

The Confluence of AI and Analysis

Workshop October 31st 🎃 – Jaarcongres IIBA Nederland 2024, Utrecht

In this workshop

We are uncovering better ways of leveraging AI in analysis by doing and helping others do it.

Just like the first part of the Agile Manifesto.



Bert Heymans
Business Analyst



— **Practical skills & mindset shift**

1. The Right Fit: Is Generative AI the Solution for Your Use Case?
2. Simulation: The Analysis Process with an LLM (Large Language Model)
3. Prompting Patterns for Analysts
4. Be Critical! But How? A practical approach.



**How long did it
take ChatGPT
to get 1 million
users?**



chatgpt.com



VPN



ChatGPT 4o ▾



What can I help with?



Create image



Summarize text



Analyze data



Help me write

More

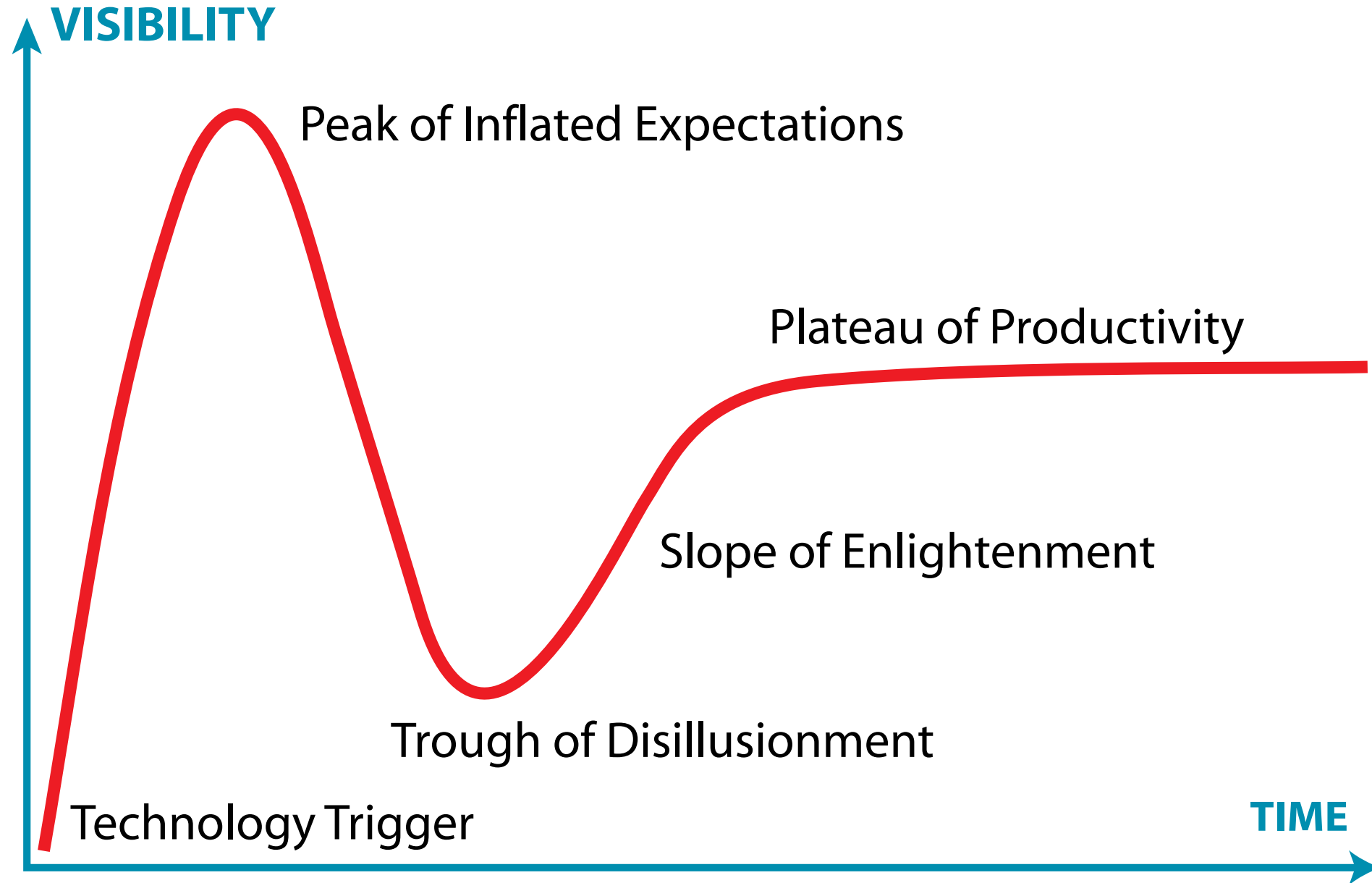


Please explain to the people in the room how they can use you



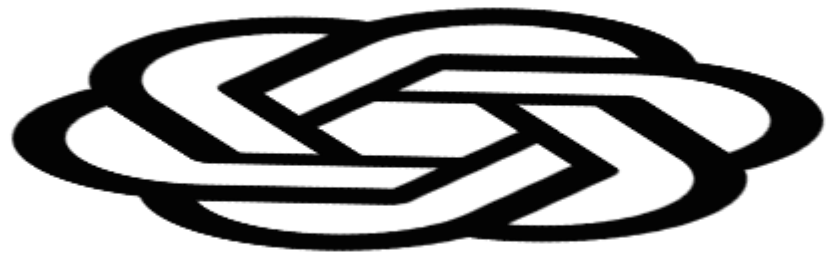
ChatGPT can make mistakes. Check important info.





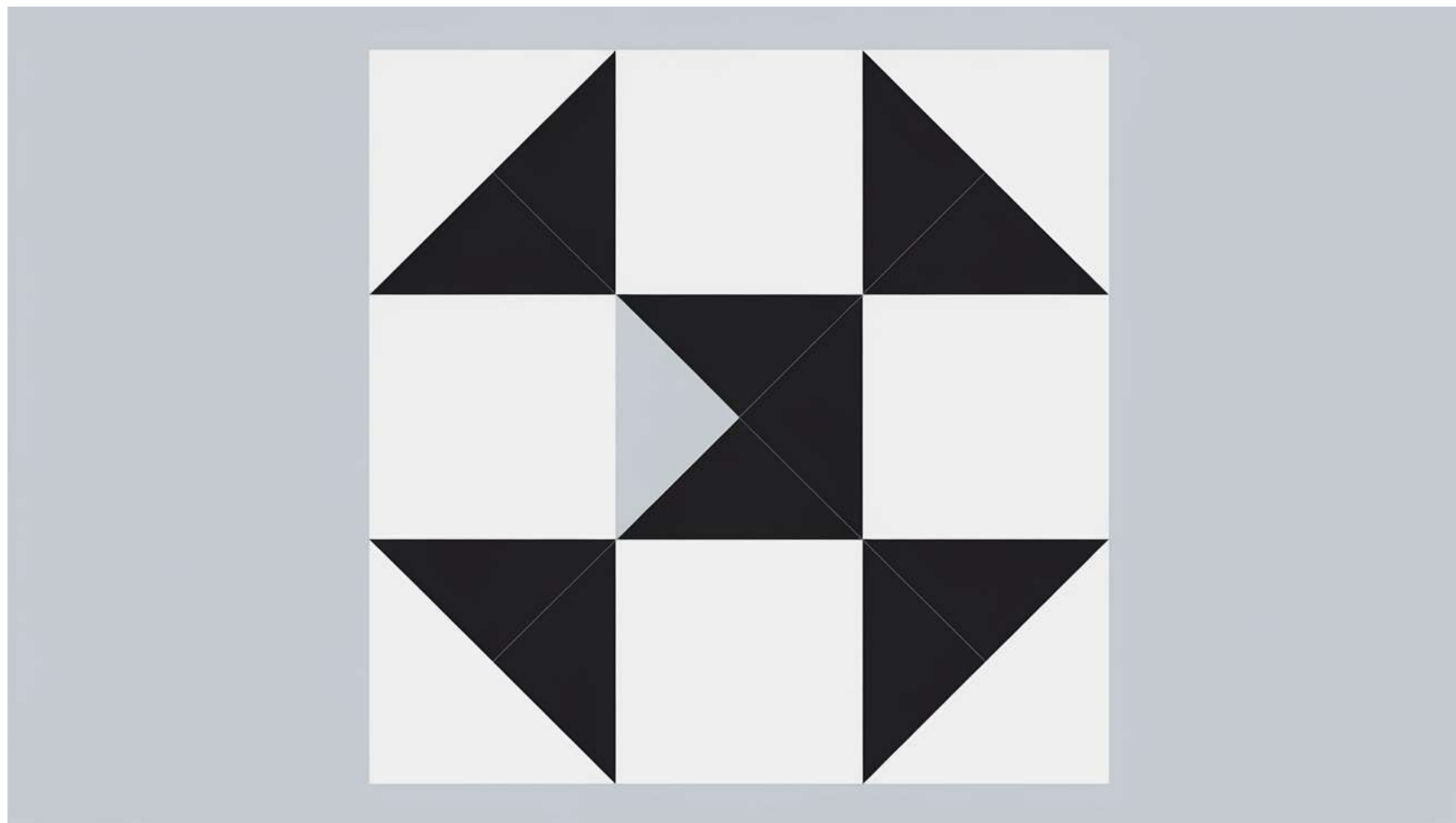


**What do
you use AI
for?**



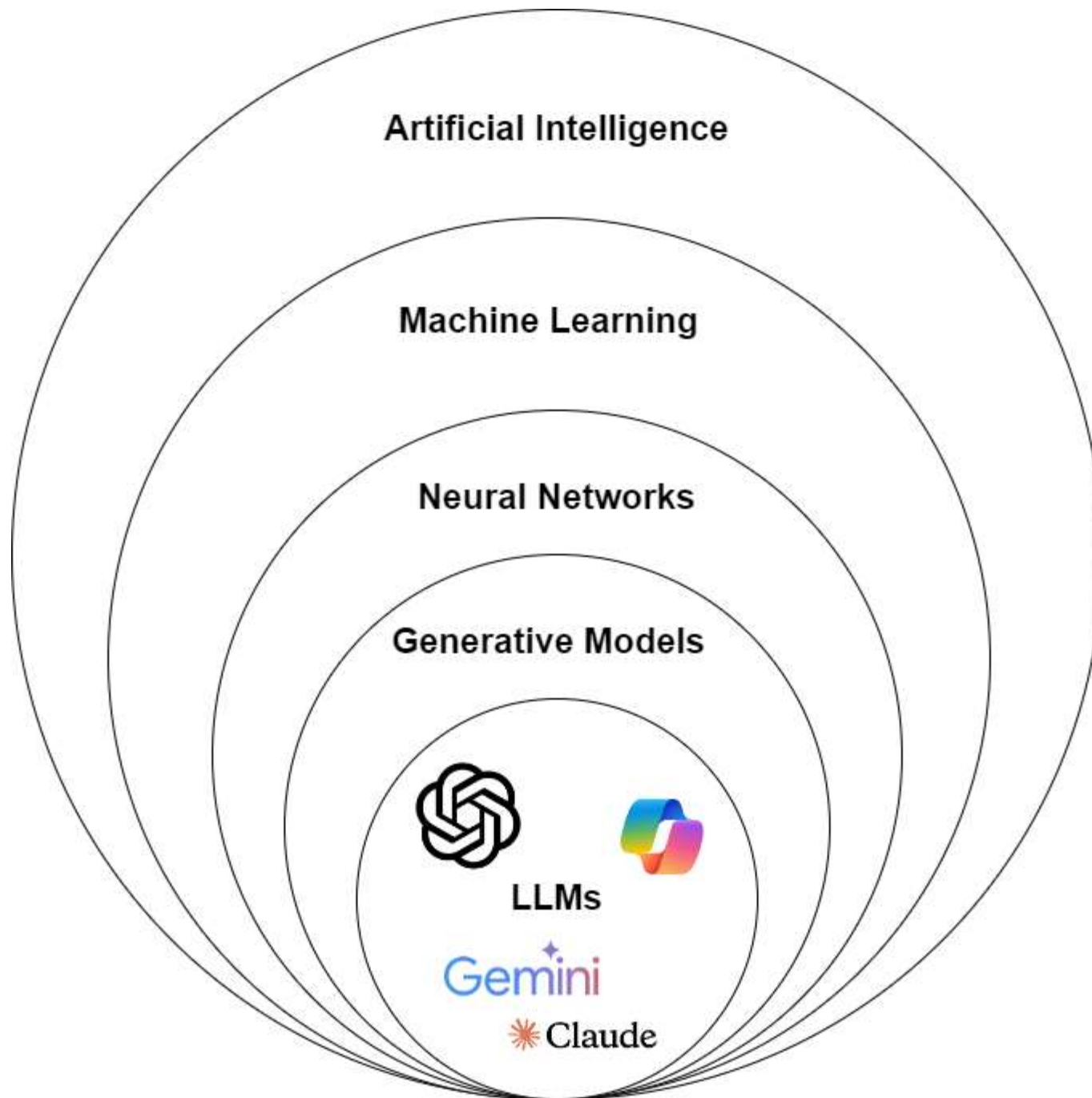
**Any bad
experiences?**

Hallucinations, by example ...



Discovering the right fit

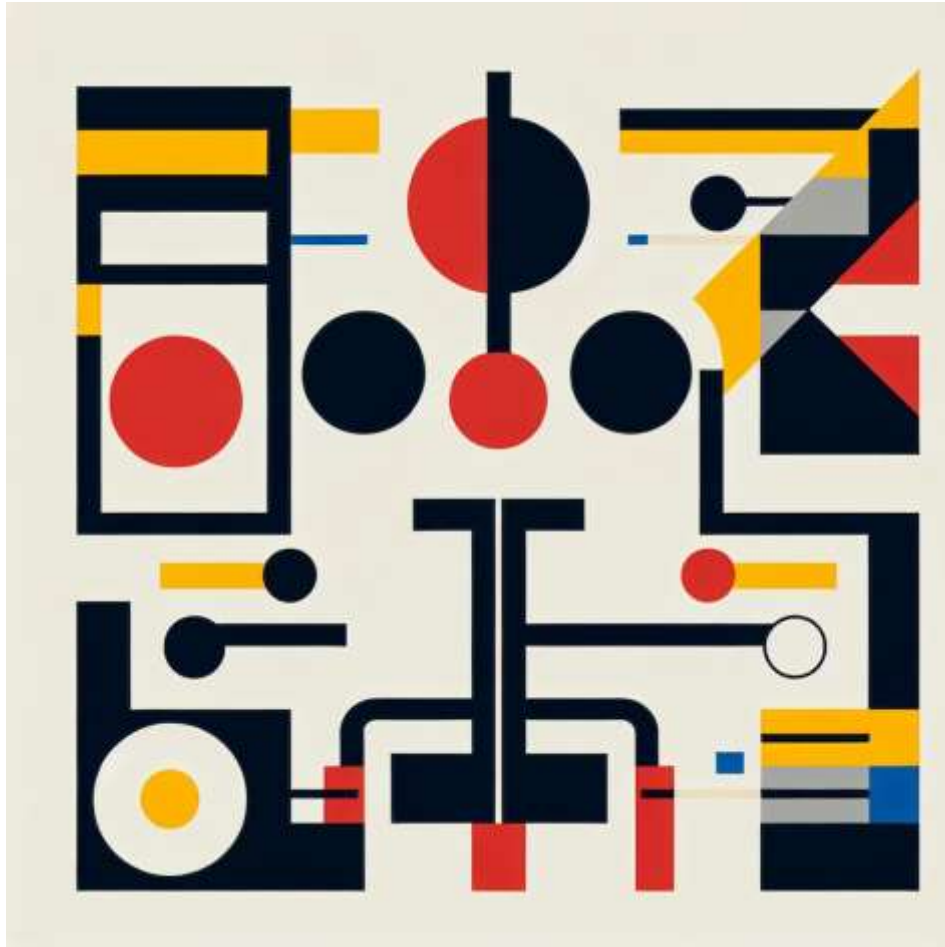
“It is tempting, if the only tool **you have** is a **hammer**, to treat **everything** as if it were a **nail**.” – Abraham Maslow



**Focus of
today:**

LLMs
(Large Language Models)

What is a Large Language Model?



- An is trained on a massive amount of text to understand language.
- It generates **a response** based on a prediction.

The Big 5



ChatGPT (OpenAI)



Copilot (Microsoft)



Gemini (Google)



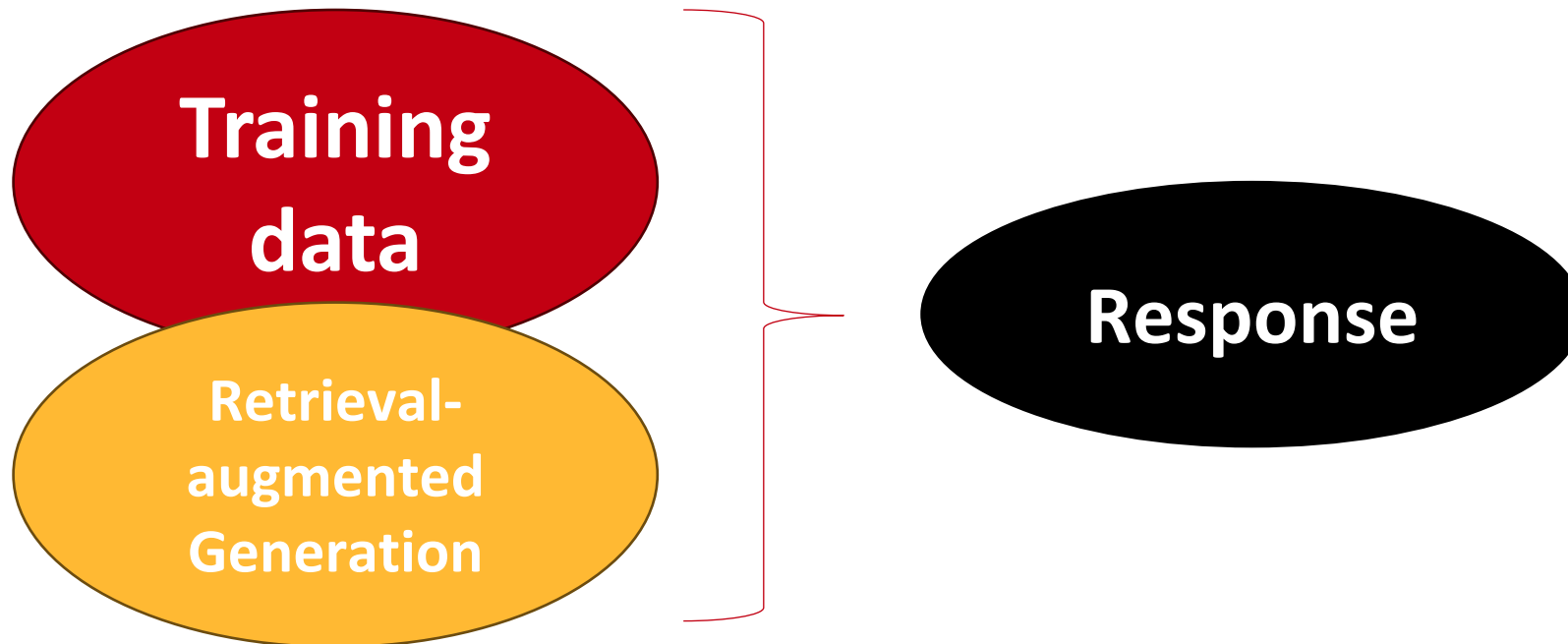
Claude (Anthropic)



Perplexity.ai (Perplexity AI, Inc.)

Knowledge cut-off (on 26/10/2024)

- 🦁 ChatGPT (OpenAI) → October 2023
- 🐘 Copilot (Microsoft) → October 2023
- 🦊 Gemini (Google) → “My knowledge is constantly evolving”
- 🐘 Claude (Anthropic) → April 2024
- 🐘 Perplexity.ai (Perplexity AI, Inc.) → December 2023

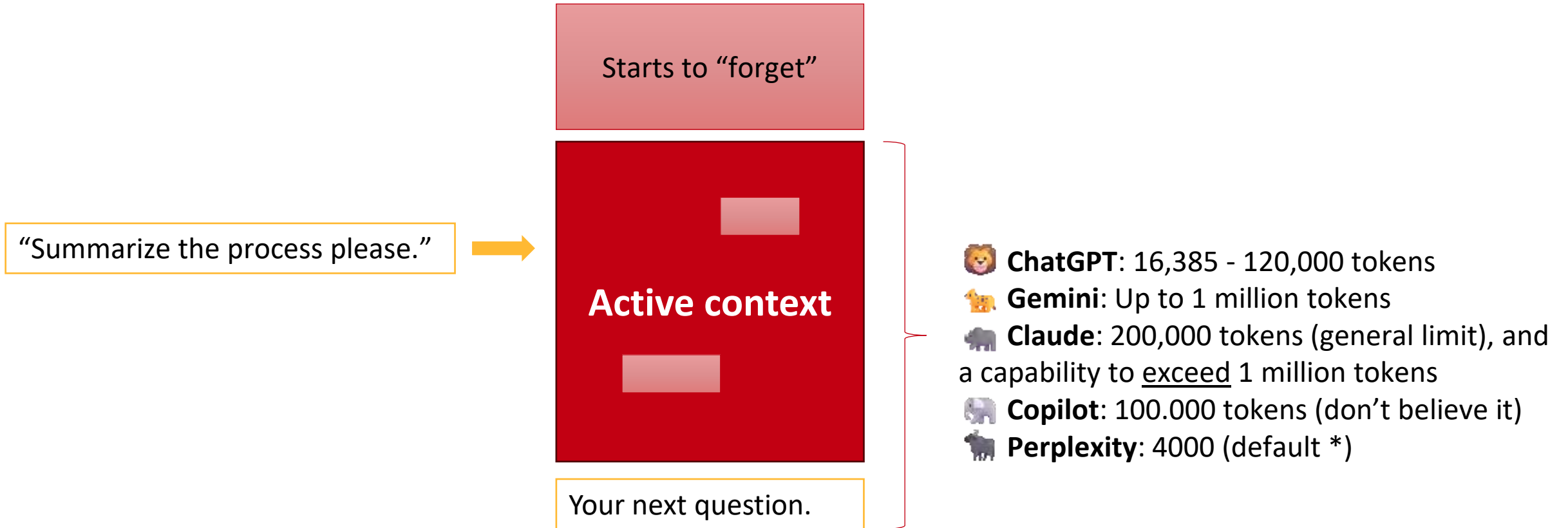


Why is this important?



Linguistic relativity and cultural evolution are key to understand the meaning of the user's question.

The context window.



Put into perspective.

1 token $\approx$ 3/4 of a word

100 tokens $\approx$ 75 words

 ChatGPT
(the largest model)

The entire
“**Lord of the Rings**” trilogy

 Gemini &  Claude

The whole “**Harry Potter**” series
plus “**The Hobbit**”
($\approx$ 8 books)



Use Cases for Analysts

The Checklist

Should you use an LLM for that?

Essential Questions

- Is the task primarily text-based?
- Are you exploring ideas or generating creative content?
- Does the task involve complex or open-ended questions?
- Is a margin of error acceptable?
- Would it benefit you to iterate?

The Checklist

Should you use an LLM for that?

Red-Flags?

- Is absolute accuracy required?
- Does the task require highly specialized knowledge?
- Any sensitive or confidential data?

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Explain this interface to me.



This appears to be a work-tracking interface, likely designed for interim or freelance workers to manage their schedules and track their workdays. Here's a breakdown of the elements on the screen:

1. Calendar View (Top Section):

- The calendar is for October 2024, with workdays highlighted in green.
- Green days (10th, 16th, 17th, and 23rd) indicate days worked or scheduled workdays.
- Non-highlighted days and weekends are shown in standard colors, with weekends (Saturday and Sunday) shaded in pink, marking non-working days.
- The date today is the 26th of October, as it's highlighted with a thin border.

2. Statistics Section (Middle):

- "Dagen gewerkt" (Days Worked): This shows the number of days worked so far, which is 7.
- "Dagen te werken" (Days to Work): This indicates the remaining days to be worked, which is 58. This could be based on a preset goal or contract requirement.

3. Green Notification Bar:

If the AI can't explain, it's probably not very clear. It should not tell to anything that surprises you either.

Create a wireframe for me.

Please make a wireframe for a mobile app that helps interim workers fill indicate the days they have worked in order to acquire a bonus.

Belgian law states that when they work 65 days, they get a bonus from a fund. Because interim workers switch jobs often and their work schedules are fragmented this is hard to keep up with.

We need to come up with **a user friendly interface** that helps them keep track of how much they worked. **There's a catch though**, they can earn days towards the 65 day goal by having equivalent situations: sick days within a contract, official holidays within a contract period.

() This one works with  Claude.*

B Please make a wireframe for a mobile app that helps interim workers fill indicate the days they have worked in order to acquire a bonus. Belgian law states that when they work 65 days, they get a bonus from a fund. Because interim workers switch jobs often and their work schedules are fragmented this is hard to keep up with. We need to come up with a user friendly interface that helps them keep track of how much they worked. There's a catch though, they can earn days towards the 65 day goal by having equivalent situations: sick days within a contract, official holidays within a contract period.

I'll create a wireframe for a mobile app that helps interim workers track their progress towards the 65-day bonus, including both actual workdays and equivalent situations.

Mobile App Wireframe for Interim Worker Day Tracking
Click to open image

I've designed a user-friendly mobile interface with these key features:

1. Progress Tracker
 - Large circular progress indicator showing current progress (42/65 days)
 - Visual representation makes it easy to see how close they are to their goal

B

Reply to Claude...

Claude 3.5 Sonnet (New)

Mobile App Wireframe for Interim Worker Day Tracking

Preview

Code

9:4185%

42/65
days

+ Add Today's Work

This Month
16 days

View →

Overview

Calendar

History

Recent Entries

Monday, Oct 25
Company: TechCorp

Friday, Oct 22
Sick Day (Counted)

Thursday, Oct 21
Holiday (Counted)

Last edited 1 minute ago

Publish

Explain this code / tech to me.



ChatGPT 4o



Please explain this code to me:

```
^(?:(?:31(\\V|-|\\.)(?:0?[13578]|1[02]))\\1|(?:(?:29|30)(\\V|-|\\.)(?:0?[13-9]|1[0-2])\\2))(?:?(?:1[6-9]|[2-9]\\d)?\\d{2})$|^?(?:29(\\V|-|\\.)?2\\3(?:?(?:1[6-9]|[2-9]\\d)?(?:0?[48]|[2468][048]|[13579][26])|(?:16|[2468][048]|[3579][26])00))))$|^?(?:0?[1-9]|1\\d|2[0-8])(\\V|-|\\.)(?:0?[1-9])|(?:1[0-2]))\\4(?:1[6-9]|[2-9]\\d)?\\d{2})$
```



This regular expression is a bit of a beast! 🐉 It's designed to validate dates in the `DD/MM/YYYY`, `DD-MM-YYYY`, or `DD.MM.YYYY` format, including leap years. Here's a breakdown of its parts:



1. Main Components



Message ChatGPT



ChatGPT can make mistakes. Check important info.

Because we all get dragged into some technicality at some point.

Draft a process

Let's make a Mermaid.js version of the process and the decisions

Here's a Mermaid.js diagram representing the chatbot process flow and key decision points.

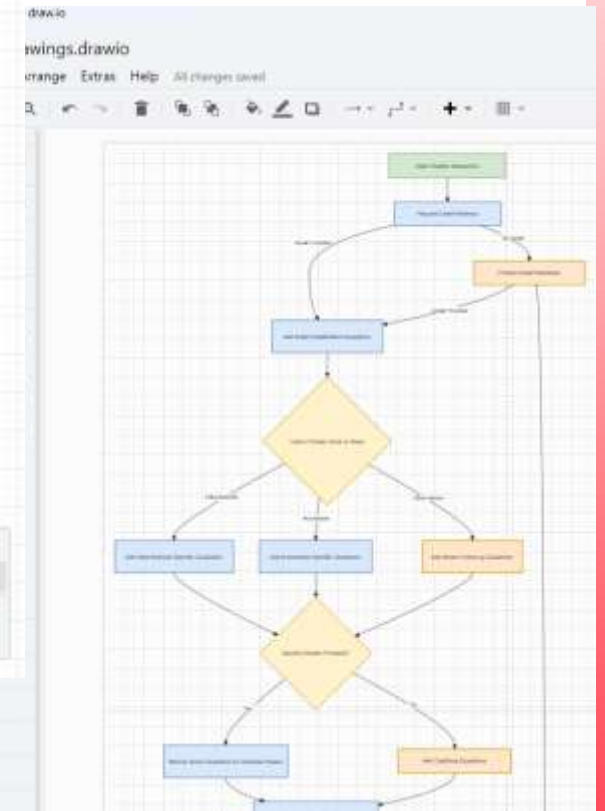
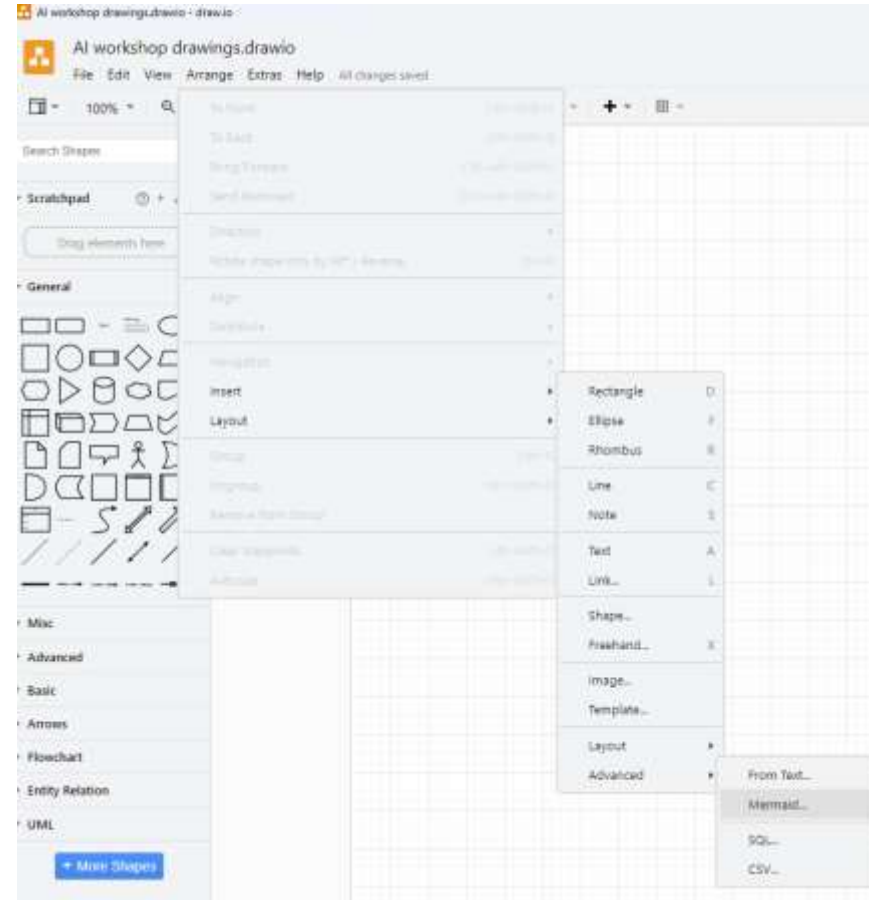
```
graph TD
    A[Start Chatbot Interaction] --> B[Request Email Address]
    B --> |Email Provided| C[Ask Initial Qualification Questions]
    B --> |No Email| D[Prompt Email Reminder]
    D --> |Email Provided| C
    D --> |Email Refused| E[End Session]

    C --> |User's Primary Goal or Need| F[Data Analysis]
    C --> |Data Analysis| G[Ask Data Analysis Specific Questions]
    C --> |Automation| H[Ask Automation Specific Questions]
    C --> |Other Needs| I[Ask Broad Follow-up Questions]
```

Copy code

Message ChatGPT

ChatGPT can make mistakes. Check important info.



Generate **Mermaid.js** code and insert in draw.io

Making a draft requirements doc

Please convert the following stakeholder meeting notes into a detailed requirements document. The document should include:

- An executive summary.
- Functional requirements.
- Non-functional requirements.
- Project timeline.
- Constraints and assumptions.
- Action items.

Ensure that the requirements are clearly categorized and numbered for easy reference.

[Insert the meeting notes here]

Real world input is messy and fragmented. There are limits ⚠️

This result will be off, don't hesitate to iterate on it!

Creating user stories

Using the high-level business objectives provided below, please create detailed user stories in the following format:

"As a **[type of user]**, I want **[an action]** so that **[a benefit]**."

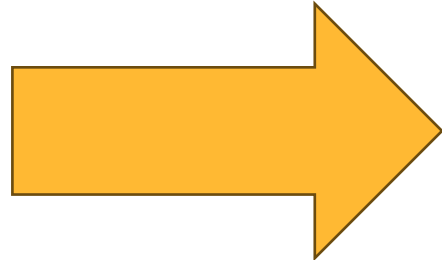
Ensure that each user story is specific, clear, and addresses a single functionality or feature.

[Insert the high-level business objectives here]

You might want to use a few examples of your own user stories to come up with a template that suits your organization. You might get lucky when it fills in blanks (functional and/or data).

Taking it a step further.

**Established
context**



Summarize the process please.

What are the decision that are taken?

What data would a user need in this scenario in order to do X?

What might be missing in the plan?

What type of project can I compare this with?

Please create a WBS (work breakdown structure).

How complex are these steps, please create a table, use t-shirt sizes to indicate complexity.

*Within **the same chat session**, ask follow-up questions. Be mindful of the context window though.*

But don't take it too far ...

You're done when
YOU can do your
work better. 💡



Making a perfect
prompt is not the
goal. 🧘

Do not try to have
the AI do
everything for you.
⚠️

Stakeholder / customer scenario

Why would a customer ask this question?

I want to understand them better, how can I respond?

[describe the customer]

How would the customer react to this?

[describe scenario]

This works great
within an
established
context! 💡

Sentiment analysis

[file with responses from a feedback form]

Please have a look at all the answers we got from this feedback form. I'm curious about the sentiment of the feedback. Output a table with the number of positive, neutral and negative responses. Give examples for each sentiment from the input.

Watch out for the size of the input here, mind the context size! 💡

Generate Test Data by Example

Generate test cases for a shipping price calculator. Each test case should include:

- Origin Country
- Destination Country
- Package Weight (kg)
- Package Dimensions (L x W x H in cm)
- Shipping Speed (Standard, Express, Overnight)
- Expected Shipping Price (EUR)

Here are some examples:

*If you have a file
with some data,
this is even
easier! 💡*

1. Test Case

- Origin Country: Belgium
- Destination Country: The Netherlands
- Package Weight: 2 kg
- Package Dimensions: 30 x 20 x 10 cm
- Shipping Speed: Standard
- Expected Shipping Price: 25 EUR

2. Test Case 2

- Origin Country: The Netherlands
- Destination Country: Germany
- Package Weight: 5 kg
- Package Dimensions: 40 x 30 x 20 cm
- Shipping Speed: Express
- Expected Shipping Price: 60 EUR

Now, please generate 5 more test cases following the same format.

Great business use cases for LLM's

- RAG (Retrieval-augmented Generation)
→ *what 🐘 Perplexity does*
- Selective summarization, ex. insurance coverage
- Content generation, ex. SEO texts
- Insight extraction, ex. medical diagnosis support
- Classifications, ex. sorting support requests



— What is it bad at?

Since LLMs rely on **probability**, they might choose an answer that “sounds” right based on context, even if it’s technically incorrect.

It’s pretty **bad at reasoning, doing maths and following rules step-by-step.**

Don’t use it for Business Rule Engines! (*** yet**)

02.

Simulating the analysis process with an LLM.

“It is not the answer that enlightens, but the question.”

– Eugène Ionesco

A High-Level Business Case?

Anything you got asked
to do recently? 💡

Some high-level
requirement 💡

Something you want to
improve in your
process 💡

Would this work?

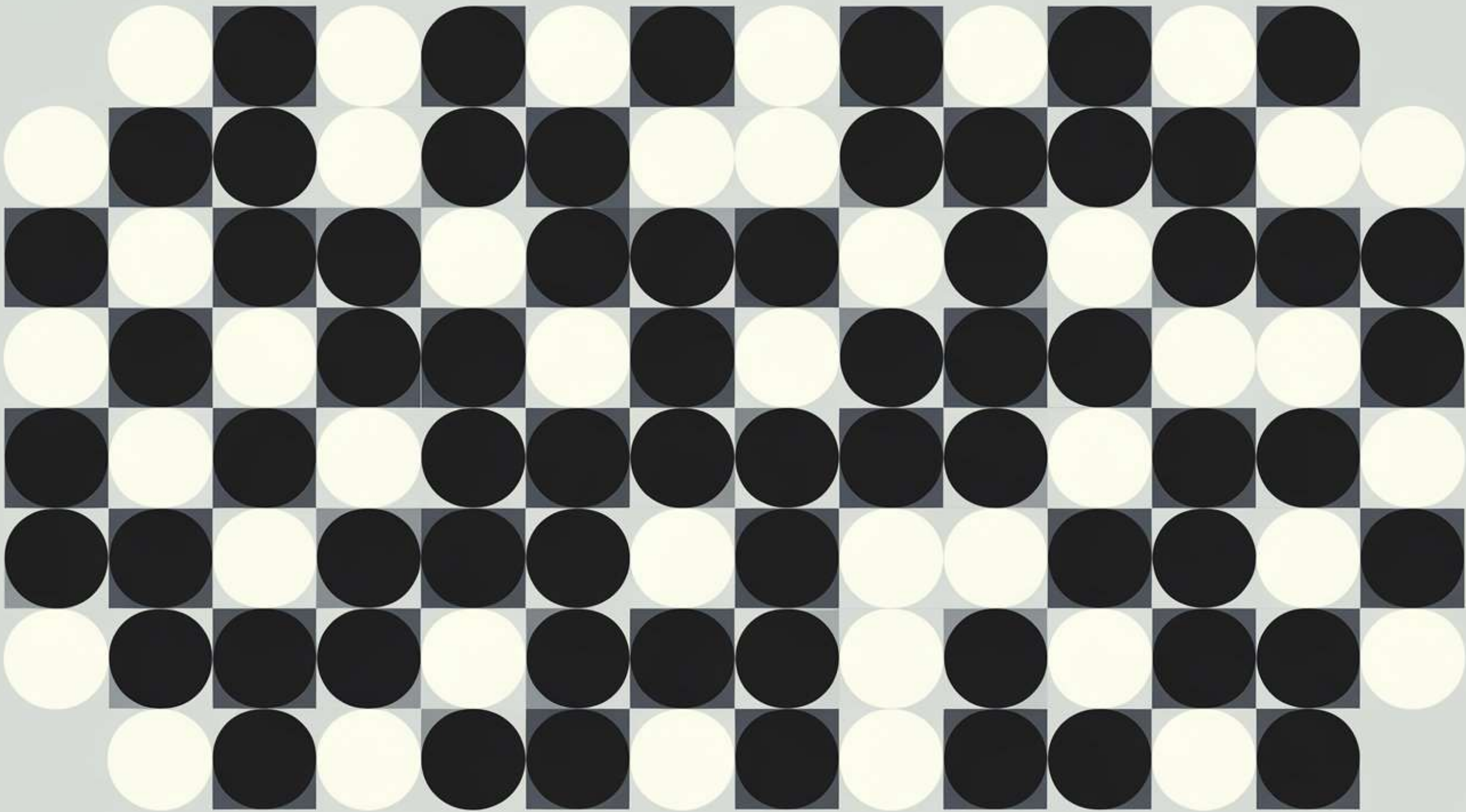
Let's use the checklist.

Essential Questions

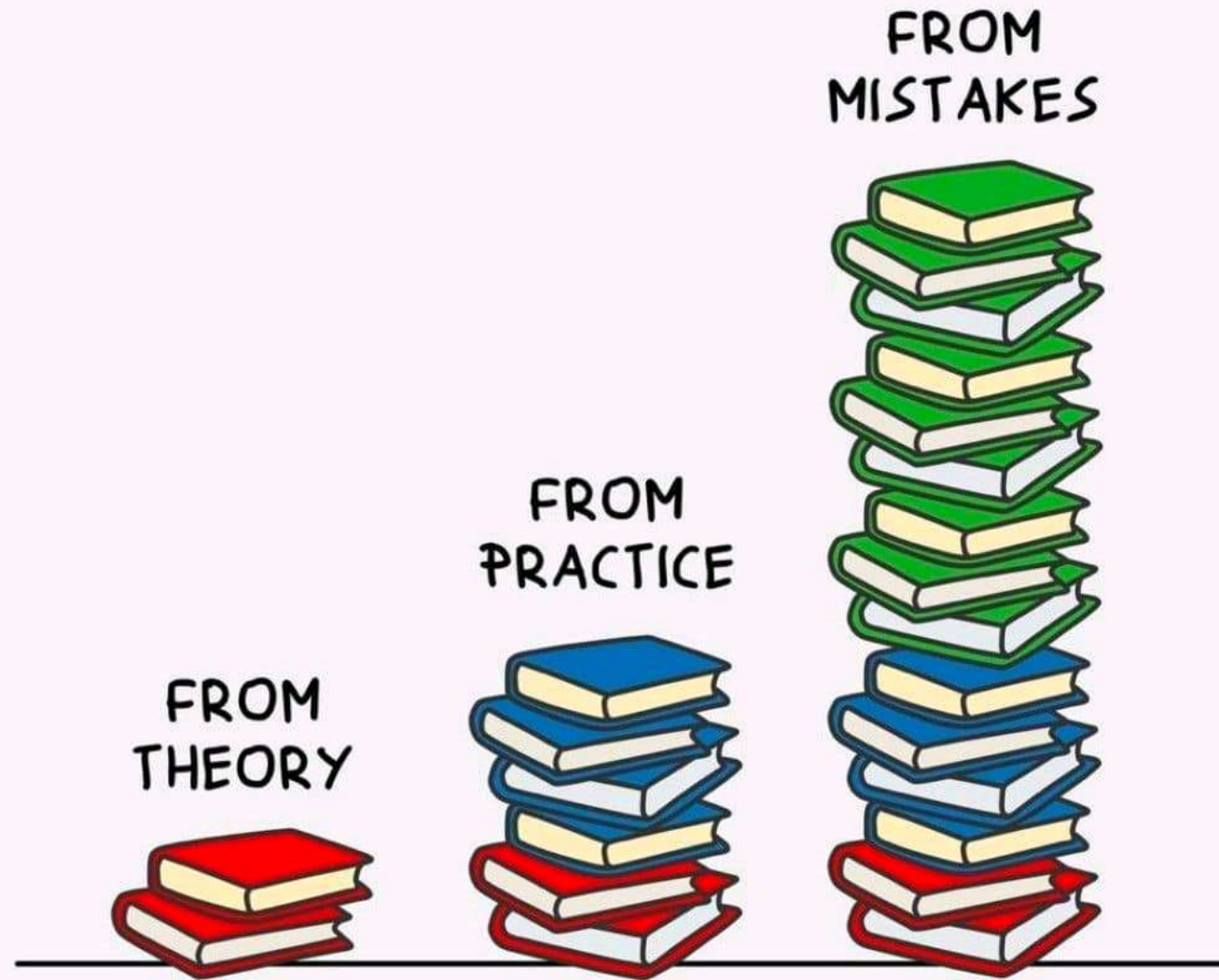
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Red-Flags?

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HOW MUCH YOU LEARN



Example

I would like you to ask me questions in order to achieve a way that helps my colleagues at The Business Analysts (a consulting company specialized in providing analysts) to choose the right training. Twice a year we organize a TBA Academy month, where we invite our colleagues to come to training days on a variety of topics. They can get refreshers on things they already know or (and this is especially interesting for new recruits) learn a new skill that helps them perform at their best for our clients. I already have a description of all the courses/trainings and we have a diagram showing the way the courses relate to each other, however it's hard to get them to find and join the trainings that are right for them. OK?

You should ask questions until I respond with “🌟”.

Ask me one question at a time.

Alright, please ask the first question.



This resulted in ...

TBA Academy Opleiding Keuzebot ▾



TBA Academy Opleiding Keuzebot

By Bert Heymans  

Ik help je opleidingen kiezen uit het TBA Academy aanbod.

Help me kiezen uit
het aanbod ajb.

Hoe werk deze
bot precies?

Welke opleidingen
zijn er in
het aanbod?



Message TBA Academy Opleiding Keuzebot



ChatGPT can make mistakes. Check important info.

?

03.

Prompting Patterns for Analysts.

A small selection ...

Recap

- The template pattern
- One-shot / few-shot prompting pattern
- Output formatting
- ...

Have you noticed other
similarities in approach?



Take these home with you.

- To teach yourself prompting on the go:
 - The Question Refinement Pattern
 - Alternative Approaches Pattern
- To help ask the right question:
 - The Cognitive Verifier Pattern
- To type less when doing research:
 - The Outline Expander

Have a look at this research on prompting patterns:

- [A Prompt Pattern Catalog to Enhance Prompt Engineering with ChatGPT](#)



Question Refinement Pattern

Pattern:

From now on, whenever I ask a question, suggest a better version of the question to use instead.

Example:

Whenever I ask a question about reducing project costs, suggest a refined version of the question that emphasizes sustainable cost efficiency and value creation. Ask me for the first question to refine.

Do this at the start of the chat, then start adding context and asking targeted specific questions.

Alternative Approach Pattern

Pattern:

If there are alternative ways to accomplish a task X that I give you, list the best alternate approaches.

(Optional) compare/contrast the pros and cons of each approach

(Optional) include the original way that I asked

(Optional) prompt me for which approach I would like to use

Example:

For every prompt I give you, If there are alternative ways to word a prompt that I give you, list the best alternate wordings . Compare/contrast the pros and cons of each wording.

Do this at the start of the chat, then start adding context and asking targeted specific questions.

Cognitive Verifier Pattern

Pattern:

When I ask a question, follow these rules:

- generate a number of additional questions that would help more accurately answer the question.
- combine the answer to the individual question to produce the final answer to the overall question

Example:

When you are asked to plan the roll-out of our new VR product, follow these rules. Generate a series of additional questions about the **target market**, **budget constraints**, **key milestones**, and **necessary resources**. Combine the answers to these questions to better structure the roll-out plan.

This way the dimensions you care about are taken into account with each question.

Do this at the start of the chat, then start adding context and asking targeted specific questions.

The Outline Expander

Pattern:

- Act as an outline expander.
- Generate a bullet point outline based on the input that I give you and then ask me for which bullet point you should expand on.
- Create a new outline for the bullet point that I select.
- At the end, ask me for what bullet point to expand next.
- Ask me for what to outline.

Example:

I want to learn about the organization IIBA, **please act as an outline expander.** Use the alphabet and numbers for the bullets in the list and sublist. When I pick a bullet, expand on it and create a new list.

*This is great for quickly
creating a broad context.*



Do this at the start of the chat, then propose a topic you want to explore.

04.

Be Critical! But How? A practical approach.

"If you don't own the model, the model's owner will control everything you ask of it."
– Teun Segers

Just use Perplexity.ai



Embrace variance, exploit it

Ask the model to create more versions of answers and let it give itself points on them based on criteria that you define. (Or just keep asking for more and different answers)

Starter question:

I'm looking for the best use cases of this new tool for architects.

[explain tool]

What are some great use cases.

[follow up with "please generate more use cases" as much until you are satisfied]

Model introspective question:

[chat session, or file with many answers on the same question]

Give every use case you gave above a number, a title and a rating from 1 to 10. The highest score is the best answer based on these criteria:

- predicted impact of the result on the architect's performance
- frequency that the use case would be used in the daily life of an architect

Output this is a table.

Patterns



Make sure your question is doing what you intend it to do.
This may not be obvious (to the model).

Use the **Cognitive Verifier Pattern**. (see previous slides)



Ask the model for the source **AND** check the source yourself.

Try: Whenever you output text, generate a set of facts that are contained in the output. The set of facts should be inserted at the end of the output. Whenever possible mention the source of the fact. The set of facts should be the fundamental facts that could undermine the veracity of the output if any of them are incorrect.



**Be bold,
stay curious,
experiment!**

Thanks IIBA NL!



Thank you!

Be wise,
optimise 🤖

**Kontich**

Business Park King Square
Veldkant 33B,
2550 Kontich

Leuven

Wetenschapspark Arenberg
Gaston Geenslaan 11 b4,
3001 Heverlee

Gent

Crepaingebouw
Bellevue 1,
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Bonus tools list

<https://whataicandotoday.com/> 🤗

A roleplaying centric AI : <https://character.ai/>

Removing a background: <https://www.remove.bg/>

Interior redesign with AI: <https://www.roomgpt.io/>

3d printing models: <https://www.getleo.ai/>

SEO: <https://seowriting.ai/>

Customer service:

- <https://watermelon.ai/nl/>
- <https://customgpt.ai/>

More image editing:

- <https://skylum.com/luminar-ai>
- https://www.adobe.com/be_nl/products/firefly.html

Art generator: <https://davinci.ai/>

Video generation: <https://runwayml.com/>