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Does Data Shape AI, or can AI Lead Alone

Thoughts and Provocations

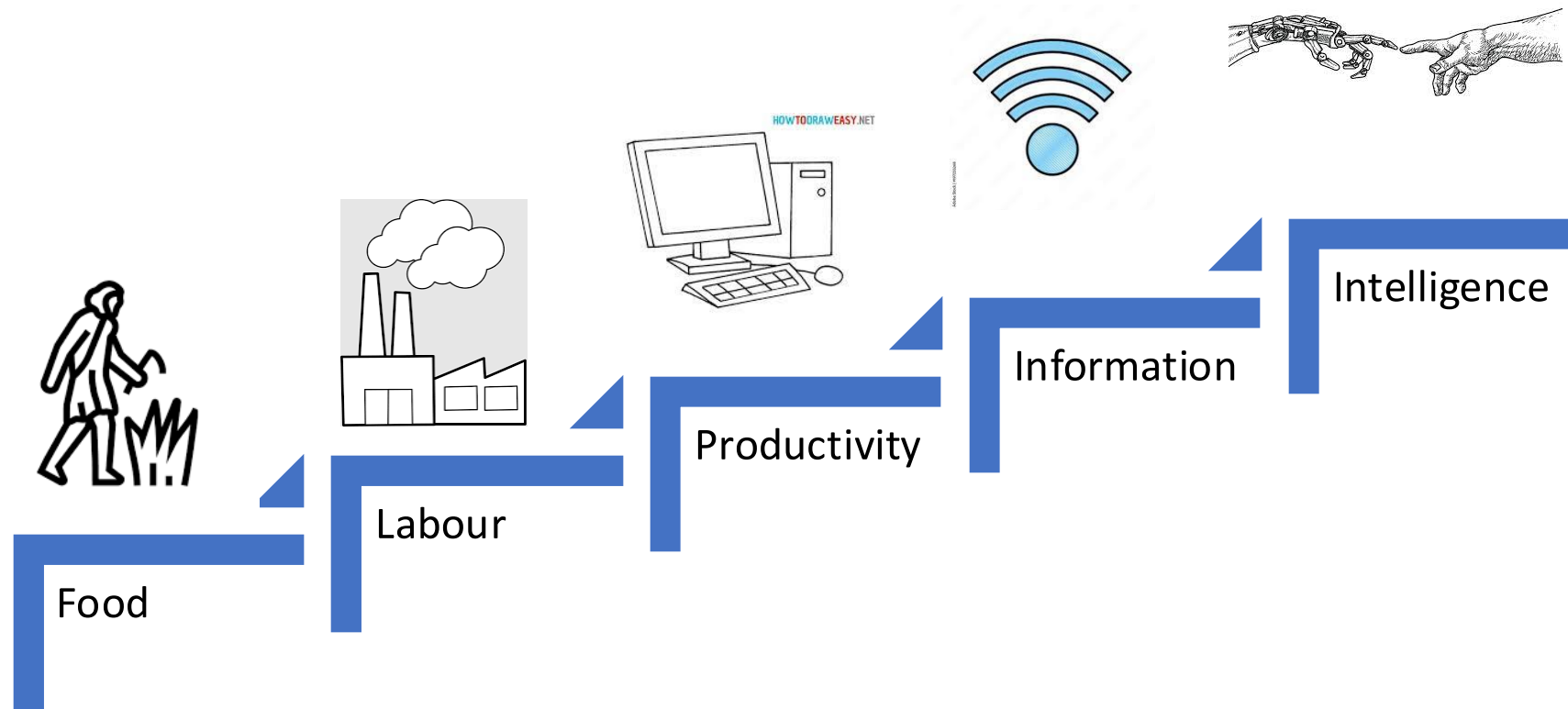


@j_bindra ; ChatGPT

29 Nov 2024 | Afternoon IST | NCR



We are on the cusp of a new era



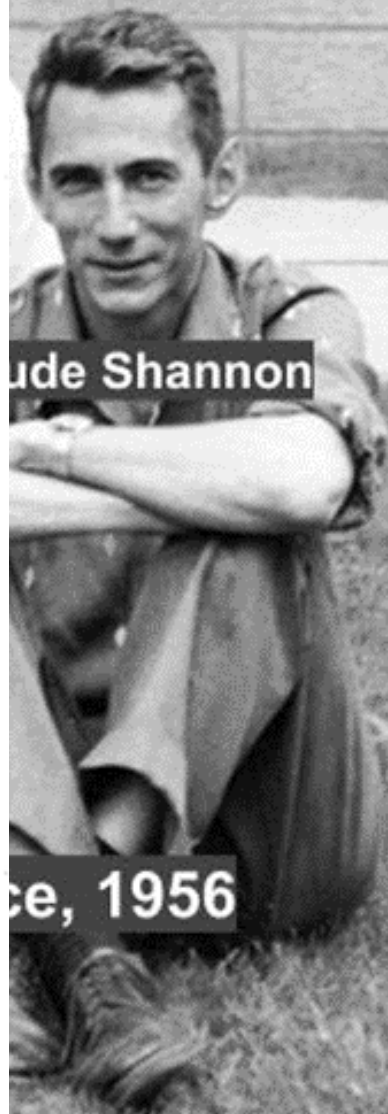
A PROPOSAL FOR THE
DARTMOUTH SUMMER RESEARCH PROJECT
ON ARTIFICIAL INTELLIGENCE

J. McCarthy, Dartmouth College
M. L. Minsky, Harvard University
N. Rochester, I. B. M. Corporation
C. E. Shannon, Bell Telephone Laboratories

August 31, 1955



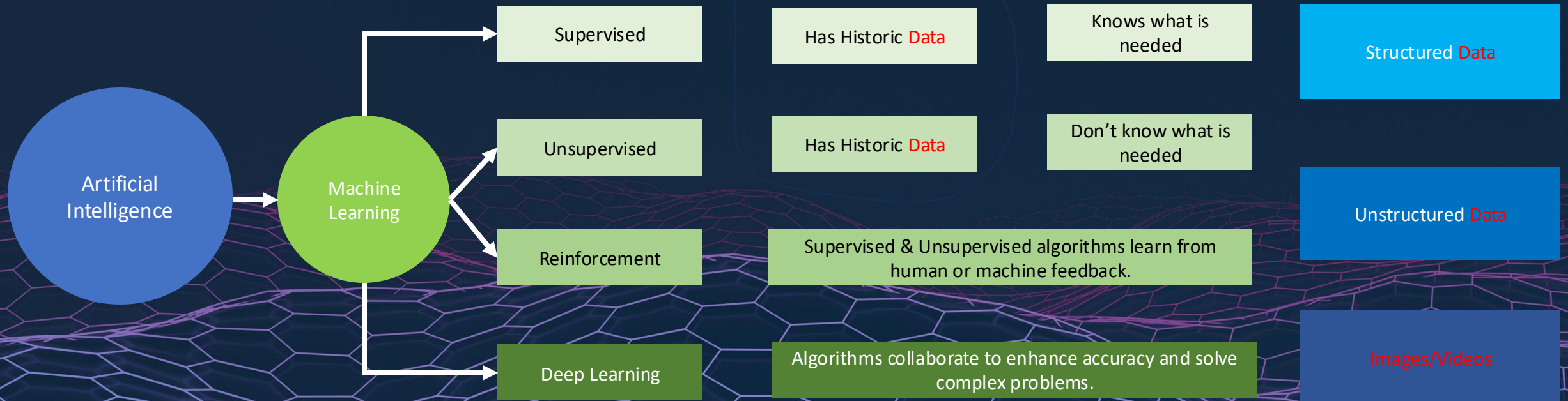
Dartmouth S



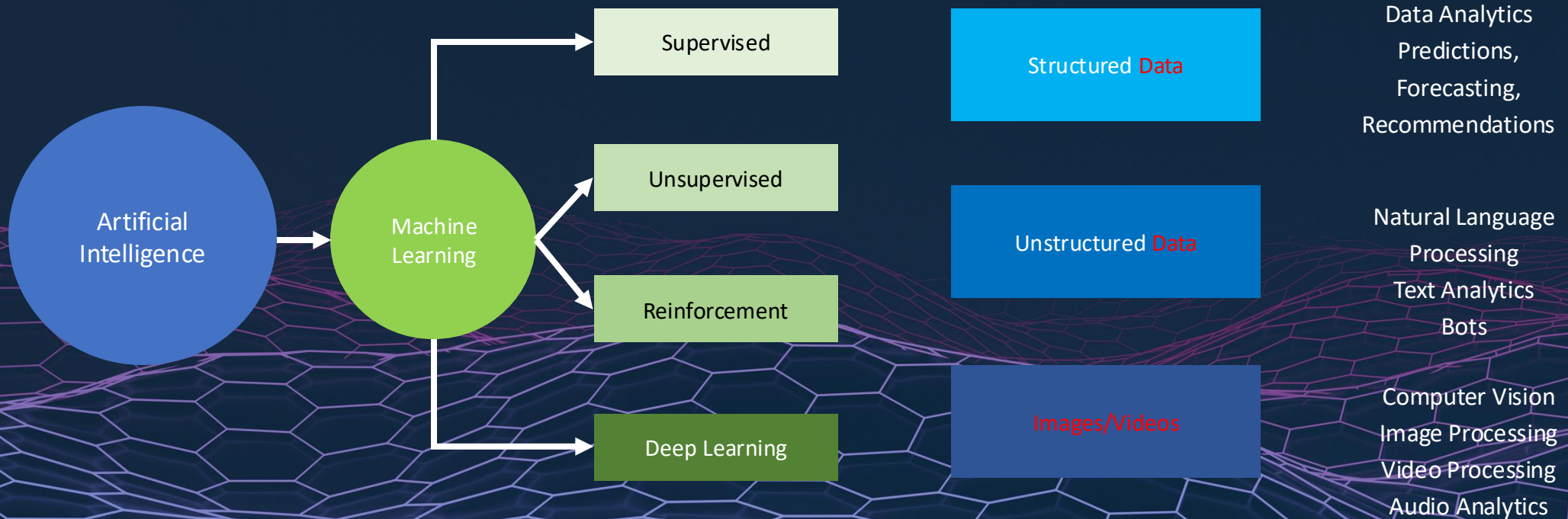
ude Shannon

ce, 1956

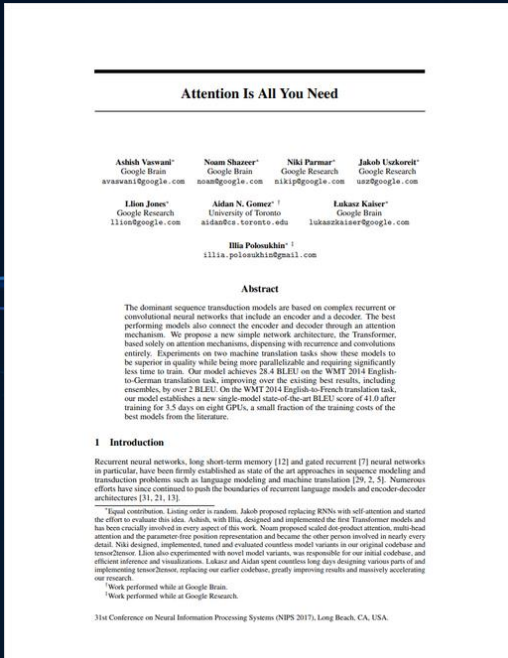
AI -Recap



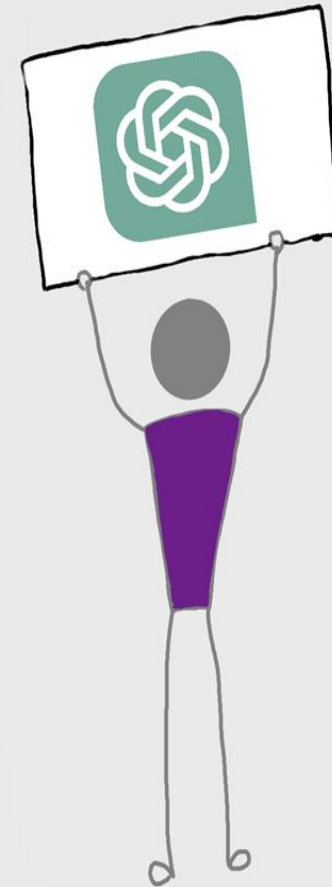
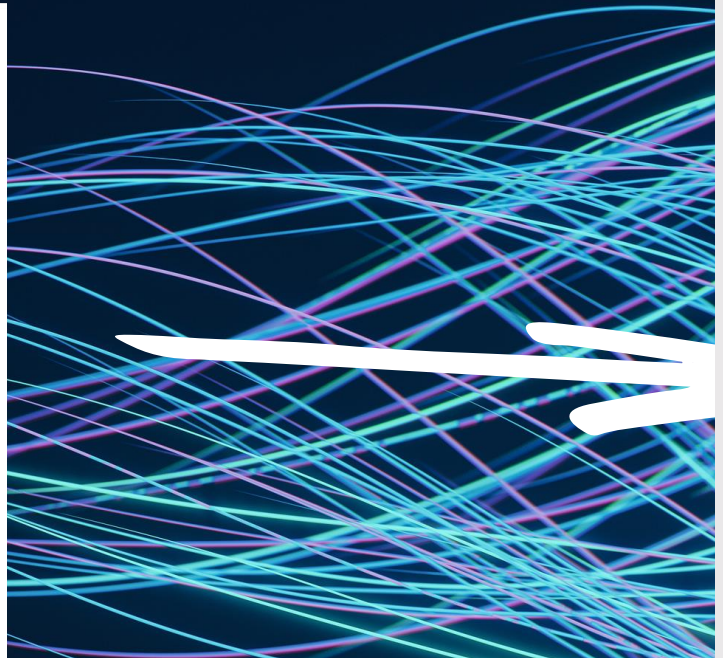
AI -Recap



Attention is all that you need

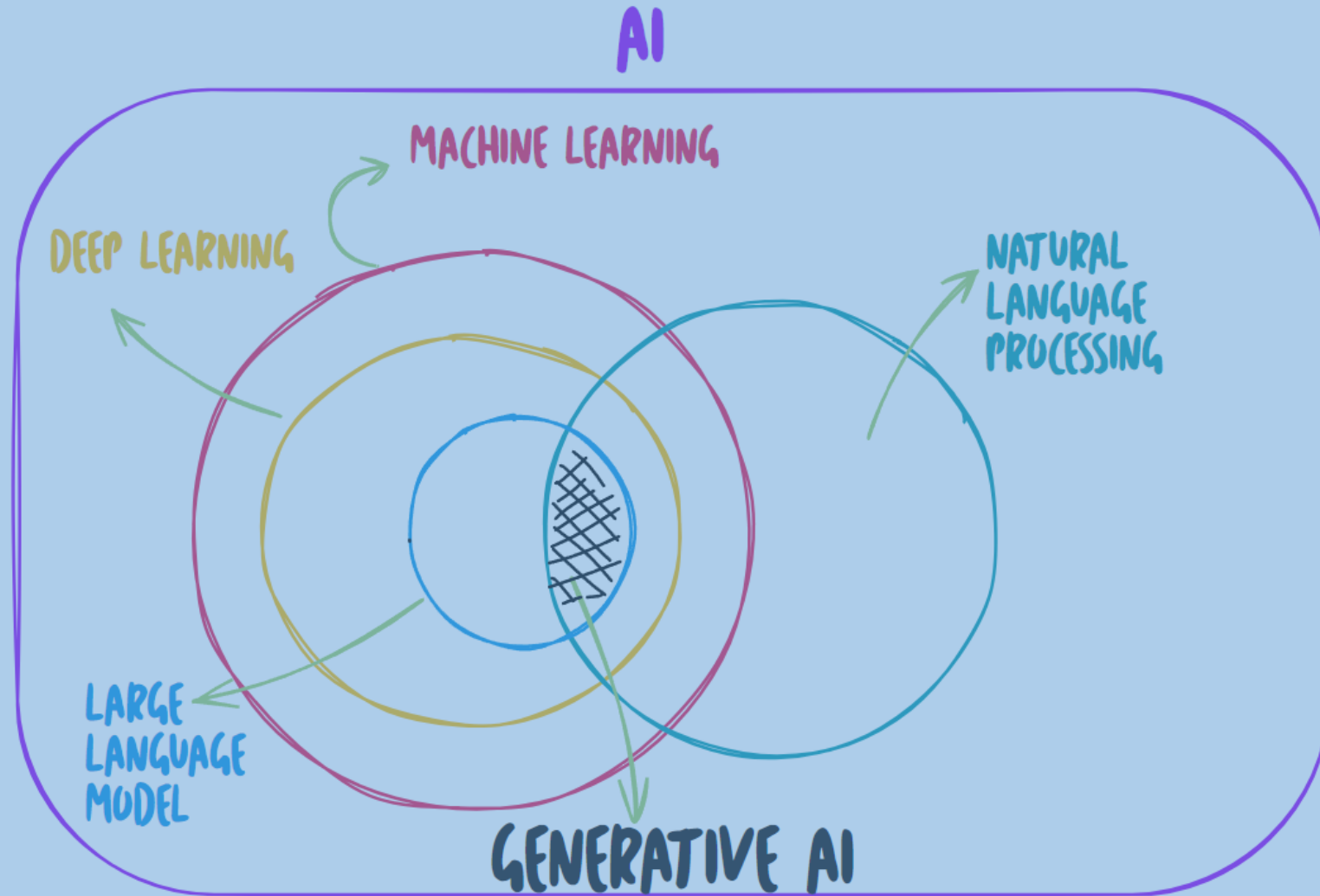


Query, Key, Value
Score
Softmax
Multiply by Value
Sum(Output)



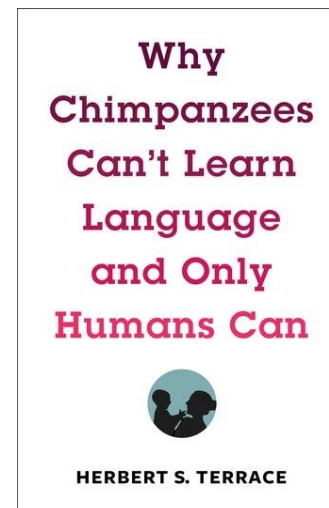
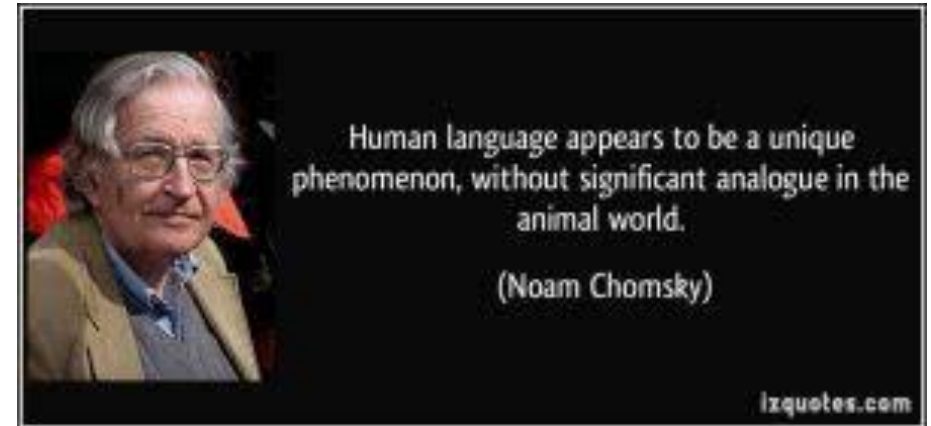
CHATGPT
brought AI from
behind the scenes
where it was lurking
from 70 years, into
our hands.

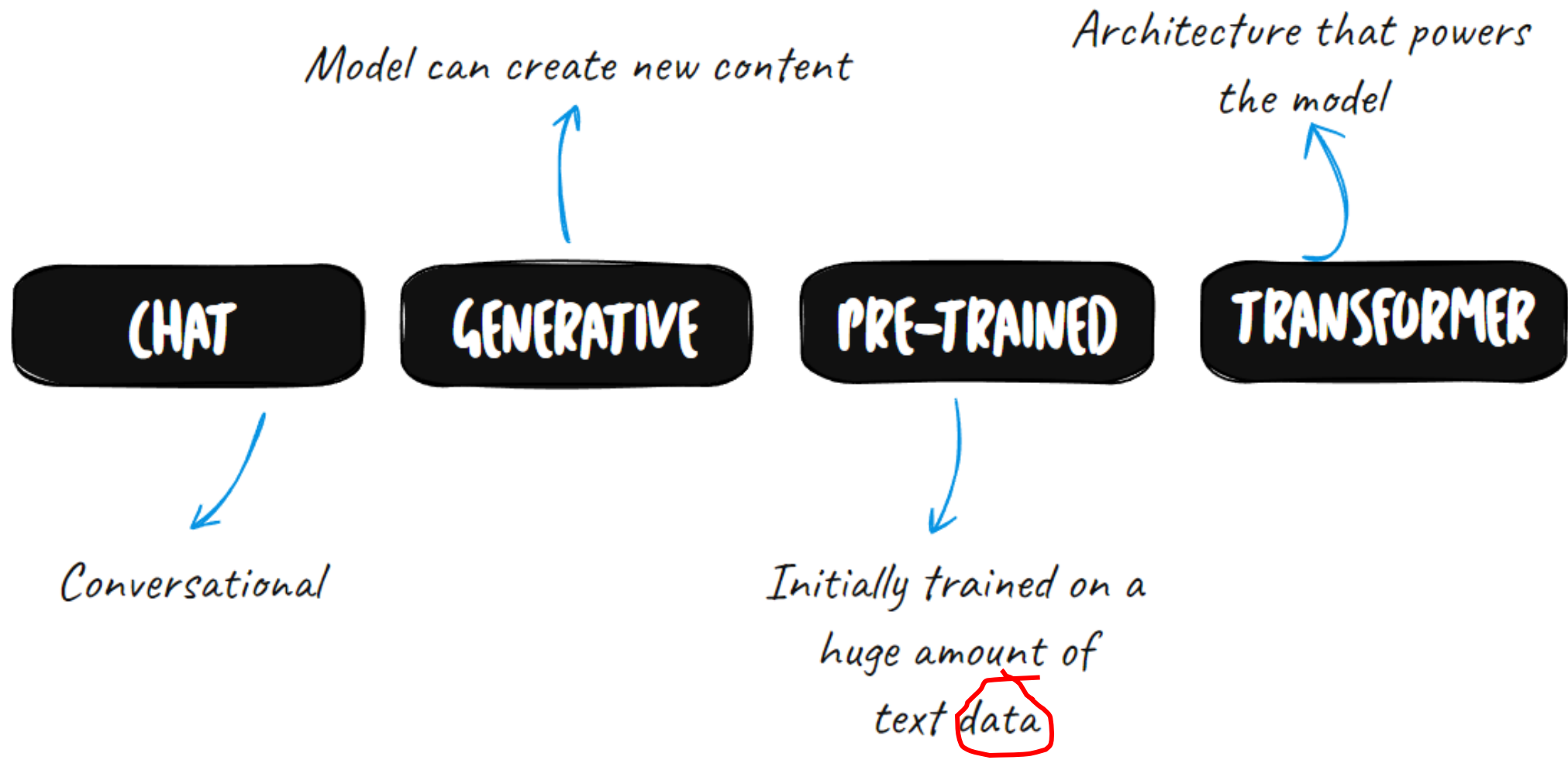
What Powers Generative AI?



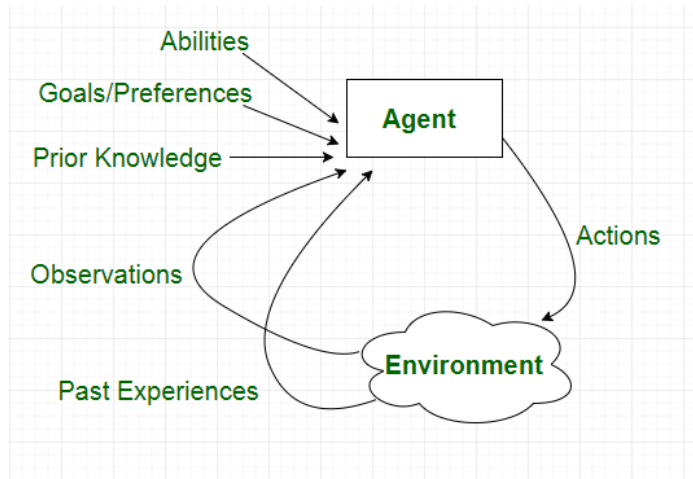
Large Language Models (LLMs) and Generative AI

- LLMs are neural networks that have been trained on massive bodies of text to process and, in particular, **generate** language
- Ingesting millions of sentences, paragraphs, and even samples of dialogue, they learn the statistical patterns that govern how each of these elements should be assembled in a sensible order
- LLMs are effectively the world's most powerful autocomplete technologies
- The model strategizes to be plausible instead of truthful





Agents are the New Platform



AI Agents Stack

NOVEMBER 2024

- VERTICAL AGENTS**
 - Decagon, SIERRA, replit, perplexity, Harvey, MultiOn, Cognition, FACTORY, All Hands, Dosu, Lindy, 11x
- AGENT HOSTING & SERVING**
 - Letta, LangGraph, Assistants API, Agents API, Amazon Bedrock Agents, LiveKit Agents
- OBSERVABILITY**
 - LangSmith, arize, weave, Langfuse, AgentOps.ai, braintrust
- AGENT FRAMEWORKS**
 - Letta, LangGraph, AutoGen, Llamaindex, crewAI, DSPy, phidata, Semantic Kernel, AUTOPILOT
- MEMORY**
 - MemGPT, zep, LangMem, mem0
- TOOL LIBRARIES**
 - composio, Browserbase, exa
- SANDBOXES**
 - E2B, Modal
- MODEL SERVING**
 - LLM, ollama, LM Studio, SGL, together.ai, Fireworks AI, groq, OpenAI, ANTHROPIC, RESTRAL AI, Gemini
- STORAGE**
 - Chroma, drant, milvus, Pinecone, Weaviate, NEON, supabase



- 4G-LTE sim card slot
- stop-motion powered 360° rotational camera with privacy mode
- LAM Large Action Model
- analog scroll wheel & push-to-talk button
- rabbit hole web portal
- your pocket companion
- direct actions
- complex actions
- ai-enhanced communication
- computer vision eye
- experimental teach mode

Evolution of the customer



Aspect	Industrial Customer	Digital Customer	AI Customer
Choice	Limited, standardized	Abundant, comparison-driven	Infinite, hyper-personalized
Interaction	Transactional, local	Omni-channel, social	Immersive, conversational
Technology Use	None or minimal	Reactive (search, click)	Proactive (anticipates needs)
Brand Relationship	Functional loyalty	Emotional and social loyalty	Collaborative partnership
Sustainability	Not a focus	Awareness growing	Integral to decisions

AI will unleash creativity

live **mint**

GenAI's hallucinations may turn out helpful if we use them well

Dreamt-up stuff can inspire human creativity if we consider it a feature instead of a software bug



JASPREET BINDRA is a technology expert, author of 'The Tech Whisperer', and a Masters in AI and Ethics from Cambridge University.

German chemist Friedrich Kekulé was having a reverie, or day-dream, of a snake biting its own tail, and he started wondering if the six carbon atoms in the benzene molecule had a similar structure. This hallucinatory experience led to the discovery of the hexagonal ring structure with alternating single and double bonds, a ground-breaking concept in organic chemistry. Kekulé was not the only one. Dmitri Mendeleev reportedly had a vision of the periodic table and Edison claimed to mine his dreams for material. Writer Stephen King claimed to have dreamt up his novel *Misery* during a somnolent flight, and the masterpieces of Van Gogh and Salvador Dali were often inspired by hallucinations.

The word 'hallucinate' entered the technology lexicon after the launch of ChatGPT and the realization that these Generative AI chatbots were inventing or 'dreaming up' a lot of false and weird stuff. ChatGPT's savior ego Sydney famously expressed its undying love for a *New York Times* reporter. A US lawyer relied upon it to file a case against an airline, but the judge found that all the cases cited were dreamt up by ChatGPT. When I was writing a paper on Indian philosophy and privacy for a Cambridge University course, ChatGPT authoritatively gave me five research papers to cite—all of them wrong. This hallucinatory ability of GenAI has peo-

ple worried, especially when dealing with enterprise use cases or applications in healthcare or education. In fact, the efficacy of a large language model (LLM) is often measured by how much it does or does not hallucinate, with research companies introducing hallucination indexes. A recent Cornell research ([bit.ly/48gko53](#)) revealed that GPT-3.5 hallucinated 69% of the time, and Meta's LLaMA 2 hit an astounding 88% level. While the later versions of the models have improved substantially, companies are worried that the nonsense that these models spew out could hurt their brand and stock price, anger customers and pose a legal threat.

However, we need to think differently about this. What if hallucinations in LLMs are a feature, not a bug? The probabilistic construct of these models promotes this behaviour, and it might be impossible for Generative AI to be accurate all the time. What if we start leveraging this human-like behaviour of creativity (and, yes, hallucination) the same way Kekulé and Dali did? Sundar Pichai of Google backs the thought. He suggests that hallucinating could be a feature and a bug, and that a GenAI experience should be "imaginative, like a child who doesn't know what the constraints are when they're imagining something." Marc Andreessen of AI6Z

QUICK READ

The false and weird results that Generative AI often throws up have got many people worried but we should start viewing these hallucinations as an aid for human creativity.

Factual accuracy may not be GenAI's strong suit but it helps to have new ideas churned out that can inspire novel thoughts and judge our minds towards creative combinations.

remarked: "When we like the answer, we call it creativity; when we do not, we call it hallucination."

Artists and creators have caught on. John Thornhill has written in the *Financial Times* ([bit.ly/42E8FNm](#)) about Martin Puchner, a Harvard professor who 'loves hallucinations.' Puchner talks about how humans mix cultures and inputs from previous generations to generate new stuff, and how civilizations advance that way. "Culture," he says, "is a huge recycling project." This is precisely what GenAI is doing. It is borrowing, stealing, copying and also mashing up different inputs from humans to create new stuff. Thus, says Thornhill, "Hallucinations may not be so much an algorithmic aberration as a reflection of human culture." If we stop looking at GenAI as a forecasting tool, but as one that enhances our creative process by giving us innovative ideas and content, 'hallucinations' would be welcome. Modern artists and creators have started harnessing this power. Visual Electric, a California-based firm, encourages hallucinations to create new visuals and ideas ([bit.ly/49AhuAd](#)). Austin Carr has written in *BusinessWeek* about a film director, Paul Trillo, who used GenAI to create an acclaimed short film with psychedelic effect. Inworld AI uses the creativity of GenAI to help video game developers build interactive computer characters.

We need to see GenAI for what it is, not confuse it with machine or deep learning (which are also AI) and expect it to make high-accuracy predictions. Think of GenAI as a writer of fiction, not non-fiction. It is the 'creative' side of GenAI that enables idea generation, art production and better work outcomes with Copilot. If we think like Stephen King or Van Gogh, it can become an immensely powerful creative tool. As for use cases that require exact answers, we need to be careful until these models improve. Until then, as John Thornhill concludes his FT article: "Caveat prompter." Gen-AI users, beware.



Sam Altman @sama · Feb 15

we'd like to show you what sora can do, please reply with captions for videos you'd like to see and we'll start making some!

15K

3.3K

30K

6.9M

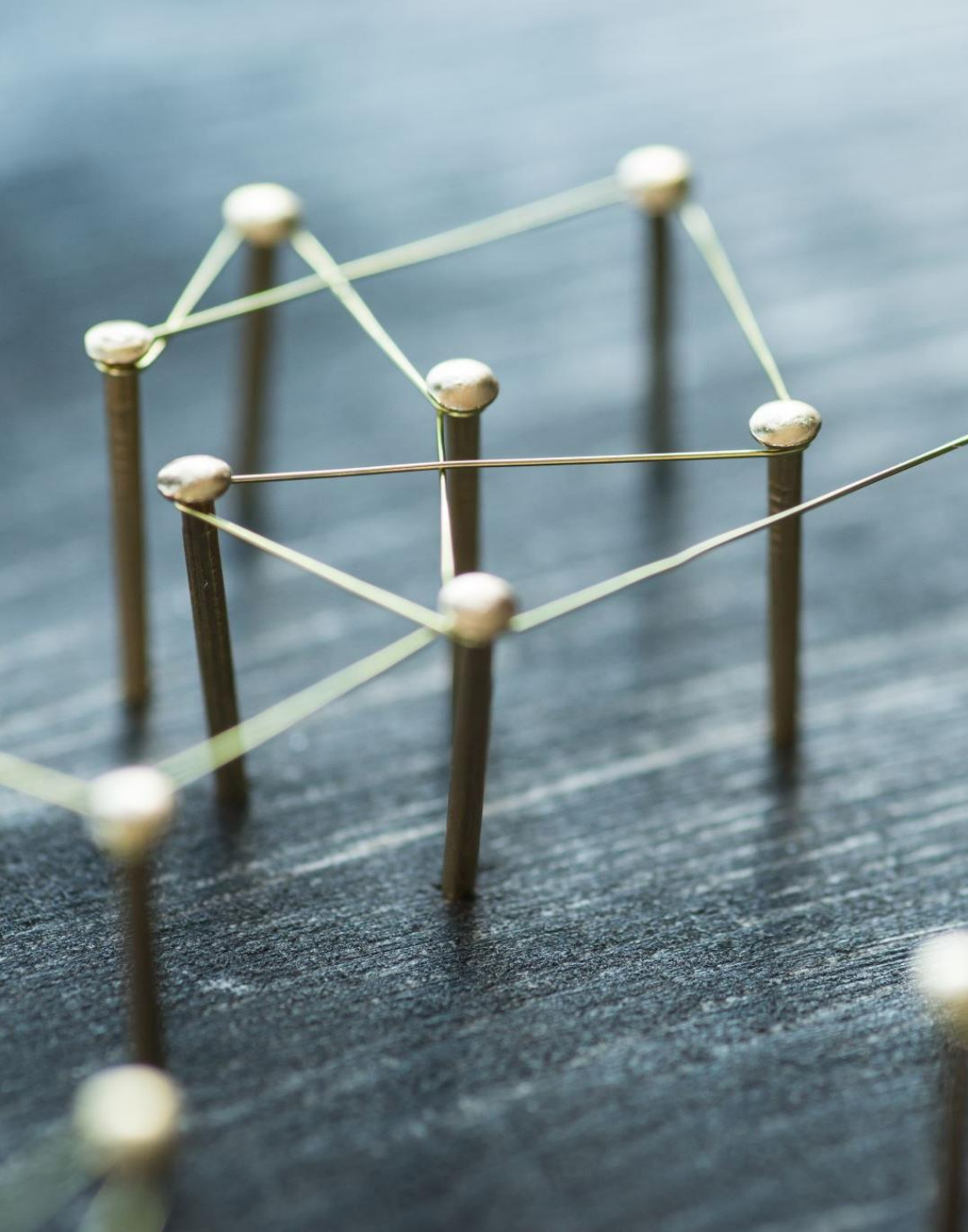


Kunal Shah

@kunalb11

A bicycle race on ocean with different animals as athletes riding the bicycles with drone camera view

11:50 PM · Feb 15, 2024 · 6.7M Views



Does Data Shape AI, or Can AI Lead Alone?

Let us ask the AI!

The Role of Data in Shaping AI

- 1. Foundational Necessity:** Data is the raw material that fuels AI algorithms. Without high-quality, diverse datasets, AI models are prone to bias and inaccuracies.
- 2. Contextual Understanding:** AI relies on data to learn context, patterns, and relationships. For instance, AI in healthcare depends on medical datasets to make diagnoses or predictions.
- 3. Evolution of Models:** Continuous data input allows AI systems to improve through training, fine-tuning, and learning from real-world feedback.

Can AI Lead Without Data?

- 1. Pre-trained Models and Transfer Learning:** AI systems like OpenAI's GPT models leverage pre-trained knowledge but still require domain-specific fine-tuning for accuracy.
- 2. Emerging Self-Improvement Capabilities:** Advanced AI systems are exploring reinforcement learning and synthetic data generation, reducing dependence on external data to some extent.
- 3. Knowledge vs. Intelligence and Creativity:** AI without data may mimic intelligence or creativity but lacks the ability to adapt to novel scenarios, making it less reliable in dynamic environments.

Philosophical and Ethical Considerations

- 1. Does Data Equal Intelligence?** Data-driven AI may reflect human knowledge but not creativity or autonomy. AI "leading alone" suggests evolving beyond human input, raising existential questions.
- 2. Risk of Autonomy:** If AI operates independently of data, it could become less transparent, posing risks of decision-making without accountability.
- 3. Ethical Boundaries:** The balance between data dependence and AI autonomy involves ethical dilemmas about control, bias, and trustworthiness.

Future Outlook

1. **Symbiotic Relationship:** Data and AI are interdependent. The future likely lies in a hybrid model where AI uses pre-existing data, generates new insights, and adapts to novel scenarios.
2. **AI as a Data Creator:** Generative AI has started to create its own data (e.g., synthetic datasets), which could pave the way for AI systems to "lead" within specific domains.

Emergent Properties



Emergent properties are the computational capabilities of AGI systems that cannot be reduced to the properties of their individual components.

“Something unknown is doing we don’t know what” - Sir Arthur Eddington

GPT-4 vs ChatGPT

Prompt: Here we have a book, 9 eggs, a laptop, a bottle and a nail. Please tell me how to stack them onto each other in a stable manner.

GPT-4:

One possible way to stack the objects onto each other in a stable manner is:

- Place the book flat on a level surface, such as a table or a floor. The book will serve as the base of the stack and provide a large and sturdy support.
- Arrange the 9 eggs in a 3 by 3 square on top of the book, leaving some space between them. The eggs will form a second layer and distribute the weight evenly. Make sure the eggs are not cracked or broken, and handle them gently to avoid dropping them.
- Place the laptop on top of the eggs, with the screen facing down and the keyboard facing up. The laptop will fit snugly within the boundaries of the book and the eggs, and its flat and rigid surface will provide a stable platform for the next layer. Make sure the laptop is closed and turned off, and do not press any keys or buttons.
- Place the bottle on top of the laptop, with the cap facing up and the bottom facing down. The bottle will add some height and balance to the stack, and its cylindrical shape will reduce the contact area with the laptop. Make sure the bottle is empty and closed, and do not shake or tilt it.
- Place the nail on top of the bottle cap, with the pointy end facing up and the flat end facing down. The nail will be the final and smallest object in the stack, and its sharp tip will prevent it from rolling or sliding off the bottle. Make sure the nail is clean and straight, and do not touch or move it.

ChatGPT

Prompt: Can you write a proof that there are infinitely many primes, with every line that rhymes?

ChatGPT:

Sure! Here is a proof that there are infinitely many primes, with each line of the proof rhyming:

Consider the set of all primes.
Call this set P and let it start with just two, the first prime.
If we take all the primes in P and add one,
We get a new set of numbers that has never been done.

This set, call it S , is composed of only composite numbers.
No primes will be found among them, that's for sure.
But we know that there must be at least one prime,
Since S is infinite, and that much is clear.

If we take the smallest number in S that is not in P ,
And call it p , we can add it to our set, don't you see?
But this process can be repeated indefinitely.
Thus, our set P must also be infinite, you'll agree.

So there you have it, a proof that's quite solid.
There are infinitely many primes, that much we can see.
No need to be coy, no need to be contrite.
Infinity is a big number, just like P .

Prompt: Draw a unicorn in TikZ.

ChatGPT: [Produces LaTeX compiling to following picture.]





So, what can you do about it now?

Building AI and Tech Literacy In Your Organization. And Beyond

[Go Beyond >](#)

Our Impact

2.5 Million+
People Impacted

100+
Engagements

120+
Customers



THANK YOU



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