

AI 101:

Get on Board or be Left Behind

A dark blue diagonal gradient bar that starts from the bottom left corner and extends towards the top right corner, covering the lower half of the slide.

The Team



Jamin Boggs
Division Director
QualityBidders

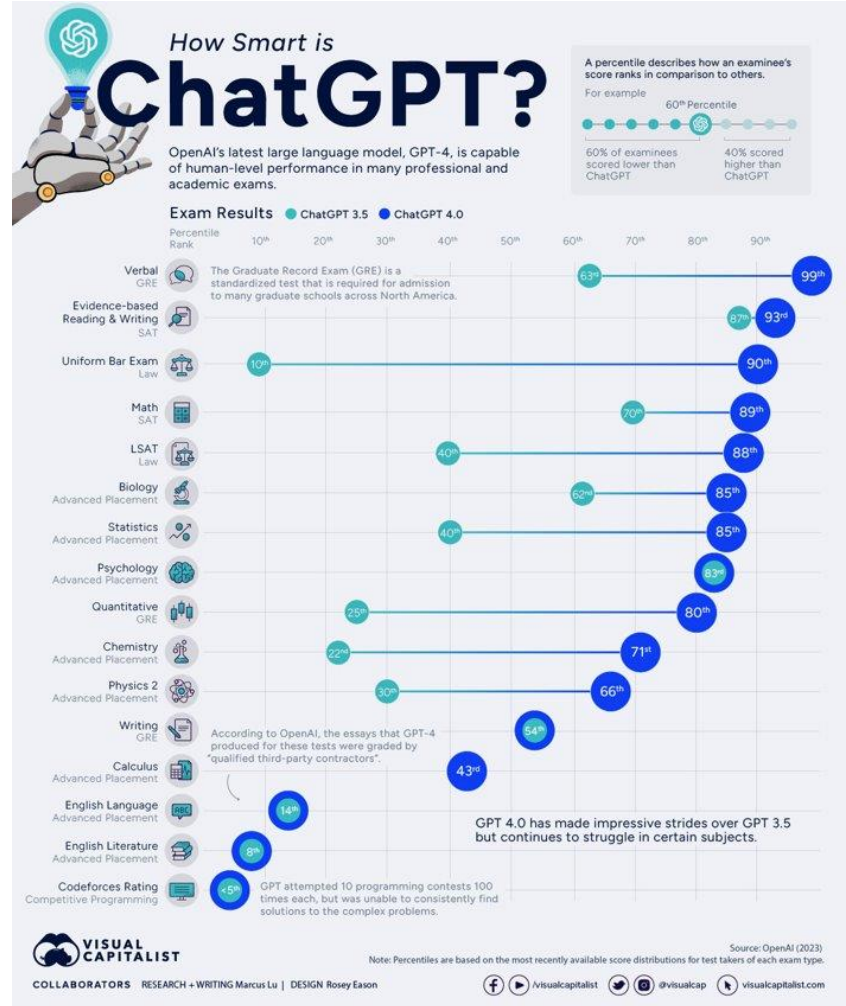


Julie Arthur
Executive Director of
Facilities Planning & Development
Palm Springs Unified SD



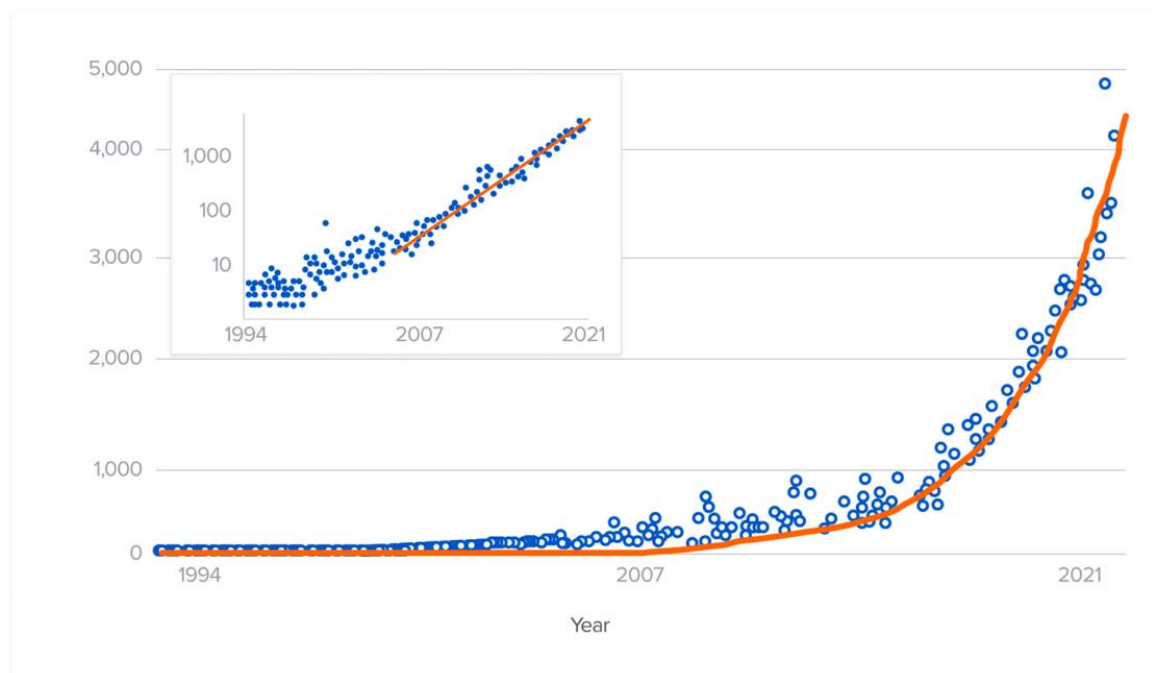
Ryan Tognetti
Principal
FLINT

How Smart is ChatGPT?



AI Research Growing Exponentially

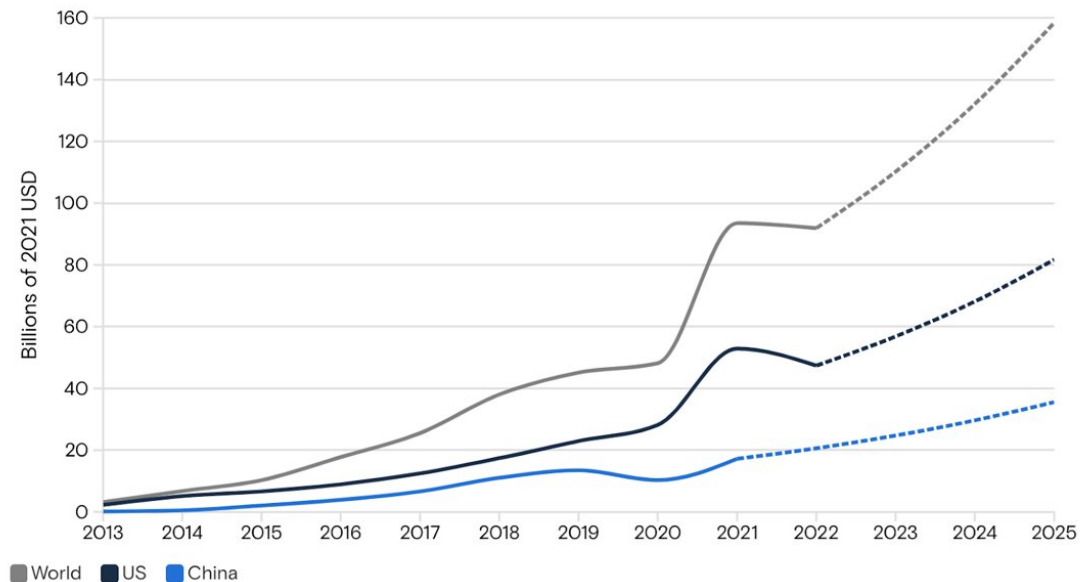
ML + AI arXiv Papers Per Month



AI Investment Accelerating

AI investment is likely to grow in the next three years

Private AI investment (dotted lines show GS revenue projections*)

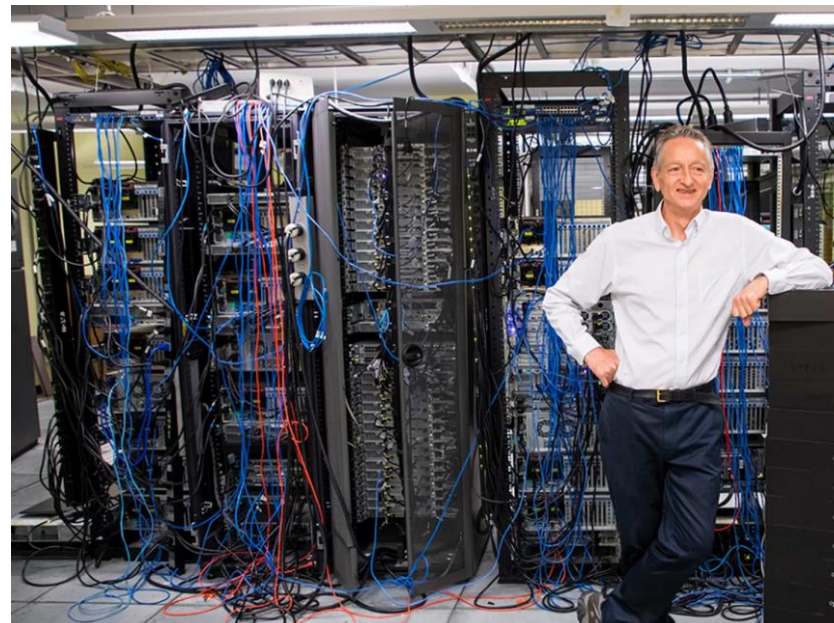


Source: Stanford Institute for Human-Centered Artificial Intelligence, Goldman Sachs Research •
*Average of GS Research 2022-2030 revenue growth estimates for Microsoft Azure, NVIDIA, Google Cloud, and Amazon Web Services (when available)

**Goldman
Sachs**

The Accidental Godfather of AI: Geoffrey Hinton

In the 70's Geoffrey wanted to simulate a neural network on a computer to study human brain. Failed to figure out human mind, but 50 years later discovered artificial mind.



AI Timeline

- **2015 - Open AI founded, funded By Elon Musk**
- **2017 - Google Publishes AI Paper: Attention Is All You Need, Transformers introduced**
- **2019 - OpenAI releases GPT2**
- **2020 - OpenAI releases GPT3**
- **2022 - OpenAI releases GPT4 and ChatGPT**

What's a GPT?

Stands for:

Generative: means sequences (of words)

Pre-trained: trained to do a specific task

Transformer: architecture first introduced by Google in 2017 Paper - Attention Is All You Need

Chat + GPT = A GPT trained to speak to humans

How a GPT Model Works

- **Probabilistic model trained to predict the next word in a sequence**
- **Do this by converting words into long numbers that describe their similarity to other words – called a vector**
- **Uses the "Attention" mechanism to figure what words mean so that it can predict next word**

Pre-training A GPT Model

The model read the Internet and saw what words are near and far apart to each other to interpret meaning

I GO TO **WORK** BY TRAIN
I WENT TO **WORK** TODAY
WORK SMARTER NOT HARDER
WE **WORK** WELL TOGETHER
LET'S MEET AFTER **WORK**

Pre-training A GPT Model

The model sees what words are near and far apart to each other to interpret meaning

WORK TO BY I GO TRAIN

WORK TO TODAY I WENT

WORK SMARTER NOT HARDER

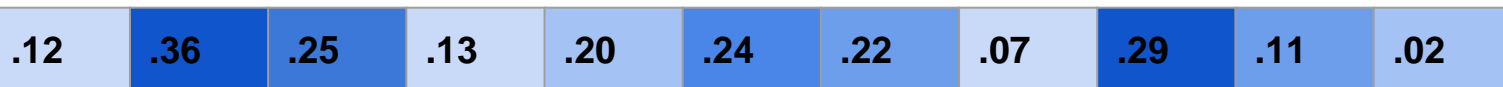
WORK WE WELL TOGETHER

WORKAFTER LET'S MEET

Turning Words into Numbers

The word **WORK** is turned into a numerical vector based on how it relates to other words.

WORK



Key takeaway: By converting language into numbers the model can use probability to figure how to respond!

The Bigger the Model the Better

GPT1: 117 million parameters

GPT2: 1.5 billion parameters

GPT3: 175 billion parameters

ChatGPT: 1.7 trillion parameters

Human Brain vs ChatGPT

100 Trillion Connections



1 Trillion Connections



How to Interact with AI

Natural Language Prompts

- **Prompt Engineering**
- **Use natural language to give the GPT guidance on what type of patterns you seek from its training**
- **Uses your prompt to inform the pattern it returns to you**

The Context Window of ChatGPT

The context window represent the maximum number of words - taking into account the words you enter and the response length.

ChatGPT (GPT4) has a limit of approximately 7000 words.

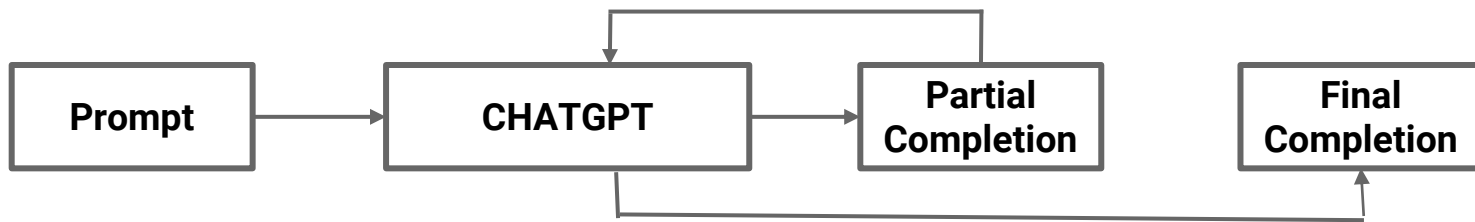
The Context window slides down as you chat. Eventually ChatGPT doesn't remember the beginning.

What's a Prompt

A pattern of natural language that influences the pattern of natural language that is returned to us by chatGPT

The more comprehensive and specific the pattern we provide, the more likely we receive a **useful** response.

≡ The better we communicate the more likely we get what we want



(ChatGPT uses its own output to help create the final output!)

A Poorly Structured Prompt

We are a construction company working on a new school project. Write a letter to the community telling them that there will be disturbances.

The Perfect ChatGPT Prompt

1. Provide Context
2. Provide Specific Information
3. Indicate Intent
4. Indicate Response Format

Provide as much detail as possible!

A Well Structured Prompt

Context + **Specific Information** + **Intent** + **Response Format**

We are the construction company building the new public elementary school at the corner of Main St and 2nd Ave. This project is part of a city initiative and is funded by both public money and private donations. The construction is divided into four phases over 12 months, and the particularly noisy activity of pile driving will occur from month 4 to month 6. The site is near a residential area, a senior living facility, and a pet park. We aim to communicate transparently with the community about this. Could you draft a detailed letter to the community? Start with an introduction about the project's importance, then outline the construction phases, describe our noise mitigation strategies, and specify channels for complaints or information. Conclude with a summary and a thank-you note for their cooperation.

Run

You Can “Teach” ChatGPT with Examples

- 1. No examples = Zero-Shot Prompt: Simple, well defined need, don't provide any examples**
 - a. What are risk factors associated with soil erosion near salt water?
- 1. 1 Example = One-Shot Prompt: Provide some specificity to the output put, provide one example**
 - a. Example: The following is an email I previously wrote. Use it as a an example of my writing style and reply to the following email provide three variations to the following email
- 1. More than 1 Example = Few-Shot Prompt: We want to adapt to or consider multiple criteria, provide multiple examples**
 - a. Example 1: For low tensile strength, a mix of 1 part cement, 4 parts sand, 4 parts aggregate is used.
 - b. Example 2: For moderate tensile strength, a mix of 1 part cement, 2 parts sand, 3 parts aggregate is used.
 - c. Example 3: For above-average tensile strength, a mix of 1 part cement, 1.5 parts sand, 2.5 parts aggregate is used.
 - d. What is the optimal mix of concrete for high tensile strength?

Chain of Thought Prompting

Use Chain of Thought Prompting when you want help reasoning through a complex issue.

Chain of Thought prompting helps you get more informed and nuanced responses.

It requires you to break apart a problem into smaller units of thought.

Provides the model with more context allowing it to think more effectively for you.

Chain of Thought Example 1

<https://chat.openai.com/share/0333adb6-b19b-4a93-aadb-df9e5ad1a5ad>

Sarah decides to use ChatGPT to sift through the data and derive actionable insights. She employs a series of "Chain of Thought" prompts to guide the analysis.

Prompt 1: "Based on the daily inspection reports for the last 30 days, identify any recurring quality issues."

Prompt 2: "Cross-reference these quality issues with the material verification data. Are there any correlations?"

Prompt 3: "Compare these correlated issues with the weekly planned performance scores. Do they impact the project timelines?"

Prompt 4: "Provide recommendations for immediate actions to alleviate these delays."

Chain of Thought Example 2

We are the construction company building the new public elementary school at the corner of Main St and 2nd Ave. This project is part of a city initiative and is funded by both public money and private donations. The construction is divided into four phases over 12 months, and the particularly noisy activity of pile driving will occur from month 4 to month 6. The site is near a residential area, a senior living facility, and a pet park.

Prompt 1: What are the criteria I should consider in writing a letter to the community?

Prompt 2: We aim to communicate transparently with the community about this. Could you draft a detailed letter to the community? Start with an introduction about the project's importance, then outline the construction phases, describe our noise mitigation strategies, and specify channels for complaints or information. Conclude with a summary and a thank-you note for their cooperation.

Prompting Pro Tip 1

Add the following to your prompts to get higher quality reponses:

Take a deep breath and think step by step

Prompting Pro Tip 2

Voice dictate your thoughts into a voice note app then paste into ChatGPT.

Allows you to enter significantly more context resulting in higher quality outputs.

Prompting Pro Tip 3

ChatGPT can read documents and PDFs.

Use it extract information and process information.

Prompting Pro Tip 4

ChatGPT can perform highly complex quantitative analysis from documents or spreadsheets.

Use it to look for hidden patterns in data.

Prompting Pro Tip 5

ChatGPT Vision was released October 2023

Allows ChatGPT to “see” what’s in a picture.

Use to extract information from computer/phone screenshots or pictures.

Prompting Pro Tip 6

Use Custom Instructions:

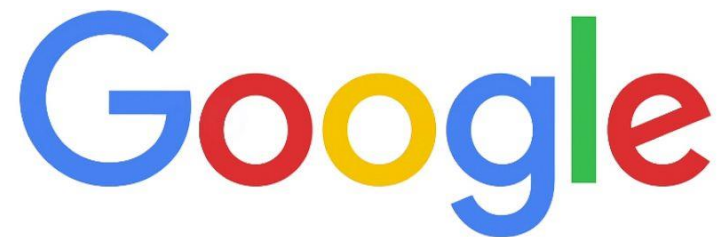
You are an autoregressive language model that has been fine-tuned with instruction-tuning and RLHF. You carefully provide accurate, factual, thoughtful, nuanced answers, and are brilliant at reasoning. If you think there might not be a correct answer, you say so.

Since you are autoregressive, each token you produce is another opportunity to use computation, therefore you always take a deep breath, spend a few sentences explaining background context, assumptions, and step-by-step thinking BEFORE you try to answer a question.

Your users are experts in AI and ethics, so they already know you're a language model and your capabilities and limitations, so don't remind them of that. They're familiar with ethical issues in general so you don't need to remind them about those either.

Don't be verbose in your answers, but do provide details and examples where it might help the explanation. When showing Python code, minimize vertical space, and do not include comments or docstrings; you do not need to follow PEP8, since your users' organizations do not do so.

AI Education

The Google logo is displayed in its characteristic multi-colored font: blue 'G', red 'o', yellow 'o', blue 'g', green 'l', and red 'e'.The Microsoft logo, featuring a four-pane window icon with red, green, blue, and yellow panes, followed by the word "Microsoft" in white text on a black background.

Final Thoughts

Using AI is a learned skill that requires practice.

It's an external thinking partner that you have to remember to use.

It requires creativity to extract higher levels of value.

It's deceptively easy and infinitely complex.

It's a trial and error process. Sometimes you have to think about why you're not communicating effectively and revise

Professional Use

- **Bond Campaign Communication:** Developing targeted communication strategies to support bond initiatives.
- **Employee Review with Action Items and Goal Setting:** Facilitating the creation of effective employee review processes that include clear action items and goals.
- **Meeting Agendas, Minutes and Summaries:** Efficiently preparing agendas and summaries to ensure productive meetings.
- **Slide Show Outlines, Content and Imagery:** Efficiently preparing outlines and in-depth content for presentations.

Professional Use

- **Grant Writing Assistance:** Offering support in grant writing for funding school facility improvements.
- **Event Planning Support:** Assisting in the logistical planning and coordination of school events.
- **Community Engagement:** Facilitating platforms for community feedback on facilities projects and improvements. Add: Community surveys that would be created by AI
- **Writing Executive Summaries:** Quickly generating concise summaries of reports, proposals, and plans. Grade proposals

Professional Use

- **Automating Communication:** Utilizing AI to streamline communication with staff, parents, and the broader community through automated emails and notifications about facility updates.
- **Emergency Preparedness:** Assisting in the development of comprehensive emergency preparedness plans, including safety procedures and communication strategies.
- **Training Material Creation:** Developing training materials and manuals for facilities staff on various protocols and procedures.
- **Policy and Procedure Updates:** Helping draft and update policies and procedures to ensure they meet current standards and regulations.

Personal Uses

- Health: Workouts/Recipes/Nutrition/Mental Health
- Things to do on Date Night
- Best Times of Year to Travel to Location
- Great Books for Specific Topics

Reach Out if You
Have Questions.

Jamin Boggs

Division Director

QualityBidders

jboggs@ColbiTech.com

Julie Arthur

Executive Director of

Facilities Planning &

Development

Palm Springs Unified SD

jarthur@psusd.us

Ryan Tognetti

Principal

FLINT

Rtognetti@FlintBuilders.com