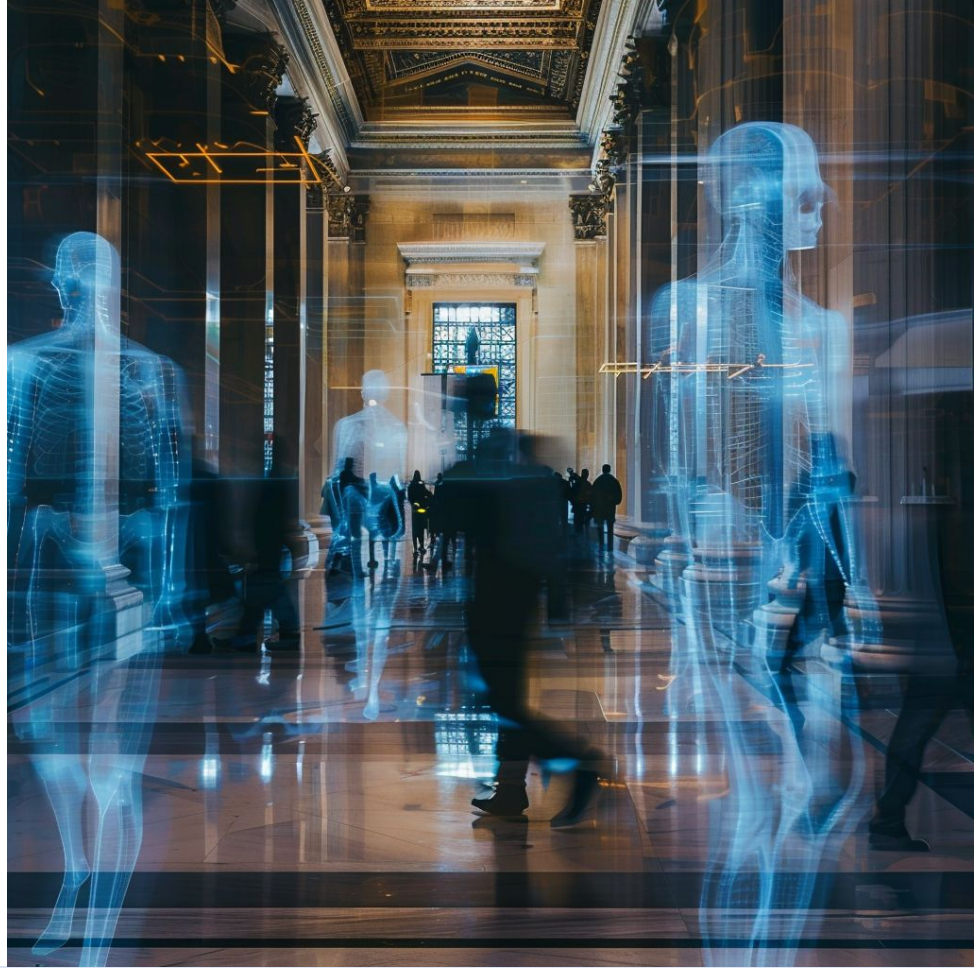


ChatGPT & Generative AI in City Hall



Chris Porter • Chris Snider • IMFOA • April 18, 2024

Chris Porter



- Associate professor of computer science at Drake University and director of Drake's Artificial Intelligence program
- Teach classes in computer science, data analytics, artificial intelligence, and digital ethics.

Chris Snider



- Associate professor of multimedia in Drake University's School of Journalism and Mass Communication
- Teach classes on video, audio, social media, design, storytelling and web design to undergrad and graduate students

Innovation Profs LLC

- Help people understand generative AI tools through workshops and custom training
- Assist with crafting policies on the use of generative AI at your company or organization
- Offer a weekly newsletter of major developments in generative AI (with an Iowa focus) at **innovationprofs.com**

The plan for today

- Primer on generative AI
- Intro to prompting
- Use cases for LLMs and some cautions
- AI multimedia tools
- Framework for using generative AI
- Questions



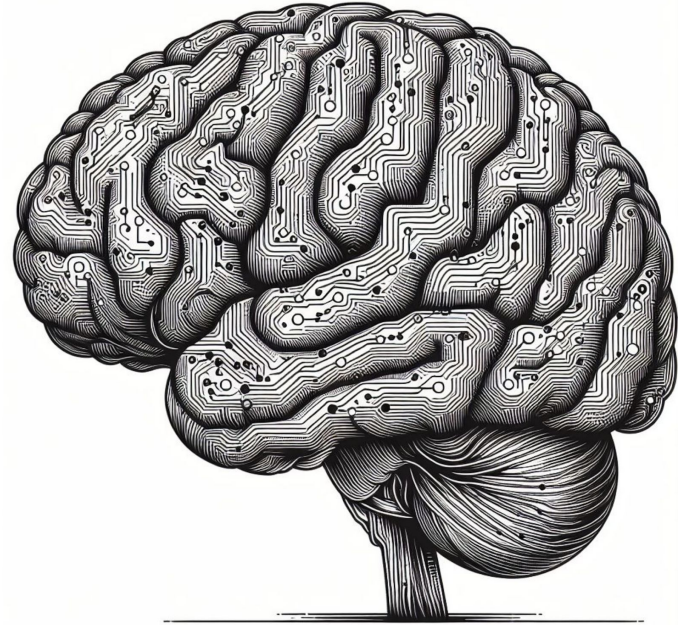
Primer on Generative AI

What is generative AI?

- Generative AI is the use of AI tools to produce audio, text, images, video, code, and so on.
 - Text-based generative AI: ChatGPT, Gemini, Copilot, Claude
 - Text-to-image generative AI: DALL-E 3, Midjourney, Stable Diffusion
- Contrast with other areas of AI: Prediction, classification, clustering, reinforcing certain behavior

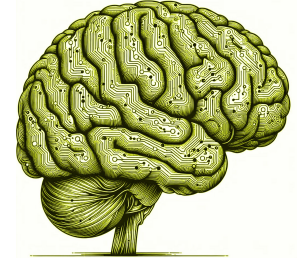
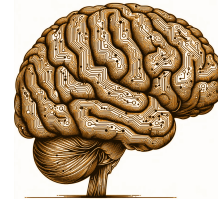
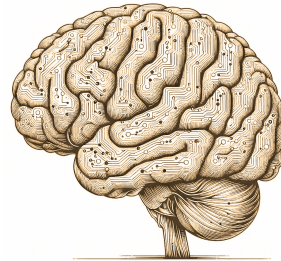
Large language models

- Large language models (LLMs) such as GPT-3, GPT-3.5, GPT-4, which underlie ChatGPT, are machine learning models that have been trained using massive amounts of textual data.



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Large language models

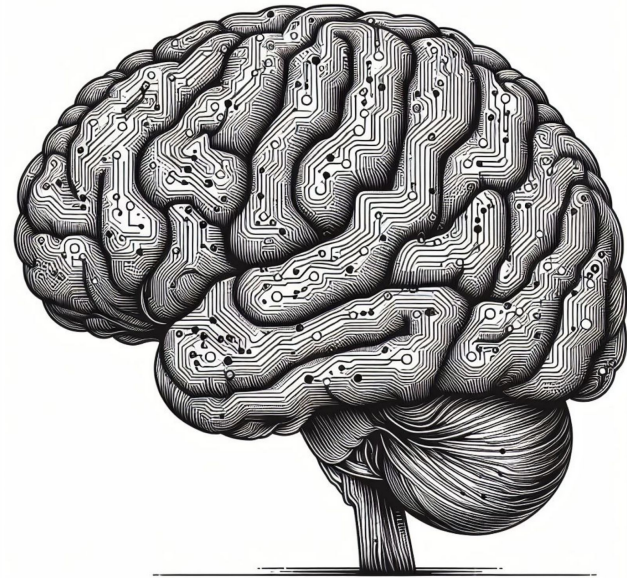
- The key breakthrough in the development of LLMs is the ability of models to provide on-topic, human-like text in response to the prompts they receive.

Large language models

- The key breakthrough in the development of LLMs is the ability of models to provide on-topic, human-like text in response to the prompts they receive.

GPT-2 (2019) example
in response to a
prompt about North
Korea:

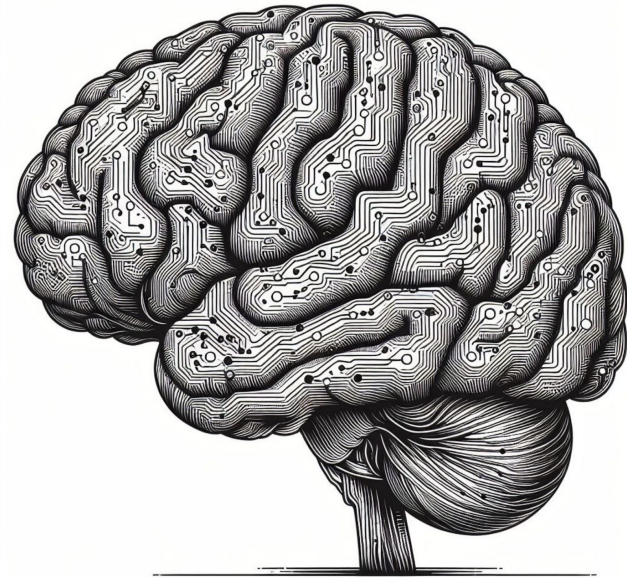
Life is a place full of surprises! Melt a glorious
Easter cake in French but not that green. Well,
a green cake, but for a Tuesday, of course! All
Easter party year and here is the reason for baka.



Complete this sentence:
"A duck walks into a..."



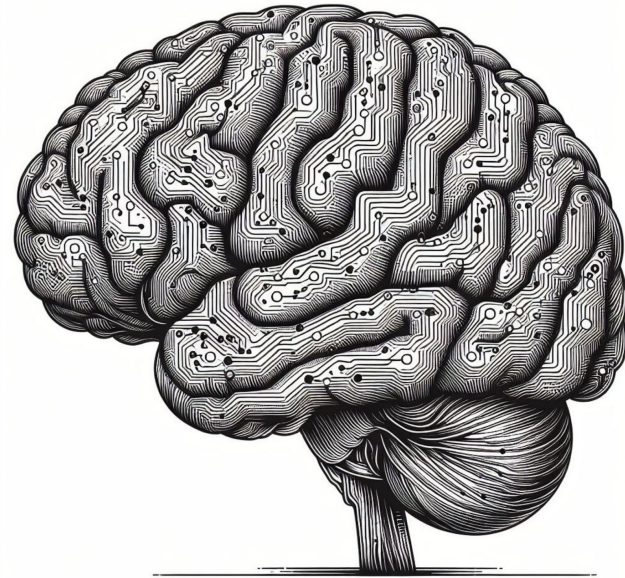
Complete this sentence:
"A duck walks into a..."



A duck walks into a { bar (93%)
pond (4%)
bucket (2%)
typhoon (1%)



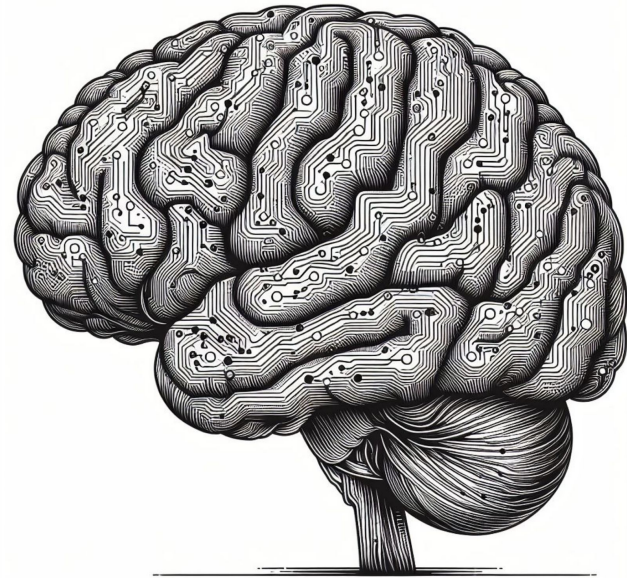
Complete this sentence:
"A duck walks into a..."



A duck walks into a {
bar (93%)
pond (4%)
bucket (2%)
typhoon (1%)



Complete this sentence:
"A duck walks into a..."



A duck walks into a bar.

Two important points

1. **LLMs such as the different GPT versions are static models:** although they may appear to learn in the course of a fixed conversation, these conversations do not change the underlying model.
2. **LLMs are probabilistic:** their outputs are determined probabilistically, so there's a degree of unpredictability. The same input in two different conversations may not always yield the same output.

LLM tools

- ChatGPT (OpenAI) - chat.openai.com
- Copilot (Microsoft) - copilot.microsoft.com
- Gemini (Google) - gemini.google.com
- Claude 3 (Anthropic - backers include Google and Amazon)
- Llama 2 (Meta)

Intro to Prompting



What is prompting?

- Prompting is the process of creating an input (usually text) instructing the Generative AI to generate the desired response.



Text - Text


You
Write a letter to a constituent addressing their concerns about road construction in their area

ChatGPT
Certainly! Below is a template for a letter that addresses a constituent's concerns about road construction in their area. Feel free to modify it to suit the specific situation and the official's stance or plans regarding the construction.

[Your Name]
[Your Position]
[Your Office Address]
[City, State, Zip Code]
[Date]

[Constituent's Name]
[Constituent's Address]
[City, State, Zip Code]

Dear [Constituent's Name],

I hope this letter finds you well. I want to take a moment to acknowledge your concerns regarding the ongoing road construction in [specific  or neighborhood] that you have brought to my attention. I understand that such projects can significantly impact daily life, causing disruptions to

Text - Image

You
create an image for social media warning people about road construction

ChatGPT



Here's the social media graphic designed to alert the public about ongoing road construction. It features a vibrant orange background with clear warning symbols and text to ensure the message is immediately understood.

A few notes on prompts

- Prompts can be simple questions, can contain large bodies of text, or might include a chain of instructions.
- Not all prompts are created equal: there is a skill to good prompt writing.
- Moreover, the same prompt used in two different conversations may yield different outcomes.
- Effective prompting should be an iterative process!

A good prompt can affect performance!



You

Multiply $2256 * 935$



ChatGPT

2256 multiplied by 935 equals 2,110,560.



You

Try again, but make sure you distribute correctly.

A good prompt can affect performance!



ChatGPT

I apologize for the mistake. Let's distribute correctly:

$$2,256 * 935 = (2,000 * 935) + (200 * 935) + (50 * 935) + (6 * 935)$$

Now, calculating each part:

$$(2,000 * 935) = 1,870,000$$

$$(200 * 935) = 187,000$$

$$(50 * 935) = 46,750$$

$$(6 * 935) = 5,610$$

Now, add them all together:

$$1,870,000 + 187,000 + 46,750 + 5,610 = 2,109,360$$

So, 2256 multiplied by 935 with proper distribution is 2,109,360.

Some types of prompting

- Giving Instructions
- Role Prompting
- Few-Shot Prompting
- Combinations of these techniques

Giving instructions

- One useful type of prompting is instruction prompting, in which one simply provides instructions (even complex ones) for the AI to complete.

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CH

Read the following sales email. Remove any personally identifiable information (PII), and replace it with the appropriate placeholder. For example, replace the name "John Doe" with "[NAME]".



Hi John,

I'm writing to you because I noticed you recently purchased a new car. I'm a salesperson at a local dealership (Cheap Dealz), and I wanted to let you know that we have a great deal on a new car. If you're interested, please let me know.

Thanks,

Jimmy Smith

Phone: 410-805-2345

Email: jimmysmith@cheapdealz.com

Giving instructions



Hi [NAME],

I'm writing to you because I noticed you recently purchased a new car. I'm a salesperson at a local dealership ([DEALERSHIP NAME]), and I wanted to let you know that we have a great deal on a new car. If you're interested, please let me know.

Thanks,

[SENDER NAME]

Phone: [PHONE NUMBER]

Email: [EMAIL ADDRESS]



Role Prompting

- With role prompting, you begin by assigning a role to the AI, which affects the performance of the AI in response to the prompt in question.
- **Prompt:** Act as a city council member, and ask me relevant questions and critique my responses as I present elements of my proposal for improving public transportation.

Role Prompting Resource

Awesome ChatGPT Prompts

Welcome to the "Awesome ChatGPT Prompts" repository! This is a collection of prompt examples to be used with the ChatGPT model.

The [ChatGPT](#) model is a large language model trained by [OpenAI](#) that is capable of generating human-like text. By providing it with a prompt, it can generate responses that continue the conversation or expand on the given prompt.

In this repository, you will find a variety of prompts that can be used with ChatGPT. We encourage you to [add your own prompts](#) to the list, and to use ChatGPT to generate new prompts as well.

To get started, simply clone this repository and use the prompts in the README.md file as input for ChatGPT. You can also use the prompts in this file as inspiration for creating your own.

We hope you find these prompts useful and have fun using ChatGPT!

<https://github.com/f/awesome-chatgpt-prompts>


Few Shot Prompting

- With few shot prompting, we provide the AI with several examples (i.e. shots) of what we want it to accomplish.

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CH Great product, 10/10: positive
Didn't work very well: negative
Super helpful, worth it: positive
It doesnt work!:

 negative

Combining Techniques

- **Prompt:** Twitter is a social media platform where users can post short messages called "tweets". Tweets can be positive or negative, and we would like to be able to classify tweets as positive or negative. Here are some examples of positive and negative tweets. Make sure to classify the last tweet correctly.
 - Q: Tweet: "What a beautiful day!" Is this tweet positive or negative?
 - A: positive
 - Q: Tweet: "I hate this class" Is this tweet positive or negative?
 - A: negative
 - Q: Tweet: "I love pockets on jeans"
 - A:

What are LLMs good at doing?

- Generating human-like text, images, audio, and even code on a wide variety of subjects
- Analyzing text, data, and other information, and providing summaries, insights, and recommendations
- Helping with all kinds of tasks like research, brainstorming, proofreading and language translation
- Creating novel ideas, stories, poems, and solutions to open-ended problems
- Following directions and completing tasks as instructed

Prompt ideas for public sector

- Generate a summary of key points from this [paste policy text].
- Draft an email response to this citizen inquiry [paste inquiry text].
- Create a list of potential risks and mitigation strategies for this [paste project description text].
- Draft a press release for this [paste event or announcement text].
- Create an outline for a presentation on [paste topic text] for a public sector audience.

Prompt ideas for public sector

- Identify key potential stakeholders and their interests for this [paste project or initiative text].
- Write a social media post to promote this [paste event or initiative text].
- Write a job description for a new position in the [paste department or agency text].
- Create a set of interview questions for a candidate applying to this [paste job position text].

Marketing tasks AI can help with

- **Generate ideas/drafts** for blog posts, social media content, and other marketing materials
- Create **product descriptions, newsletters, other marketing copy**
- Generate **different creative text formats**, like poems, code, scripts, musical pieces, email, letters, etc.
- **Analyze your existing content** and suggest improvements
- **Personalize your content** for different audiences
- **Analyze customer data** to identify trends and insights
- **Analyze customer feedback** to identify areas for improvement



Exercising caution

- LLMs can make stuff up, so we need to exercise caution.

Exercising caution

- LLMs can make stuff up, so we need to exercise caution.

 Message ChatGPT...



ChatGPT can make mistakes. Consider checking important information.

Enter a prompt here



Gemini may display inaccurate info, including about people, so double-check its responses. [Your privacy & Gemini Apps](#)

Some limitations

- LLMs are prone to hallucinate, producing non-sensical or non-factual responses.
- ChatGPT may propagate biases inherited from the data on which it was trained.
- Jailbreaks can be used to bypass its content policy.

Some broad recommendations

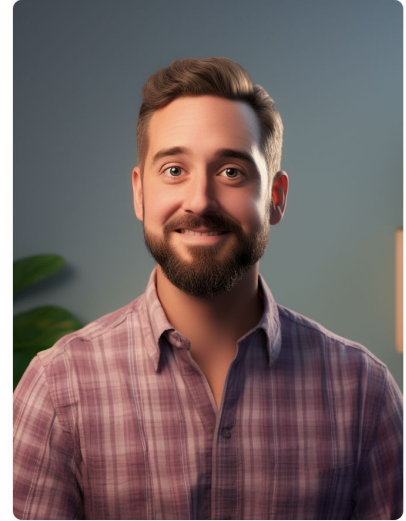
- LLMs are effective at producing routine, boilerplate text.
- Although the accuracy of LLMs is improving, it is better to ask them to perform tasks where the outcome meets a standard such as “good vs. bad” instead of “true vs. false”.
- Use your expertise and experience to judge the outputs of LLMs.

Generative AI Multimedia



Beyond text tools

- Midjourney or DALL-E to create images
- MusicFX or Suno to create music
- Runway or Pika to create videos
- ElevenLabs or Resemble to create voiceovers
- **D-ID or Synthesia to create avatar videos**
- Pictory or Descript to edit audio and video



Text-to-Image tools



Image creation tools

- Midjourney Paid (limited free options)
- DALL-E 3 Paid (free through Microsoft CoPilot)
- Imagen 2 (Google) Free (available in Gemini / ImageFX)
- Imagine with Meta Free
- Stable Diffusion Paid (limited free options)
- Ideogram Free
- Nightcafe Paid (use Stable Diffusion 1.5 for free)
- Adobe Firefly Limited credits for free
- Photoshop Need Creative Cloud license
- Leonardo AI Free options

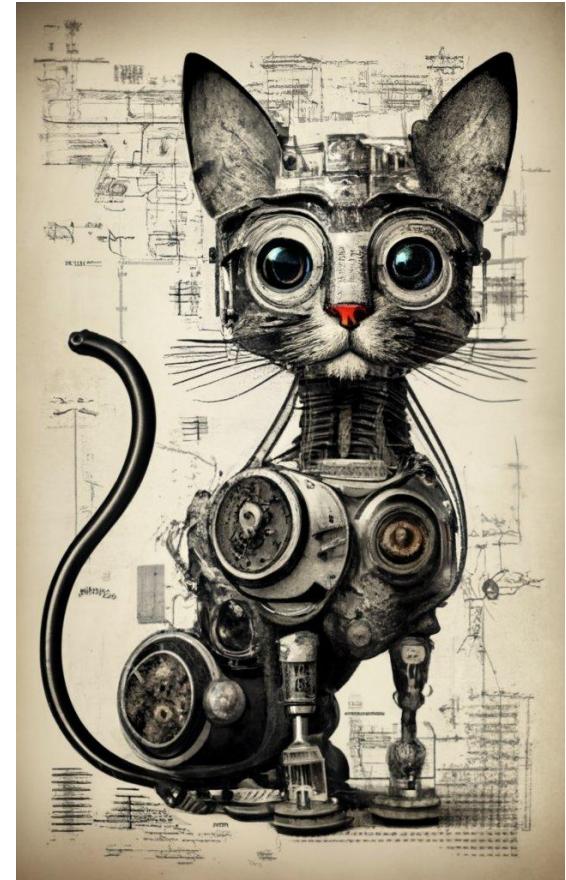


Prompting

- An effective AI art prompt should include **specific descriptions, subjects, colors, locations and artistic styles**. This allows the neural networks used by the generator to create the best possible visuals.

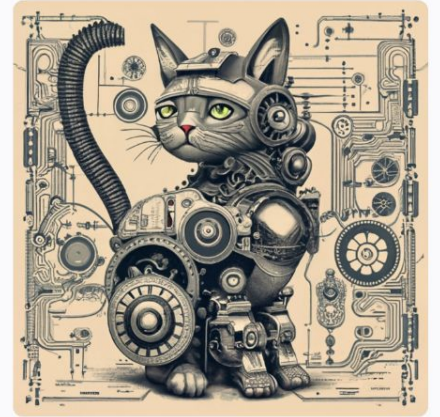
Prompting

- **Prompt:** poster of a mechanical cat, technical Schematics viewed from front and side view on light white blueprint paper, Illustration drafting style, typography, conceptual art, dark fantasy, steampunk, cinematic (via @enfangdor on Ideogram)

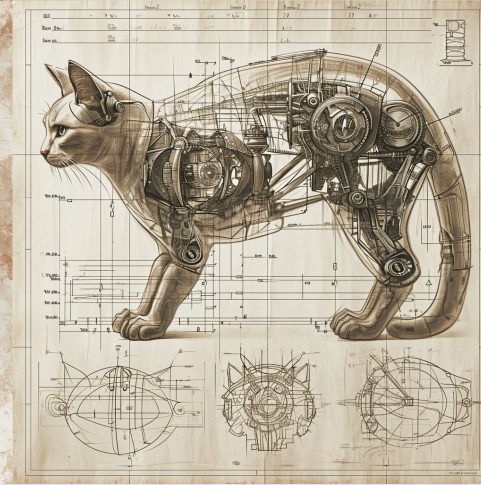
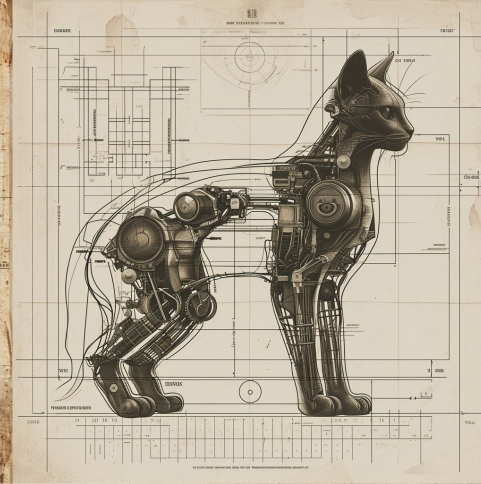
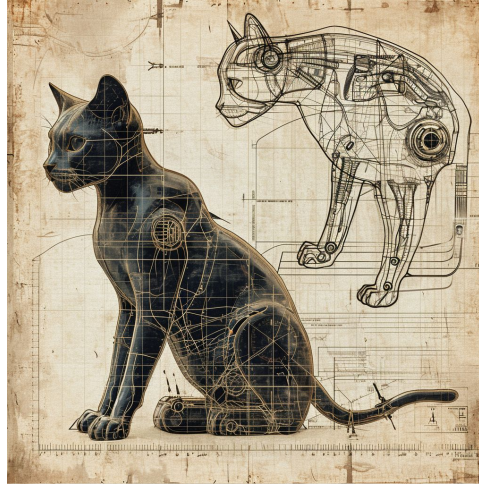


Generation completed

Dismiss



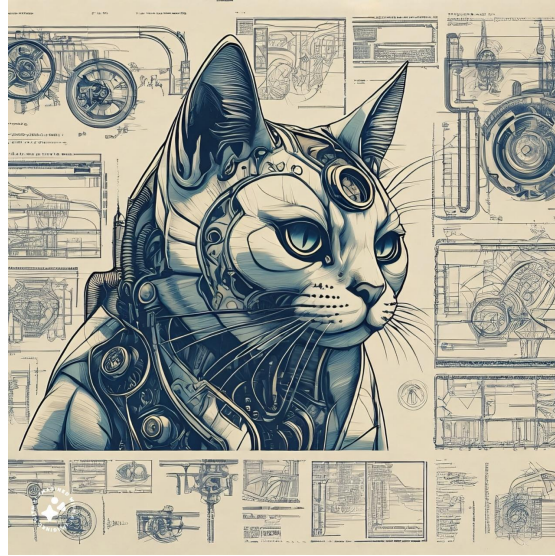
Midjourney



DALL-E



Imagine with Meta



Imagen



What to include in prompts



- Main subject
- Secondary subject
- Artist names or styles
- Photography prompts
- Specific colors (optional)
- The order does matter when it comes to writing prompts, so it is better to put your main subject first in the order.

What to include in prompts



- A deer passing through (main subject) an abandoned neon city (secondary subject), by Dan Mumford and Victo Ngai (artist names), 8k resolution, a masterpiece, 35mm, hyperrealistic, hyper maximalist (photography/artistic prompts), crimson, jade (colors).

The more detail the better

a 4k, realistic photo of a border collie sitting next to a miniature australian shepard dog on a red couch



Generate images

google.com/search/images



The more detail the better

4k photorealistic image of a border collie and a miniature australian shepherd sitting next to each other on a red couch. The dogs are both looking at the camera with happy expressions. The couch is in a living room with a large window that lets in



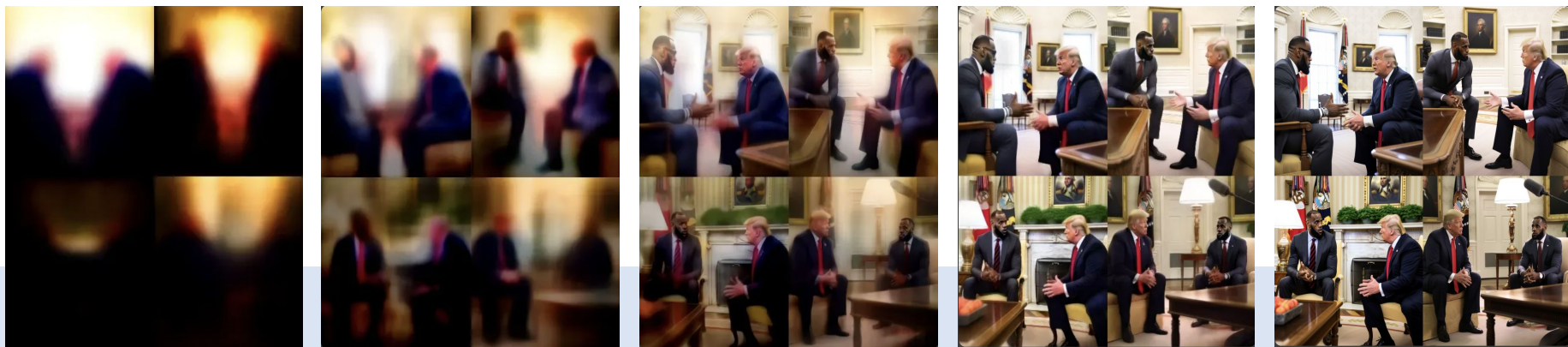
Undo

Generate images



How they work

- In a diffusion model, you have a computer gradually add random noise to its training dataset of images
- Over time, it learns how to recover the original image by reversing the noise. With enough training, the model can then generate brand-new images through denoising a random image.



DALL-E 2 + ChatGPT in action

- Making a book with my five-year-old son

Default (GPT-3.5)



i want you to write a kids book about cats. ask me some questions that you can use to write the book.



Sure, I'd be happy to help you write a kids' book about cats! Let's start with some questions to get the creative process going:



1. Who will be the main character of the book? Is it a particular cat or a group of cats?
2. What will be the setting of the story? Will it take place in a city, a farm, a forest, or some other location?
3. What is the main problem or challenge that the cats will face in the story?
4. Are there any other characters in the book, like humans or other animals? If so, what are their roles?



The main characters are six cats. They go outside and climb over the fence and somehow they see a cave. They hear a noise.

DALL-E 2 + ChatGPT in action



Audio Tools

- MusicFX (Google)
- Suno
- MusicGen and AudioGen
- Stable Audio
- Resemble AI
- ElevenLabs
- Murf AI
- Adobe Enhance Speech

Video tools

- D-ID
- Synthesia
- Pictory
- Descript
- Pika Labs

Elevenlabs

- Generate realistic voices in different languages
- Clone a voice with as little as one minute of audio
- Generate sound effects
- Translate audio and video to 29 different languages

Elevenlabs Speech Synthesis

Speech Synthesis

Unleash the power of our cutting-edge technology to generate realistic, captivating speech in a wide range of languages.

Text to Speech

Convert text into lifelike speech using a voice of your choice.

Speech to Speech

Create speech by combining the style and content of an audio file you upload with a voice of your choice.

Settings

Eleven Multilingual v2

Chris Snider Voice Clone 1

+ Add Voice


ELEVENLABS PREMADE

- ▶ Alice new british confident news
- ▶ Brian new american deep narration
- ▶ Chris new american casual conversational
- ▶ Adam american deep narration
- ▶ Antoni american well-rounded narration
- ▶ Arnold american crisp narration
- ▶ Bill american strong documentary
- ▶ Callum american hoarse video games
- ▶ Charles american deep narration

Elevenlabs Voice Labs Voice Cloning


Add Voice ✕

Name


Click to upload a file or drag and drop
Audio or Video files, up to 10MB each


OR

Samples 0 / 25

 No items uploaded yet. Upload audio samples of the voice you would like to clone.

Sample quality is more important than quantity. Noisy samples may give bad results. Providing more than 5 minutes of audio in total brings little improvement.

Labels 0 / 5

 No labels. Click + to add a first one.

Description

Elevenlabs Voice Labs Voice Cloning

Chris Snider Voice Clone 1 + Add Voice

Voice Settings

Stability More variable More stable

Clarity + Similarity Low High

Style Exaggeration None (Fastest) Exaggerated

Speaker Boost To Default

Text

This is Chris Snider. You've been listening to me present for awhile now today. Do you recognize this as my voice?
Can you tell any differences?



AI Voice Generator in 29 Languages

Our text to speech tool supports 29 languages and all diverse accents - just select the appropriate accent and enter text in your language of choice. VoiceLab allows you to clone your voice once and use it in any language. [Explore all languages & accents](#) →

▶ English 
Callum



▶ Croatian 
Ivan



▶ Hindi 
Sanjay



▶ French 
Pierre



▶ Korean 
Min-jun



▶ Portuguese 
Manuel



▶ Malay 
Ahmad



▶ Slovak 
Jozef



▶ Danish 
Anders



▶ Tamil 
Arvind



▶ Ukrainian 
Oleksandr



▶ Swedish 
Mimi





Adobe Enhance Speech

- Free tool uses AI to improve the quality of your audio.
- [Example](#) and [Adobe's sample](#)

Enhance Speech



Drop files to enhance

Choose files



Sample.wav

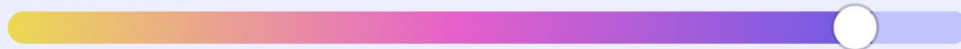
0:16

 Download



Enhance Speech

90% strength



Sample.wav
00:16



Video: Synthesia

- Turns text into videos with AI avatars.

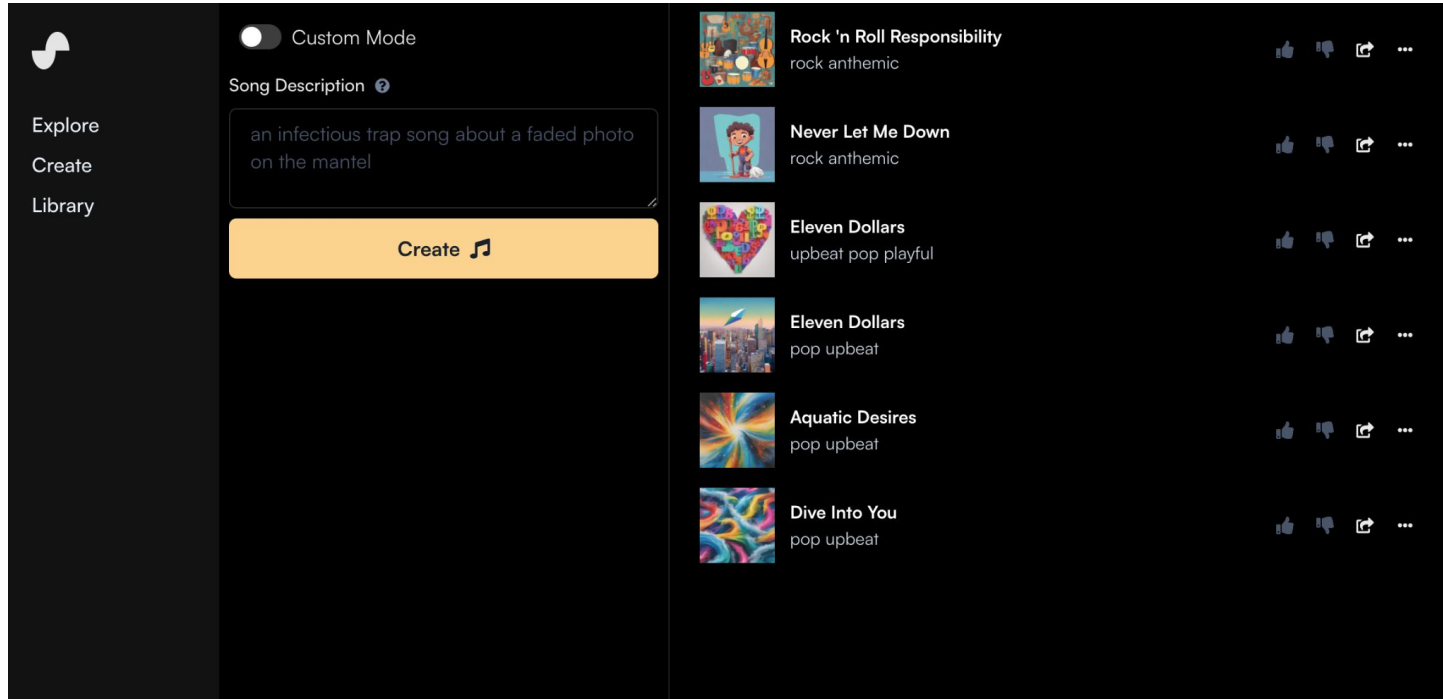
The screenshot shows the Synthesia web interface. On the left, there's a 'TRY IT YOURSELF' section with the heading 'Create a free AI video'. Below this, there are two main steps: '1 Select video template' and '2 Edit your video script in any language'. Under step 1, there are buttons for 'SYNTHESIA DEMO', 'SALES PITCH', and 'COMPLIMENT'. Under step 2, there are buttons for 'LEARNING & DEVELOPMENT' and 'HOW-TO VIDEO'. A text input area contains the script: 'Hi, I'm Natalie! I'm an AI avatar created entirely by artificial intelligence. You too can create a video like this with just a few clicks. Try it out for yourself today!'. Below the text, it says '30 characters left' and there is a large blue 'Generate Free AI Video' button. A disclaimer at the bottom left reads: 'Political, inappropriate and discriminatory content will not be approved.'

The main part of the screenshot is a preview window. At the top, it says 'This is what your video will look like'. The preview shows a woman (Natalie) speaking against a blue background. Below the video, there are controls for 'English (US) - Engaging', 'Debounce', 'Marker', 'Pause', 'Debounce', and a play button with '0:00 / 0:08'. To the right of the preview is an 'Add avatar' section with a grid of 12 different AI avatars, including Natalie, Ryan, Laura, Jonathan, Evelyn, Isabella, Laura, Matt, Sofia, Kenneth, and Ross. At the top right of the preview window, there are buttons for 'Share', 'Media', 'Record', 'Play', and 'Generate'.







Music: Suno

- A powerful and versatile platform that can generate hyper-realistic music, speech, and sound effects from text
- Use Suno AI to create engaging and interactive learning materials, such as songs, stories, quizzes, and games.

Music: Suno



The screenshot displays the Suno music creation interface. On the left is a dark sidebar with a logo and navigation options: 'Explore', 'Create', and 'Library'. The main area features a 'Custom Mode' toggle, a 'Song Description' input field containing the text 'an infectious trap song about a faded photo on the mantel', and a yellow 'Create' button with a music note icon. To the right, a list of generated songs is shown, each with a unique thumbnail, title, genre, and social interaction icons (like, dislike, share, and more).

Thumbnail	Song Title	Genre	Actions
	Rock 'n Roll Responsibility	rock anthem	Like, Dislike, Share, More
	Never Let Me Down	rock anthem	Like, Dislike, Share, More
	Eleven Dollars	upbeat pop playful	Like, Dislike, Share, More
	Eleven Dollars	pop upbeat	Like, Dislike, Share, More
	Aquatic Desires	pop upbeat	Like, Dislike, Share, More
	Dive Into You	pop upbeat	Like, Dislike, Share, More



Suno example

- Images created using Midjourney and CoPilot



Music: Suno

- Try it out at suno.ai



The screenshot displays the Suno AI music interface. On the left is a dark sidebar with the Suno logo and navigation options: 'Explore', 'Create', and 'Library'. The main content area is titled 'Trending' and features three song recommendations, each with a cover image, title, and genre:

- Mistletoe and Missing You** (pop acoustic) - Cover image shows a snowy winter landscape.
- Turkey Time** (pop) - Cover image shows a Thanksgiving dinner table with turkey and pumpkins.
- A is for Amazing** (gospel soul choir) - Cover image shows a colorful, abstract pattern.

Video: OpenAI's Sora



Prompt: Photorealistic closeup video of two pirate ships battling each other as they sail inside a cup of coffee.

A Human-Centered Framework

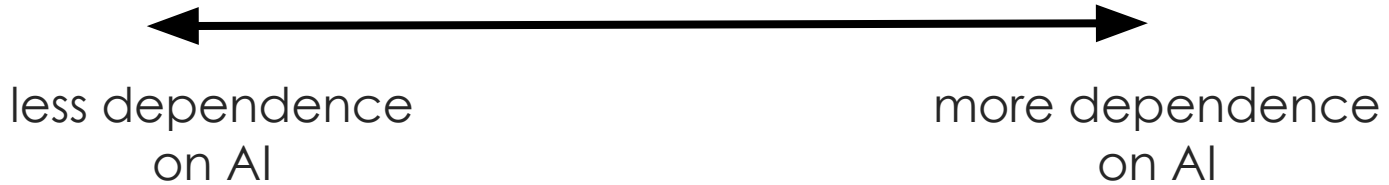


Developing a policy on AI usage

- For a given task, we can ask two questions:
 - **The use-of-AI question:** How much will we depend on AI to complete this task?
 - **The human-involvement question:** How much human involvement should be used to complete this task?

The use-of-AI question

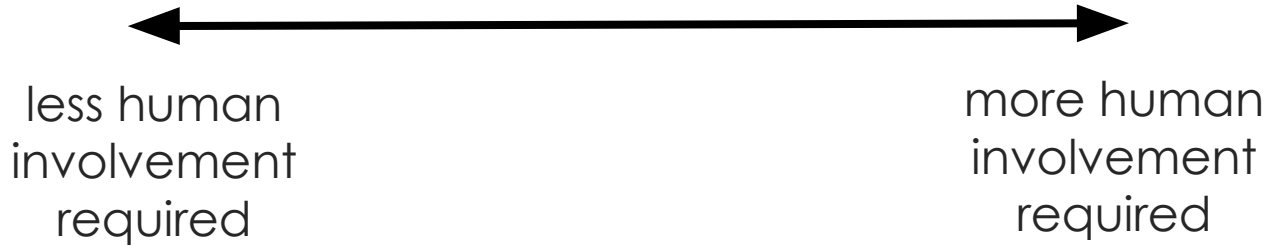
- How much will we depend on AI to complete this task?



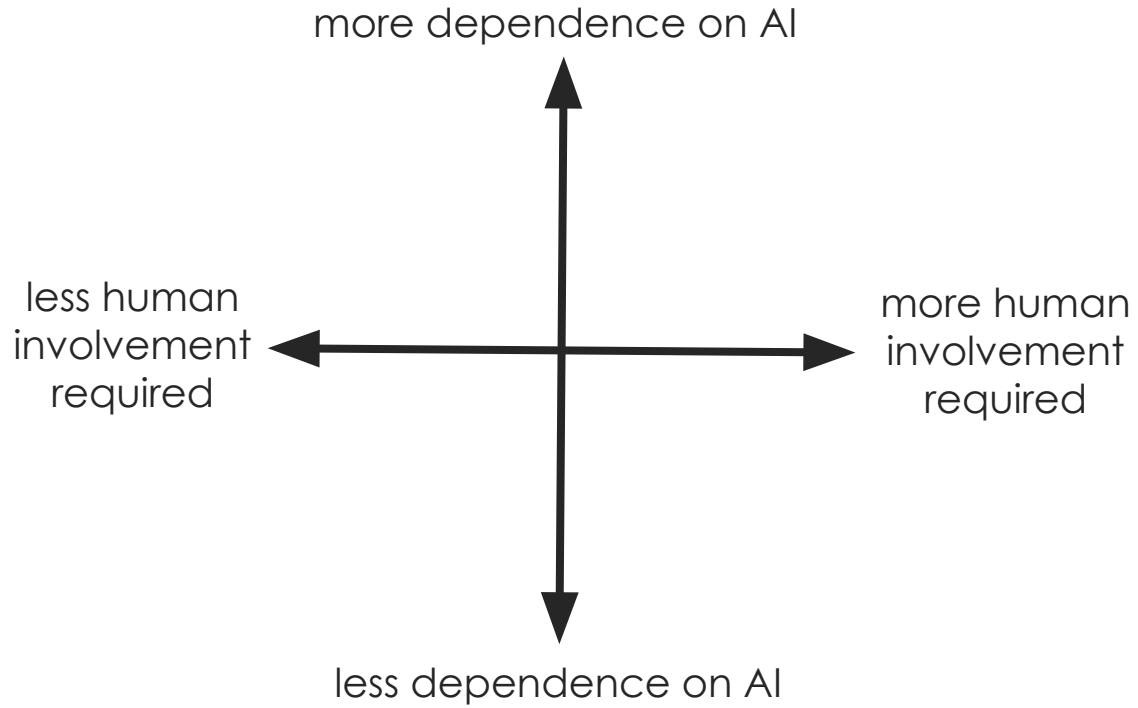
- How an organization answers this question depends on how it answers the human involvement question.

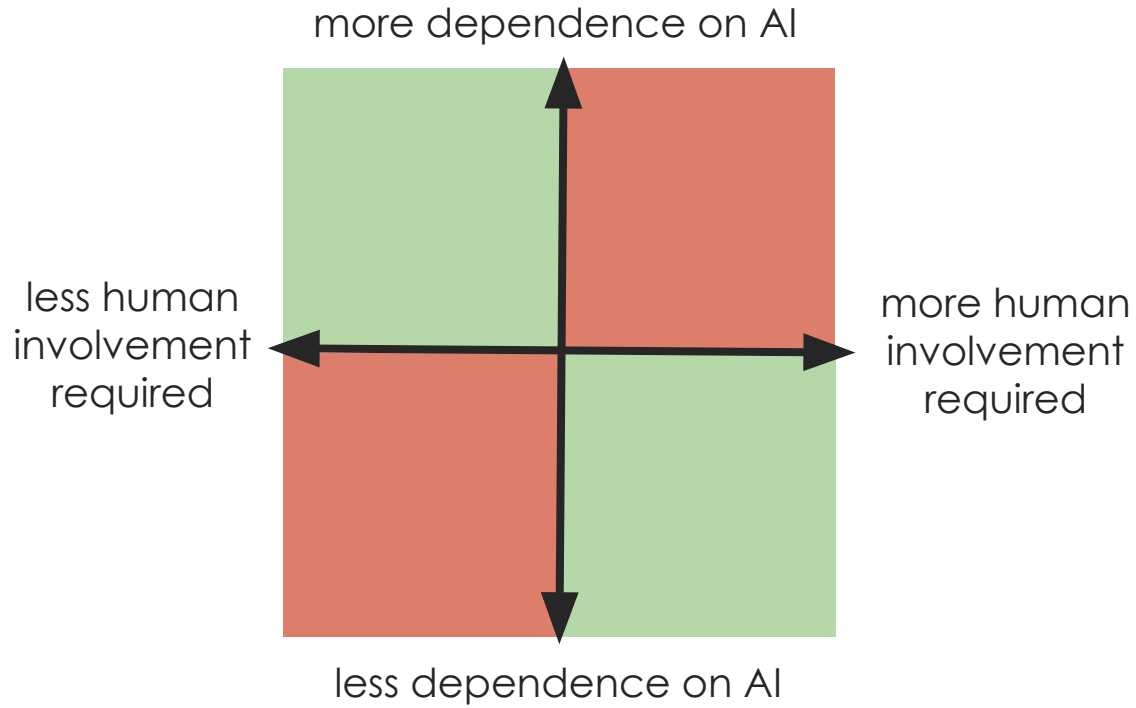
The human-involvement question

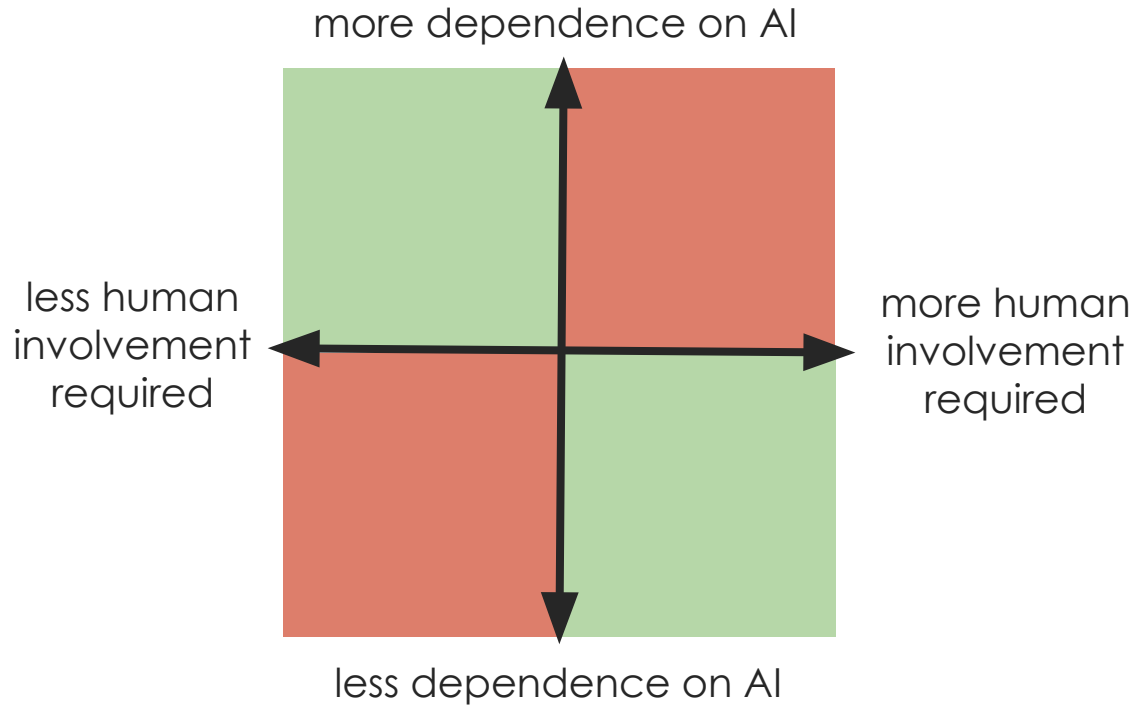
- How much human involvement should be used to complete this task?

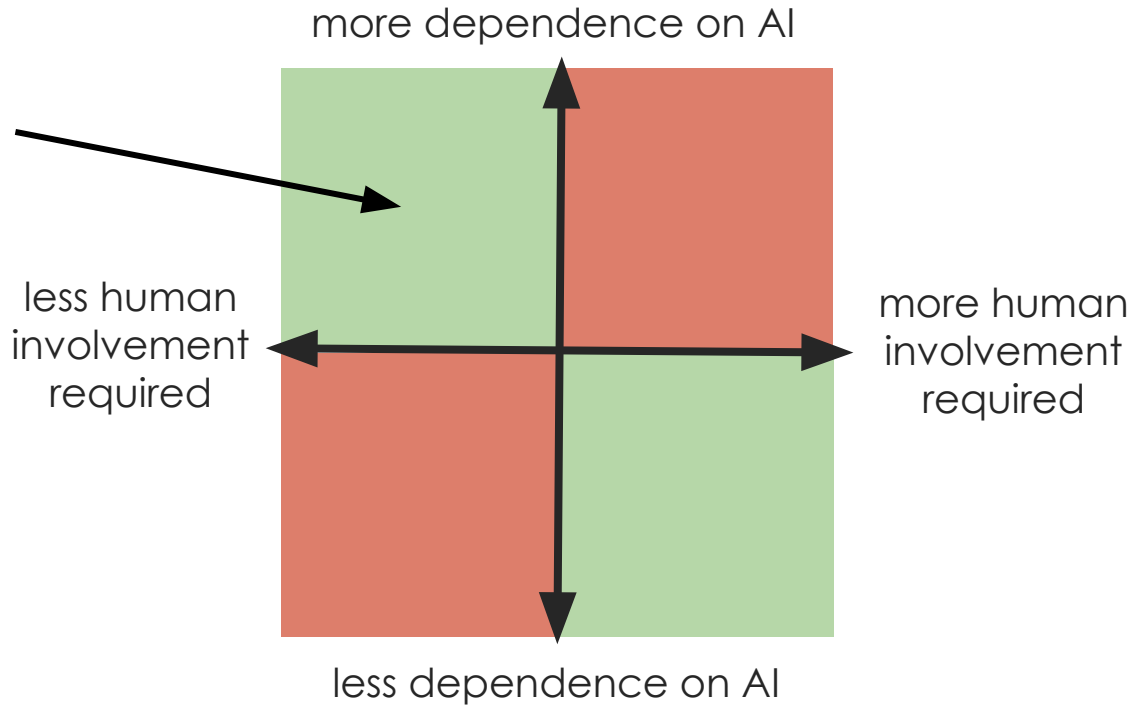


- **How an organization answers this question depends on the core values of the organization, its mission, and its priorities.**

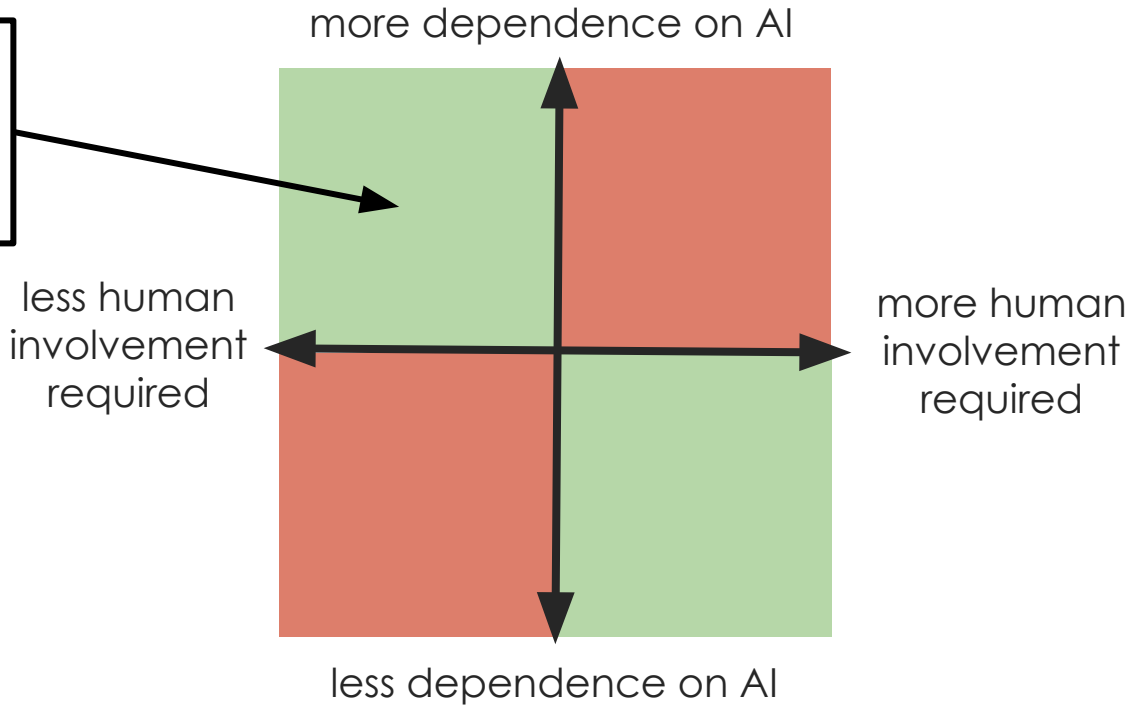




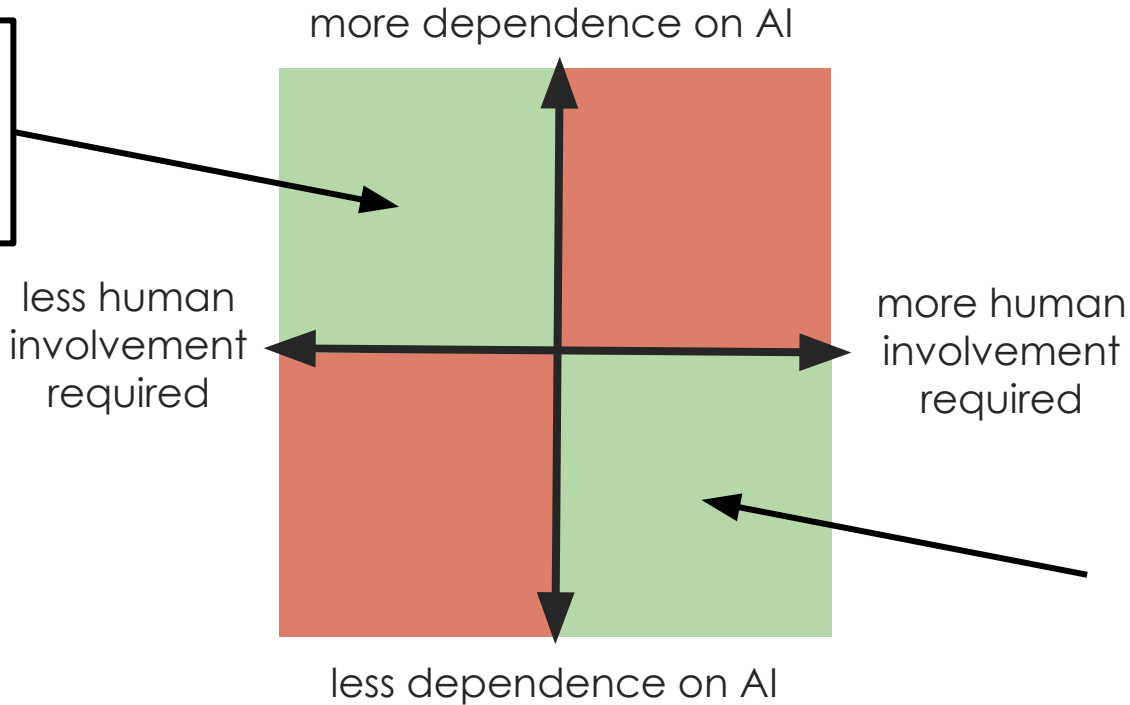




A task that requires less human involvement for which AI is used more heavily.



A task that requires less human involvement for which AI is used more heavily.



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more dependence on AI

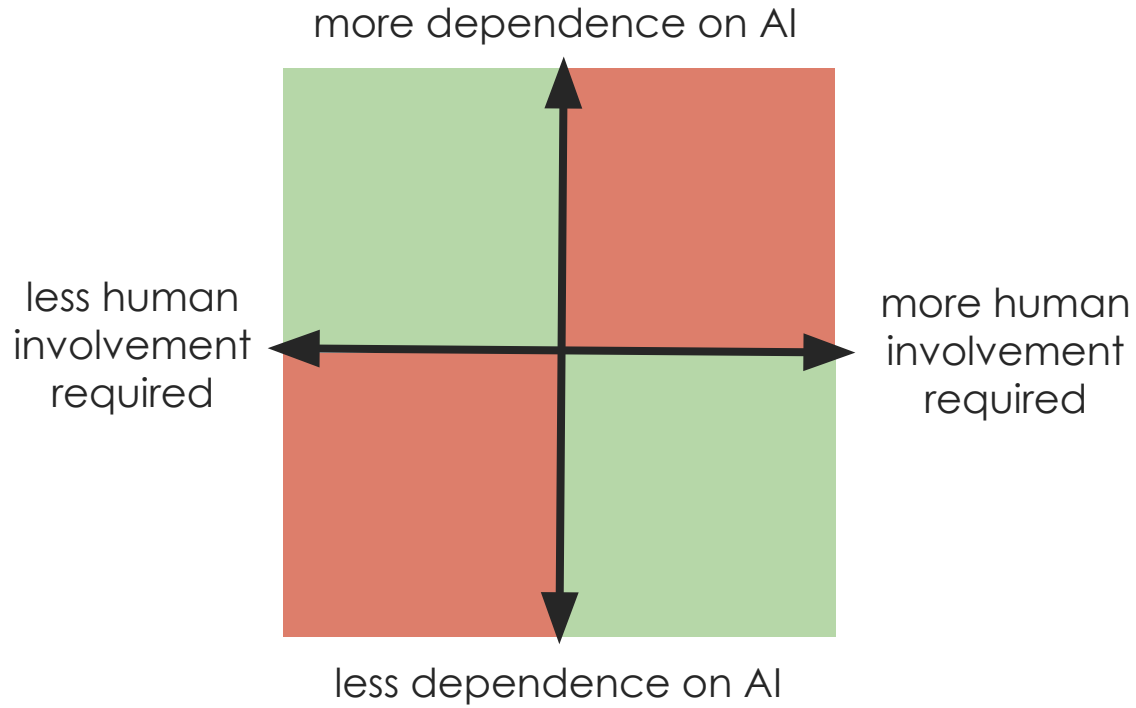
less human involvement required

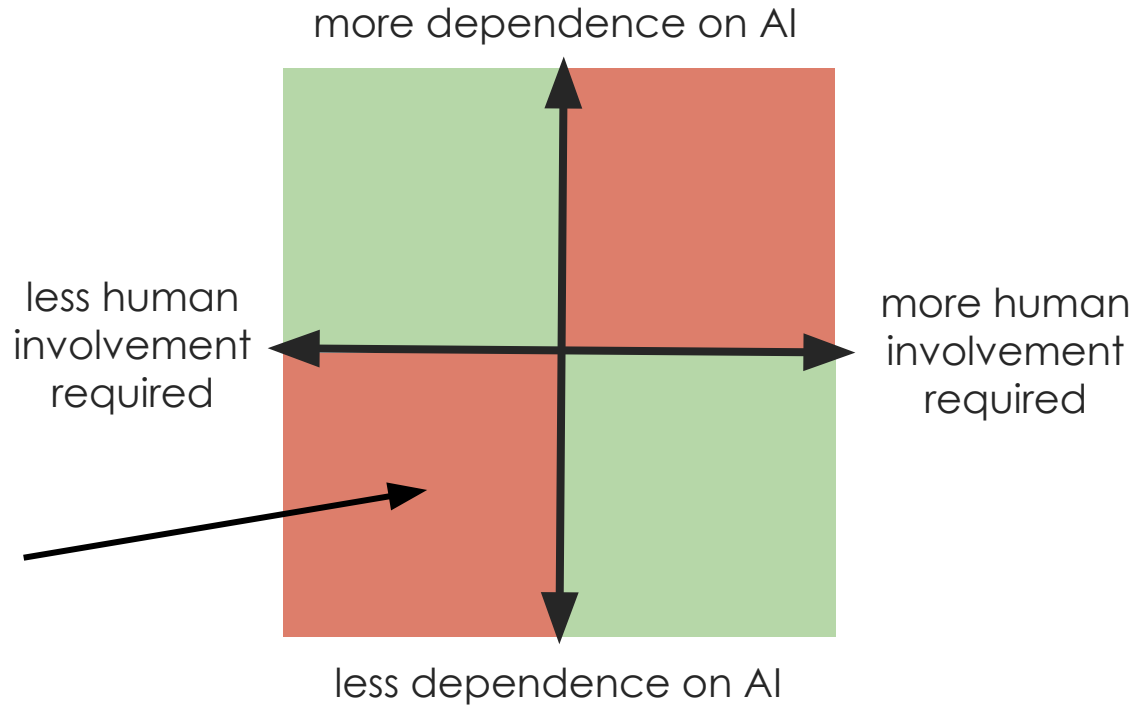
more human involvement required

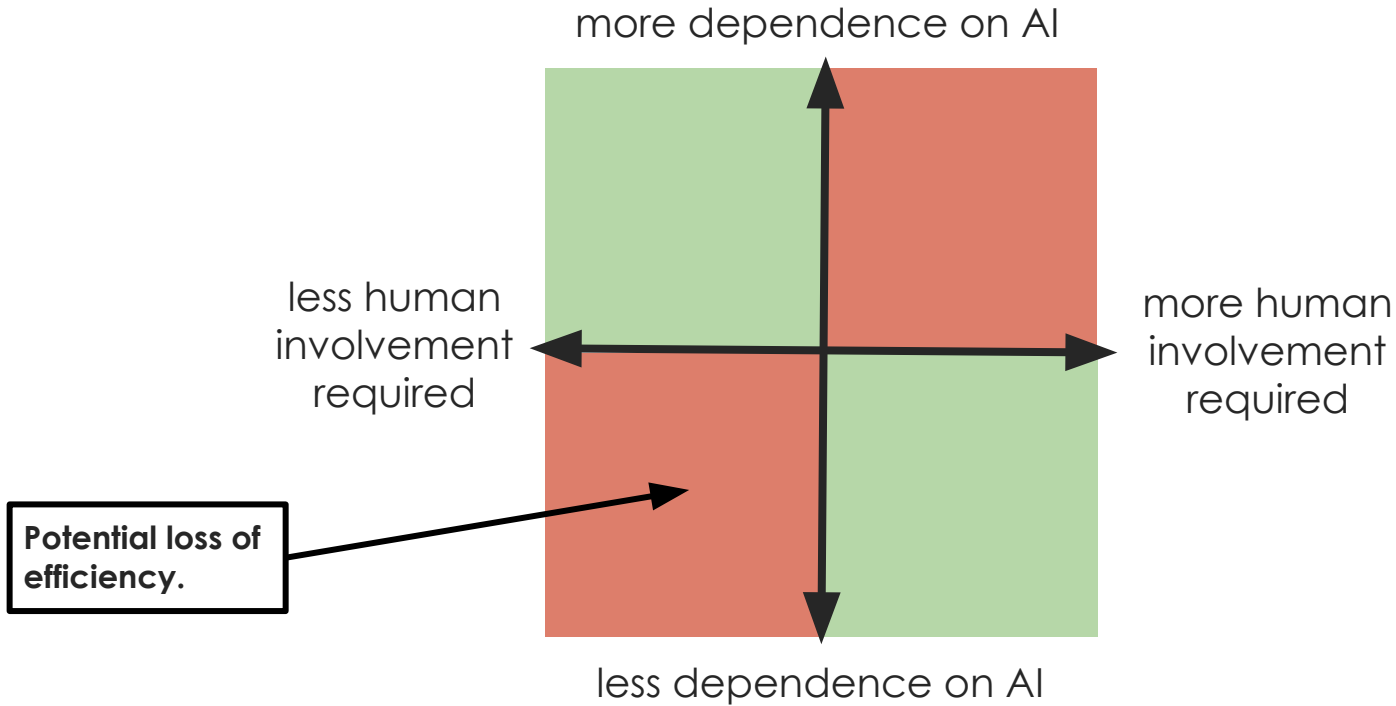
A task that requires more human involvement for which AI is used less heavily.

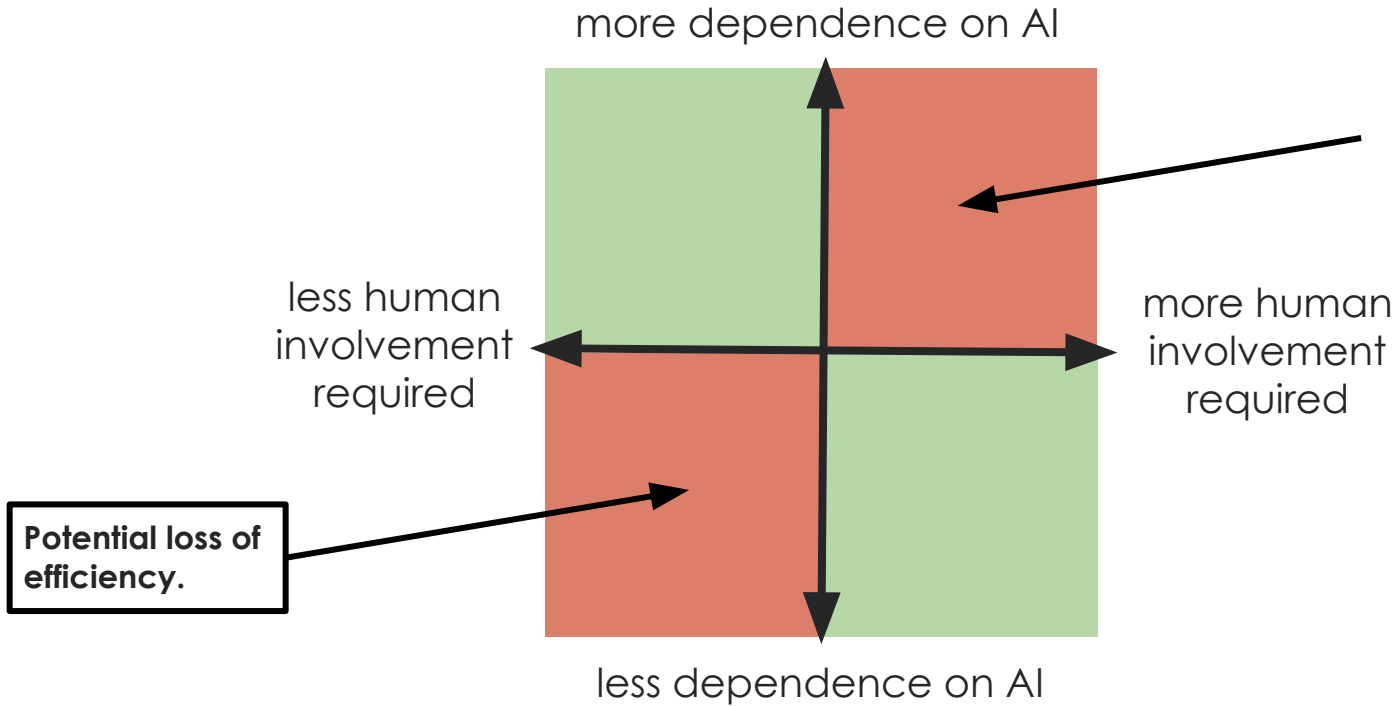
less dependence on AI

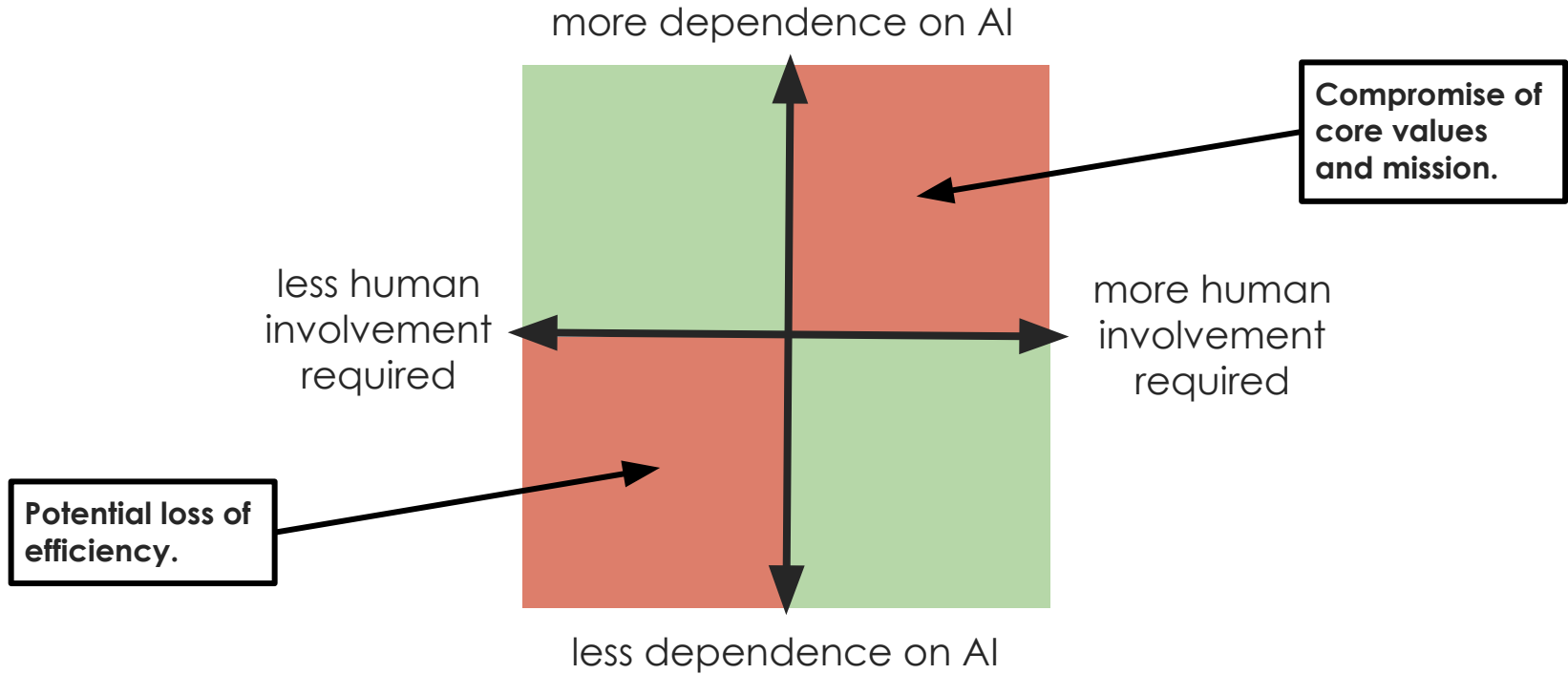
 = regions to seek
 = regions to avoid

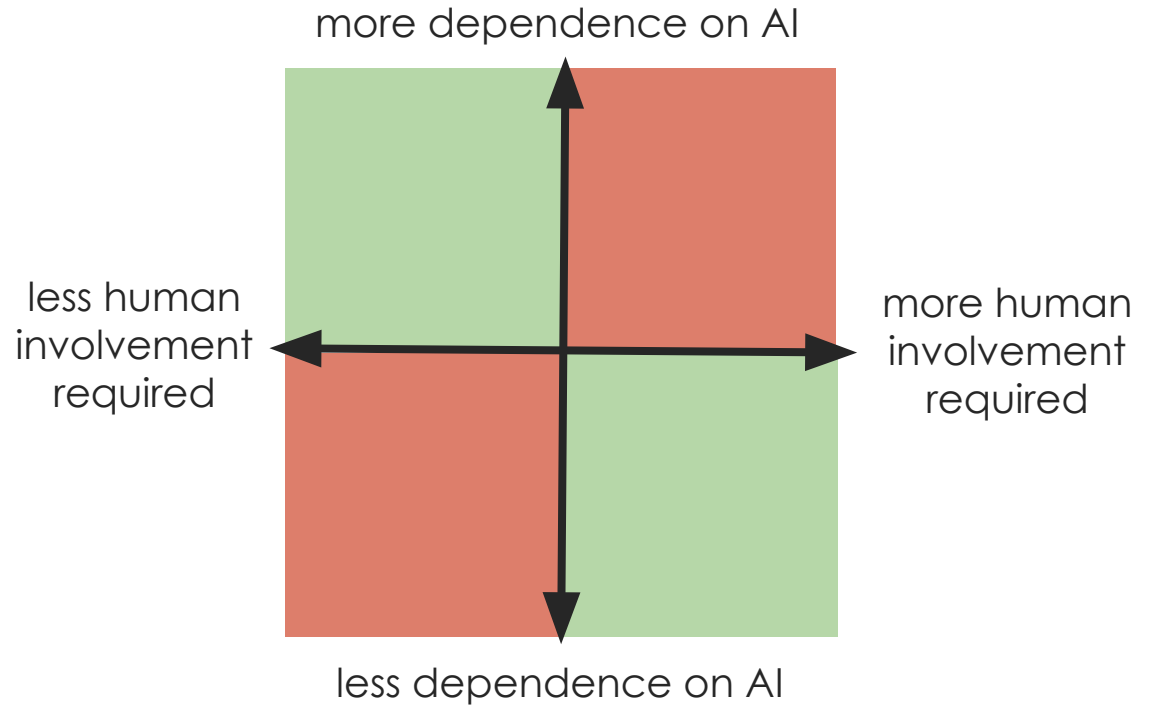


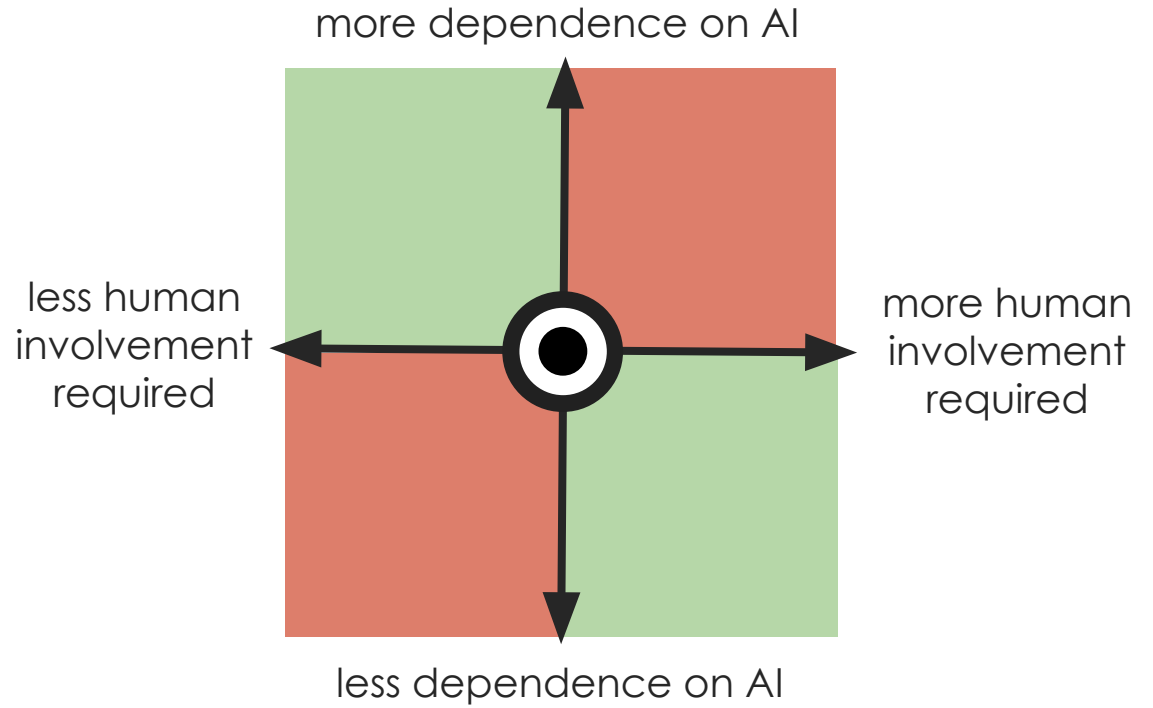




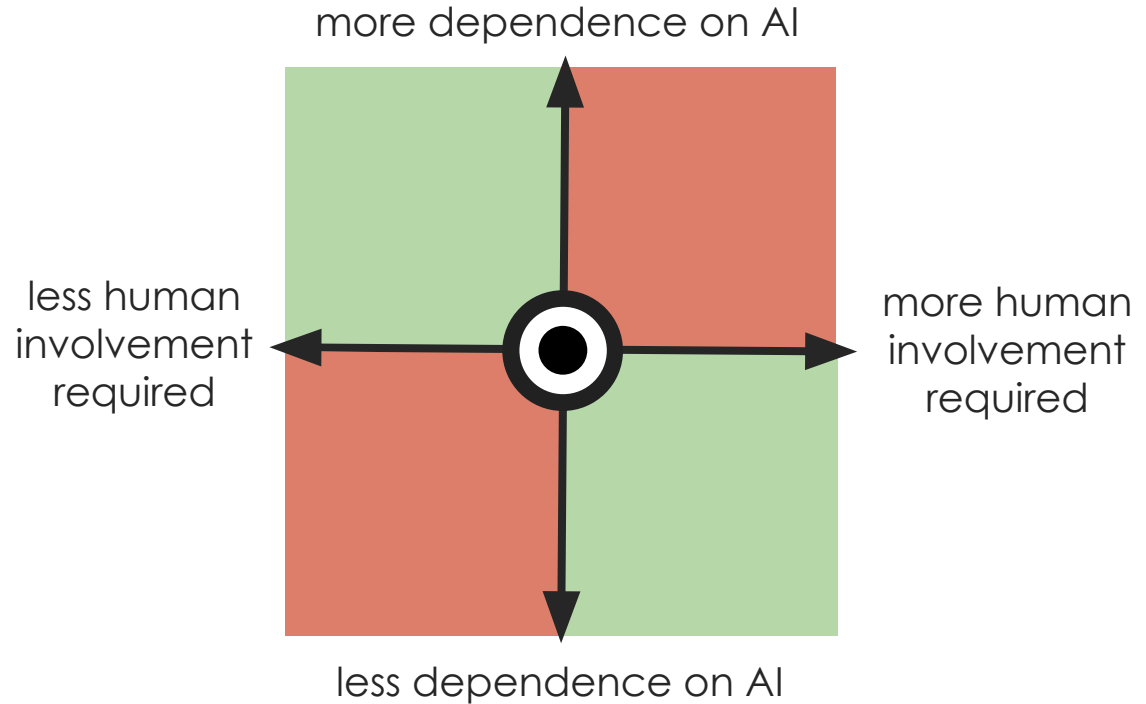








- For which tasks can we find a balance between the human and the AI?
- Such tasks require a substantial degree of human expertise and oversight, but can be accelerated by AI.

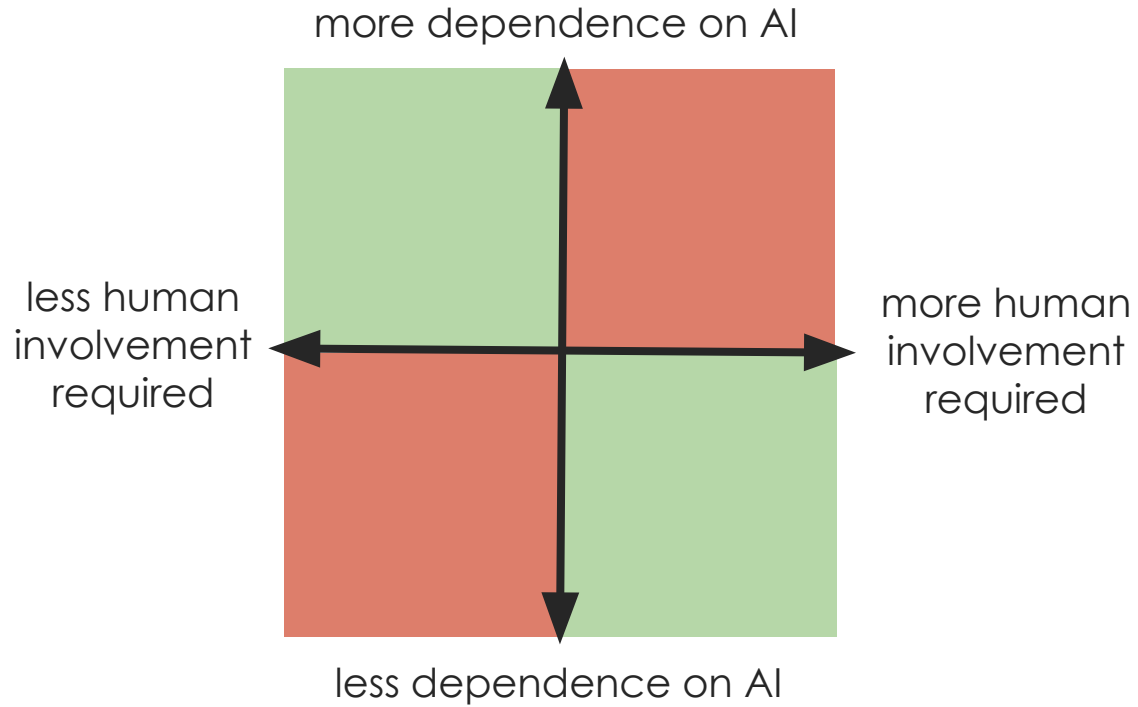


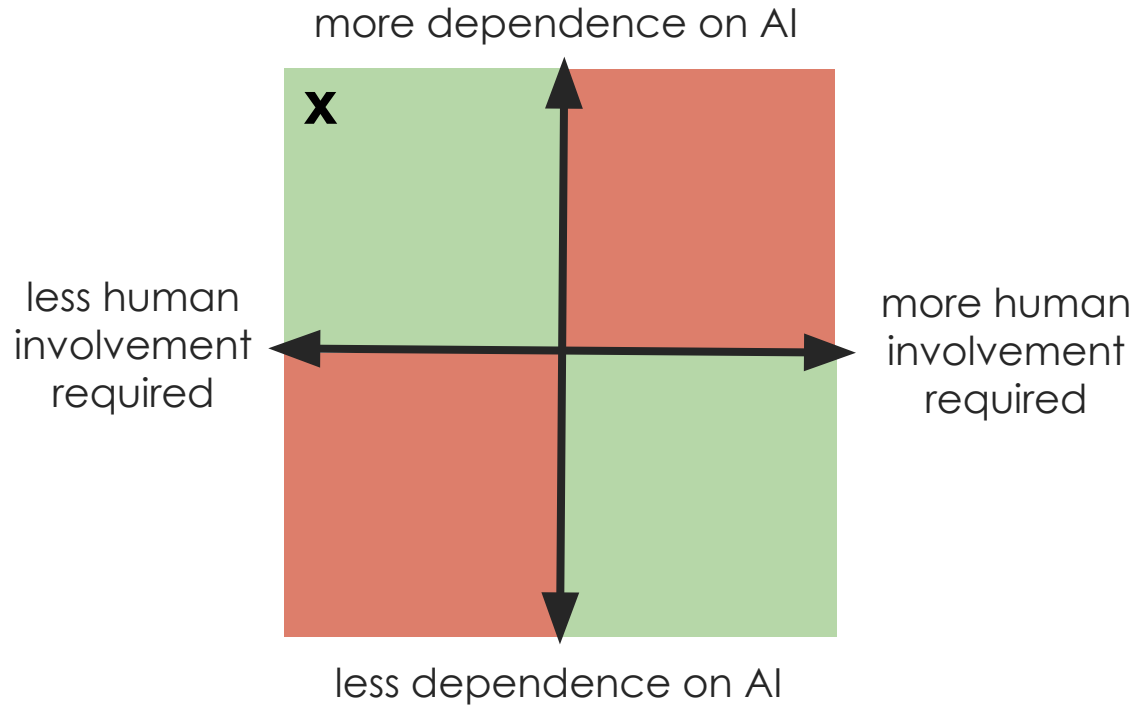
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TECH BY VICE

Eating Disorder Helpline Fires Staff, Transitions to Chatbot After Unionization

The chatbot is named "Tessa" and will replace the entire Helpline program starting June 1.

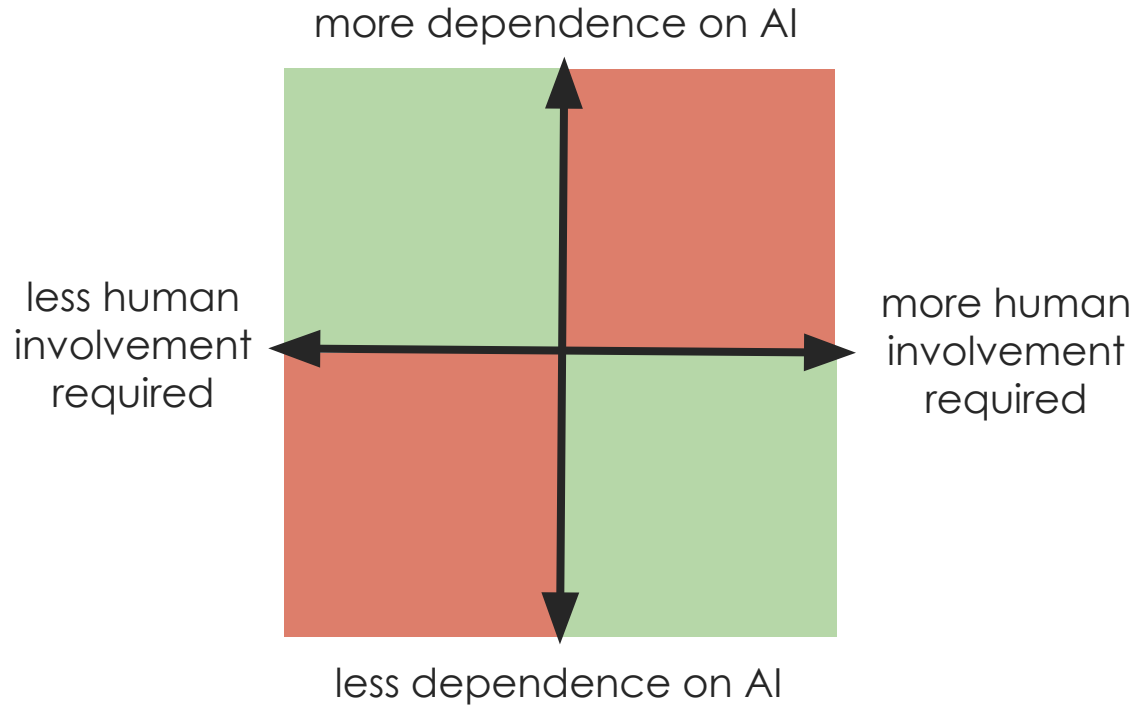
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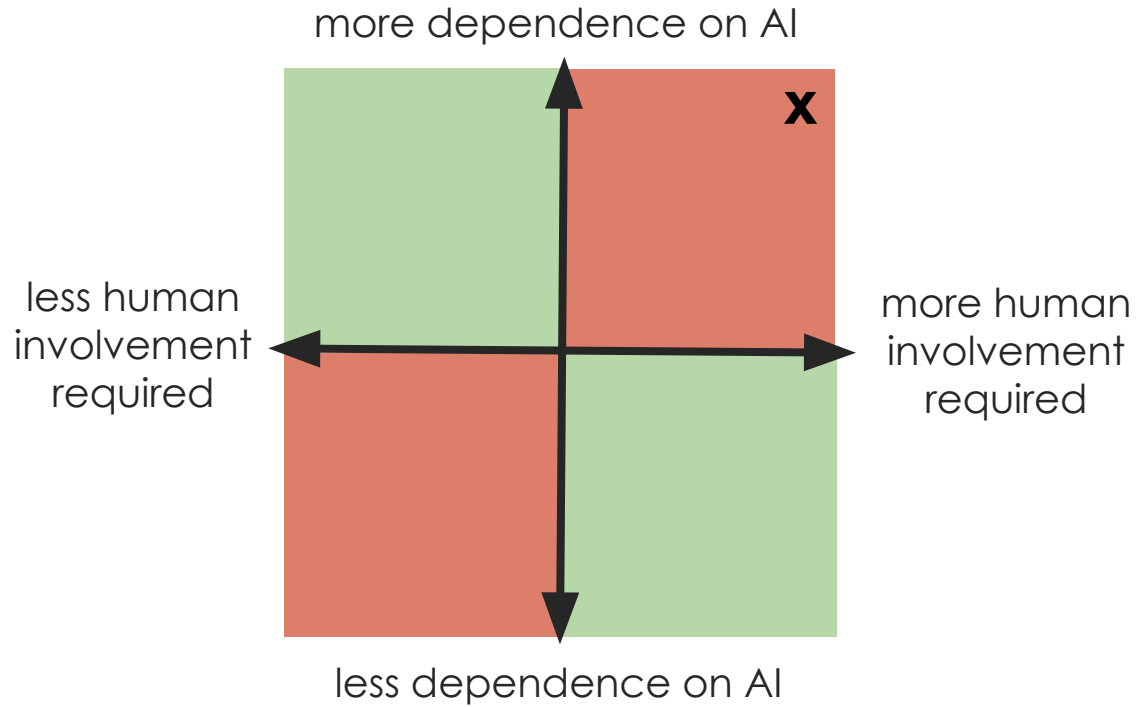
TECH BY VICE

Eating Disorder Helpline Disables Chatbot for 'Harmful' Responses After Firing Human Staff

"Every single thing Tessa suggested were things that led to the development of my eating disorder."



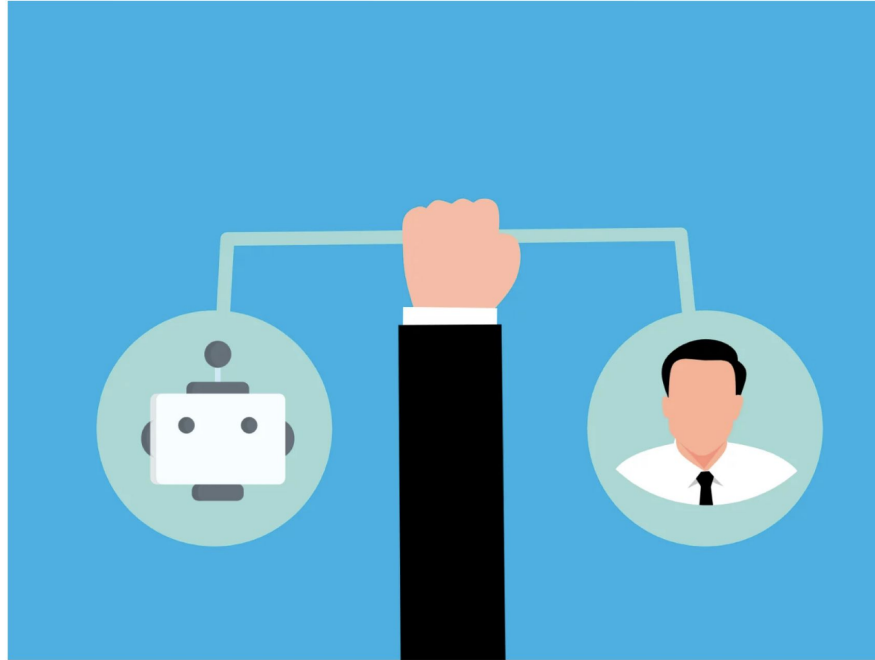




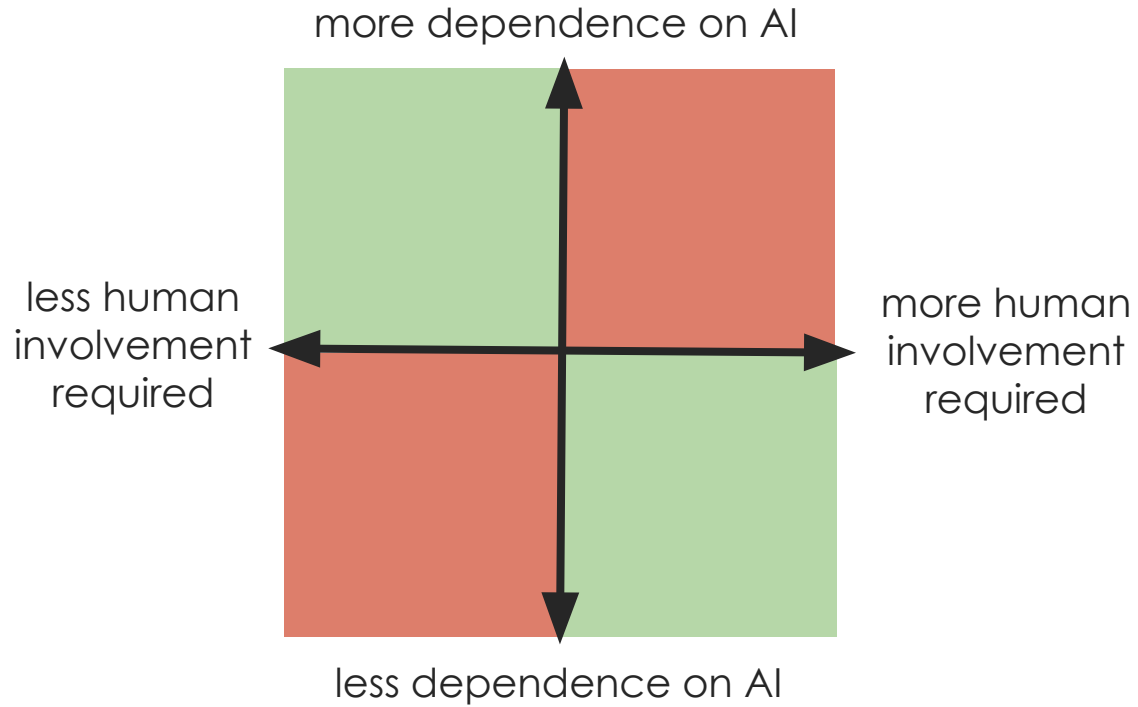
This company adopted AI. Here's what happened to its human workers

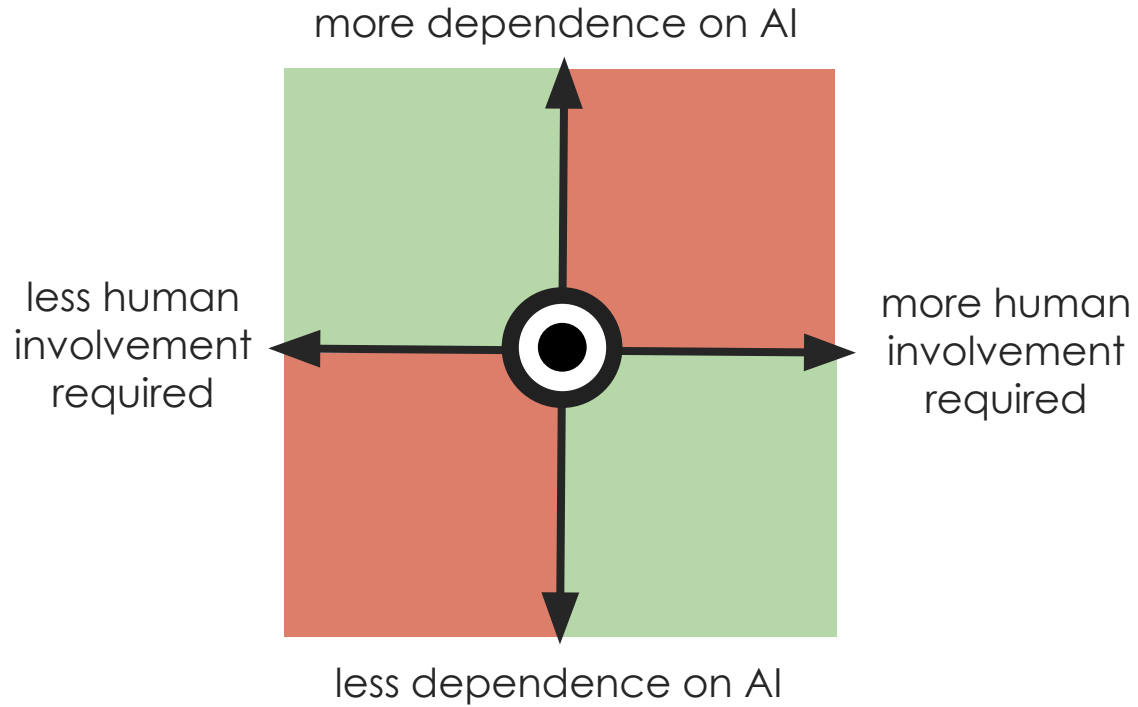
May 2, 2023 · 6:31 AM ET

 Greg Rosalsky



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Takeaways from this framework

- This framework depends on both the task in question and your organizational values.
- We should answer the “How much AI?” question based on how we answer the “How much human?” question.
- For which areas can we find an optimal balance of human-AI partnership?

Generative AI weekly newsletter



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