standard search engines that provide links, Perplexity attempts to directly answer queries. Srinivas explains:[2]

> "Perplexity is best described as an answer engine. You ask it a question, you get an answer. Except the difference is, all the answers are backed by sources. This is like how an academic writes a paper. Now, that referencing part, the sourcing part is where the search engine part comes in. You combine traditional search, extract results relevant to the query the user asked. You read those links, extract the relevant paragraphs, feed it into an LLM …
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> That LLM takes the relevant paragraphs, looks at the query, and comes up with a well-formatted answer with appropriate footnotes to every sentence it says, because it's been instructed to do so, it's been instructed with that one particular instruction, given a bunch of links and paragraphs, write a concise answer for the user, with the appropriate citation.
>
> The magic is all of this working together in one single orchestrated product, and that's what we built Perplexity for."

Srinivas, who previously was an AI researcher at DeepMind, Google and OpenAI, says he views Perplexity as a discovery engine that feeds curiosity:[3]

> "The journey doesn't end once you get an answer. In my opinion, the journey begins after you get an answer. You see related questions at the bottom, suggested questions to ask. Why? Because maybe the answer was not good enough, or the answer was good enough, but you probably want to dig deeper and ask more. That's why in the search bar, we say where knowledge begins, because there's no end to knowledge. You can only expand and grow."

Breakthroughs in AI

Please understand that while Perplexity is not perfect and still exhibits some bias, particularly regarding COVID-19 information, it significantly outperforms Google in almost every other search query. The AI-driven technology behind Perplexity provides more accurate, comprehensive, and nuanced results, making it a superior choice for general searches. Its advanced algorithms ensure that users receive the most relevant and insightful information, setting it apart from traditional search engines.

Srinivas describes several ways Perplexity embraces state-of-the-art advances in machine learning, along with general innovation. This includes retrieval augmented generation (RAG), an advanced technique in natural language processing (NLP) that combines the capabilities of LLMs with information retrieval systems to produce more accurate and contextually relevant responses.

This approach is particularly useful for tasks that require precise and up-to-date information, such as question answering, summarization and dialogue systems. In short, RAG involves the search aspect of the query, but Perplexity goes beyond this. Srinivas says:[4]

> "The principle in Perplexity is you're not supposed to say anything that you don't retrieve, which is even more powerful than RAG because RAG just says, 'OK, use this additional context and write an answer.' But we say, 'Don't use anything more than that too.' That way we ensure a factual grounding. And if you don't have enough information from documents you retrieve, just say, 'We don't have enough search resource to give you a good answer.'"

They're also using chain of thought reasoning, which takes NLP tasks up a notch in terms of performance. Chain of thought reasoning in AI refers to the ability of a language model to generate logical, step-by-step explanations or sequences of thoughts that lead to a conclusion or answer. This approach enhances the model's performance on complex reasoning tasks by encouraging it to articulate the intermediate steps in its reasoning process. Srinivas explains:[5]

> "Chain of thought is this very simple idea where, instead of just training on prompt and completion, what if you could force the model to go through a reasoning step where it comes up with an explanation, and then arrives at an answer?
>
> Almost like the intermediate steps before arriving at the final answer. And by forcing models to go through that reasoning pathway, you're ensuring that they don't overfit on extraneous patterns, and can answer new questions they've not seen before."

The Beginning of Real Reasoning Breakthroughs

Whether or not AI is fundamentally capable of higher-level reasoning, akin to human cognitive processes, remains to be seen. Reaching that point, however, relies in part on applying more inference compute, which in AI refers to the computational resources and processes involved in running an AI model to make predictions or decisions based on new data.

This stage is distinct from the training phase, which involves building and optimizing the model. Broken down, inference is the process by which an AI model applies learned patterns to new data to generate predictions, classifications or other outputs. For example, using AI to classify images or predict stock prices.

The compute aspect, meanwhile, refers to the computational power required to perform inference. It involves hardware, software frameworks and algorithms optimized for efficient computation. Srinivas says:[6]

> "Can you have a conversation with an AI where it feels like you talked to Einstein or Feynman? Where you ask them a hard question, they're like, I don't know. And then after a week they did a lot of research … and come back and just blow your mind.
>
> I think if we can achieve that amount of inference compute, where it leads to a dramatically better answer as you apply more inference compute, I think that will be the beginning of real reasoning breakthroughs … It's possible. We haven't cracked it,

but nothing says we cannot ever crack it."

Curiosity Is a Key Part of What Separates Humans From AI

Part of cracking this code involves teaching AI how to mimic natural human curiosity. "What makes humans special though, is our curiosity," Srinivas explains. "Even if AIs cracked this, it's us still asking them to go explore something. And one thing that I feel like AIs haven't cracked yet is being naturally curious and coming up with interesting questions to understand the world and going and digging deeper about them."[7]

Beyond this, there's a lot of controversy and fear around artificial general intelligence (AGI), which refers to a type of AI that possesses the ability to understand, learn and apply knowledge across a wide range of tasks at a level comparable to human intelligence.

Srinivas says he doesn't think we need to worry about "AIs going rogue and taking over the world," but there is an issue of who controls the compute on which AGI runs. "It's less about access to a model's weights. It's more access to compute that is putting the world in more concentration of power and few individuals. Because not everyone's going to be able to afford this much amount of compute to answer the hardest questions."

A sign of higher intelligence in AI, Srinivas says, is becoming capable of creating new knowledge and providing truth to questions we don't know the answers to — and helping us understand why it's the truth.

"Can you build an AI that's like Galileo or Copernicus where it questions our current understanding and comes up with a new position, which will be contrarian and misunderstood, but might end up being true? … And the answer should be so mind-blowing that you never even expected it."[8]

What's the Future of Search and AI?

We're already seeing AI tools like Perplexity, which are exponentially superior to existing search engines. In the future, however, Srinivas says the goal isn't about building a better search tool but building a platform for knowledge:[9]

> "If you zoom out, before even the internet, it's always been about transmission of knowledge. That's a bigger thing than search … So, we imagine a future where the entry point for a question doesn't need to just be from the search bar. The entry point for a question can be you listening or reading a page, listening to a page being read out to you, and you got curious about one element of it and you just asked a follow-up question to it.
>
> That's why I'm saying it's very important to understand your mission is not about changing the search. Your mission is about making people smarter and delivering knowledge. And the way to do that can start from anywhere. It can start from you reading a page. It can start from you listening to an article … It's just a journey. There's no end to it."

Keep in mind that Perplexity and other AI tools are not a replacement for your own critical thinking; rather, they serve as an aid to enhance your creativity. It's vital to keep this in mind and remember that AI is an adjunct to, not a substitute for, your intellectual and

creative capacities.

While precautions need to be taken, including not sharing personal or confidential information, this is not about replacing human action but enhancing it, allowing individuals to focus on aspects of their work that require uniquely human attributes like empathy, strategic thinking, creativity and curiosity. Srinivas explains:[10]

> "So, I think curiosity makes humans special and we want to cater to that. That's the mission of the company, and we harness the power of AI and all these frontier models to serve that. And I believe in a world where even if we have even more capable cutting-edge AIs, human curiosity is not going anywhere and it's going to make humans even more special.
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> With all the additional power, they're going to feel even more empowered, even more curious, even more knowledgeable in truth-seeking and it's going to lead to the beginning of infinity."

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Notes

[1] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 0:28

[2] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 2:05

[3] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 7:14

[4] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 1:56:44

[5] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 1:16:04

[6, 7] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 1:23:53

[8] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 1:34

[9] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet,

2:34

[10] LexFridman.com, Transcript for Aravind Srinivas: Perplexity CEO on Future of AI, Search & the Internet, 2:50
