

AI-Powered Development using Copilot & ChatGPT

Drupaljam Utrecht

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- expert in Drupal 7 to 10 upgrades
- loves music and family



In this talk



1. AI image generation examples
2. Human level tipping point
3. AI coding example
4. Recap coding and image generation
5. Closing

Large Language Model (LLM)

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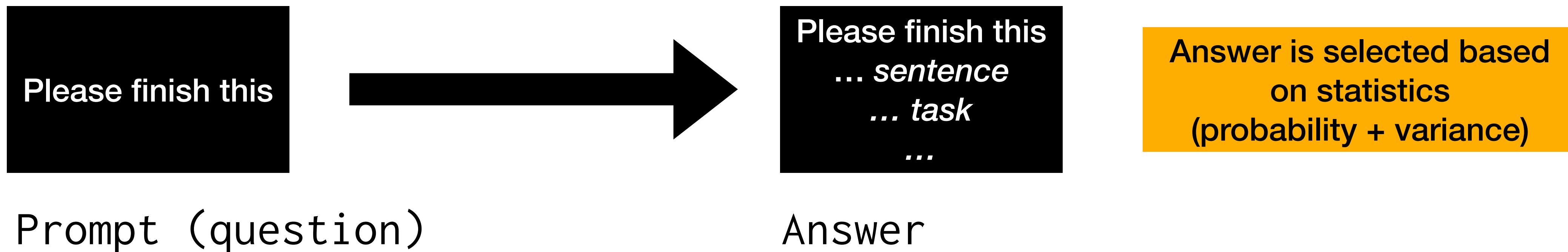
Large language models take
the world by storm

Large Language Model (LLM)

- LLMs are the backend & IQ of current AI
- Generates and understands Text, Image, Sound and more
- Trained on immense amounts of data

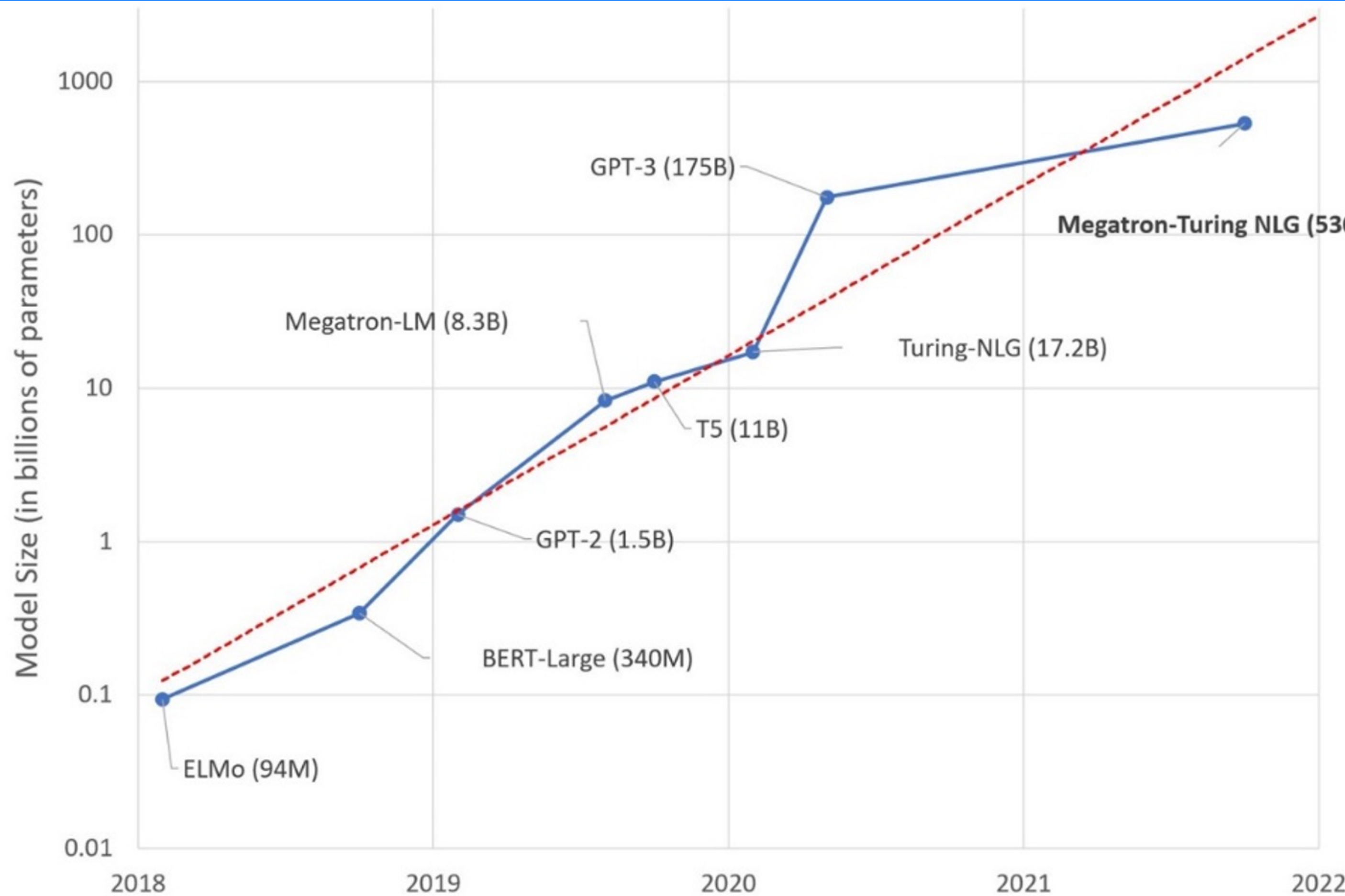
Large Language Model (LLM)

In essence it is an **auto-complete** machine.



Large Language Model (LLM)

Model Size in Billions of parameters



GPT-4 is estimated with 1.76 trillion parameters

Llama3 400B+ is in training 2024-05

2023

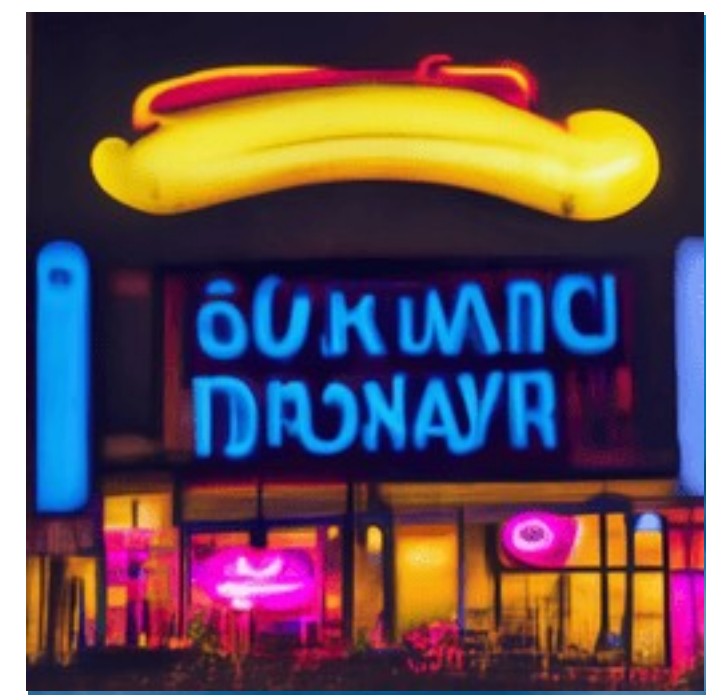
2024

source: <https://learn.microsoft.com/en-us/ai/playbook/technology-guidance/generative-ai/working-with-llms/>
source: <https://en.wikipedia.org/wiki/GPT-4>

Spectacular evolution of LLMs

MIDJOURNEY image generation (2022 Feb to 2023 Dec)

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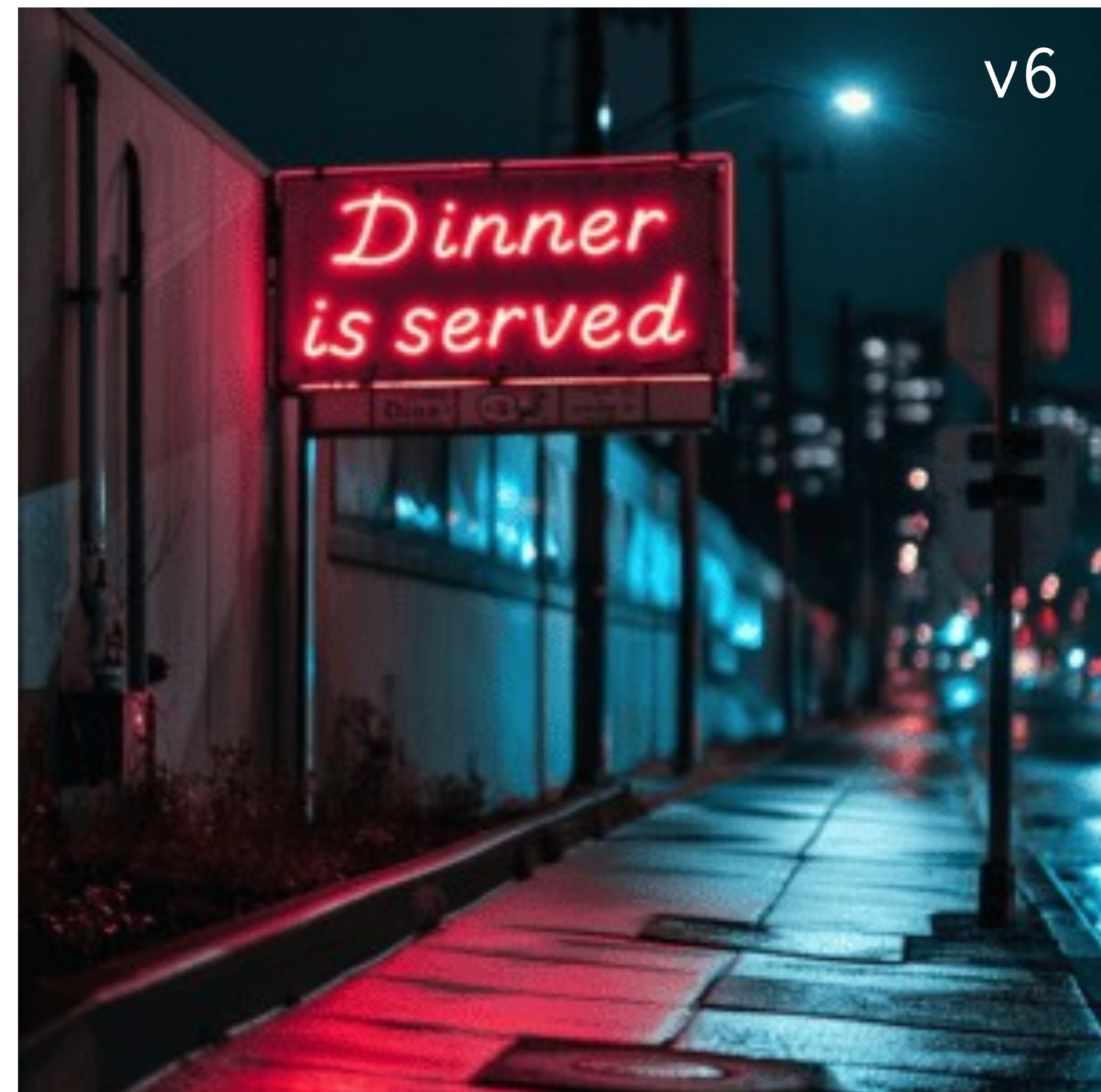
v1



v2



v4

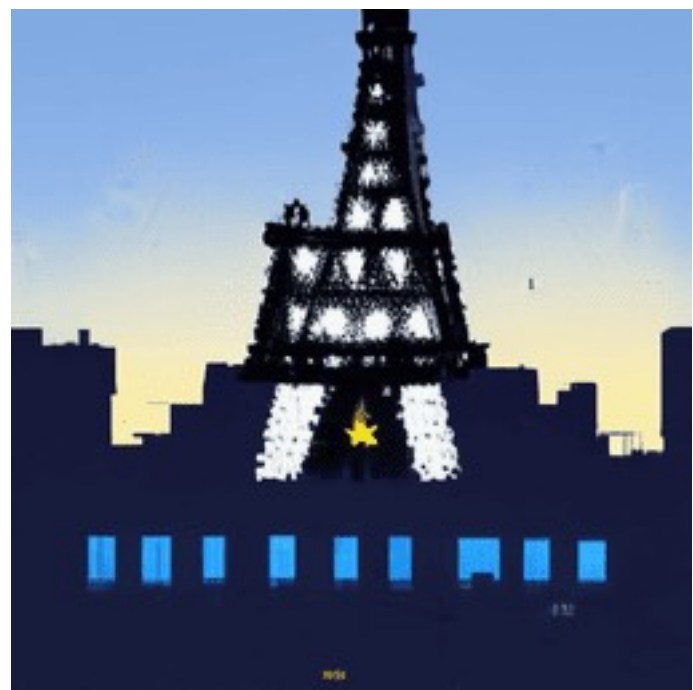


v6

Spectacular evolution of LLMs

MIDJOURNEY image generation

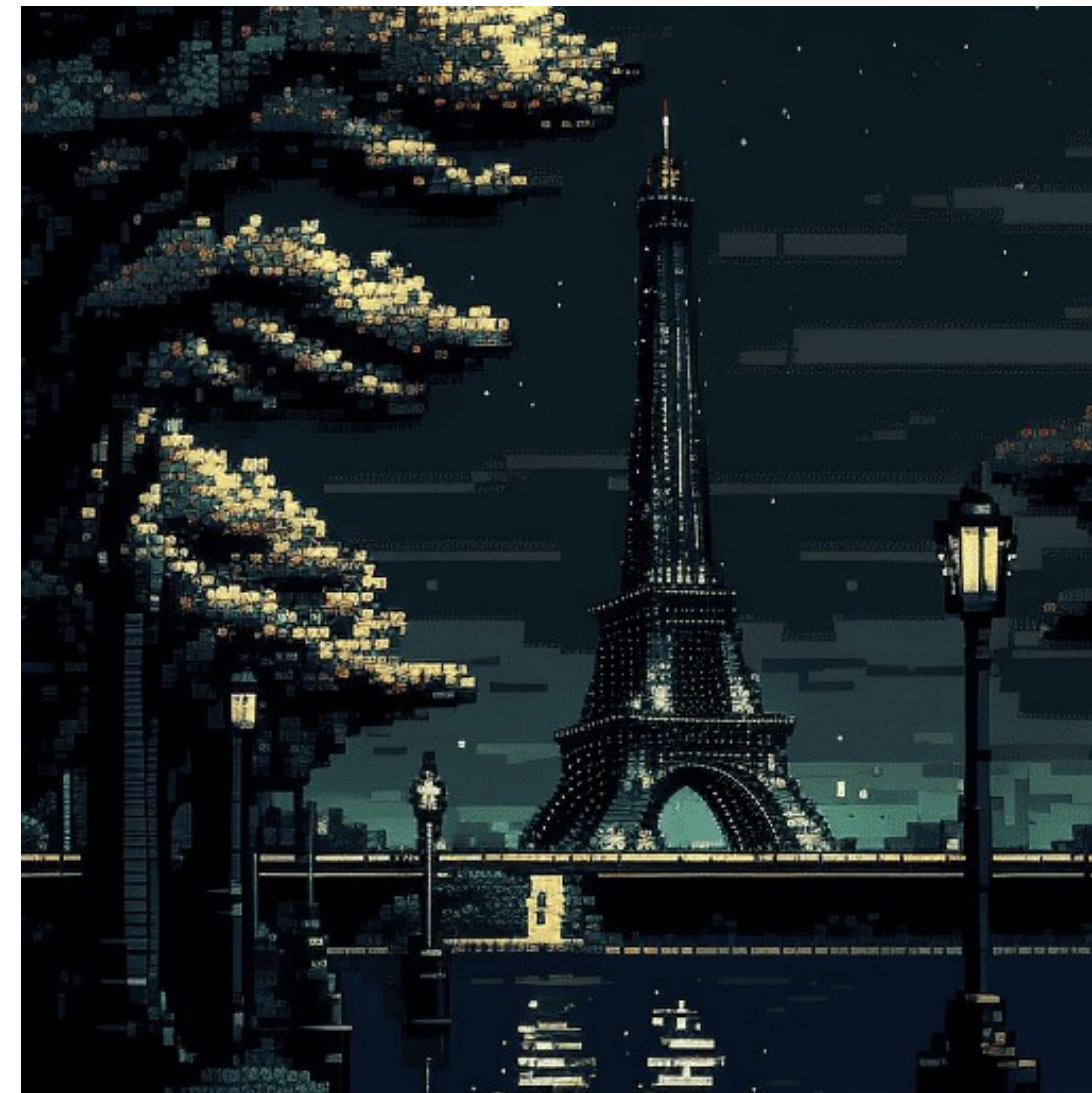
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v1



v2



v4



Delicious food

AI-generated food images preferred over real ones

Spectacular evolution of LLMs

MIDJOURNEY image generation

2022



v1



v2



v4

2023

v6



Spectacular evolution of LLMs

Food video generation (Jan 2023 vs June 2024)

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2023 January



2024 June

15 seconds video

Spectacular evolution of LLMs

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2022

Bad picture

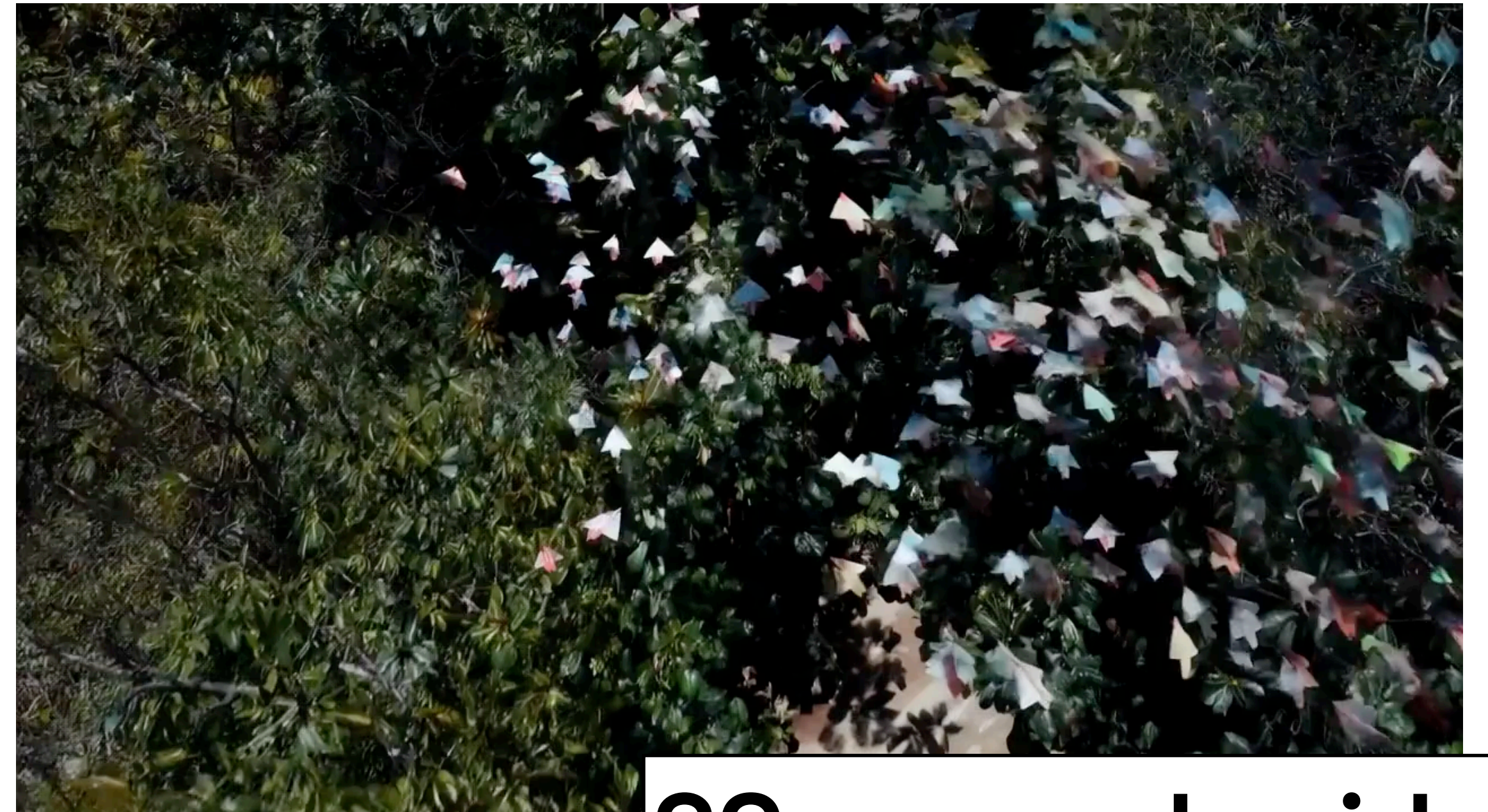


26 months



2024

4k realistic video

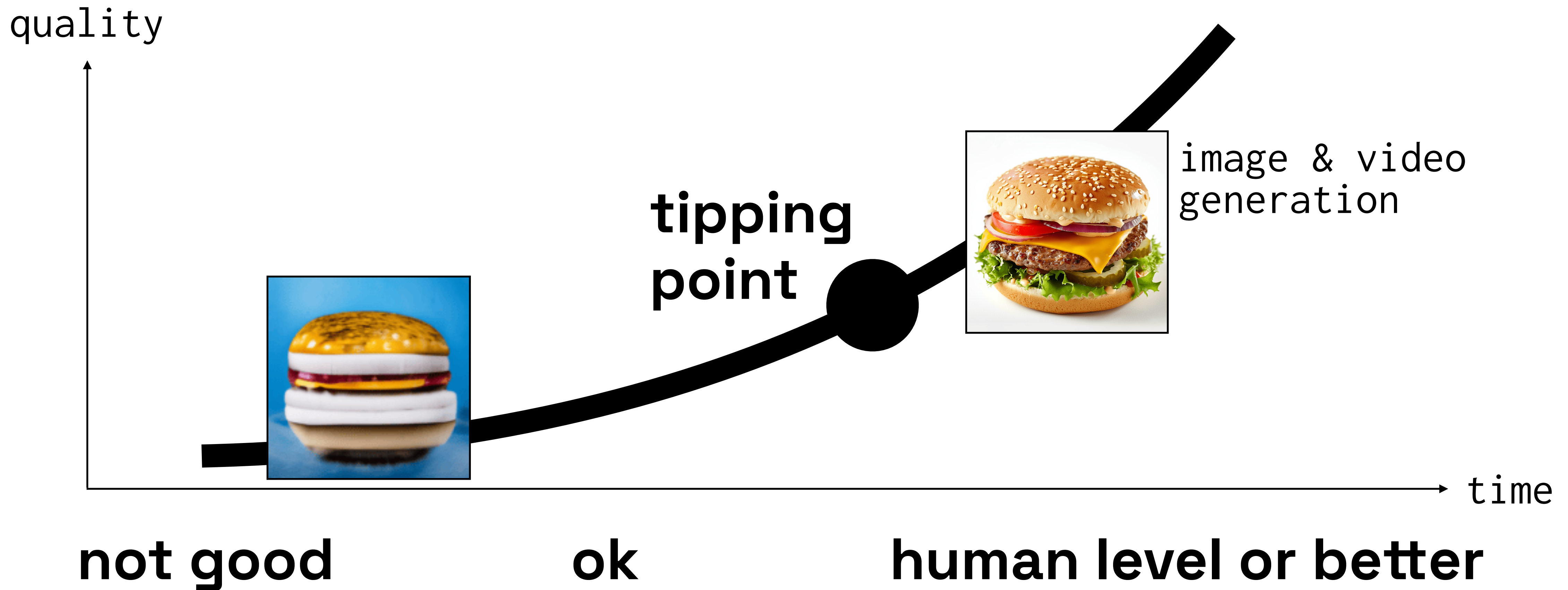


20 seconds video

Human level

Tipping point

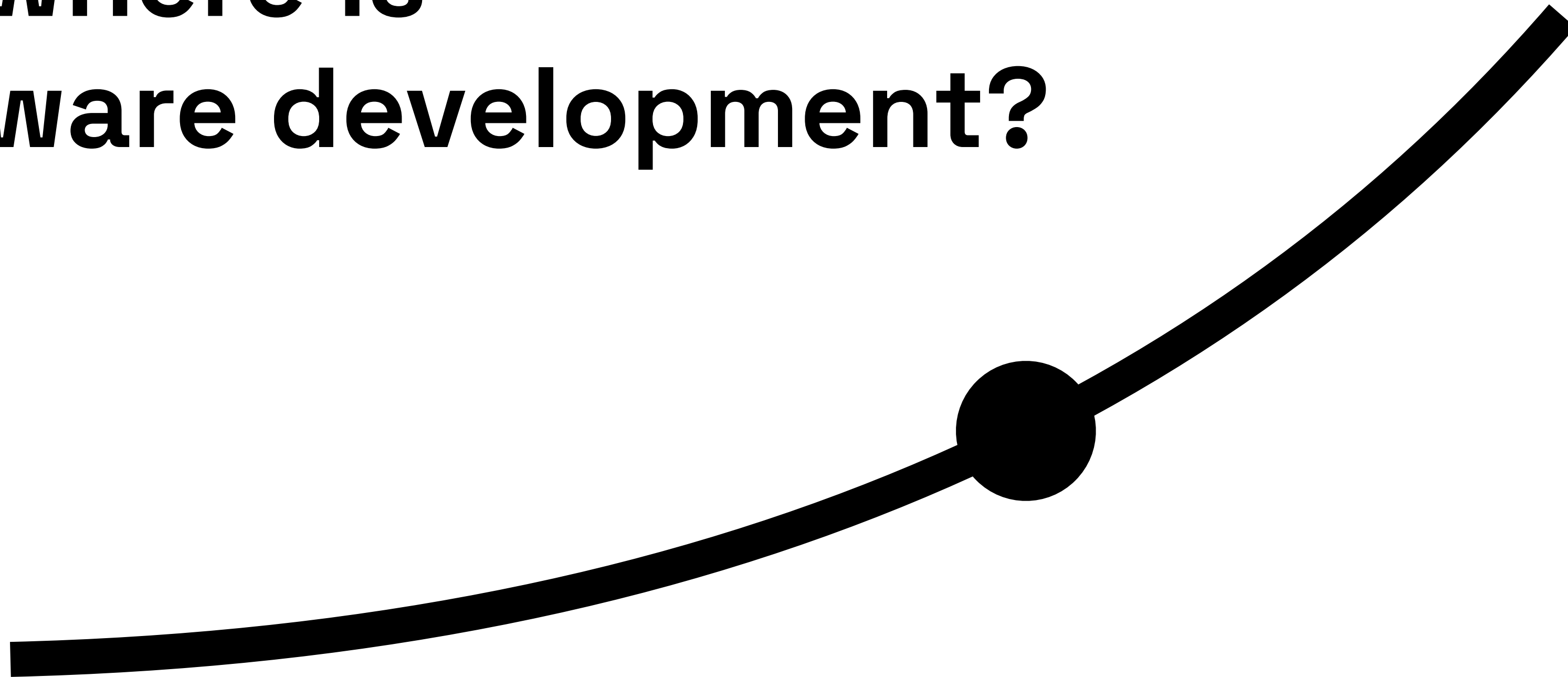
Human level tipping point



Human level tipping point

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**But where is
software development?**



How good is AI in software development?

Let's find out with a coding example: create a "countdown"

Drupal 7 support ends [January 5, 2025](#)

207 : 08 : 43 : 08

Days

Hrs

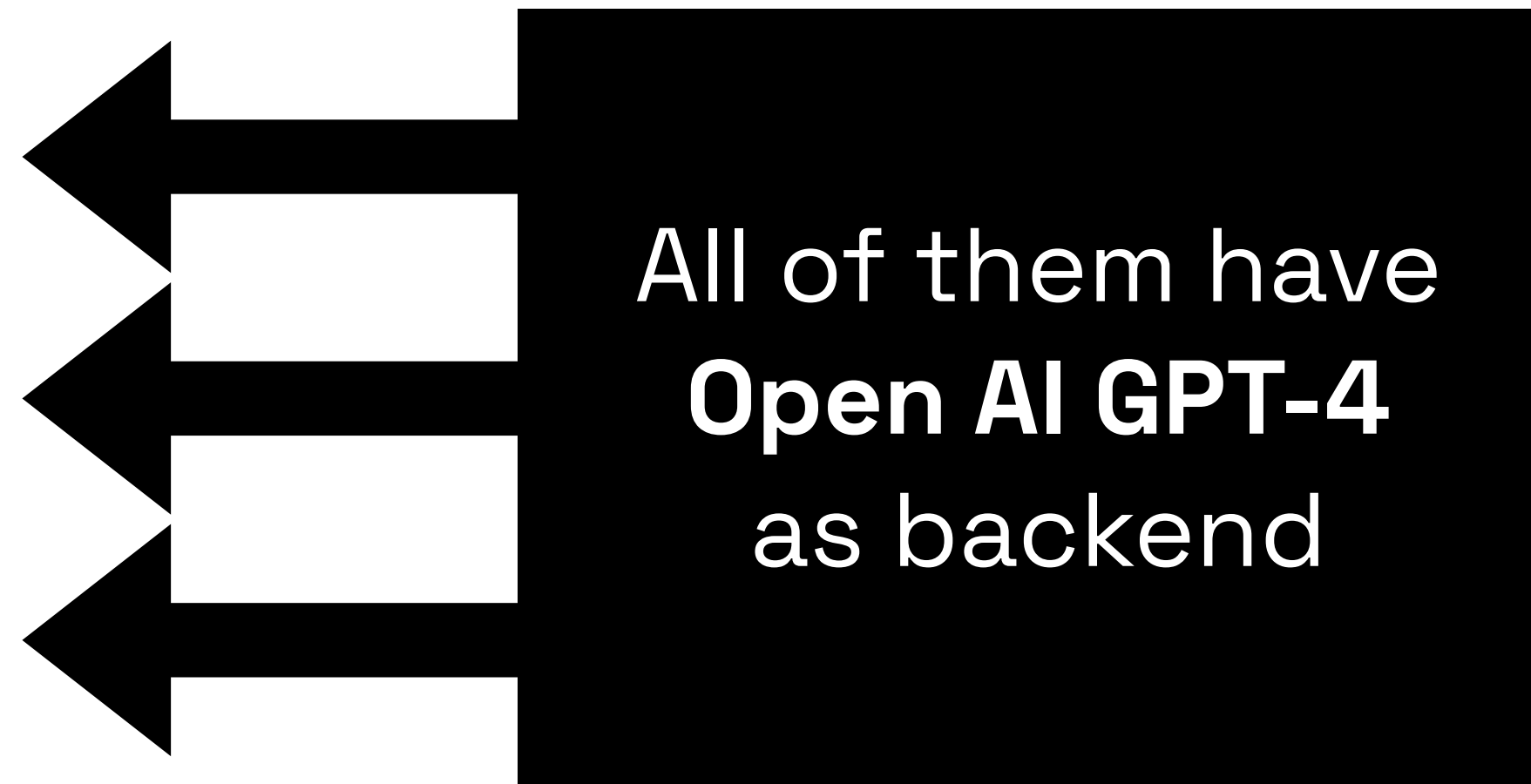
Min

Sec

Create “countdown”

Tools:

- OpenAi ChatGPT
- GitHub Copilot
- Screenshot - 2- code



Create “countdown”

Plan:

1. Find online example
2. Use AI tools to create **presentation** (html + css)
3. Use AI tools to create **logic** (twig + javascript)

Existing example: Olympic Games

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Olympic Games Paris 2024 - 26 July - 11 August, 2024

45 : 02 : 58 : 24

Days Hrs Min Sec

**Ω
OMEGA**
OFFICIAL TIMEKEEPER

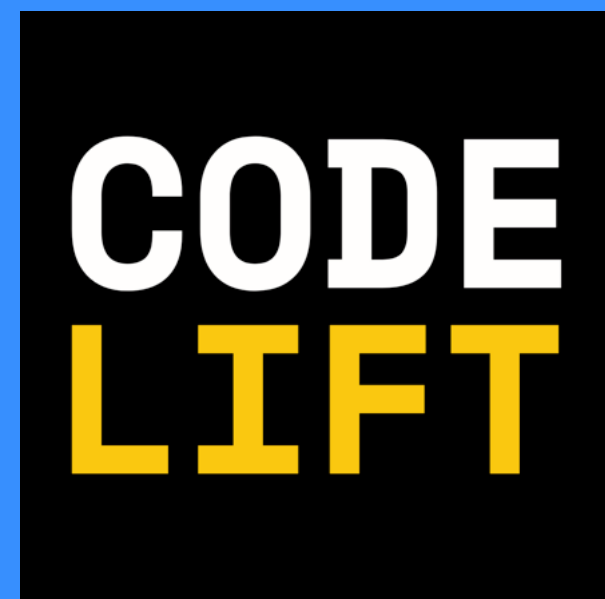
cropped
example

45 : 02 : 59 : 06

Days Hrs Min Sec

Create “countdown” PRESENTATION

Screenshot-to-code & GPT-4



45:02:59:06
Days Hrs Min Sec

input

Steps:

5s: initial creation

20s: render as table

39s: utility classes

55s: font-sizes

The interface for 'Screenshot to Code' is shown. On the left, there are settings for 'Generating:' (Bootstrap) and 'AI Model:' (GPT-4o). Below these is a link for 'Tips for better results'. On the right, there is an 'output' section with a large dashed box for uploading a screenshot. Below the box is a 'Record Screen' button and a 'Capture' button. A 'New!' notification is present above the 'Record Screen' button.

Screenshot to Code

Generating: Bootstrap

AI Model: GPT-4o

[Tips for better results](#)

output

Drag & drop a screenshot here, or click to upload

New! Upload a screen recording (.mp4, .mov) or record your screen to clone a whole app (experimental). [Learn more.](#)

Record Screen

Or screenshot a URL...

Enter URL

Capture

2 minutes video (2x speed)

Done “countdown” PRESENTATION

Screenshot-to-code & GPT-4

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45:02:59:06

Days Hrs Min Sec

input

output

45:02:59:06

Days Hrs Min Sec

```
<div class="text-center">
  <table class="mx-auto">
    <tr>
      <td class="fw-bold display-1" id="days">45</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="hours">02</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="minutes">59</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="seconds">06</td>
    </tr>
    <tr class="fs-3 mt-2">
      <td>Days</td>
      <td></td>
      <td>Hrs</td>
      <td></td>
      <td>Min</td>
      <td></td>
      <td>Sec</td>
    </tr>
  </table>
</div>
```

Create “countdown” LOGIC

ChatGpt & GPT-4

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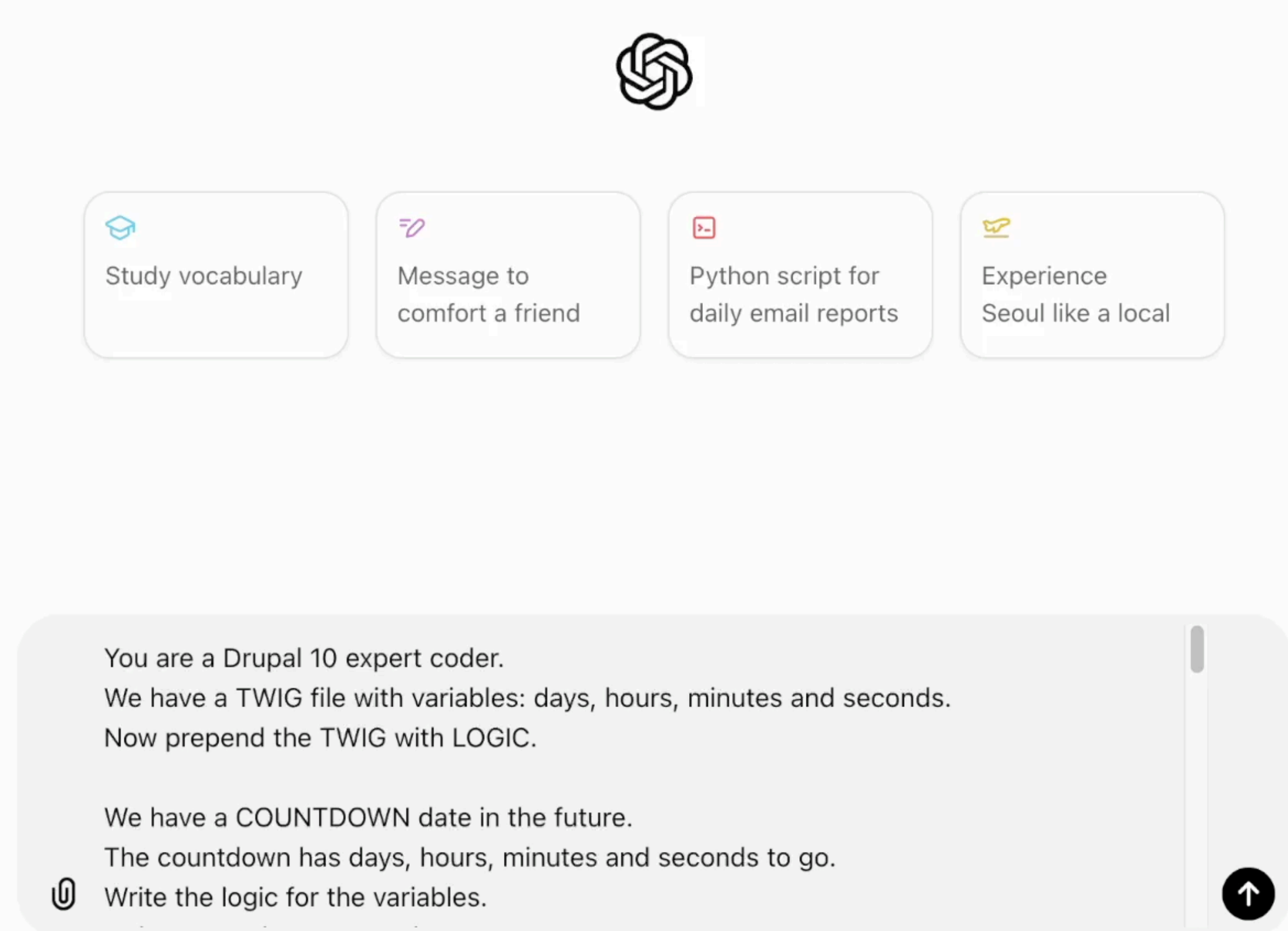
1:30 minutes video (real speed)

Steps

5s: Create twig logic

30s: Add javascript logic

1m 10s: Final result



Done “countdown” LOGIC

ChatGpt & GPT-4

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input

```
<div class="text-center">
  <table class="mx-auto">
    <tr>
      <td class="fw-bold display-1" id="days">45</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="hours">02</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="minutes">59</td>
      <td class="fs-1">:</td>
      <td class="fw-bold display-1" id="seconds">06</td>
    </tr>
    <tr class="fs-3 mt-2">
      <td>Days</td>
      <td></td>
      <td>Hrs</td>
      <td></td>
      <td>Min</td>
      <td></td>
      <td>Sec</td>
    </tr>
  </table>
</div>
```



output

203:04:00:13
Days Hrs Min Sec

Recap create “countdown”

Recap:

1. Non-trivial javascript, html and twig
2. Finished in minutes, not hours/days
3. AI guided by developer, multiple iterations required
4. Small and well defined task

45:02:59:06
Days Hrs Min Sec

A bit more about prompts and iterations

Prompt 1a: Bootstrap presentation

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```
IMPORTED_CODE_BOOTSTRAP_SYSTEM_PROMPT = ""
```

```
You are an expert Bootstrap developer.
```

- Do not add comments in the code such as "`<!-- Add other navigation links as needed -->`" and "`<!-- ... other news items ... -->`" in place of writing the full code. WRITE THE FULL CODE.
- Repeat elements as needed. For example, if there are 15 items, the code should have 15 items. DO NOT LEAVE comments like "`<!-- Repeat for each news item -->`" or bad things will happen.
- For images, use placeholder images from <https://placeholder.co> and include a detailed description of the image in the alt text so that an image generation AI can generate the image later.

```
In terms of libraries,
```

- Use this script to include Bootstrap: `<link href="https://cdn.jsdelivr.net/npm/bootstrap/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-T3c6CoIi6uLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN" crossorigin="`

20 lines
prompt

Prompt 1b: Bootstrap presentation

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of the image in the alt text so that an image generation AI can generate the image later.

In terms of libraries,

- Use this script to include Bootstrap: `<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-T3c6CoIi6uLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN" crossorigin="anonymous">`

- You can use Google Fonts

- Font Awesome for icons: `<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.3/css/all.min.css"></link>`

Return only the full code in `<html></html>` tags.

Do not include markdown "```" or "```html" at the start or end.

"""

20 lines
prompt

Prompt 2a: twig logic

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```
You are a Drupal 10 expert coder.  
We have a TWIG file with variables: days, hours, minutes and  
seconds.  
Now prepend the TWIG with LOGIC.
```

```
We have a COUNTDOWN date in the future.  
The countdown has days, hours, minutes and seconds to go.  
Write the logic for the variables.  
Only output the TWIG code.
```

```
This is the HTML:
```

```
```\n
```

10+4 lines  
prompt



# Prompt 2b: Javascript logic

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**LIFT**

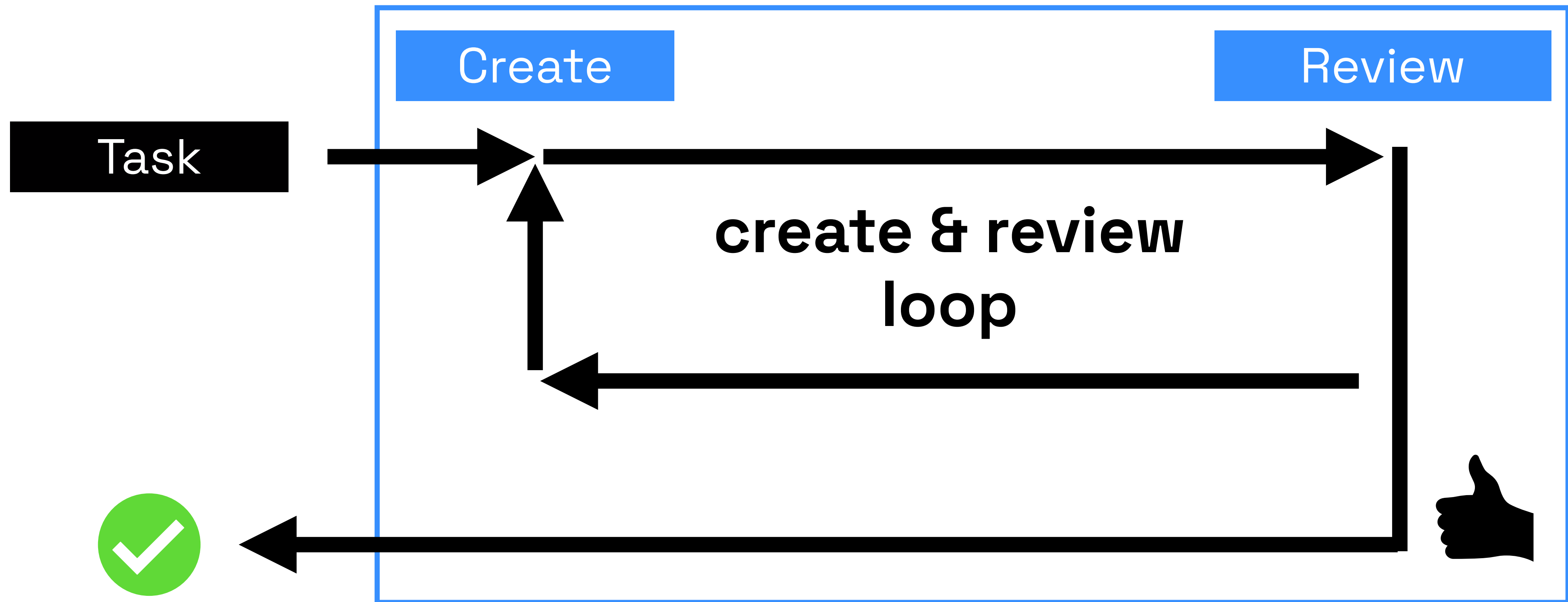
```
Now add Javascript logic that updates the countdown every second.
Add a js-data-countdown attribute that store the future-time.
Add the javascript that calculates and updates. Inline the
javascript in <script> tag Output the twig + javascript.
```

10+4 lines  
prompt

# Prompts and iterations

Multi agent system

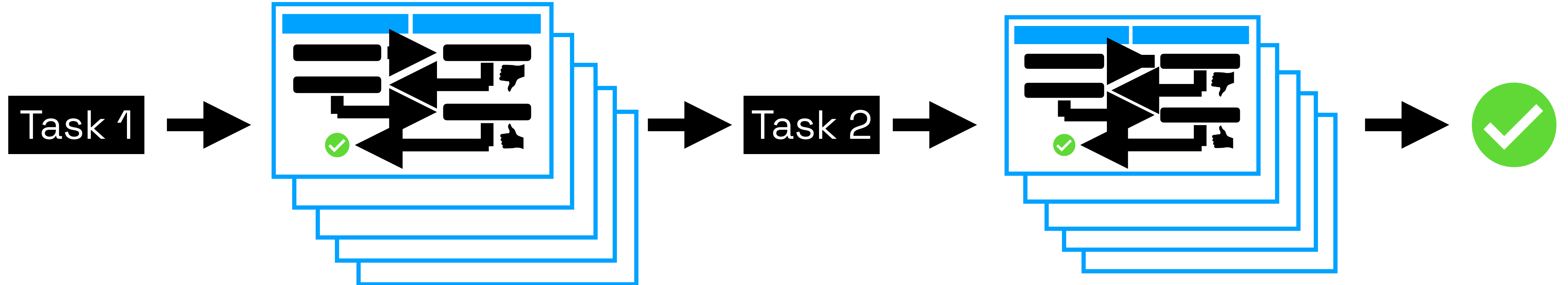
CODE  
LIFT



# Prompts and iterations

Multi agent system

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autogen

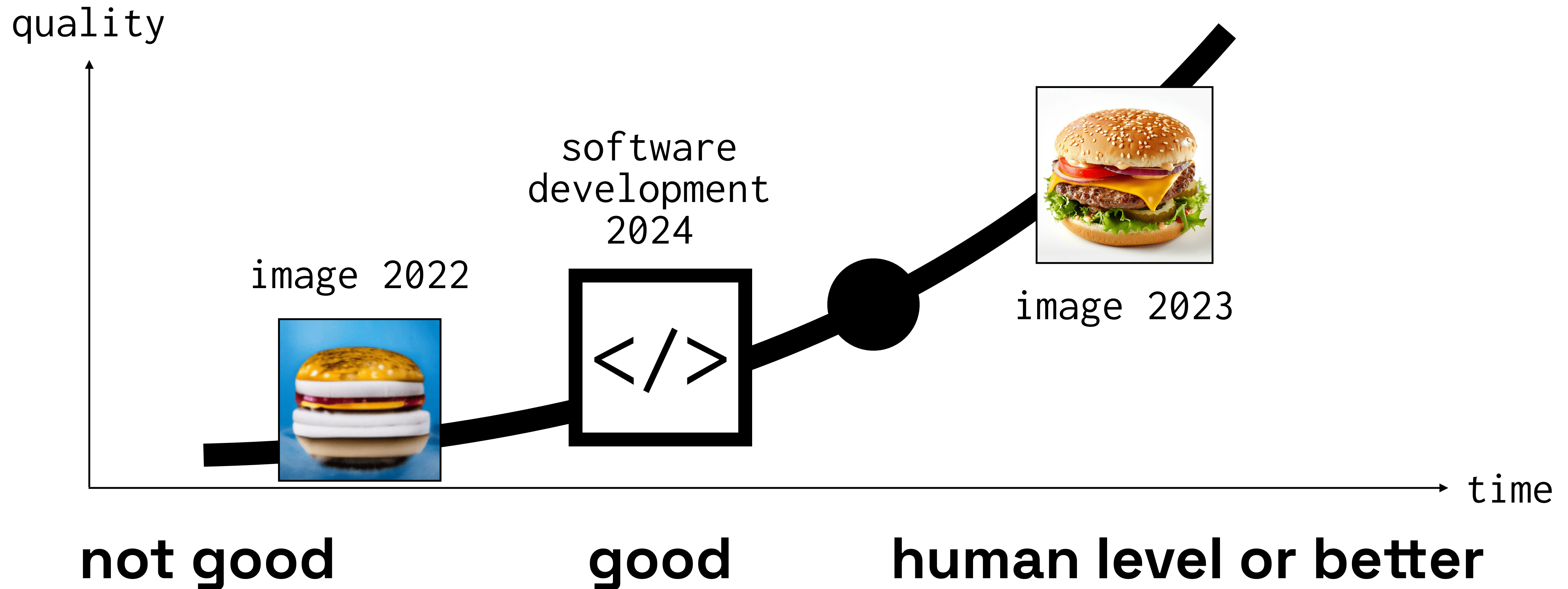
crewai



Again how good is AI in  
software development?



# Close to human level tipping point



# Closing

## Conclusions

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- AI boosts developer productivity big-time today.
- GPT-4 writes great code when guided by a developer. (treat AI as very capable junior).
- Multi-agent tactics improve quality a lot.
- Anyone should expect major evolution.

# DrupalJam

# Thank you all!



**download presentation here:**

**[codelift.ai/drupaljam.pdf](https://codelift.ai/drupaljam.pdf)**