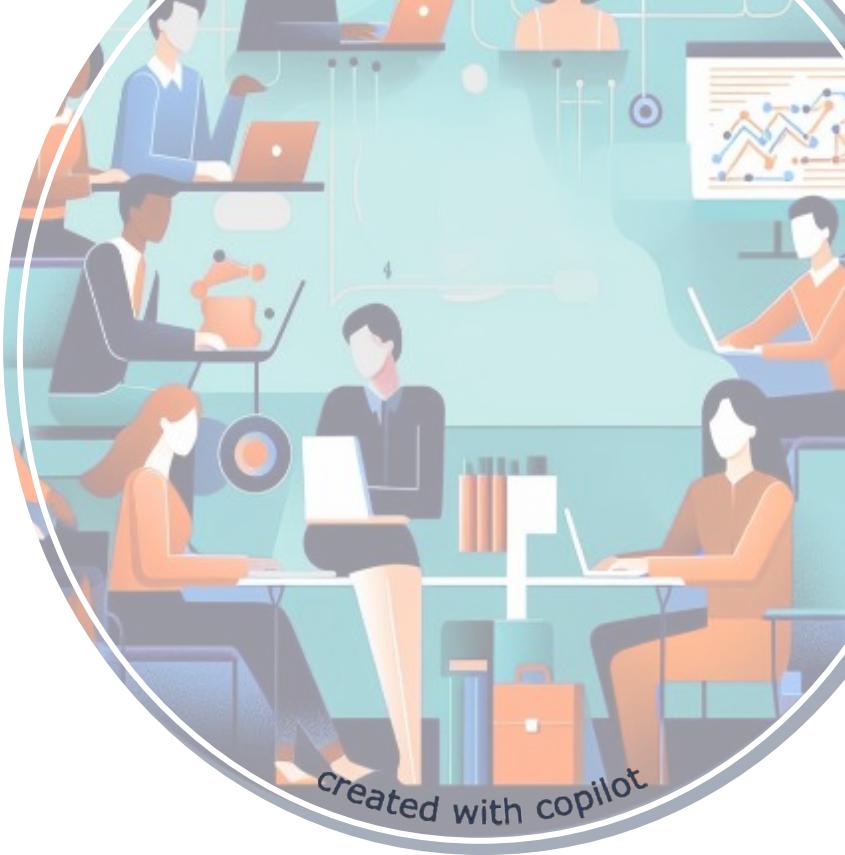


# Strategic use of Generative AI

Bruna Piereck and Alexander Botzki



This material was inspired by “Generative Artificial Intelligence (GenAI) overview” from Waterloo university [v1.0 Mckensie MA, et al 2024](#)

Speakers note and links can be found in most slides of this presentation in the notes portion of the slide.



Join at [menti.com](https://menti.com) | use code **8762 7527**

 **Mentimeter**

## Instructions

Go to

**www.menti.com**

Enter the code

**8762 7527**



Or use QR code

# Where do you see AI in your life!



cellphones



assistants



chatbots



Online shopping



web search



smart home



autonomous car



cyber security



smart farming



# VIB wants:

Policy and



practical guideline

1. To stimulate the responsible use of genAI
2. Awareness of the strengths and limitations of genAI
3. You to perform the necessary verification and quality control
4. You to refrain from using of genAI if:
  - risks to disclosure of confidential or personal information

# Practical guideline



## Practical guideline on the responsible use of generative artificial intelligence tools

The responsible use of generative artificial intelligence (genAI) tools:

- Requires a high level of awareness on the limits on the quality, correctness, accuracy, and currentness of the output, and on the need to perform appropriate verification.
- Must avoid that confidential, proprietary and personal information are processed in a way that could lead to the inadvertent or deliberate disclosure, sharing, theft or loss of these types of information.

The table below gives an overview for a number of genAI tools of whether they can be safely used for confidential, proprietary or personal information. When it is indicated that the tool is not allowed for confidential, proprietary and personal information, they can of course still be used for non-confidential, non-proprietary and non-personal information.

GenAI tool	Version	Application	Allowed for confidential, proprietary and personal information?	Remarks
ChatGPT	3.5	Text generator, feedback provider, ...	NO	It is advised not to use this version for confidential, proprietary and personal information, even when one has opted out for 'improve the model for everyone' and opted for a 'temporary chat'.
ChatGPT	4	Text generator, feedback provider, designer, multimedia developer, data analysis, ...	NO	It is advised not to use this version for confidential, proprietary and personal information, even when one has opted out for 'improve the model for everyone' and opted for a 'temporary chat'.
	4.0	Text generator, feedback provider, designer, multimedia developer, data analysis, ...	NO	It is advised not to use this version for confidential, proprietary and personal information, even when one has opted out for 'improve the model for everyone' and opted for a 'temporary chat'.
	4 Enterprise	Text generator, feedback provider, designer, multimedia developer, data analysis, ...	YES	Data are not used for training purposes and the tool offers sufficient security guarantees.
MS Copilot	in Edge or via copilot.microsoft.com	Idea generator, advanced search engine, writing assistant, multimedia developer, feedback provider, ...	YES	But only in case you use the tool with authentication via the VIB or university email address.
	Web app	Idea generator, advanced search engine, writing assistant, multimedia developer, feedback provider, ...	YES	But only in case you use the tool with authentication via the VIB or university email address.

NO

They **CAN STILL** be used for:  
- non-confidential  
- non-proprietary  
- non-personal

# Practical guideline



## Practical guideline on the responsible use of generative artificial intelligence tools

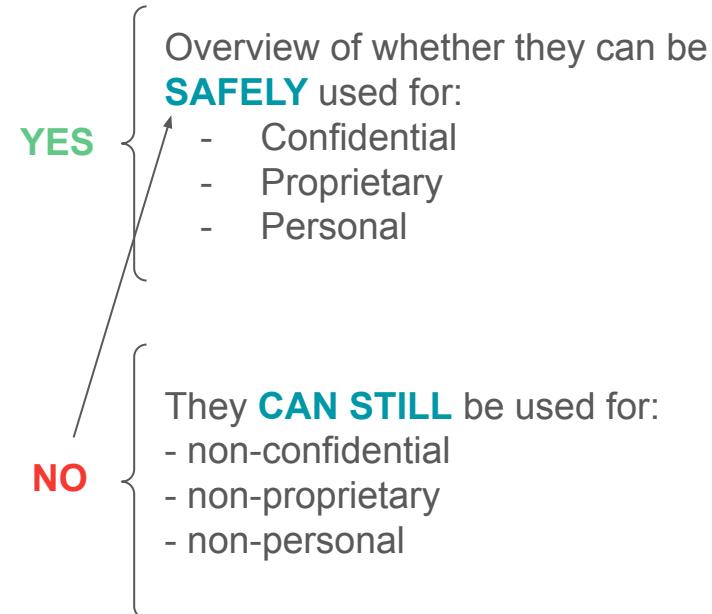
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VIB includes Enterprise data protection  
[Microsoft 365 Copilot](#)



# What is behind AI ?



# DON'T PANIC



We'll teach you  
how to drive

Not how to build a car



# What is behind AI ?

- Statistics based
  - Patterns



LLMs = Large language models  
Predict the next word

Illustration by @storyset on freepik

# What is behind AI ?

- Statistics based
  - Patterns



LLMs = Large language models  
Predict the next word

“ This was seasoned with pepper and \_\_\_\_\_ ”

Illustration by @storyset on freepik

# What is behind AI ?

- Statistics based
  - Patterns
- The AIM:  
Machine algorithm → Human-like
  - Problem solving
    - Complex data
    - Flexible analysis
    - Dynamic process
  - Decision making



@storyset on freepik

# What is behind AI ?

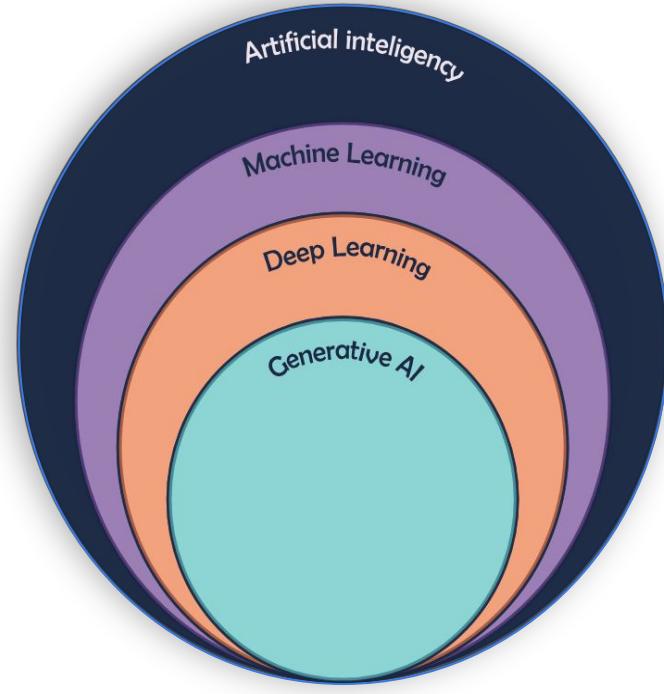
- Statistics based
  - Patterns
- The AIM:  
Machine algorithm → Human-like
- Trained from datasets
  - Variable complexity and specificity



@storyset on freepik

# AI: a set of technologies

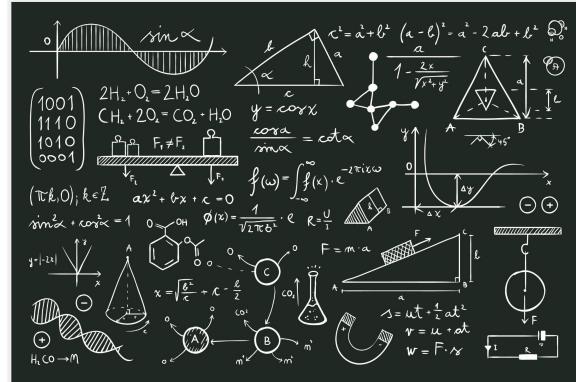
- “classifier”
  - AI
    - pattern recognition
  - ML (machine learning)
    - Structured data
  - DL (Deep Learning)
    - Multilayered unstructured data
    - Large language models (LLM)
- “generator”
  - Generative AI
    - Generate content



# Concepts

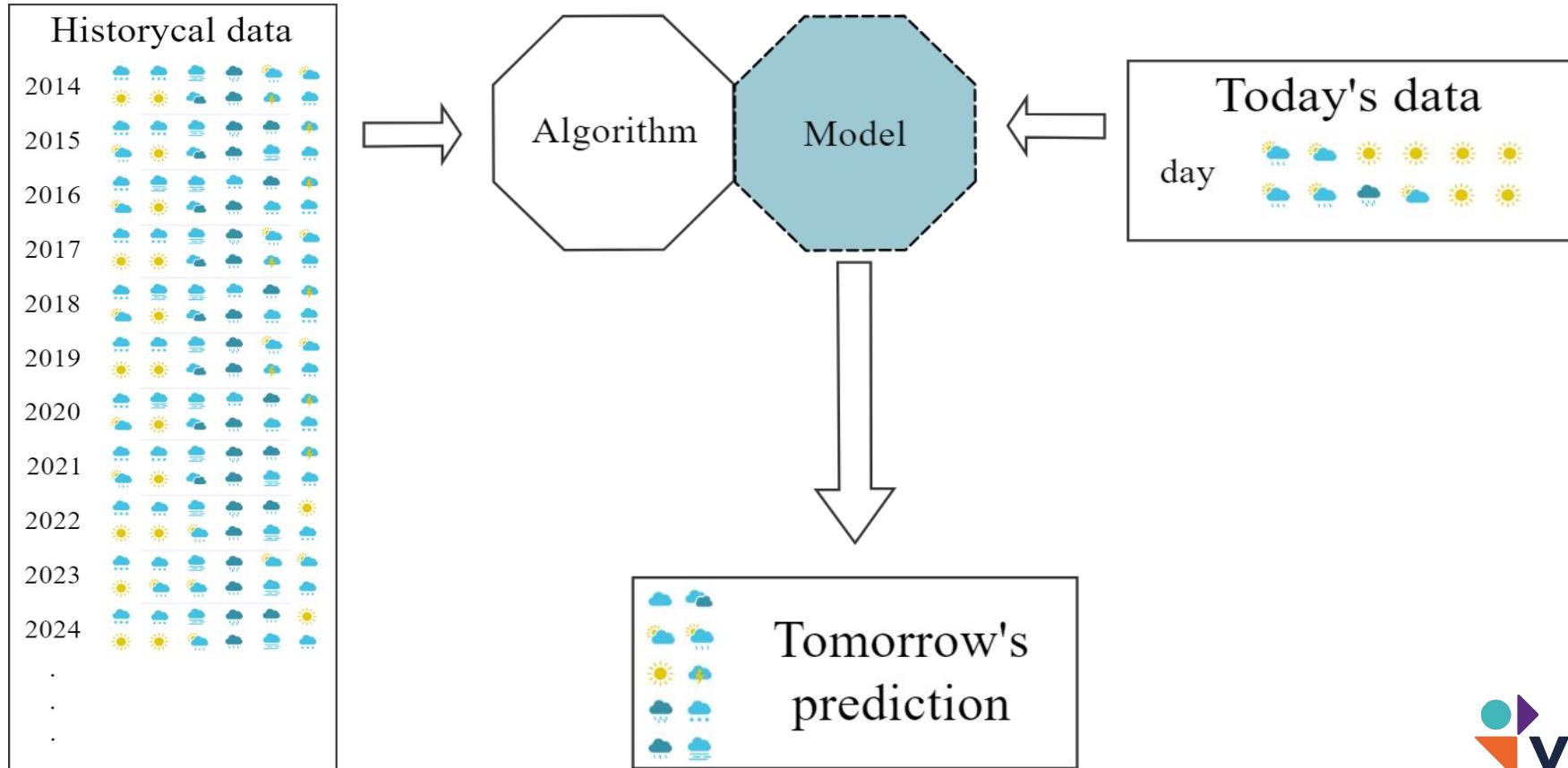
- Data: Information
- Algorithm: calculations
  - Create model
  - Optimize model
- Model
  - Mathematical function
  - Enable predictions

information

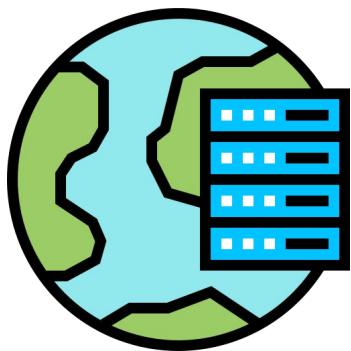


$$X = 1 + \frac{n}{1!} + \frac{zy^2}{2!}$$

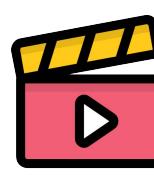
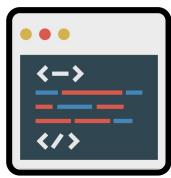
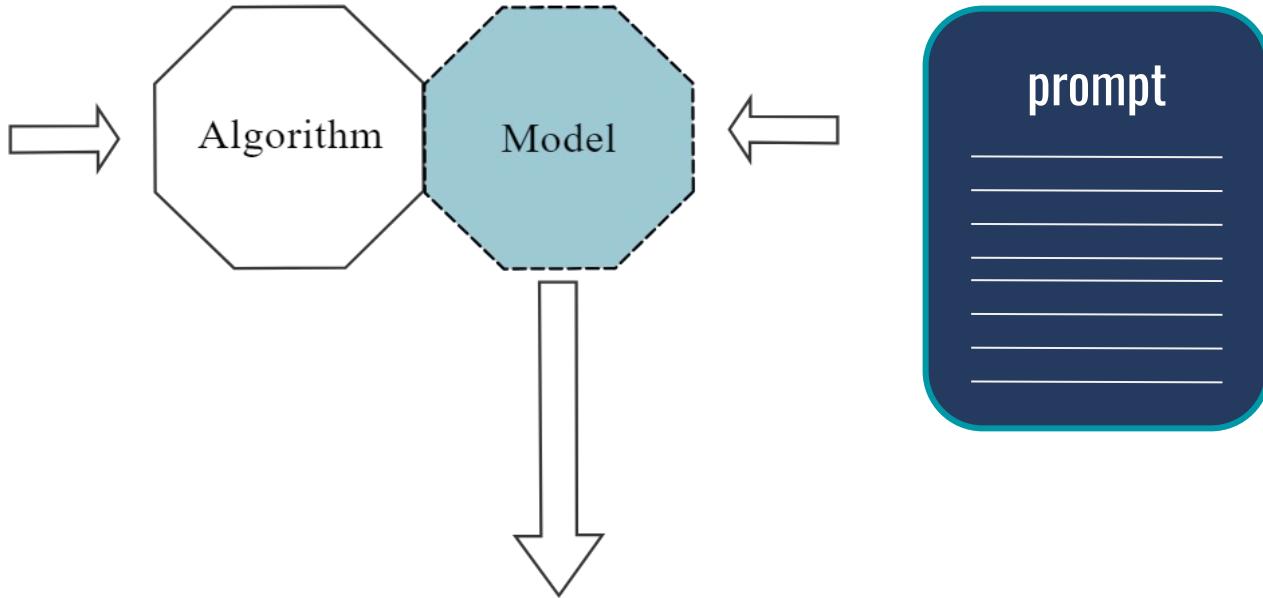
# General example:



# Generative AI example:



real world data



# GenAI products (examples)

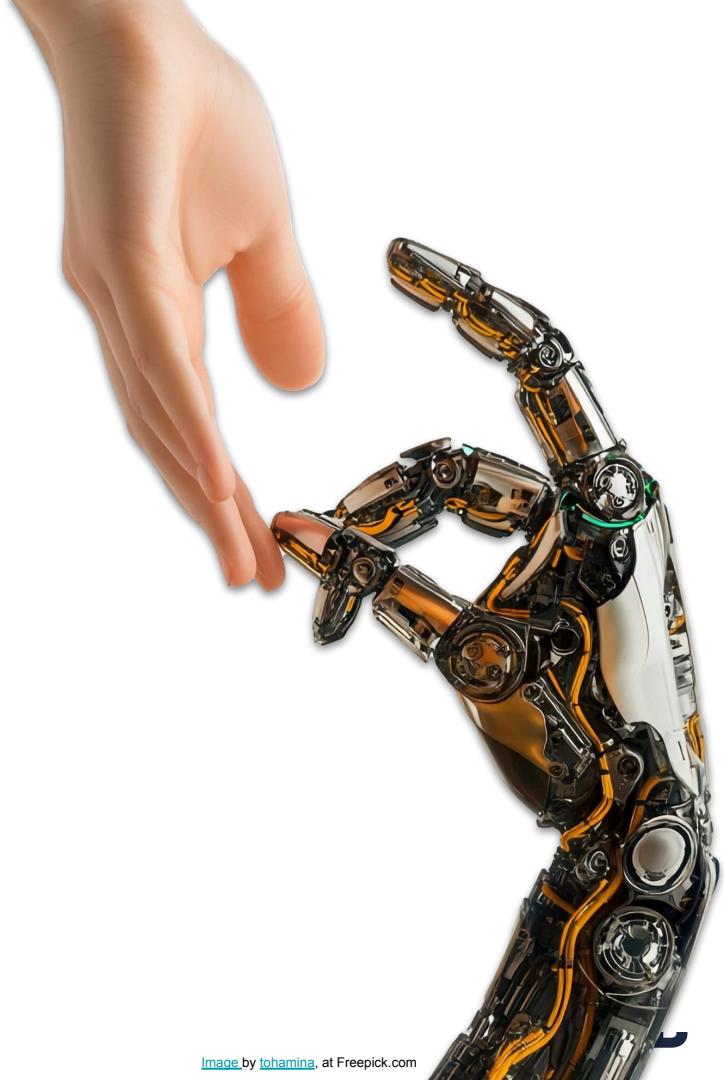
- Copilot (Microsoft)
- ChatGPT (OpenAI)
- Dalle-4 (OpenAI)
- Gemini
- Elicit
- etc ...



Gemini



*VIB guideline*



# GenAI products

Model vs Product

- Copilot (Microsoft)
- ChatGPT (OpenAI)
- Dalle-4 (OpenAI)
- Gemini
- Elicit
- etc ...

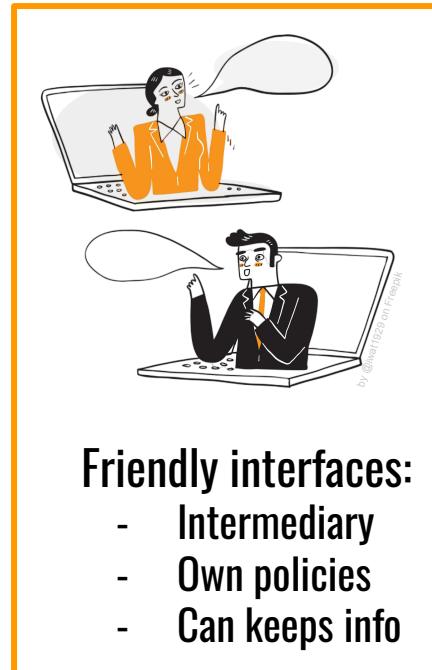
# GenAI products

- Copilot (Microsoft)
- ChatGPT (OpenAI)
- Dalle-4 (OpenAI)
- Gemini
- Elicit
- etc ...

Model

vs

Product



# GenAI products

- Copilot (Microsoft)
- ChatGPT (OpenAI)
- Dalle-4 (OpenAI)
- Gemini
- Elicit
- etc ...

Model



Your set-up:  
- Locally  
- Remotely  
- API

vs

Product



Friendly interfaces:  
- Intermediary  
- Own policies  
- Can keeps info

# Products that could help:



Meeting Assistant: Meeting notes, automated summaries



Project manager: Tasks, deadlines, who is doing what



Solutions for Excel and Google sheets: create, extract, classify



Manage expenses: track receipts, reimbursements, create reports and invoices



Manage and automate: Marketing, Data management, IT helpdesk, support, ticketing system



Scheduler - Calendaring : Moving from doodles, getting feedback on proposed time



# Privacy Policy of products

always look into it

# GenAI products privacy policy

## Data privacy

- GenAI tools can:
  - Retain your information
  - Use it for (re)training (model improvement)
  - Make data collection of:
    - Device info.
    - Geolocation
    - IP address

### Avoid

- Institutional information
  - Personal & Sensitive data
- ↓
- Disclose sensitive or personal data
  - Loss of confidentiality, copyrights, etc

## Examples policies:

# Examples policies:



ChatGPT



DALL·E



OpenAI

## Content

<https://openai.com/policies/terms-of-use/>

Updated: December 11, 2024

**Your content.** You may provide input to the Services (“**Input**”), and receive output from the Services based on the Input (“**Output**”). Input and Output are collectively “**Content**”. You are responsible for Content, including ensuring that it does not violate any applicable law or these Terms. You represent and warrant that you have all rights, licences, and permissions needed to provide Input to our Services.

**Ownership of content.** As between you and OpenAI, and to the extent permitted by applicable law, you (a) retain your ownership rights in Input and (b) own the Output. We hereby assign to you all our right, title, and interest, if any, in and to Output.

**Opt out.** If you do not want us to use your Content to train our models, you have the option to opt out by updating your account settings. Further information can be found in [this Help Center article](#). Please note that in some cases this may limit the ability of our Services to better address your specific use case.

## Examples policies:



# Copilot

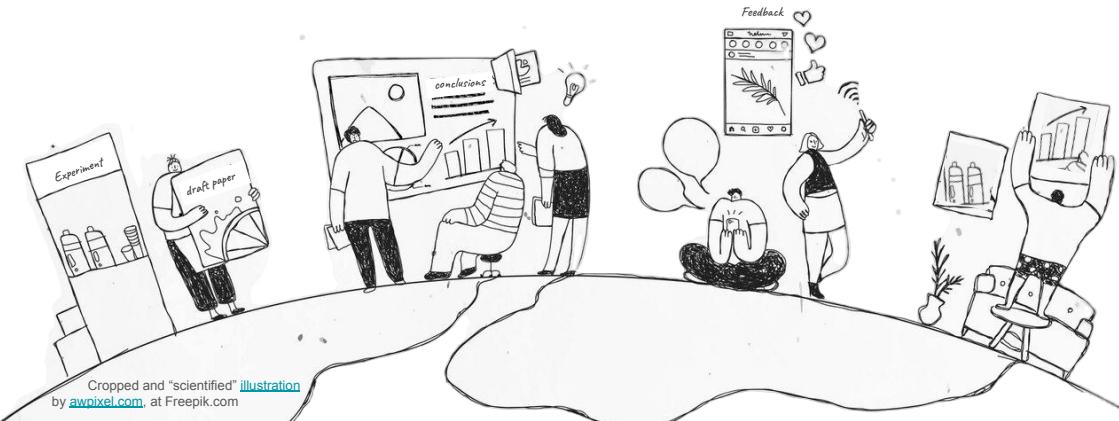
<https://www.bing.com/new/termsofuse>

Last Updated: 2024-10-01 ([past versions](#))

5. **Ownership of Content.** Microsoft does not claim ownership of Prompts, Creations, customizations, instructions, or any other content you provide, post, input, or submit to, or receive from, the Online Services (including feedback and suggestions). However, by using the Online Services posting, uploading, inputting, providing or submitting content you are granting Microsoft, its affiliated companies and third party partners permission to use the Prompts, Creations, customizations (including GPTs), and related content in connection with the operation of its businesses (including, without limitation, all Microsoft Services), including, without limitation, the license rights to: copy, distribute, transmit, publicly display, publicly perform, reproduce, edit, translate and reformat the Prompts, Creations, and other content you provide; and the right to sublicense such rights to any supplier of the Online Services. Your use of the Online Services does not grant you any ownership rights in any underlying technologies, intellectual property, or other data that comprise or support the Online Services.

# What you can do with GenAI

- Write and Brainstorm
  - Ideas
  - Text
  - Summaries
  - Translation
  - Language improvement
  - Etc ...
- Generate
  - Code
  - Image
  - Video
  - Text
  - Tables
  - Etc ...
- Other ideas
  - Literature Search
  - Graphs making
  - Feedback simulation
  - Documentation improvement
  - Etc ...



Cropped and "scientified" illustration  
by [awpixel.com](http://awpixel.com) at Freepik.com

# Let's give it a try:

Ask copilot or your product of choice



- Prompt:

**draw a primary school teacher**

<https://copilot.cloud.microsoft>

# Let's give it a try:



- **Prompt:**  
**make a pastel color sketchy drawing  
of one fuller women with her  
headsets reading a book, refrain of  
adding background.**

# Let's give it a try:



- **Prompt:**  
make a pastel color sketchy drawing  
of one fuller women with her  
headsets reading a book, refrain of  
adding background.

**Who owns this image ?**

**Copyrights**  
always look into it

# What is “copyrightable” ?

works and creations that are original.

They must be the result of the author's own intellectual work, and not a copy of a pre-existing work

## Who owns the work?

The author or the institution



# GenAI and Copyrights

Reflexions

- The potential copyright infringement by generative AI models



# GenAI and Copyrights

Reflexions

- The potential copyright infringement by generative AI models
- Are works produced with generative AI tools copyrightable?
- By whom?



# Ownership in AI

- Depends of:
  - Regulation ([AI act in EU](#))
  - Extend of human and AI role
  - Term & Conditions of genAI product



# Ownership in AI

- Depends of:
  - Regulation (AI act in EU)
  - Extend of human and AI role
  - Term & Conditions of genAI product
- Ownership variations:
  - User of the tool (most cases)
  - Creator of the algorithm
  - No one
    - Is not entitled
    - Is considered to be in public domain
    - Under T&C of the service provider



**New testing prompt:**

**To draw a company manager**

Sept 2024



Jan 2025



New testing prompt:

To draw a company manager

# Biases in genAI

be mindful

# Biases

- Examples:
  - Ageism
  - Sexism
  - Racial
  - Classism
  - Conservatism
  - Urbanism
- Stereotypical



Image by @freepik

# Biases

- Come from:
  - Historical data
  - Embedded in society
  - Human feedback biases
  - Model and algorithm biases
  - Reproduces societal challenges



*Image by @freepik*

# Biases

Sept 2024



Jan 2025



**prompt:** To draw a company manager

**Iteration:** Make it women

**Iteration:** make it a fuller women

Copilot  
I'll try to create that.  
Designer

Content wasn't generated because your prompt includes wording that may be in violation of the Designer code of conduct. Please change your phrasing and try again.

# Biases

Sept 2024



Jan 2025



**prompt:** To draw a company manager

**Iteration:** Make it women

**Iteration:** make it a fuller women

**Iteration:** make her 100kg

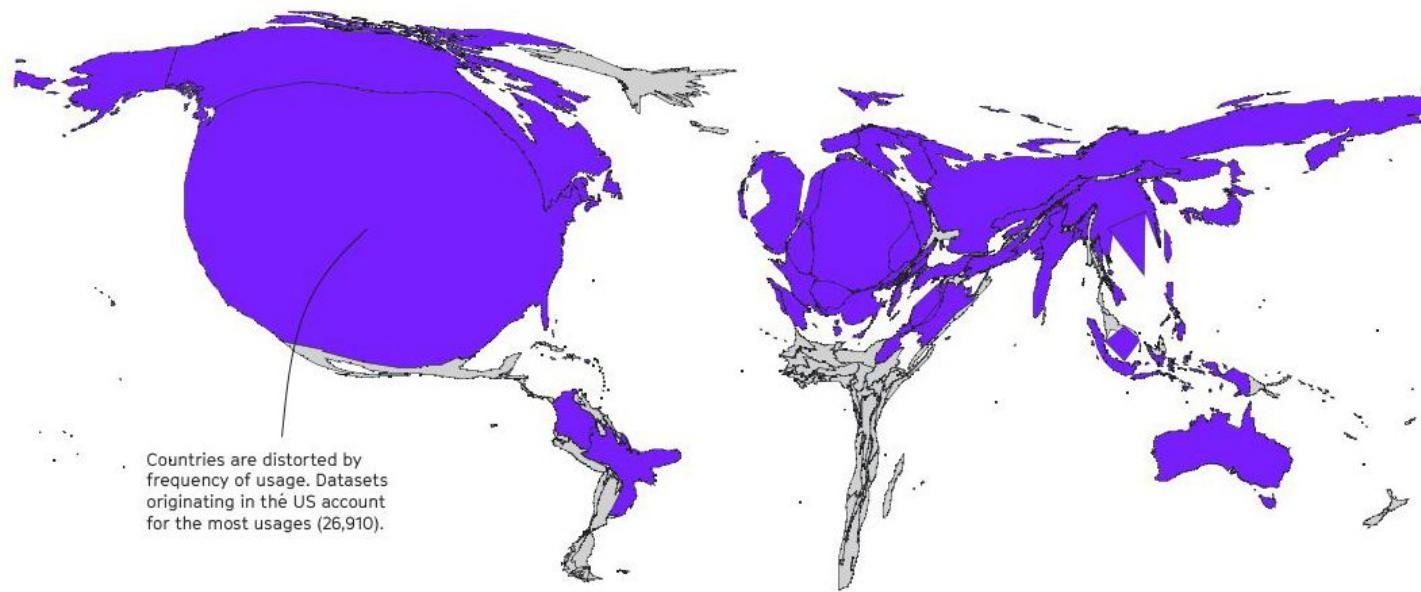
# Biases



Adding context

# Frequency of dataset usage by country

● Usage of datasets from here   ● No usage of datasets from here



ⓘ This map shows how often 1,933 datasets were used (43,140 times) for performance benchmarking across 26,535 different research papers from 2015 to 2020.

Reduced, Reused and Recycled: The Life of a Dataset in Machine Learning Research, Bernard Koch, Emily Denton, Alex Hanna, Jacob G. Foster, 2021. Map made with Natural Earth. Distorted with cartogram3.

# P.S.: Image generation with genAI

- Create something **sufficiently different**
  - Use AI to **assist** in the creative process
  - Mind the prompt
    - Citing artists
    - Citing copyrighted work
- Transparency is key
  - **Disclaimer** which AI you use
- Use reverse image search
  - **Verify** references
- Save the prompts
  - Save as image **metadata**
- Avoid very general suggestions
  - Do not reinforce biases



# Biases: IT IS IN THE DATA

- Same Same
  - Text
  - Image
  - Others ...



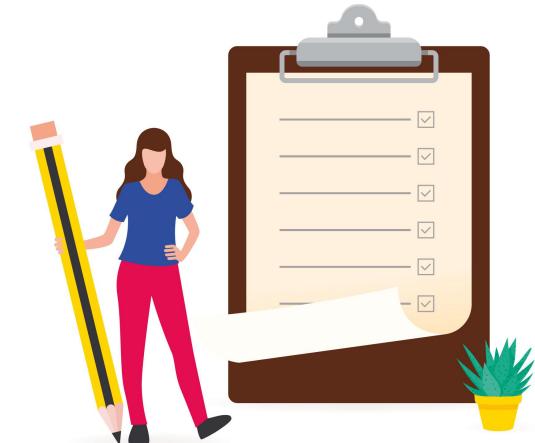
Image by @freepik

# Let's try something else:

- Prompt:

**Give me a list with 5 links about evidences on how dinosaurs built a civilization**

<https://copilot.cloud.microsoft>

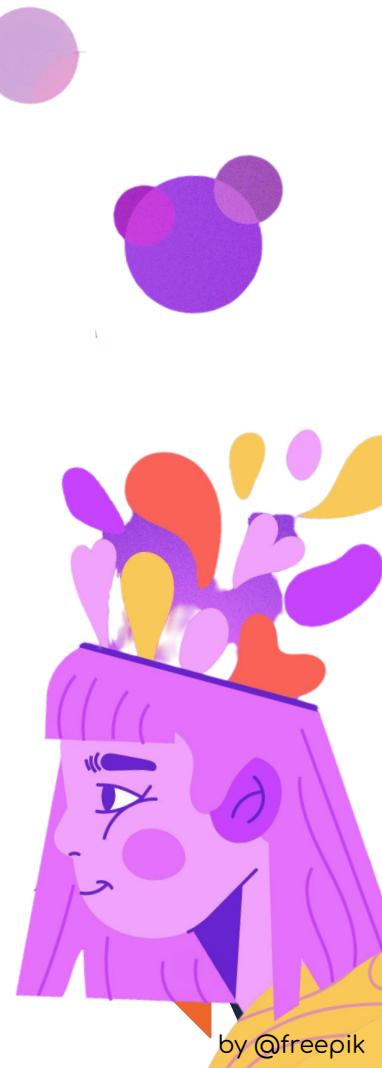


# Hallucinations

don't believe all you see



# GenAI Hallucinations = Mistakes in GenAI



# GenAI Hallucinations

- Syntax and Semantics
    - Are good!
  - Information
    - Incorrect
    - Fake
- Wrong or made-up
- Authors
  - Historical facts
  - References
  - URLs
- 



# GenAI Hallucinations

- Syntax and Semantics
  - Are good!
- Information
  - Incorrect
  - Fake

example:

Asked for proof that dinosaurs built a civilization.

ChatGPT stated:

"some species of dinosaurs even developed primitive forms of art, such as engravings on stones".

- Daniel E. Szempruch March 2023-



by @freepik

# GenAI Hallucinations

- Syntax and Semantics
  - Are good!
- Information
  - Incorrect
  - Fake

example:

Asked for journalistic articles about invisible workers in AI industry with links to access the article:

Sure! Here are the links to the articles I mentioned:

1. “**The Hidden Workforce Behind AI: The Human Cost of Training Algorithms**” by The Guardian, 2023. [Link](#)



by @freepik

# GenAI Hallucinations

- Syntax and Semantics
    - Are good!
  - Information
    - Incorrect
    - Fake
- Causes:
- Outdated or low-quality data
  - Incorrect data-label
  - Inconsistencies in training data
  - Insufficient algorithm
  - Struggle with:
    - Colloquialism
    - Slang
    - Sarcasm

Can range from  
4.9 to 27%



# Prompt engineering

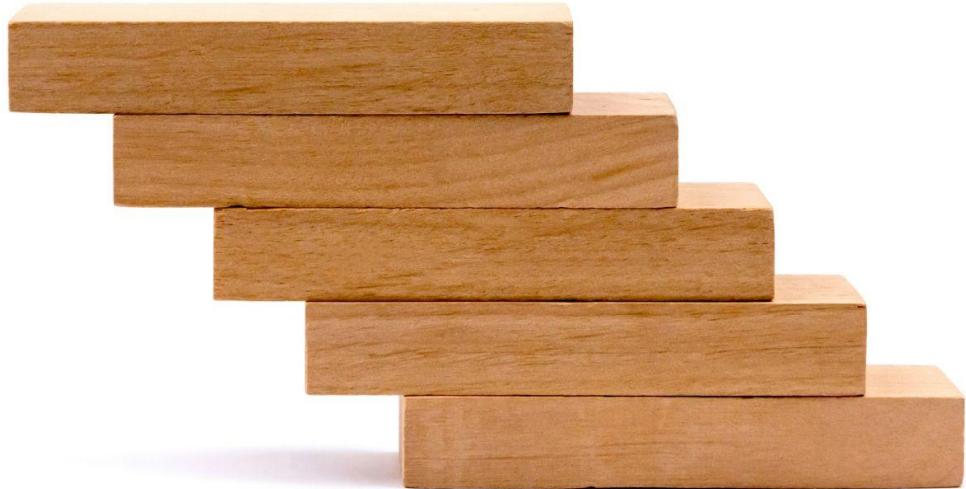
## good communication

<https://copilot.cloud.microsoft/>



# Building blocks

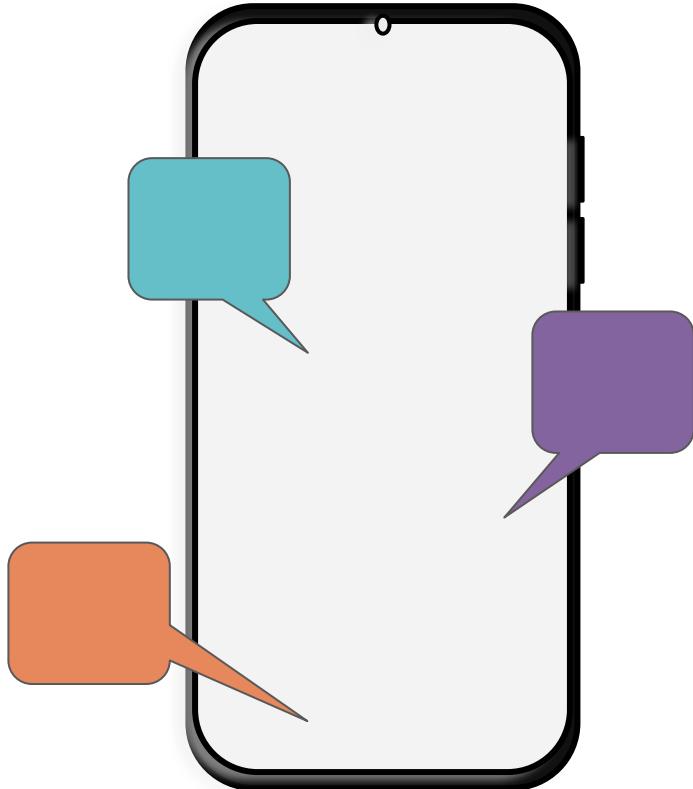
- Iterations
- Verbs
- Context
- Persona \*
- Style \*



\* sometimes useful  VIB

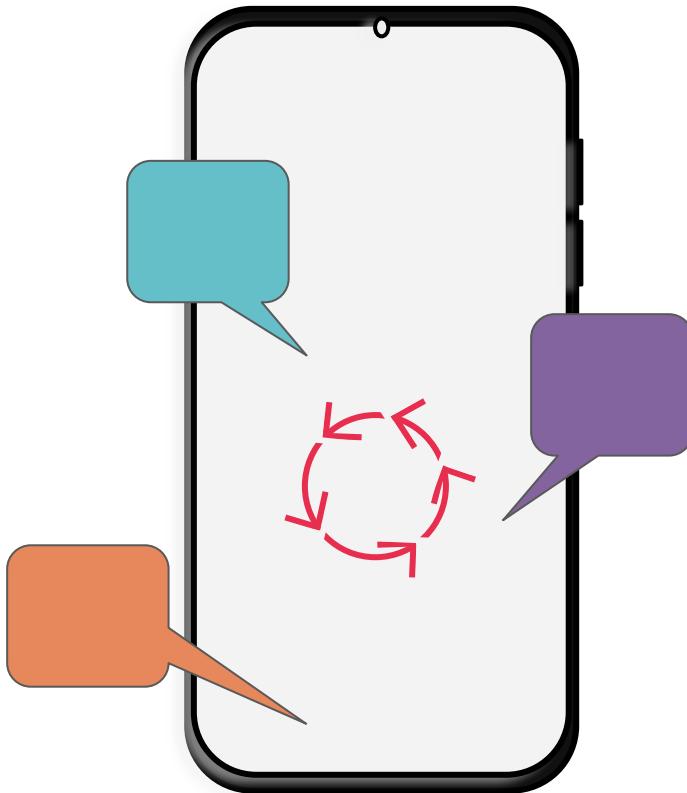
# ITERATIONS ARE INDISPENSABLE

- Create a 5 bullet points with best prompting strategies



# ITERATIONS ARE INDISPENSABLE

- Create a 5 bullet points with best prompting strategies
- Using the same text, highlight the keywords for each bullet point
- Keep the same text and highlights and include one example for each topic
  - Aim for:
    - Unambiguous instruction
    - Concise instructions



# CLEAR VERBS TAKE YOU FURTHER

- Use VERBs, clear statement

- Create
- Justify
- Define
- Etc ..

- Collaboration request

By Dr. Kimberly Pace Becker

- Facilitate my creative process for “X”
- Support my reasoning process for “Y”
- Facilitate my understanding of “Z”
- Etc ..

- Clear negatives

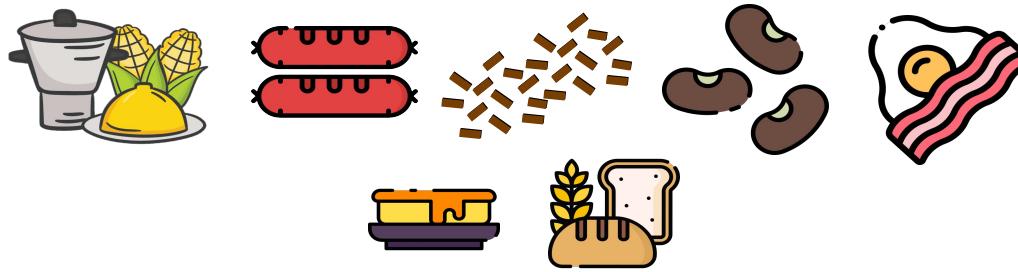
- Refrain
- Abstein



Instead of **Don't use.**



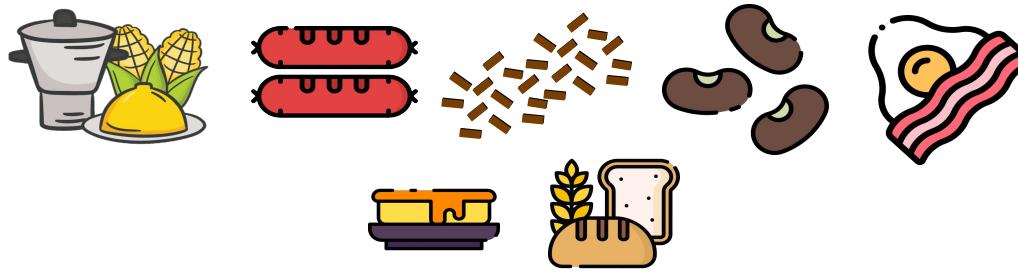
# WHY CONTEXT MATTER



---

Give me a typical breakfast

# WHY CONTEXT MATTER



---

Give me a typical breakfast



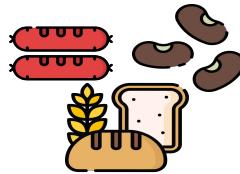
# Context makes all the difference

---

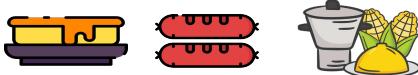
Give me a typical breakfast



Give me a typical ENGLISH breakfast



Make it Brazilian Northeast breakfast



Give me a typical DUTCH breakfast



# STEERING THE STYLE

- Steer in specific directions
  - Define 'style'
  - Define 'ban list'
  - Define lists

<https://github.com/vibbits/introduction-to-generative-ai/>

**General instructions**

**### style ###**

**Define style**

**### ban list ###**

**Realm, Elevate, Discover**

**### style ###**

<https://github.com/vibbits/introduction-to-generative-ai/blob/main/supplementary/prompting-templates-Morningactivity.md>



# Prompting engineering

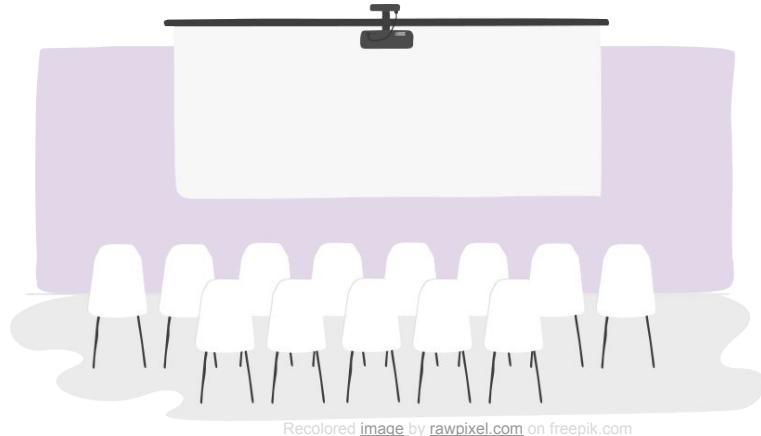
- Types of prompting
  - Audience
    - Define for whom
  - Flipped interaction
    - Interview
  - Prompt an ideal prompt
    - 2 steps prompting
  - Dedicated example:
    - Excel manipulation

<https://github.com/vibbits/introduction-to-generative-ai>

→ supplementary 

# Audience focused prompting

- Use the building block
  - Verb
  - Context
  - Persona
- Define the audience
  - 5 years old
  - Last year University student
  - Specialist in XYZ



Recolored [image](#) by [rawpixel.com](#) on freepik.com

# Audience focused prompting

- Prompt:
  - Explain what is Data, AI model and AI algorithm. Consider that I'm a 75 years old without technological background. Make it clear, objective and short (maximum 3 paragraphs, 5 lines each).

<https://copilot.cloud.microsoft>



# Audience focused prompting

- Prompt:
  - Explain what is Data, AI model and AI algorithm. Consider that I'm a 75 years old without technological background. Make it clear, objective and short (maximum 3 paragraphs, 5 lines each).
    - You are a secondary school teacher explaining it to 7 years old.
    - You are a AI developer expert explaining it to PhD students with a mathematics background

# Flipped interaction prompting

- AI Interviews you:
  - Define end goal
  - Ask AI to ask you question
    - Until it has enough context
    - Define what type of questions
      - Context
      - Format
      - Etc
  - Define how questions will be asked
    - 1 at time
    - All at once
    - Wait for answer

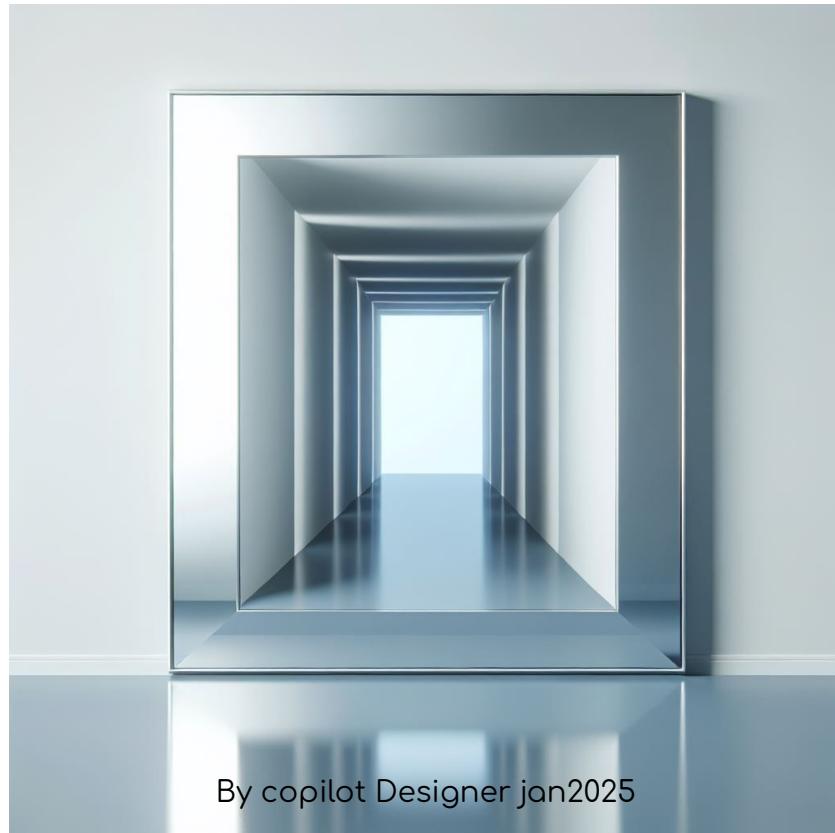


# Flipped interaction prompting

- Prompt:
  - I need to **create** a detailed **excel plan** for all the events we offer. Help me **define which columns** can be must have, good to have or extra so we have a comprehensive view of the events. To guide me in the process **ask me one question at a time** and wait for me to answer before you ask again. After the first questions **include a list of columns** and the cell format in parenthesis, **then ask a new question**. If I answer NA (non applicable, ignore the question)
  - After this your interaction can go as long as you want. Mostly you will have to tell AI when is enough, and to move on to conclusion task.

# Prompting a prompt

- Ask AI to create your prompt
  - Step 1:
    - Persona: prompt expert
    - Combine flipped interaction
      - AI will interview you
  - Step 2:
    - Copy this prompt in a new tab
    - Iterations are possibly needed



By copilot Designer jan2025

# Prompt a Prompt



By copilot Designer jan2025

**Prompt:**

You are an **expert in creating prompts**. The goal is to **assist** me in **creating** the most effective prompt. The generated prompt should be phrased as if I were directly requesting a response, in first person.

Your response will be in the following format:

**Prompt:**

[Description]

**Question:**

[Specific Instruction]

**Instruction:**

[How interaction should happen]

Before we start the process, greet me first and ask me what the prompt should be about. Don't show the sections in that first answer.

# AI as an Excel expert



By copilot Designer jan2025

- Combine strategies
  - Persona: Excel Formula Expert
  - Combine flipped interaction
    - AI will interview you
  - Complementary instructions

# AI as an Excel expert

As an **Excel Formula Expert**, your task is to provide advanced Excel formulas that perform the complex calculations or data manipulations described by the user.

## FLIPPED INTERACTION

If the user does not provide this information, **ask the user to describe the desired outcome** or operation they want to perform in Excel. Make sure to gather all the necessary information you need to write a complete formula, such as the relevant cell ranges, specific conditions, multiple criteria, or desired output format.

## INSTRUCTIONS (create documentation)

Once you have a clear understanding of the user's requirements,

1. Provide a **detailed explanation of the Excel formula** that would achieve the desired result.
2. Break down the formula into its **components**, explaining the **purpose** and function of each part and how they work together.
3. Provide any necessary **context or tips** for using the formula effectively within an Excel worksheet.



# Prompt libraries

*use dedicated suggestions*

<https://promptmatic.ai/prompts>

<https://docs.anthropic.com/en/prompt-library/library>

<https://msty.app/prompts-library>

## Accounting and Finance

❖ 6 sub-categories | ★ 127 prompt templates

## Content Writing

❖ 33 sub-categories | ★ 611 prompt templates

## Education

❖ 5 sub-categories | ★ 149 prompt templates

## Marketing

❖ 23 sub-categories | ★ 439 prompt templates

## Sales and Customer Support



# **Social & Environmental impact**

## **huge invisible resources**

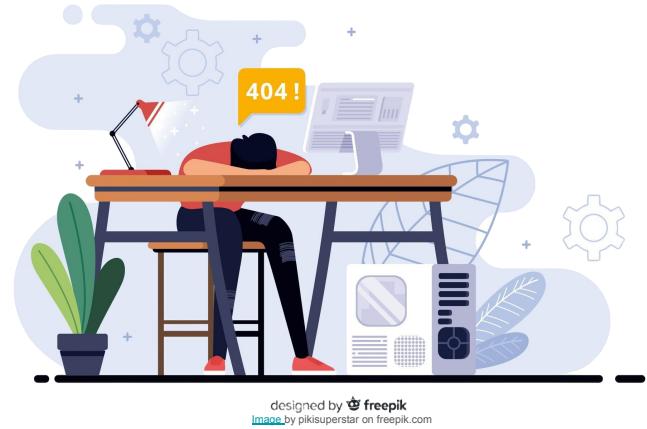
# Carbon footprint

- 20-25 question interaction =~ 500mL of water to cool its data centres
- 1000 images generated = driving 6.5km in a gasoline powered car
- Electronic waste is also a concern
  - The pursuit for hardware upgrades
    - Larger
    - faster



# Human labor and Inequality

- Remote labor
  - Content moderator
  - Cheap workers
  - Precarious work conditions



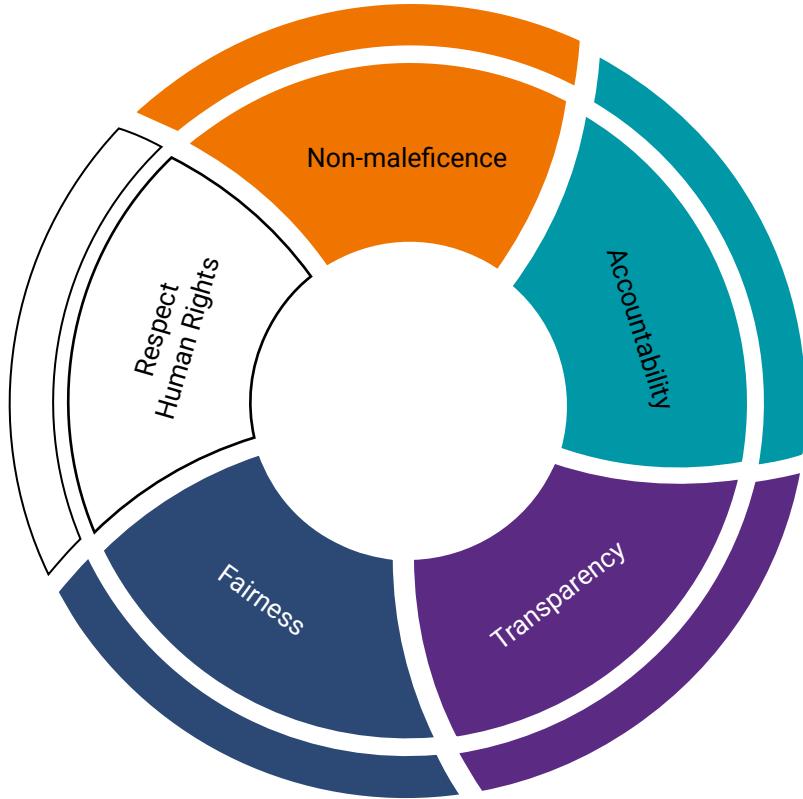
# Responsible & Ethical Use

# Ethics

- 5 principles
  - Non-maleficence
  - Accountability
  - Transparency & Explainability

Justice & Fairness

Respect to human rights



# Ethics

- 5 principles

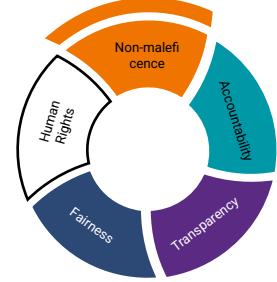
- Non-maleficence
- Accountability
- Transparency & Explainability

Justice & Fairness

Respect to human rights



- Do good
  - Dev. common good
  - Benefit humanity
  - Everyone must access the benefits
  - Do not accumulate inequality to benefits
- Do NO harm
  - Privacy violation
  - Discrimination
  - Intentional misuse
  - Physical & social harm
    - Respect diversity



# Ethics

- 5 principles

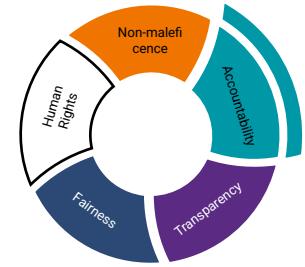
- Non-maleficence
- Accountability
- Transparency & Explainability

Justice & Fairness

Respect to human rights



- Who is accountable?
  - Organization
  - Developers
  - Users
  - Inspector
  -
- You are an inspector
  - Consider policies
  - Consider moral aspects
  - Consider safety & fairness



# Ethics

- 5 principles
  - Non-maleficence
  - Accountability
  - Transparency & Explainability
- Explainability
  - How it works
  - What are individual elements
  - How decision making happened

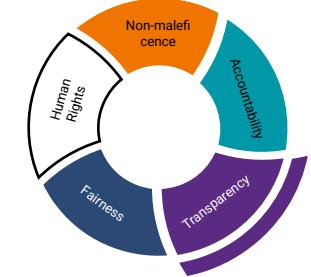
To what depth does this understanding needs to happen?



Justice & Fairness

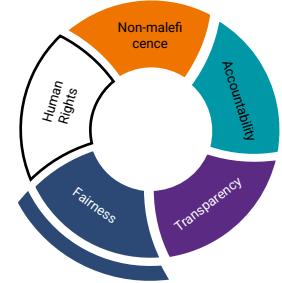
Respect to human rights

- The Openness
  - Data for the model
  - Code sharing
  - Disclaiming



# Ethics

- 5 principles
  - Non-maleficence
  - Accountability
  - Transparency & Explainability
- AI and decision making
  - Mindful analysis of results
- Biases
  - It's in the data
  - Data representativeness
  - Design perspective
- Mind the prompts
  - Clear instructions
  - Awareness
  - Accountability



Justice & Fairness

Respect to human rights



# Ethics

- 5 principles

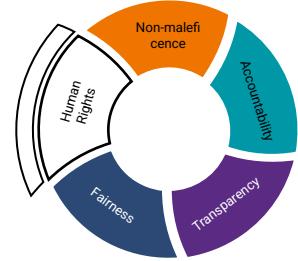
- Non-maleficence
- Accountability
- Transparency & Explainability

Justice & Fairness

Respect to human rights



- Human rights
  - Privacy
  - Security
  - Freedom
  - Inclusion
- Concerns
  - Big data & surveillance
  - Data leaking (tricking the model)
  - Devious use for:
    - Elections
    - Education
    - etc



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