

Automation Workflow with Generative AI



Topics

Automation Workflow
Generative AI (GenAI)
Prompt engineering
Workshop with GenAI
Workshop with use cases



Workflow ?

Series of steps taken in a specific order to complete goal
Product and business process

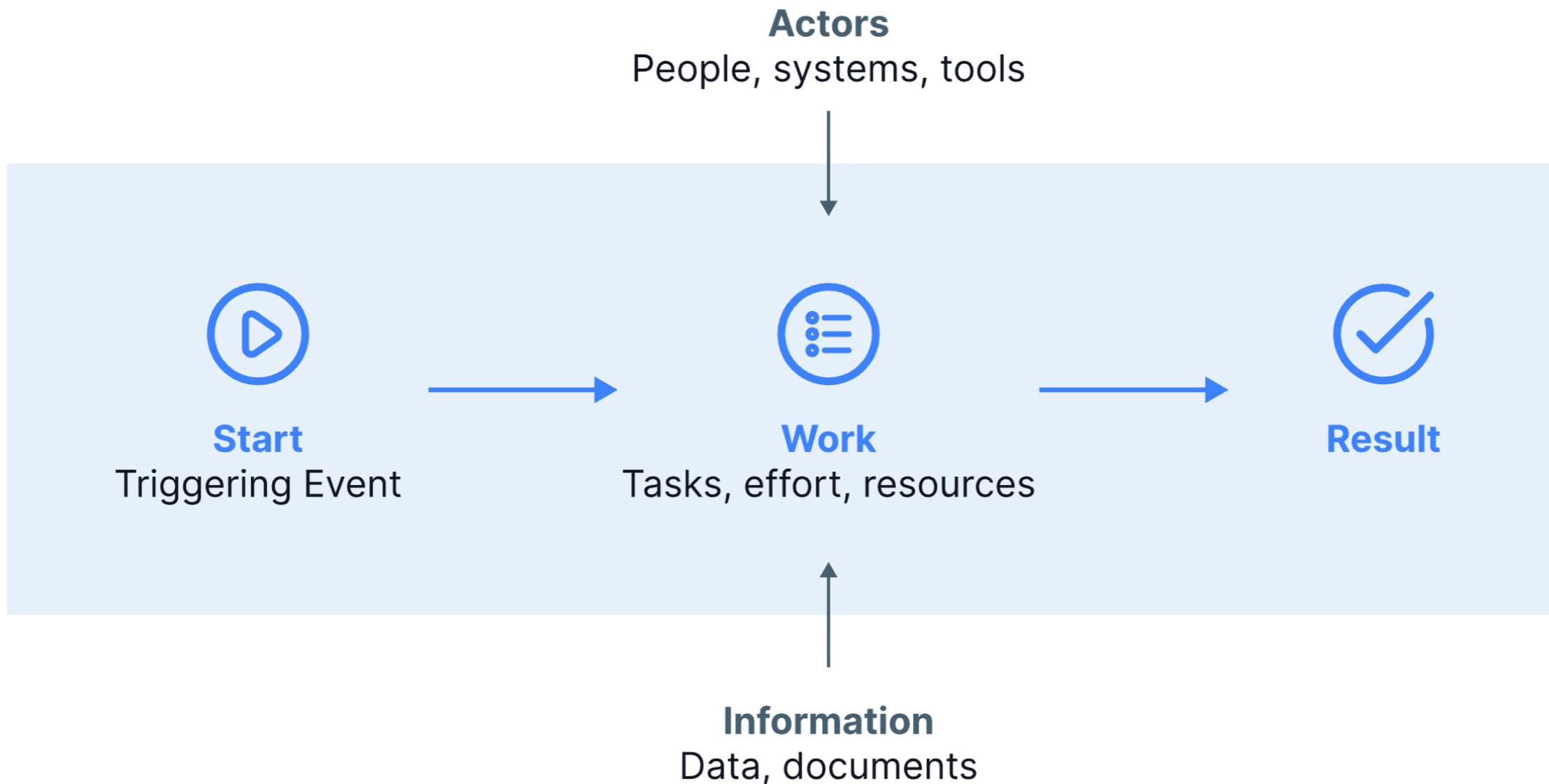
Reduce rework

More efficiency

Increase
productivity



Anatomy of Workflow ?



Key aspects of workflow ?

Defined steps

Specific order

Clear responsibility

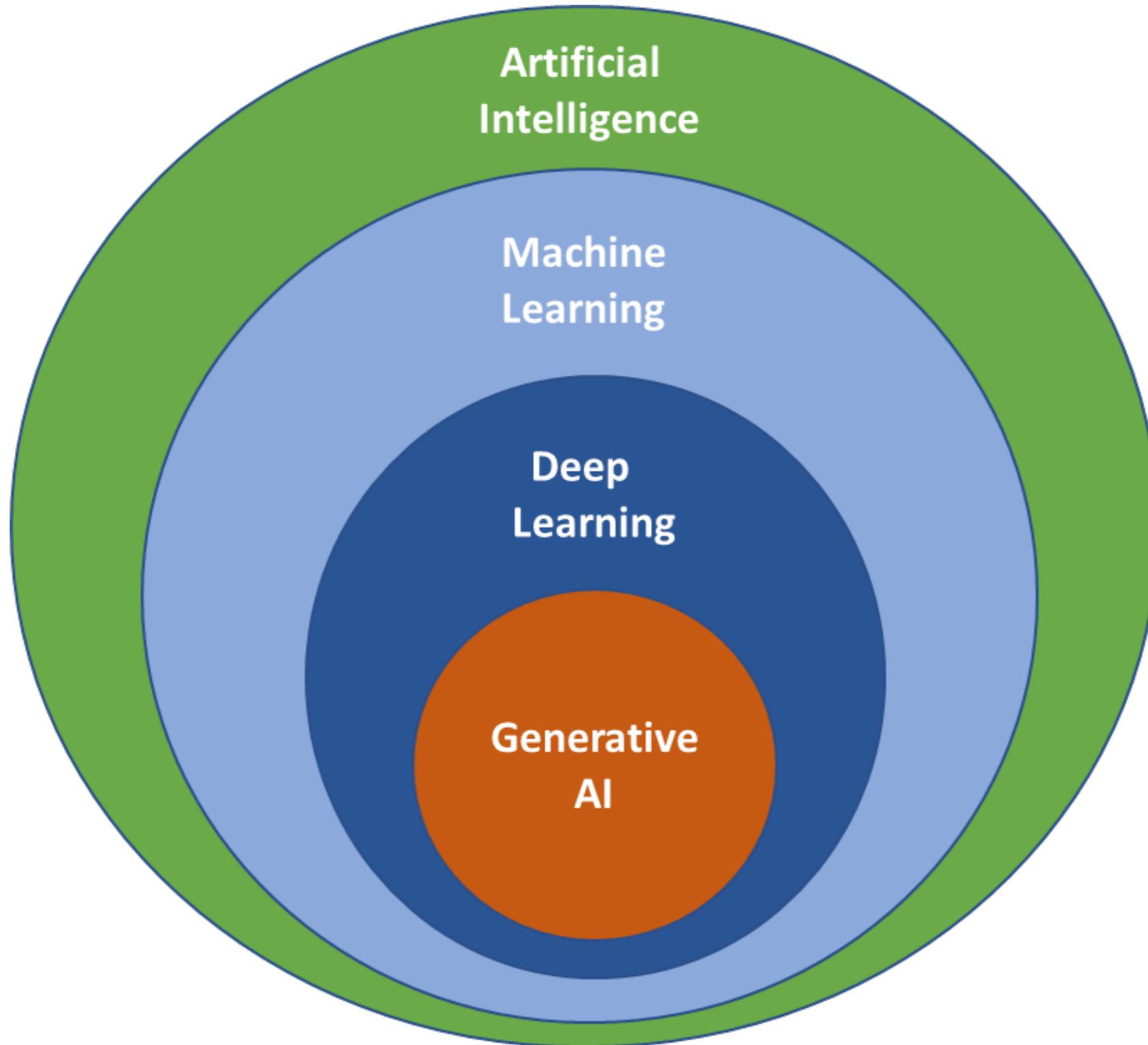
Efficiency (standardize, reduce confusion/duplication)

Automation (from manual to automated)

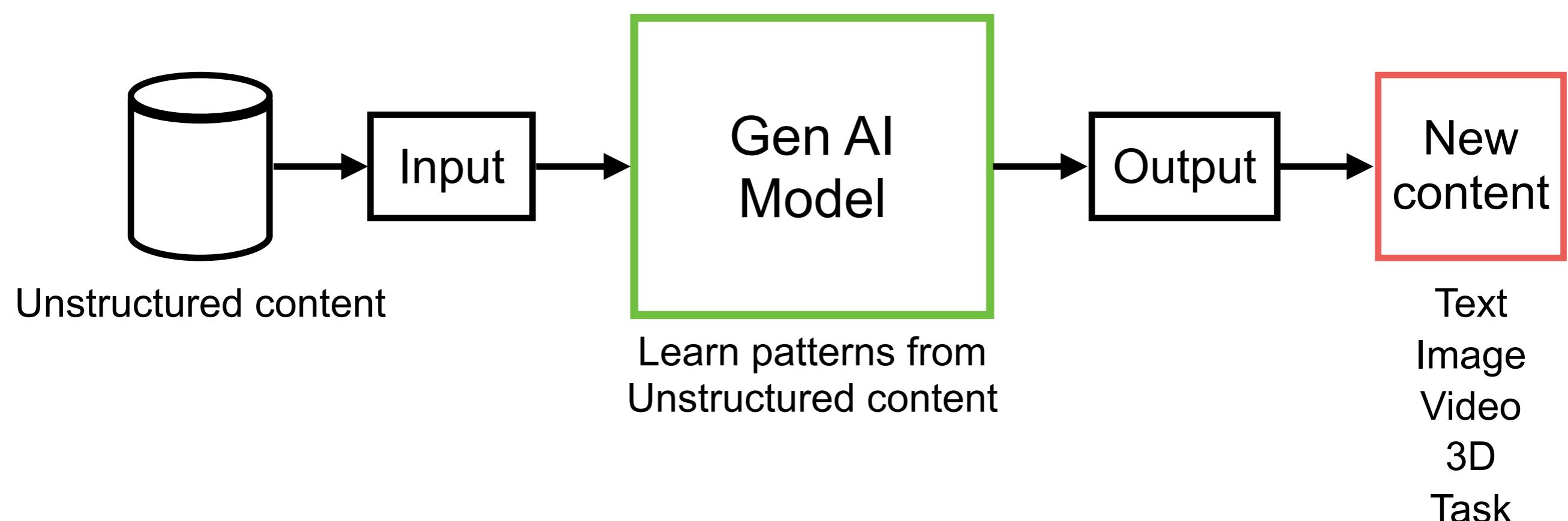


Generative AI



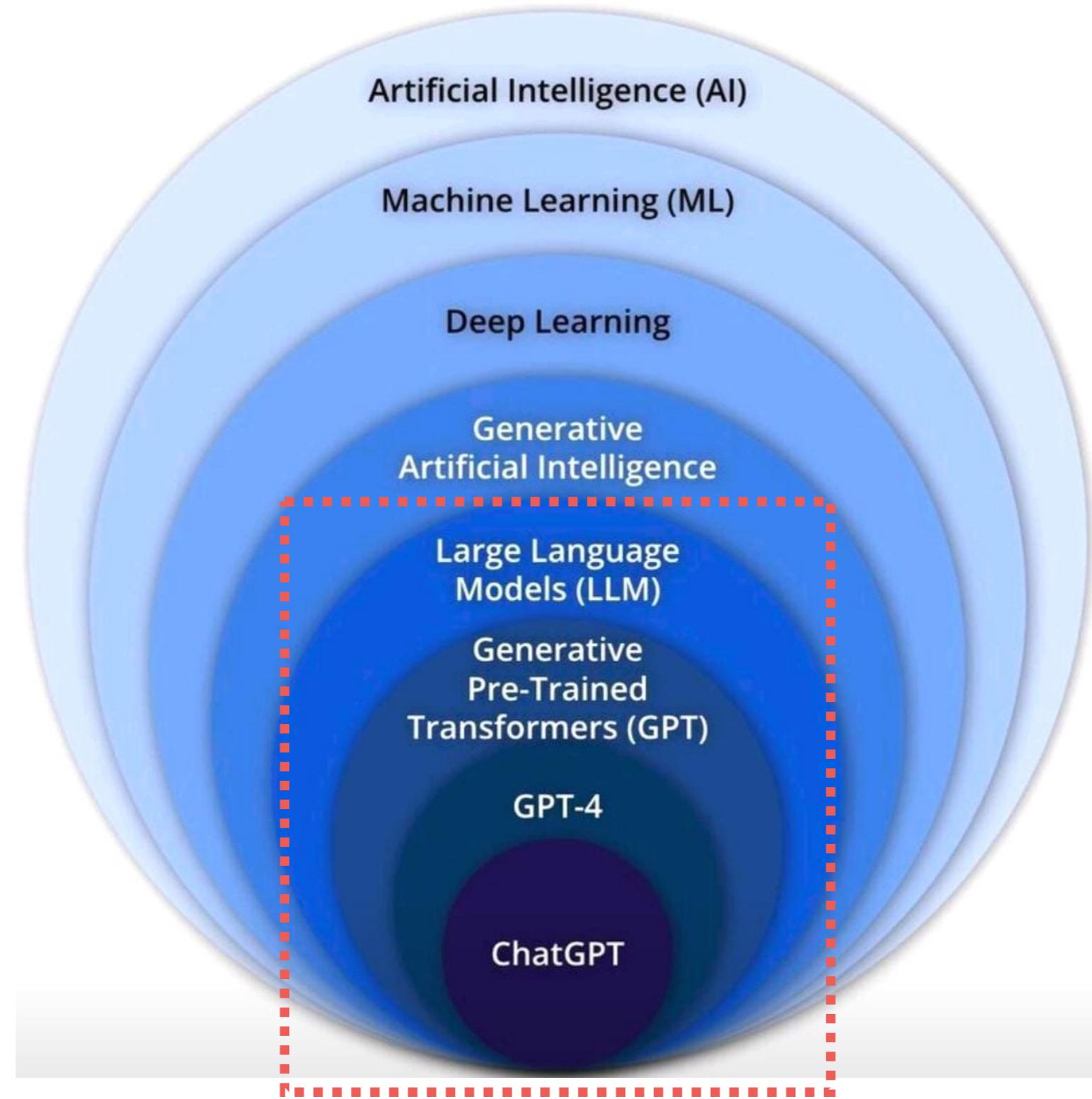


Generative AI



<https://grow.google/ai-essentials/>





LLMs in industry

Model name	Company
Bidirectional Encoder Representation from Transformers (BERT)	Google AI
Generative Pre-trained transformer-5 (GPT-5)	OpenAI
Pathways Language Model-E (PaLM-E)	Google AI
BLOOM	NVIDIA AI
Llama 4	Facebook
Claude 4.5 Sonnet	Anthropic



LLM Development timeline

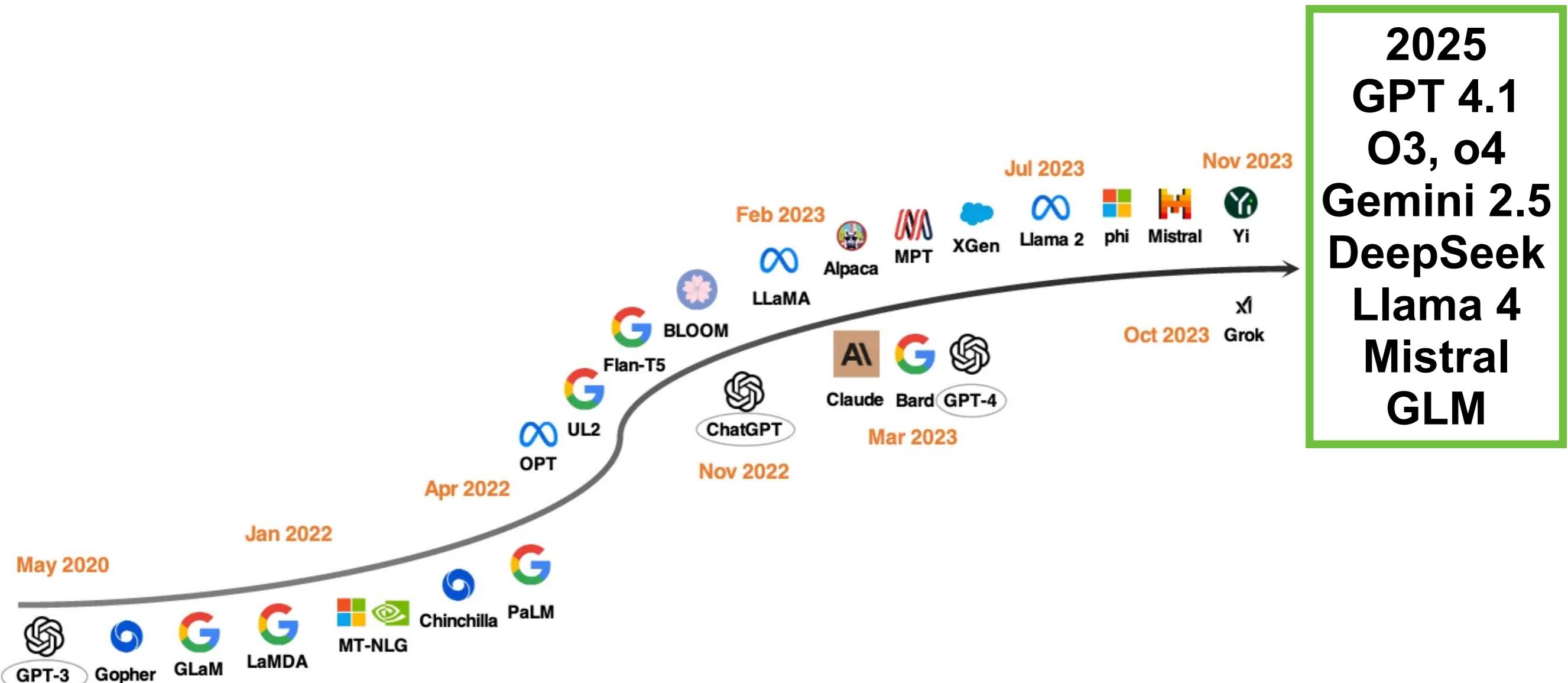
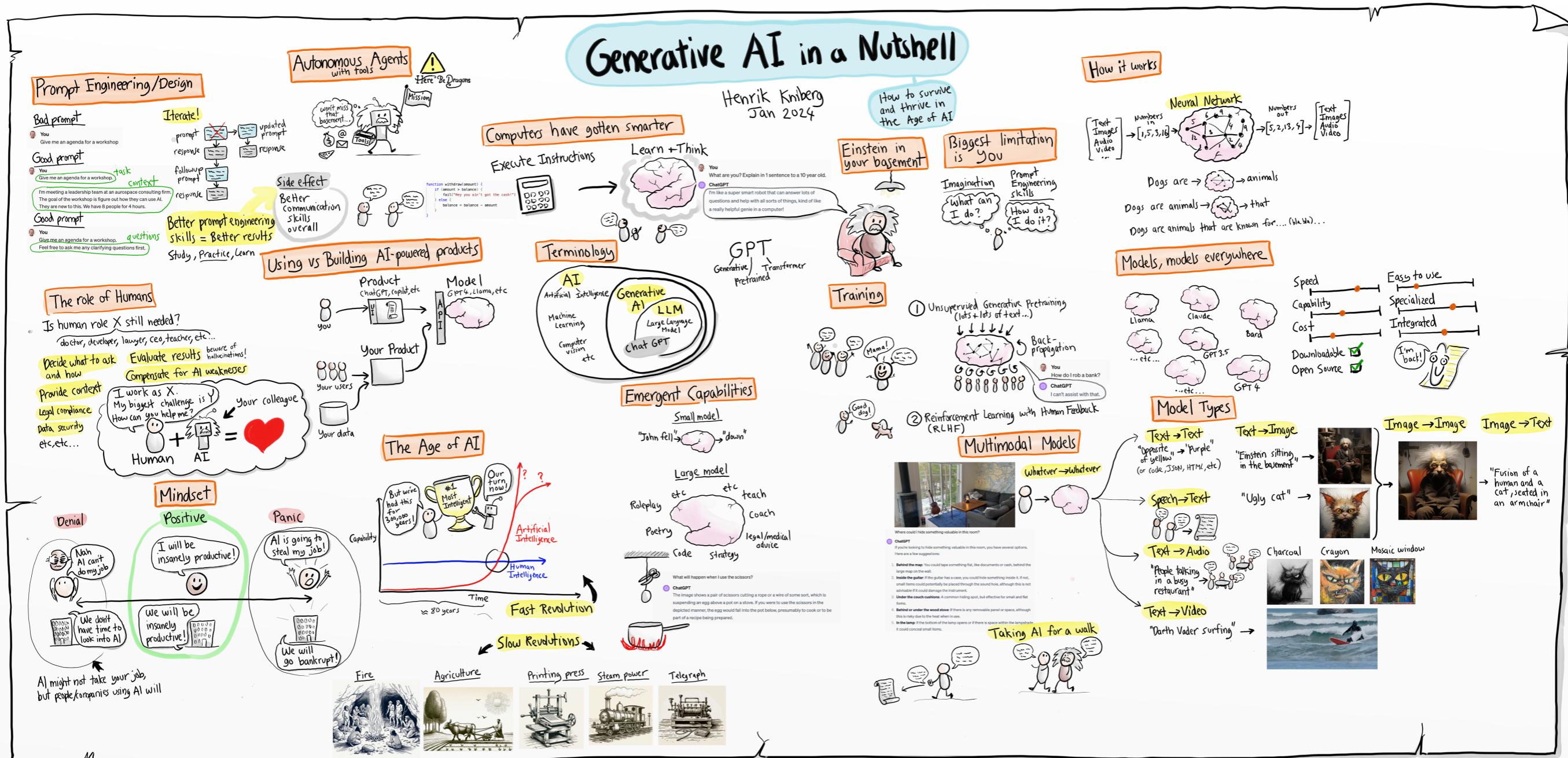


Figure 3: LLM development timeline. The models below the arrow are closed-source while those above the arrow are open-source.

<https://arxiv.org/abs/2311.16989>



Generative AI in Nutshell



<https://www.youtube.com/watch?v=2IK3DFHRFFw>



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AI Tools



AI Tools ?

Gemini



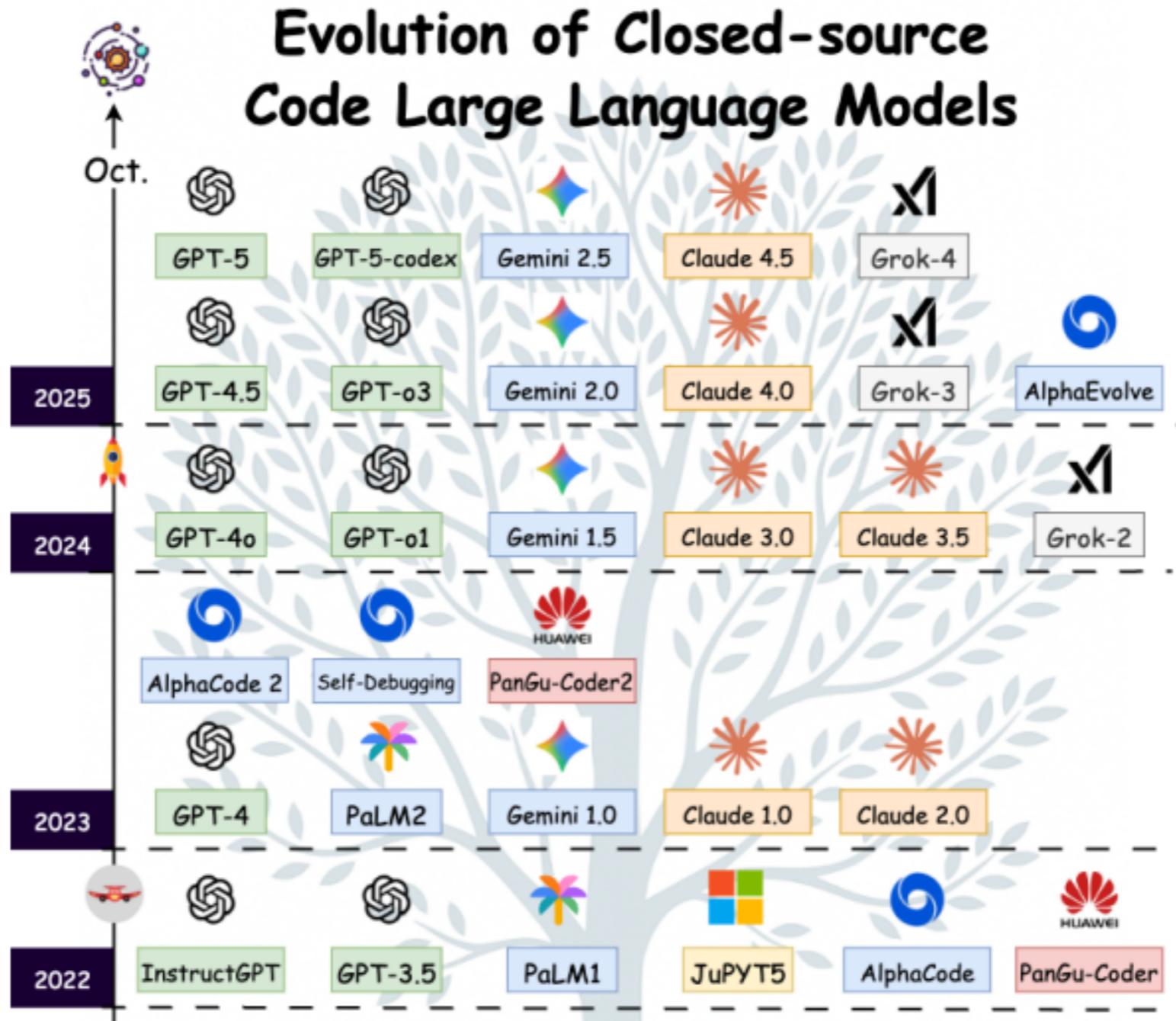
ChatGPT



Google
NANO BANANA



AI Models ?



<https://huggingface.co/papers/2511.18538>



Model Specification ?

GPT-5.1 Default ⚙️ ⚡

The best model for coding and agentic tasks with configurable reasoning effort.

Compare Try in Playground

REASONING	SPEED	PRICE	INPUT	OUTPUT
💡💡💡💡	⚡⚡⚡⚡	\$1.25 · \$10 Input · Output	Text, image	Text
Higher	Fast			

GPT-5.1 is our flagship model for coding and agentic tasks with configurable reasoning and non-reasoning effort. Learn more in our [GPT-5.1 usage guide](#).

- ❖ 400,000 context window
- ➡ 128,000 max output tokens
- 📅 Sep 30, 2024 knowledge cutoff
- 💡 Reasoning token support

<https://platform.openai.com/docs/models/gpt-5.1>



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Model Specification ?

Token

Context window

Knowledge cutoff



Token ?

GPT-4o & GPT-4o mini GPT-3.5 & GPT-4 GPT-3 (Legacy)

สวัสดีประเทศไทย

Clear Show example

Tokens	Characters
5	15

สวัสดีประเทศไทย

Text Token IDs

<https://platform.openai.com/tokenizer>



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Context Window ?

The amount of text , measured in **token**, that the model can process at one time (working memory)



CONTEXT WINDOW IN LLMS



Long Context Window is better ?

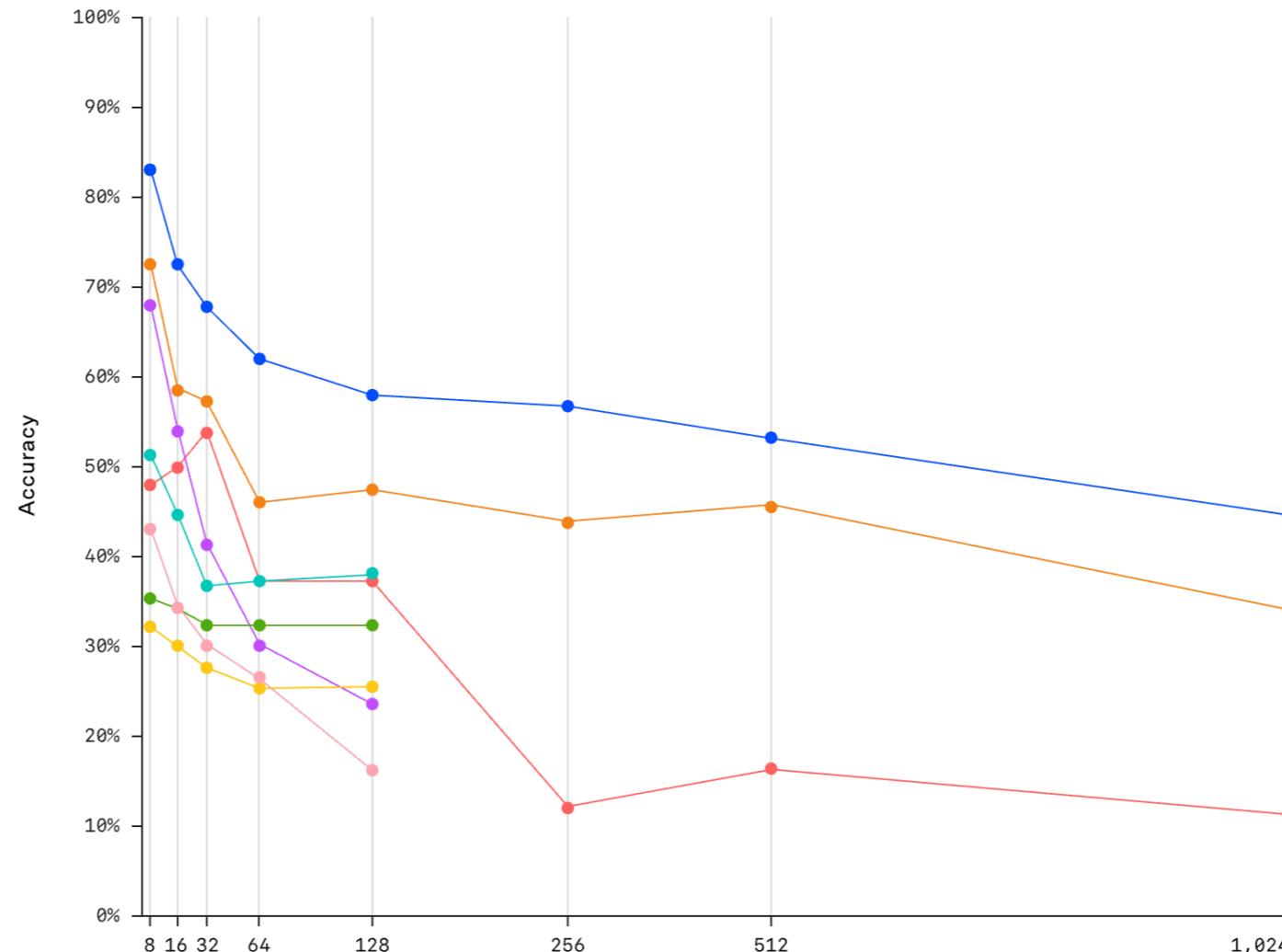
Accuracy

OpenAI-MRCR Accuracy



GPT-4.1 GPT-4.1 mini GPT-4.1 nano GPT-4.5 GPT-4o (2024-11-20)
GPT-4o mini OpenAI o1 (high) OpenAI o3-mini (high)

2 needle accuracy vs input tokens



of tokens

<https://openai.com/index/gpt-4-1/>

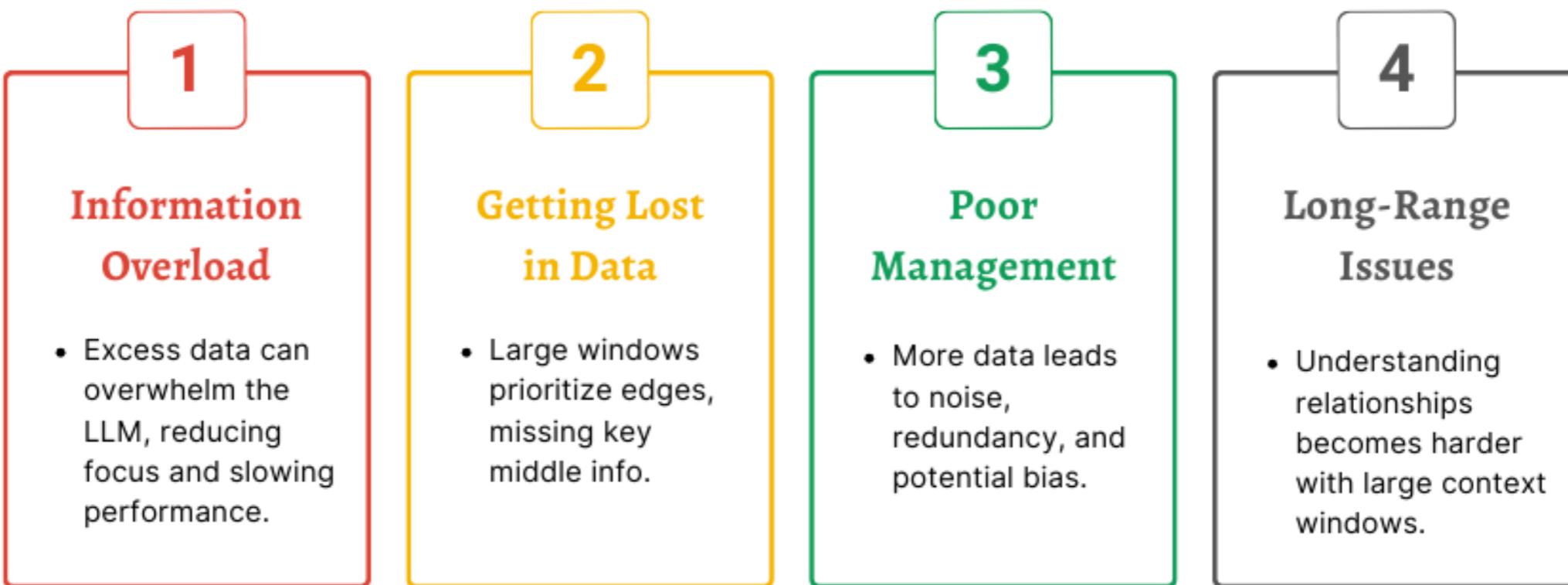


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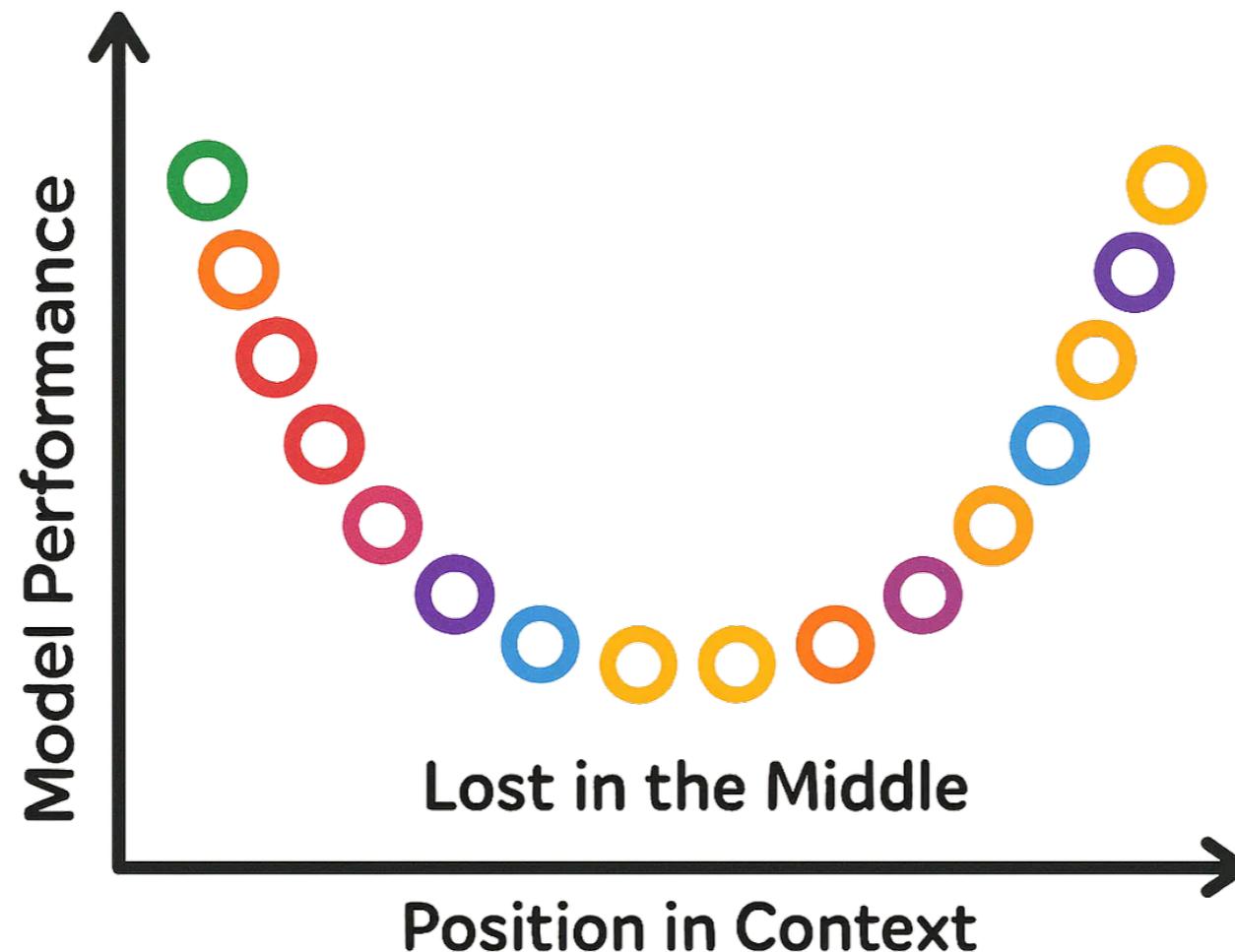
Long Context Window !!

Why Bigger Context Windows Aren't Always Better?



Long Context Window !!

Lost in the middle problem in LLM ?

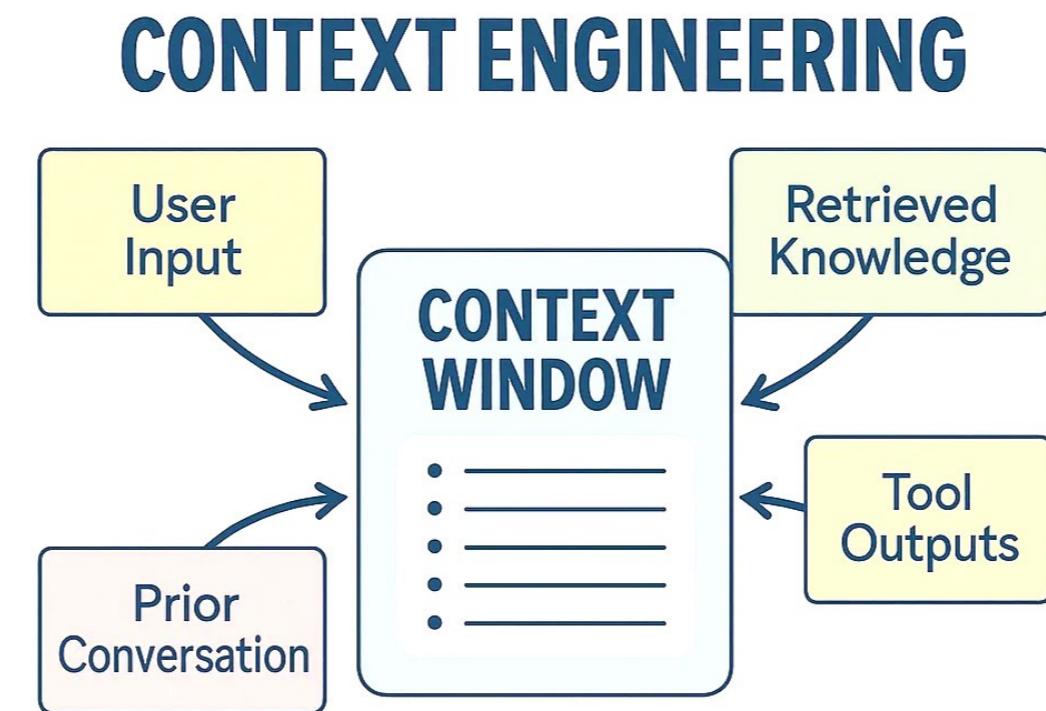


<https://arxiv.org/abs/2307.03172>



Context Engineering

Provide information and tool that need for AI to complete a task



Filling the right information in the right format, so the LLM can complete the task

<https://addyo.substack.com/p/context-engineering-bringing-engineering>



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AI Prompt Engineering



AI Prompt Engineering ?

The process of crafting **instructions** for generative AI models to get desired outputs using a combination of **science** and **art**

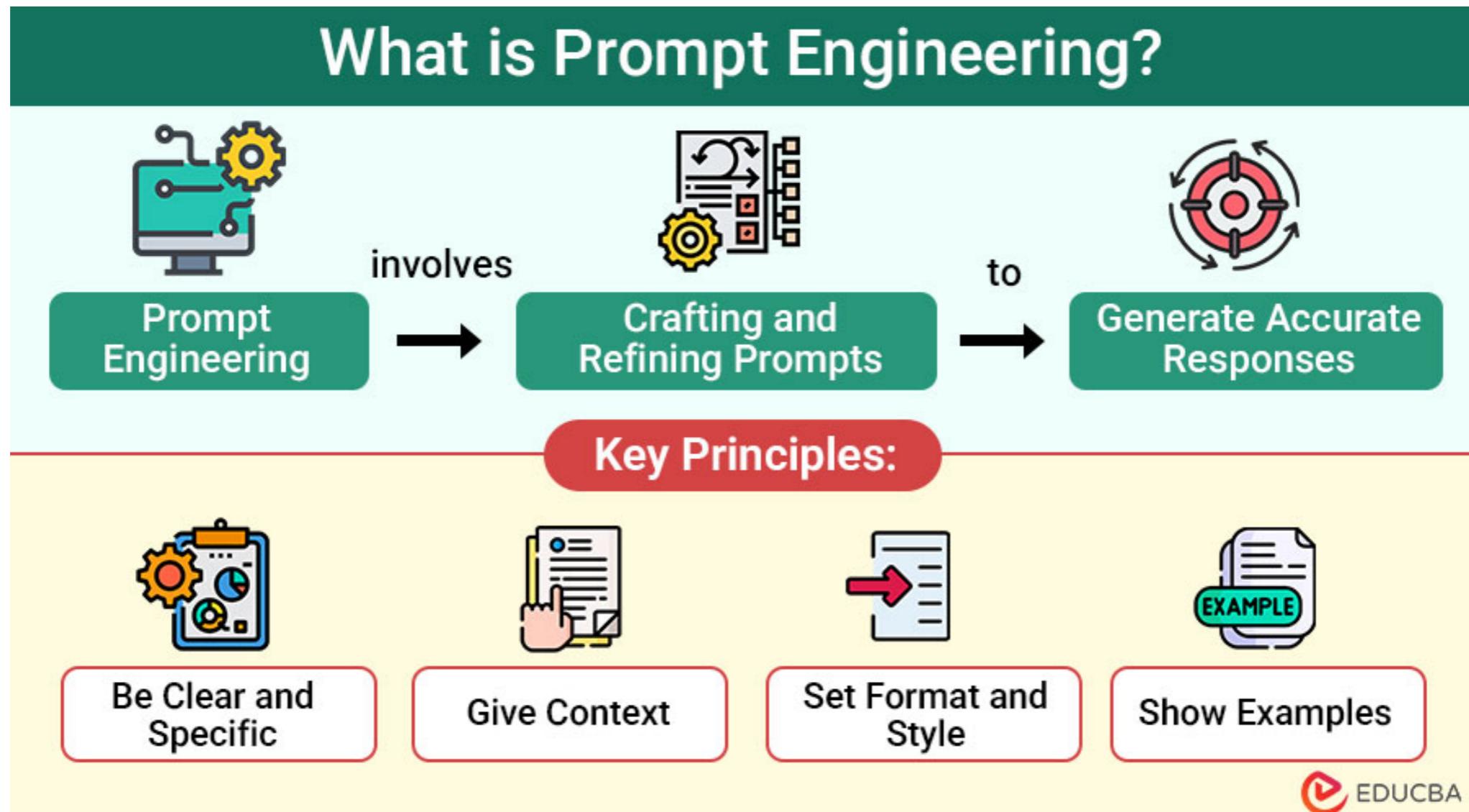
Improve output

Increase efficiency

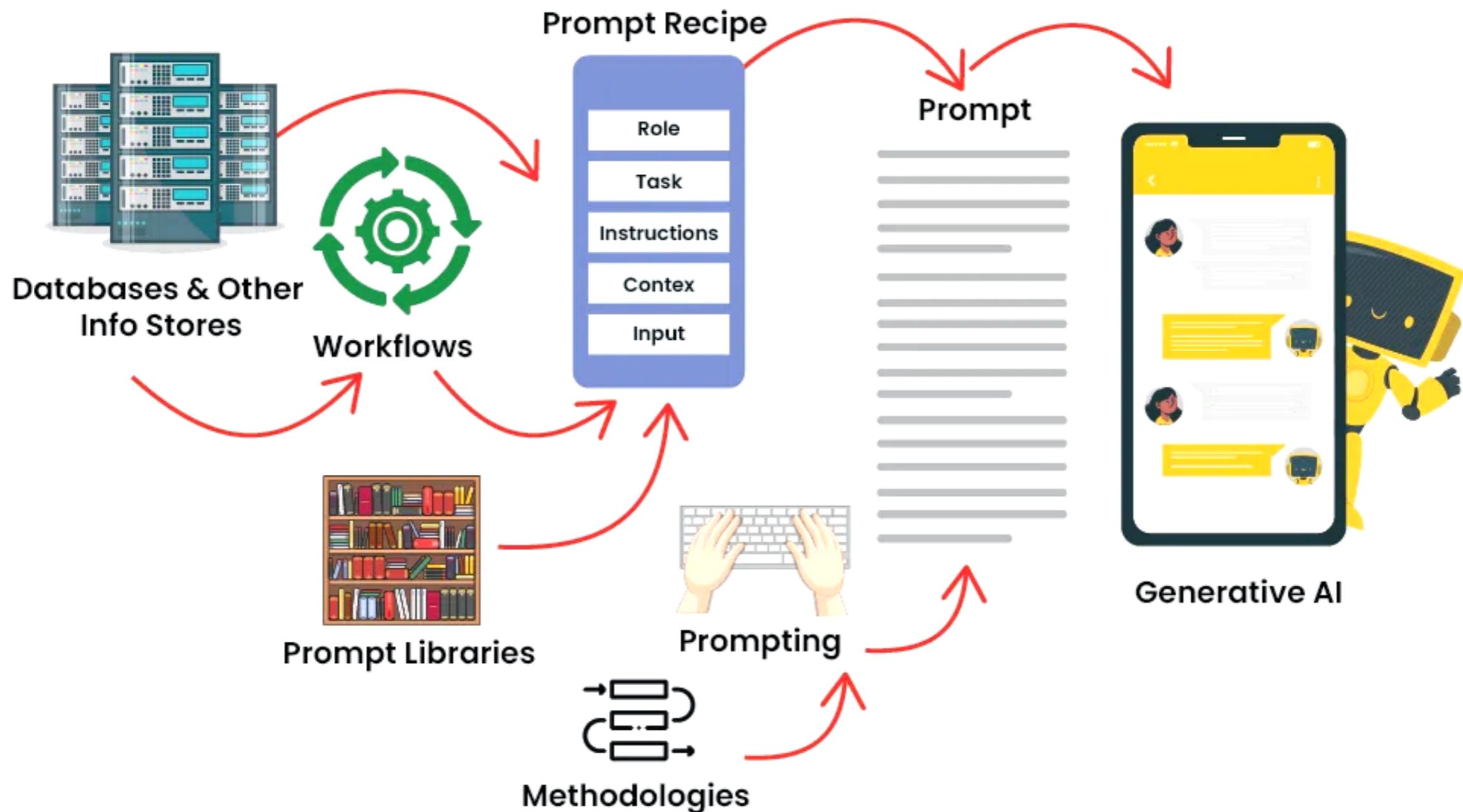
Unlocks potential of AI



AI Prompt Engineering ?



AI Prompt Engineering ?



<https://www.geeksforgeeks.org/artificial-intelligence/what-is-an-ai-prompt-engineering/>



Prompting Guide

Prompt Engineering

Prompt Engineering Guide

Prompt engineering is a relatively new discipline for developing and optimizing prompts to efficiently use language models (LMs) for a wide variety of applications and research topics. Prompt engineering skills help to better understand the capabilities and limitations of large language models (LLMs).

Researchers use prompt engineering to improve the capacity of LLMs on a wide range of common and complex tasks such as question answering and arithmetic reasoning. Developers use prompt engineering to design robust and effective prompting techniques that interface with LLMs and other tools.

Prompt engineering is not just about designing and developing prompts. It encompasses a wide range of skills and techniques that are useful for interacting and developing with LLMs. It's an important skill to interface, build with, and understand capabilities of LLMs. You can use prompt engineering to improve safety of LLMs and build new capabilities like augmenting LLMs with domain knowledge and external tools.

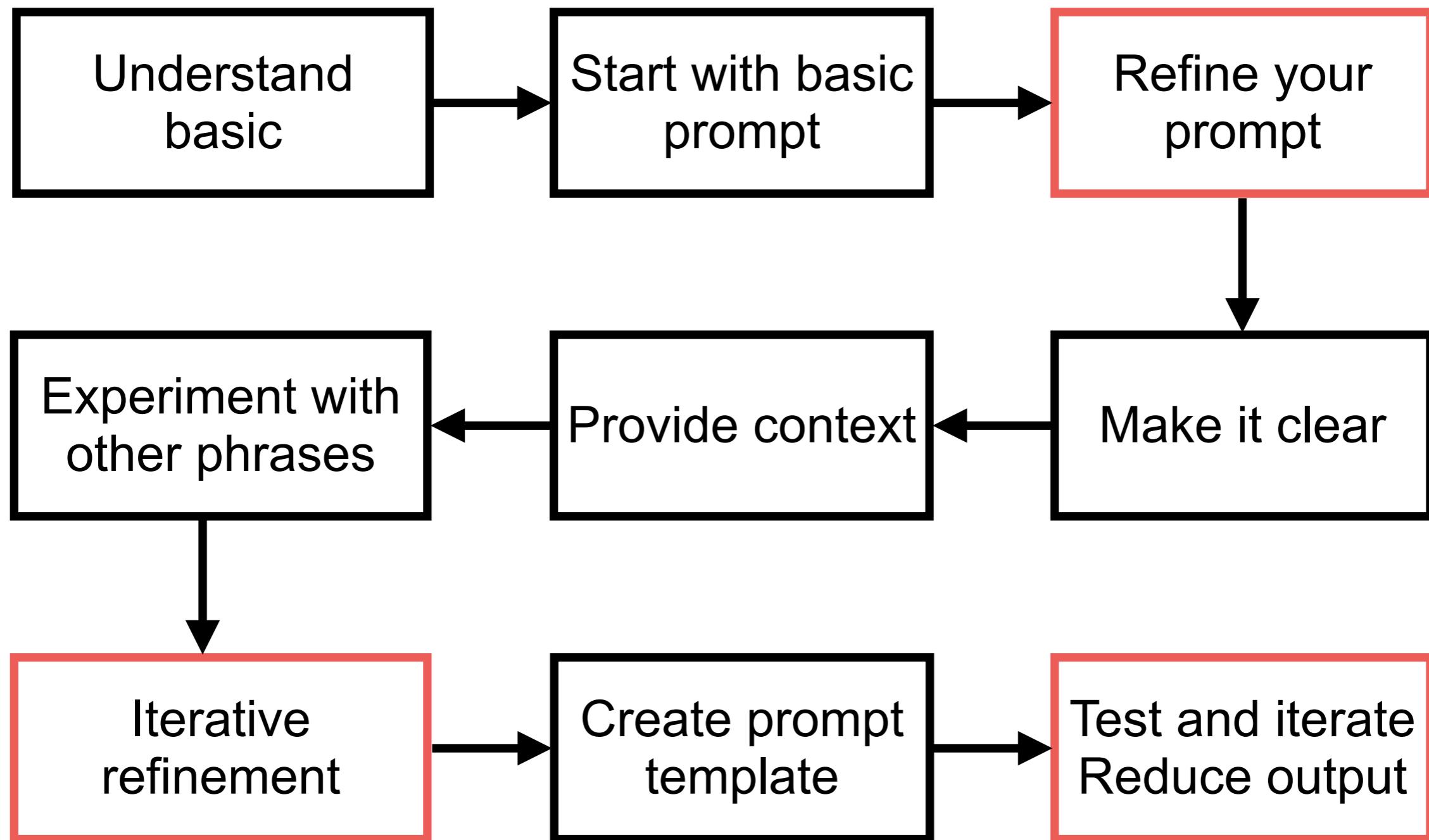
<https://www.promptingguide.ai/>



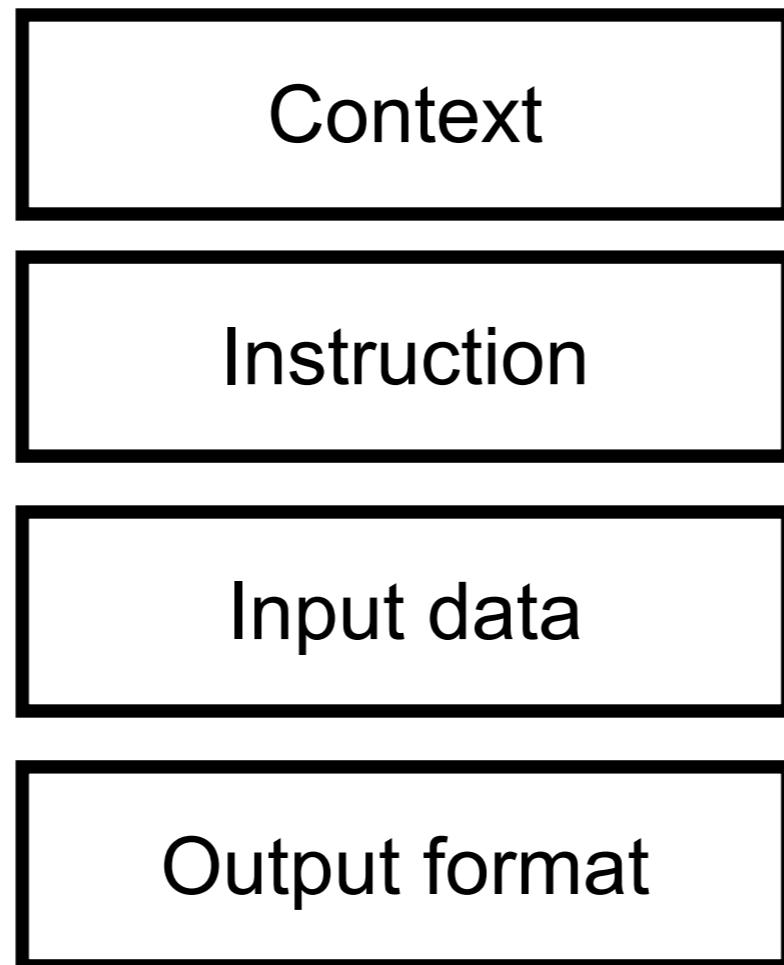
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Basic of Prompt Engineer



Structure of Prompt ?



<https://platform.openai.com/docs/guides/prompt-engineering>



Structure of Prompt !!

APE
Action, Purpose,
Expectation

RACE
Role, Action,
Context,
Expectation

TAG
Task, Action, Goal

COAST
Context, Objective,
Action, Scenario,
Task

RISE
Role, Input, Step,
Expectation

<https://twitter.com/pradeepeth/status/1673271866696544257>



Better Prompt

Write clear instructions

Provide reference text

Split complex tasks into simpler subtasks

Give the model time to think

Testing and improve ...

<https://platform.openai.com/docs/guides/prompt-engineering/six-strategies-for-getting-better-results>



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Prompt with AI Workshop



List of workshop with AI

Basic of good prompt

Read data from many datasources

Summarizing content

Generate outputs (text, file, audio)



Prompt Workshop

Text summarization
Information extraction
Question answering
Text classification
Conversation

<https://www.promptingguide.ai/introduction/examples>



Workflow Steps

Input the content (text, document, audio, video)

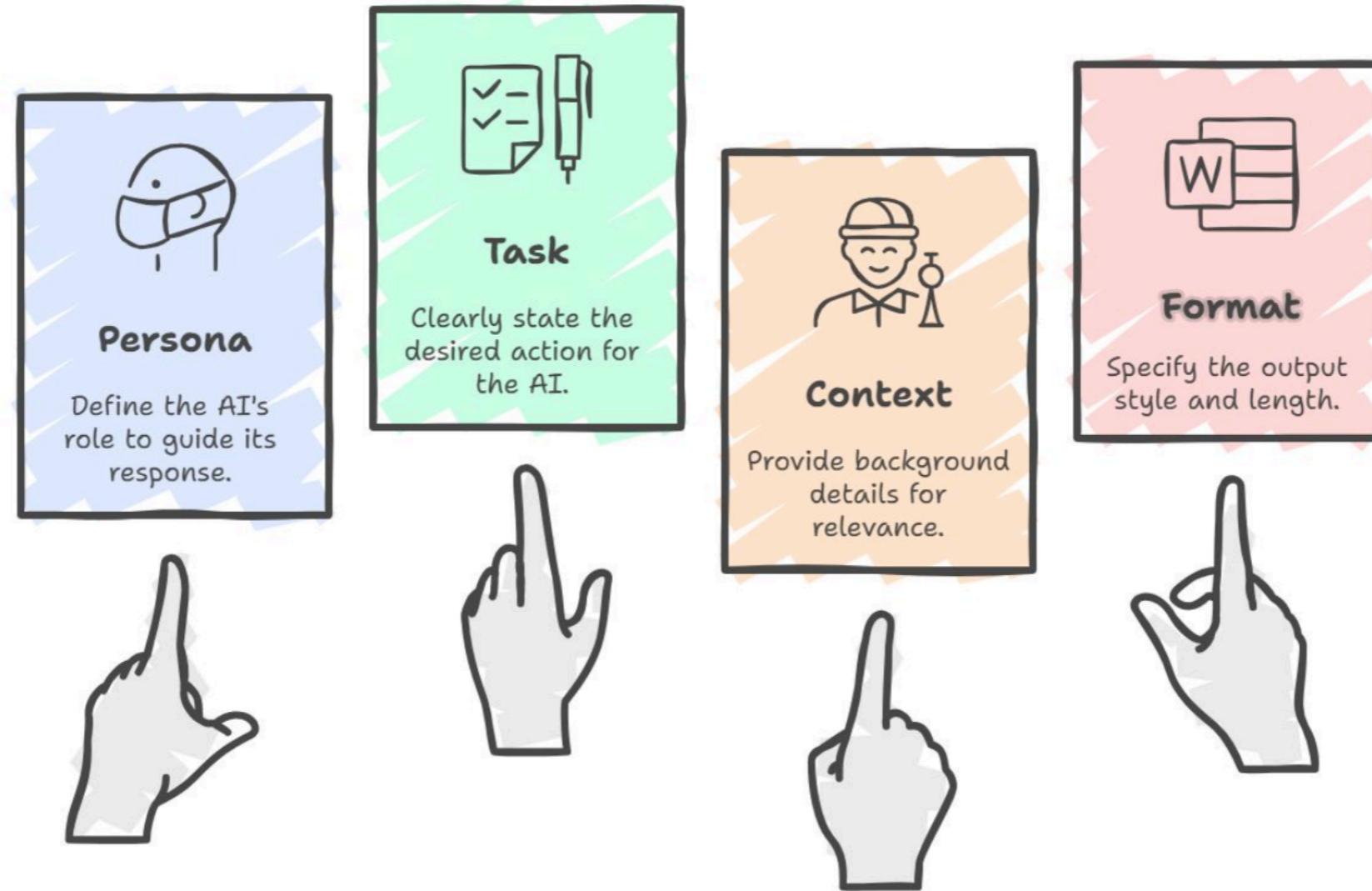
Provide instructions (prompting)

AI processing

Review and refine



Better prompt from Gemini



Persona: Tell Gemini what role to play, which gives it some context for how to behave and respond.

✍ Help me write

I am a customer service representative. Help me craft an empathetic email response. The customer ordered a pair of headphones that arrived damaged. Include a paragraph that acknowledges their frustration and 3 bullet points with potential resolutions.

Create



Task: Tell Gemini what you need it to do (summarize, write, change the tone, create, etc.), and use a verb.

✍ Help me write

I am a customer service representative. Help me craft an empathetic email response. The customer ordered a pair of headphones that arrived damaged. Include a paragraph that acknowledges their frustration and 3 bullet points with potential resolutions.

Create



Context: Provide as much relevant background as possible.

✍ Help me write

I am a customer service representative. Help me craft an empathetic email response. The customer ordered a pair of headphones that arrived damaged. Include a paragraph that acknowledges their frustration and 3 bullet points with potential resolutions.

Create



Format: Be specific when specifying desired structure.

✍ Help me write

I am a customer service representative. Help me craft an empathetic email response. The customer ordered a pair of headphones that arrived damaged. Include a paragraph that acknowledges their frustration and 3 bullet points with potential resolutions.

Create



List of tools ?



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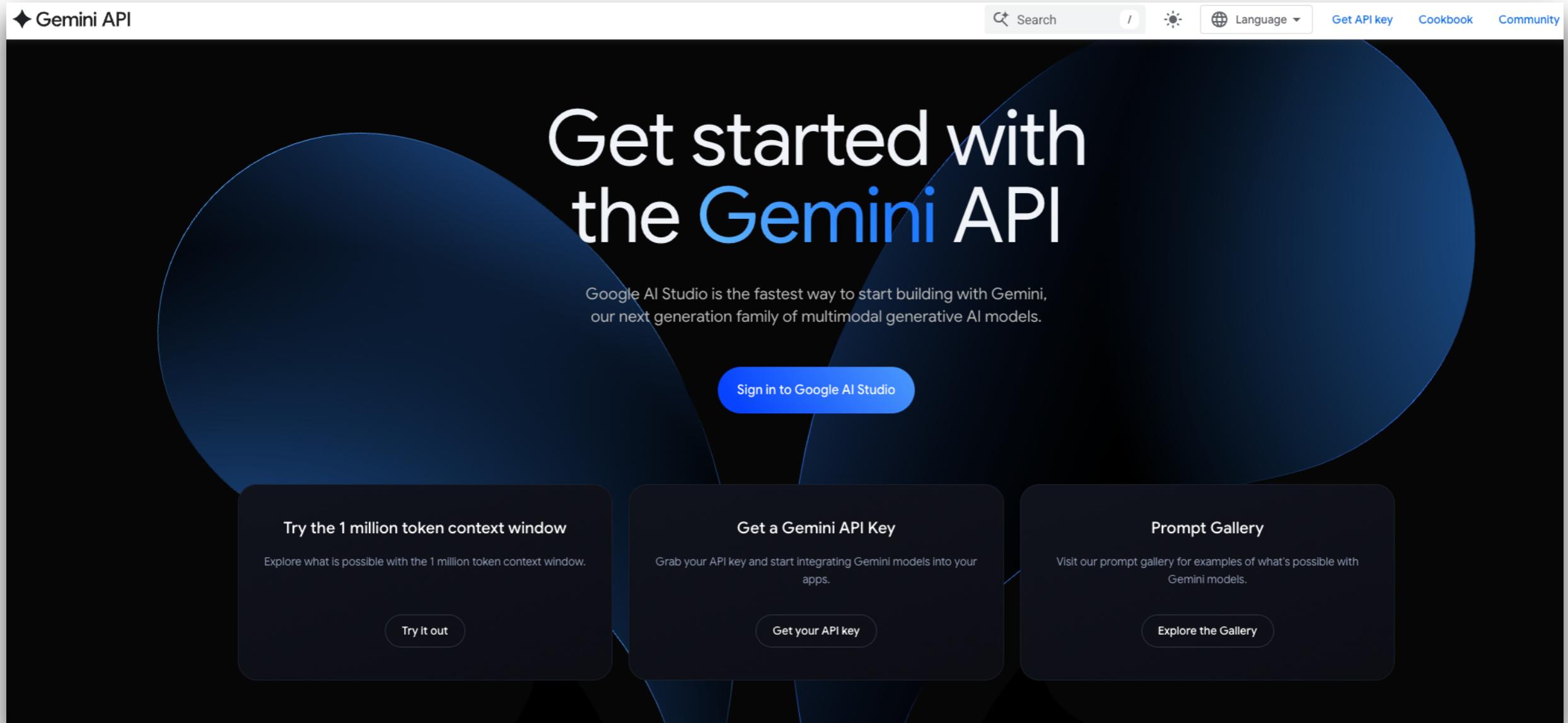
Google Gemini

The screenshot shows the Google Gemini AI interface. At the top left is the 'Gemini' logo. On the right are buttons for 'Upgrade to Google AI Plus' and a user profile icon. Below the header is a large blue text 'Hello, somkiat'. A central input field is labeled 'Ask Gemini' and includes a '+' button, a 'Tools' section, a 'Fast' dropdown, and a microphone icon. Below the input field are five circular buttons: 'Create Image' (with a camera icon), 'Write', 'Build', 'Deep Research', and 'Learn'. The bottom left corner features a gear icon.

<https://gemini.google.com/app>



Google Gemini API



The screenshot shows the homepage of the Google Gemini API. At the top, there's a navigation bar with a logo, a search bar, language selection, and links for "Get API key", "Cookbook", and "Community". The main title "Get started with the Gemini API" is prominently displayed in large white and blue text. Below it, a subtitle reads: "Google AI Studio is the fastest way to start building with Gemini, our next generation family of multimodal generative AI models." A central call-to-action button says "Sign in to Google AI Studio". To the left, a box for "Try the 1 million token context window" includes a "Try it out" button. In the center, a box for "Get a Gemini API Key" has a "Get your API key" button. To the right, a box for "Prompt Gallery" has a "Explore the Gallery" button.

<https://ai.google.dev/aistudio>



ChatGPT

The screenshot shows the ChatGPT web interface. At the top left is a sidebar with icons for profile, search, and other functions. The main area has a title "ChatGPT" with a dropdown arrow. Below it is a search bar with placeholder text "What's on the agenda today?". To the right of the search bar are icons for microphone and zero messages. A dropdown menu is open from the search bar, listing options: "Ask anything" (selected), "Add photos & files", "Create image", "Thinking", "Deep research", "Shopping research", and "... More". A small "SP" icon is at the bottom left of the main area.

<https://chatgpt.com/>



Google NotebookLM

The screenshot shows the Google NotebookLM interface. At the top left is the title "Untitled notebook". On the right are buttons for "Analytics", "Share", "Settings", "PRO", and a user profile icon. The interface is divided into three main sections:

- Sources:** Contains a button "+ Add sources", a callout "Try Deep Research for an in-depth report and new sources!", a search bar "Search the web for new sources" with dropdowns for "Web" and "Fast Research", and a note about saved sources: "Saved sources will appear here. Click Add source above to add PDFs, websites, text, videos, or audio files. Or import a file directly from Google Drive."
- Chat:** A central area with a large upload icon and the text "Add a source to get started". Below it is a "Upload a source" button. A note at the bottom says "NotebookLM can be inaccurate; please double check its responses."
- Studio:** A sidebar with options: "Audio Overview", "Video Overview", "Mind Map", "Reports", "Flashcards", "Quiz", "Infographic", and "Slide Deck".

<https://notebooklm.google/>



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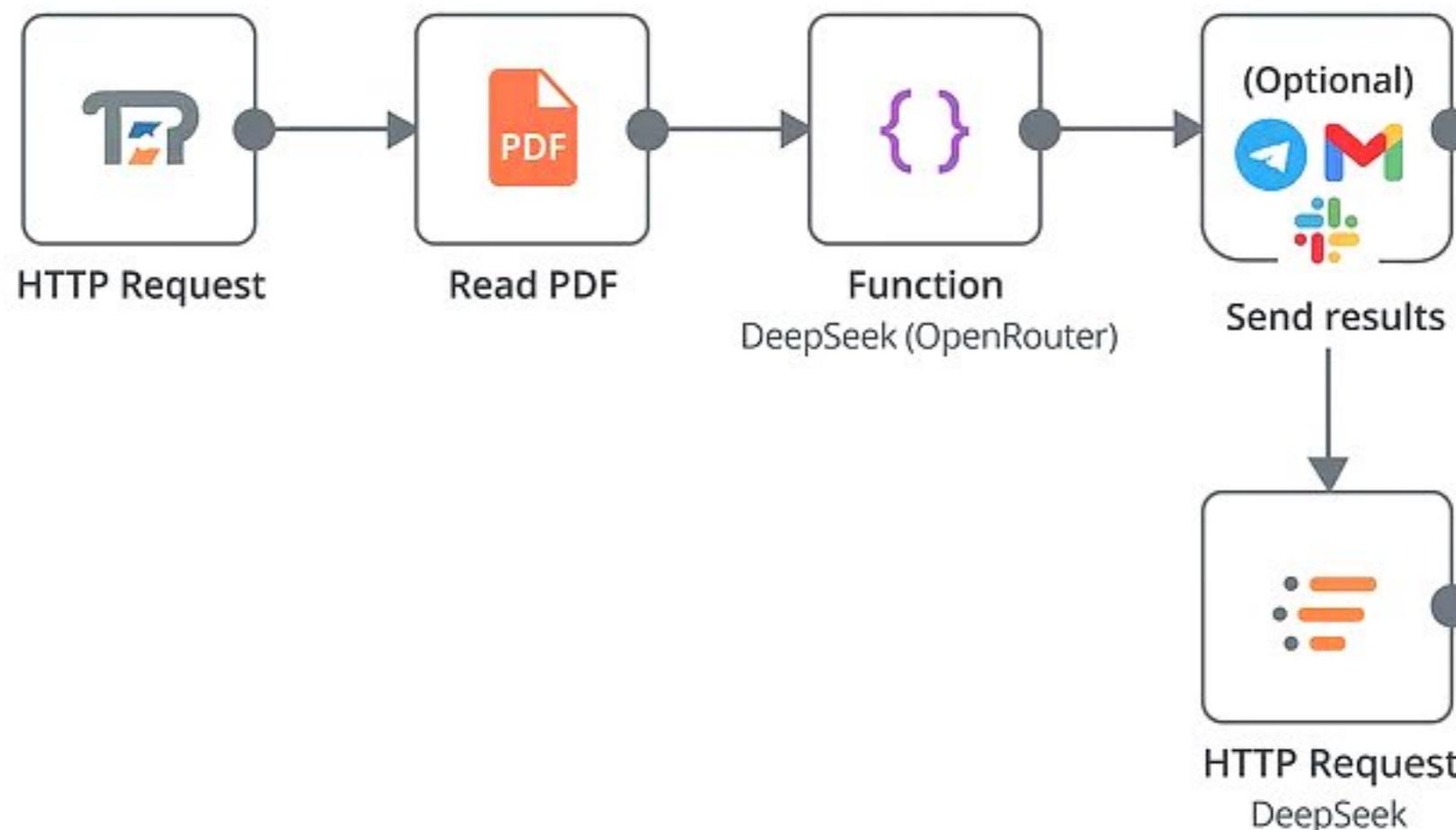
Let's start workshop



Manual to Automation ?



Automated Read data from PDF



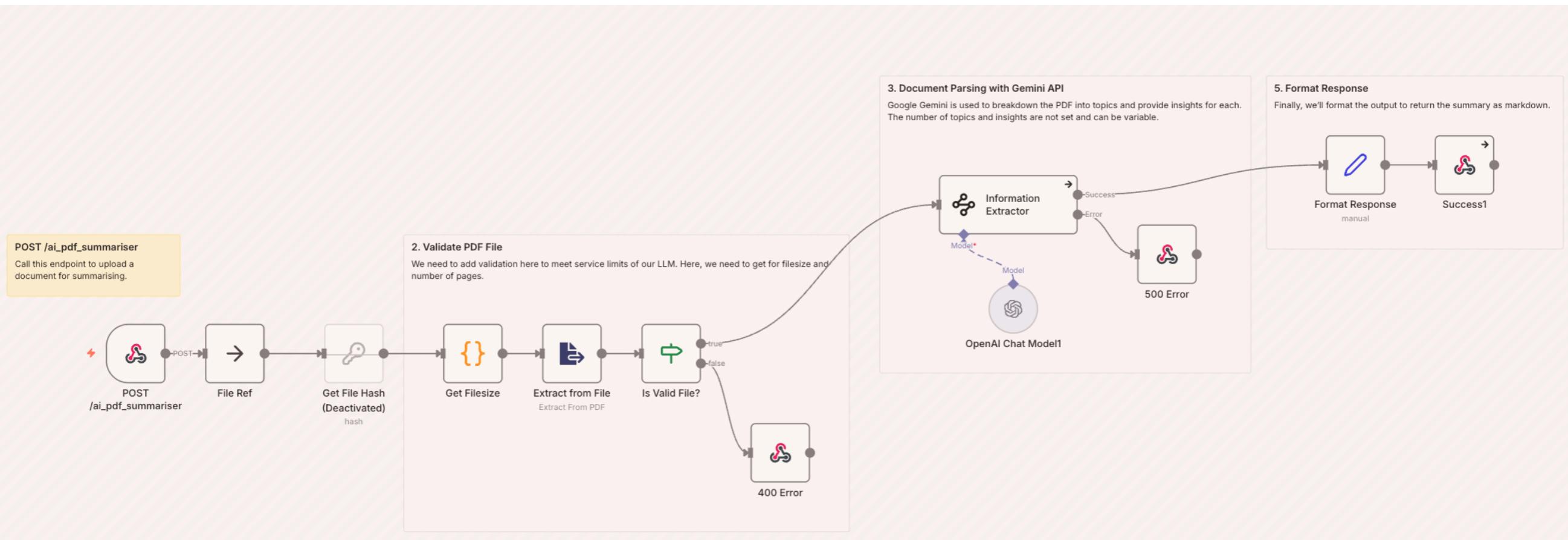
<https://leandrocaladoferreira.medium.com/how-i-automated-pdf-reading-with-ai-using-n8n-and-deepseek-bd0a8d276dea>



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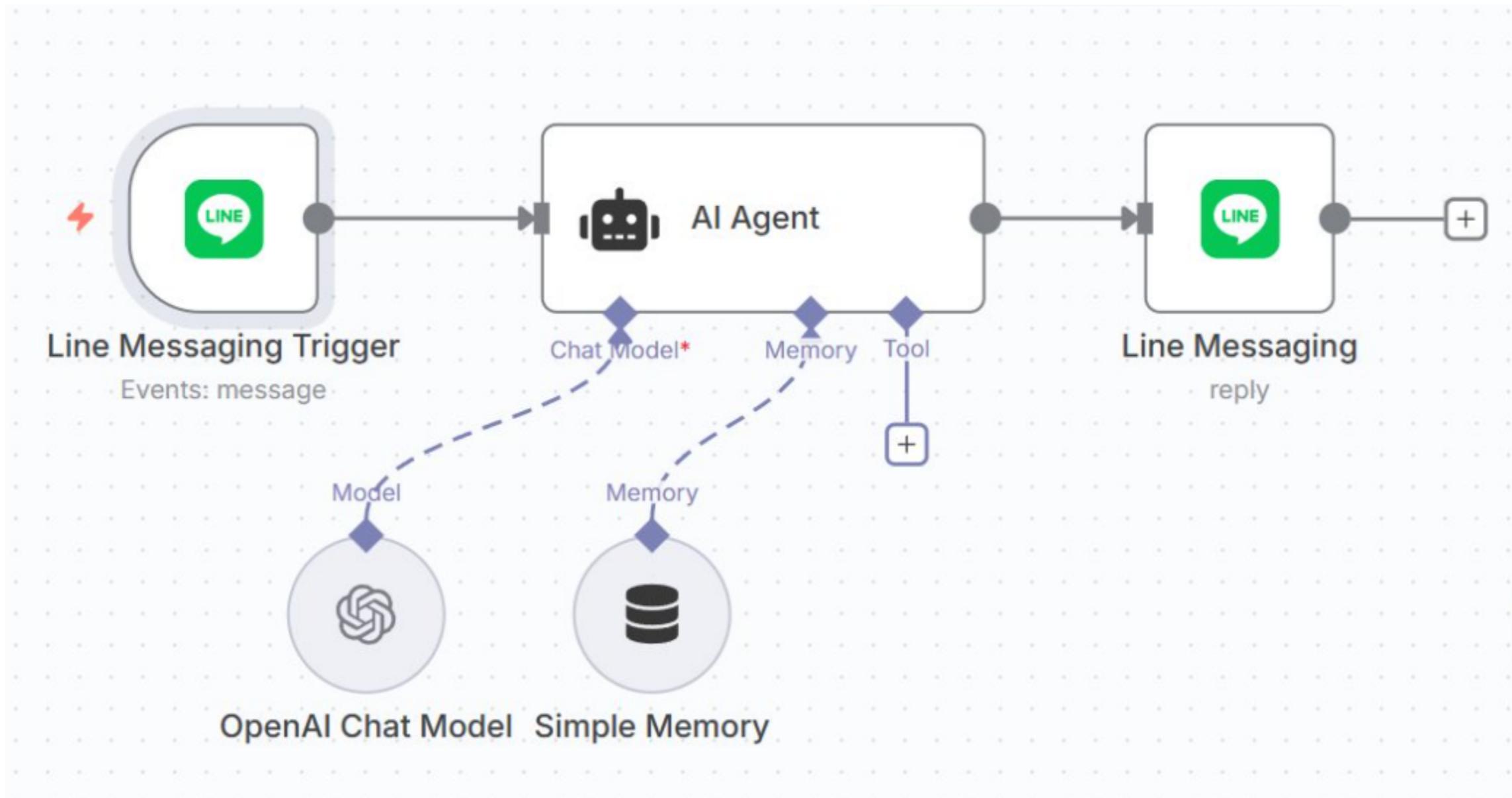
PDF Summarize



<https://n8n.io/tools/ai-pdf-summarizer/>

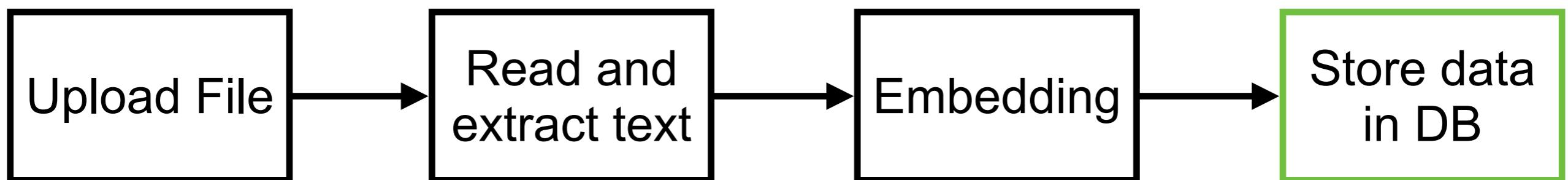


Chat with Line Messaging

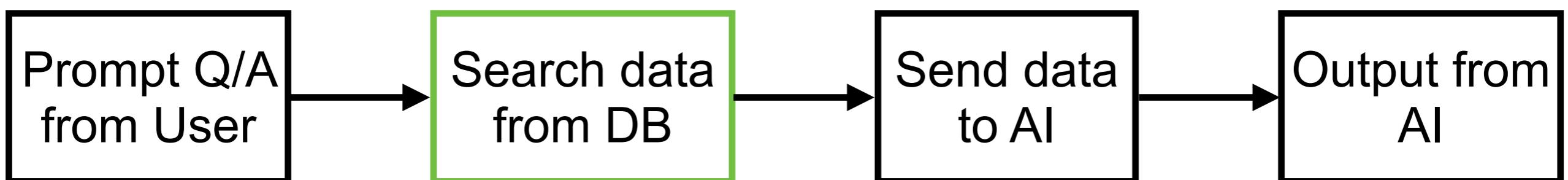


Build your AI Assistant ?

Step 1 : prepare data



Step 2 : Q/A with AI



NotebookLM

<https://notebooklm.google/>



NotebookLM

The screenshot shows the NotebookLM application interface. At the top, there is a navigation bar with icons for 'Create notebook', 'Analytics', 'Share', 'Settings', 'PRO', and a user profile. The main sections are:

- Sources:** Contains a button '+ Add sources', a search bar 'Search the web for new sources' with dropdowns for 'Web' and 'Fast Research', and a note 'Try Deep Research for an in-depth report and new sources!'. It also includes a section for saved sources and a Google Drive import option.
- Chat:** A central area with a placeholder 'Add a source to get started' and a 'Upload a source' button.
- Studio:** A sidebar with options for 'Audio Overview', 'Video Overview', 'Mind Map', 'Reports', 'Flashcards', 'Quiz', 'Infographic', and 'Slide Deck'.

At the bottom, there is a note about the AI's accuracy and a 'Add note' button.



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Datasources

The screenshot shows the Notion Datasources interface. On the left, the "Sources" section is open, displaying a search bar with "Search the web for new sources" and filters for "Web" and "Fast Research". It also features a "Try Deep Research" button and a "Upload a source" button. In the center, the "Chat" section has a placeholder "Add a source to get started" and a "Upload a source" button. On the right, the "Studio" section lists various output options: Audio Overview, Video Overview, Mind Map, Reports, Flashcards, Quiz, Infographic, and Slide Deck. A red dashed box highlights the "Sources" section.

Untitled notebook

Sources

+ Add sources

Try Deep Research for an in-depth report and new sources!

Search the web for new sources

Web Fast Research

Upload a source

Saved sources will appear here
Click Add source above to add PDFs, websites, text, videos, or audio files. Or import a file directly from Google Drive.

Chat

Add a source to get started

Upload a source

NotebookLM can be inaccurate; please double check its responses.

0 sources

Add note

Studio

Audio Overview

Video Overview

Mind Map

Reports

Flashcards

Quiz

Infographic

Slide Deck



Manage Datasources

The screenshot shows the 'Manage Datasources' page for NotebookLM. At the top left is the logo 'NotebookLM'. On the right is a close button ('X'). Below the logo is the heading 'Add sources'. To the right of the heading is a blue button labeled 'Discover sources'. A text block explains that sources let NotebookLM base its responses on information that matters most to you, with examples like marketing plans, course reading, research notes, meeting transcripts, and sales documents. Below this is a large dashed rectangular area with a central upload icon (blue circle with an upward arrow) and the text 'Upload sources'. Below the icon is the instruction 'Drag & drop or choose file to upload'. A note specifies supported file types: PDF, .txt, Markdown, Audio (e.g. mp3), .docx, .avif, .bmp, .gif, .ico, .jp2, .png, .webp, .tif, .tiff, .heic, .heif, .jpeg, .jpg, .jpe. At the bottom are three sections: 'Google Workspace' (with 'Google Drive' as a sub-option), 'Link' (with 'Website' and 'YouTube' as sub-options), and 'Paste text' (with 'Copied text' as a sub-option).

NotebookLM

Add sources

[Discover sources](#)

Sources let NotebookLM base its responses on the information that matters most to you.
(Examples: marketing plans, course reading, research notes, meeting transcripts, sales documents, etc.)

Upload sources

Drag & drop or [choose file](#) to upload

Supported file types: PDF, .txt, Markdown, Audio (e.g. mp3), .docx, .avif, .bmp, .gif, .ico, .jp2, .png, .webp, .tif, .tiff, .heic, .heif, .jpeg, .jpg, .jpe

G Google Workspace

[Google Drive](#)

Link

[Website](#) [YouTube](#)

Paste text

[Copied text](#)



Multi-format support

PDF

Text file

Google Docs
and Slide

Youtube

Website

Audio



Chat

The screenshot shows the Notion Chat interface. On the left, there's a sidebar titled "Untitled notebook" with a "Sources" section containing a "Try Deep Research" button and a search bar. The main area is titled "Chat" and features a central message input field with a "Upload a source" button. To the right is the "Studio" section, which includes options like "Audio Overview", "Video Overview", "Mind Map", "Reports", "Flashcards", "Quiz", "Infographic", and "Slide Deck". A red dashed box highlights the central "Chat" and "Studio" sections.

Untitled notebook

Sources

+ Add sources

Try Deep Research for an in-depth report and new sources!

Search the web for new sources

Web ▾ Fast Research ▾

Chat ⓘ

Add a source to get started

Upload a source

Saved sources will appear here
Click Add source above to add PDFs, websites, text, videos, or audio files. Or import a file directly from Google Drive.

NotebookLM can be inaccurate; please double check its responses.

0 sources →

Analytics Share Settings PRO

Studio

Audio Overview Video Overview

Mind Map Reports

Flashcards Quiz

Infographic Slide Deck

Add note



Chat Capabilities

How to interact with datasources ?

Conversational chat

Cross-referencing

Citation and grounding

Customize conversation styles



Studio Features

The screenshot displays the Studio Features interface, which is divided into three main vertical sections: Sources, Chat, and Studio.

- Sources:** This section contains a button to "Add sources" and a search bar with options for "Web" and "Fast Research". It also features a "Try Deep Research" button and a "Search the web for new sources" button. A note indicates that saved sources will appear here.
- Chat:** This section includes a "Upload a source to get started" button and a message from NotebookLM stating: "NotebookLM can be inaccurate; please double check its responses."
- Studio:** This section is highlighted with a red dashed border. It contains a "Create notebook" button and links to various tools: Audio Overview, Video Overview, Mind Map, Reports, Flashcards, Quiz, Infographic, and Slide Deck. A note indicates that studio output will be saved here, and it encourages users to add these features after adding sources.



Studio Features

Generate new contents/assets from your sources

VDO

Audio/podcast

Mindmap

Infographic

Report

Note taking



Gemini Canvas

<https://gemini.google.com/canvas>



Gemini Canvas

The screenshot shows the Gemini Canvas application window. At the top left is the title "Gemini". On the top right are "PRO" status and a user profile icon. A notification bar at the top center says "Nano Banana Pro is now on Gemini 3 Pro. Try it". Below the header is a greeting "Hi somkiat" with a colorful starburst icon. To the right is an "Ask Gemini" input field with a microphone icon and a "Fast" dropdown. A "Tools" button is next to it. A dropdown menu titled "Tools" is open, listing "Deep Research", "Create videos (Veo 3.1)", "Create images", "Canvas" (which is highlighted), "Guided Learning", and "Dynamic view". Other options like "Labs" are visible but dimmed. To the right of the input field are three buttons: "Write anything", "Help me learn", and "Boost my day". The main workspace area is currently empty.



Gemini Canvas

The screenshot shows the Gemini Canvas interface. On the left, there's a sidebar with various icons and sections:

- A button to "create doc file from content in below".
- A section titled "ดัชนีเชียงไห่คอมโพสิตตลาดหุ้นจีนปิดลบในวันนี้ (9 ธ.ค....)".
- A "แสดงวิธีคิด" (Show how it thinks) button with a blue star icon.
- A section about the Shanghai Composite Index (9 ธ.ค.) with a timestamp of 9 ธ.ค. 22:41.
- A link to "ลองอีกครั้งโดยไม่ใช้ Canvas".
- A section about the Hang Seng Index with text: "ผมจัดรูปแบบให้อ่านง่ายขึ้นโดยแบ่งเป็นหัวข้อตามดัชนีตลาดหุ้นครับ หากต้องการเพิ่มข้อมูลส่วนไหนบอกได้เลย มาเขียนหรือสร้างไปด้วยกัน".
- Buttons for "+", "การคิด", and a microphone icon.

The main content area displays a document titled "สรุปภาวะตลาดหุ้นจีนและหุ้นไทย (9 ธันวาคม)". It contains two numbered sections:

- 1. ดัชนีเชียงไห่คอมโพสิต (Shanghai Composite)**
 - สถานะ: ปิดลบ
 - ระดับดัชนี: 3,909.52 จุด
 - การเปลี่ยนแปลง: ลดลง 14.56 จุด (-0.37%)
 - ปัจจัยสำคัญ: นักลงทุนผิดหวังหลังจากจีนส่งสัญญาณการใช้มาตรการกระตุ้นเศรษฐกิจอย่างระมัดระวัง
- 2. ดัชนีหุ้นไทย (Hang Seng Index)**
 - สถานะ: ปิดลบ
 - ระดับดัชนี: 25,434.23 จุด
 - การเปลี่ยนแปลง: ลดลง 331.13 จุด (-1.29%)
 - ปัจจัยสำคัญ:
 - ความไม่แน่นอนเกี่ยวกับกิจกรรมอัตราดอกเบี้ยของธนาคารกลางสหรัฐฯ (เฟด)
 - ลดความคาดหวังจากการประชุมผู้นำระดับสูงของจีน ว่าจะไม่มีการเร่งออกมาตรการกระตุ้นเศรษฐกิจในทันที
 - ความกดดันจากความตึงเครียดทางการค้าและวิกฤตภาคอสังหาริมทรัพย์ที่ก่อความรุนแรงขึ้น



Workshop



Workshop

Summarize input data from multiple sources

PDF

Microsoft
Excel

Website

Youtube



Workshop with Excel file

Try to convert file to PDF or Markdown file



<https://github.com/microsoft/markitdown>



Q/A

