

Quick guide
for beginners

Updated GPT4

ChatGPT

learning prompt engineering with 100+ examples



Me

Can you explain why I should read this book?



ChatGPT

To get the most out of ChatGPT, it's necessary for the user to be able to correctly explain the task they want and the necessary context to solve it. This is called prompt engineering. As Morpheus said in The Matrix: "There are no wrong answers, only poorly formulated questions."

This small book, created by a group of professors from Universidad Politécnica and Universidad Carlos III de Madrid, will teach you how to get the most out of ChatGPT with more than 100 examples of questions (prompts).

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ChatGPT

Learning prompt engineering with 100+ examples

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Before we start

IN November 2022, OpenAI announced ChatGPT, reaching a hundred million users in just a few days. This and other tools are known as Large Language Models (LLMs), and they enable a multitude of text-related tasks, representing a qualitative leap in the development of Artificial Intelligence. Since its introduction, a group of professors and students from Universidad Carlos III and Universidad Politécnica de Madrid (Spain) have been studying the potential and limitations of ChatGPT and its competitors in numerous research projects. However, these research works are aimed at a specialized and limited audience and do not reach the general public. That is why we have decided to write this book, whose target audience is the general public, and aims to showcase the great capabilities of this innovative tool.

Before the reader embarks on exploring the possibilities of the new artificial intelligence tools presented in the rest of the book, we want to make clear who it is aimed at and what its objectives are. Starting from the beginning: we are not facing a book but rather a user guide or a set of recipes to understand and use these tools. Furthermore, a book often comes into being to endure over time, yet in our case, we know that it will be obsolete within a few years, perhaps even months, of being published, in line with the ephemeral trend that permeates our society and the rapid development of artificial intelligence.

Setting aside considerations about the terminology used to refer to this document, our primary goal is to bring artificial intelligence tools closer to the generic public, especially to people who are not familiar with computing. In our opinion, we are facing a technological revolution similar to what the Internet was

three or four decades ago or the early telephones were over a century ago. Artificial Intelligence is going to enter into our lives (in fact, it has already entered) just as email, the web, or even WhatsApp did.

Therefore, it is crucial for society as a whole to understand the possibilities of this new technology in order to take advantage of it. In summary, this book is aimed at people who do not know or have used ChatGPT or other similar tools or have done so in a very superficial way and want to discover it in a simple and enjoyable manner through example-based learning.

We also find it interesting to recall the importance that Socrates placed on questions in the process of acquiring knowledge. Interestingly, in a similar vein, the way we make/formulate queries (also known as prompts) plays a crucial role in using ChatGPT and similar AI tools. In other words, the teachings of the classics remain valid for artificial intelligence.

Before starting to interact with ChatGPT, we want to express our gratitude for the support we have received in the elaboration of this book. Thanks to Elena Merino and Miguel González for helping us learn about ChatGPT, language, and artificial intelligence. Our appreciation extends to Ana Reviriego and David Larrabeiti for reviewing the book and providing comments and suggestions, as well as to the members of the Next-Generation Internet Group (GING) at the Technical School of Telecommunication Engineers of the Universidad Politécnica de Madrid and the Advanced Switching and Communications Technologies Group (ADSCOM) at Universidad Carlos III for creating an environment in which to research and learn. Lastly, we would like to thank OpenAI for supporting our research through their researcher access program.

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Warming up

What is ChatGPT?

CHATGPT is a generative artificial intelligence (AI) tool that can be asked to perform numerous tasks using specific prompts. To warm up, we will ask ChatGPT some basic concepts about itself, prompts, and other generative AI models. Leaving aside strictness and technical details, the basis of these artificial intelligence tools is to try to 'guess' the next word, pixel, musical note, etc., generically referred to as a 'token.' For example, if I write the following sentence 'My friend Juan is from Madrid and is 45,' the word that completes the sentence could be 'years,' but it could also be 'friends,' or even 'cars.' The artificial intelligence would choose the word that is most frequently used in the context of the given sentence. In other words, we can understand generative artificial intelligence similarly as the predictive text on a mobile phone but with a much higher accuracy.

Prompt 1

What is generative artificial intelligence?

ChatGPT answers...

Generative artificial intelligence refers to a subset of AI models and algorithms designed to generate new, original content, whether it's images, text, music, or other forms of data. These models are trained on large datasets and learn patterns, structures, and relationships within the data to create new content that is similar in style or structure to the training data.

Some popular generative AI models include:

1. **Generative Adversarial Networks (GANs):** These consist of two neural networks, a generator, and a discriminator, which work against each other. The generator creates new data samples, while the discriminator tries to differentiate between real and generated data. Through this adversarial process, GANs produce increasingly realistic outputs.
2. **Variational Autoencoders (VAEs):** VAEs are a type of neural network that learns the underlying structure of input data and generates new data points by sampling from the learned distribution.
3. **Recurrent Neural Networks (RNNs) and Transformers:** These models can generate sequences of data, such as text or music, by predicting the next elements based on patterns learned from training data.

Generative AI has found applications in various fields, including art, music composition, image generation, text-to-image synthesis, language translation, drug discovery, and more. However, ethical considerations about the use and potential misuse of generated content, such as deepfakes, are important aspects to address as this technology progresses.

Prompt 2

What is a prompt for ChatGPT and what does prompt engineering entail?

ChatGPT answers...

A prompt for ChatGPT is a specific input or query provided to the language model to guide its response or generate desired output. It serves as the starting point for the AI to understand what kind of information or response is expected. For instance, if you're seeking information about a topic, the prompt would be the question or keywords related to that subject.

Prompt engineering involves crafting these prompts in a way that elicits accurate, relevant, and useful responses from the AI. It requires

understanding the capabilities and limitations of the AI model and structuring the prompt to effectively communicate the desired task or information needed.

The effectiveness of the prompt greatly influences the AI's output. Well-crafted prompts can steer the AI toward producing more accurate, relevant, and helpful responses, making prompt engineering an essential aspect of interacting with AI models like ChatGPT.

Prompt 3

What are LLMs and what is their origin?

ChatGPT answers...

Large Language Models (LLMs) are advanced artificial intelligence systems specifically designed to understand, process, and generate human-like text. These models have the capacity to learn intricate patterns, context, and relationships within language data, enabling them to perform various natural language processing tasks.

The origin of LLMs can be traced through the evolution of natural language processing and machine learning techniques. Early developments in recurrent neural networks (RNNs) and long short-term memory (LSTM) networks laid the foundation for understanding sequences of data, including language. These models, however, had limitations in capturing long-term dependencies in text.

The introduction of the Transformer architecture, notably with Google's BERT (Bidirectional Encoder Representations from Transformers) model in 2018, marked a significant advancement in capturing contextual information bidirectionally. BERT demonstrated the effectiveness of pretraining on vast amounts of text data to understand context and semantics.

Subsequently, OpenAI's GPT (Generative Pre-trained Transformers) series, starting with GPT-1 in 2018 and progressing to GPT-3 in 2020, showcased the potential of scaled-up Transformer-based models. GPT models use unsupervised learning on extensive datasets to pretrain across diverse language tasks, allowing them to generate coherent

text and perform tasks like translation, summarization, and question answering.

These developments represent a culmination of progress in deep learning, focusing on understanding and generating human-like text. However, the rise of LLMs also raises ethical concerns, including biases in language data, privacy issues, and potential misuse, prompting ongoing discussions about responsible AI deployment and risk mitigation.

In summary, LLMs or large language models like ChatGPT are complex neural networks (transformers) trained with millions of documents to predict the next word. This way, the LLM learns about language through examples. LLMs are capable of working with text in a variety of applications, for example:

- Text generation: LLMs can be used to generate creative text, such as poems, programming code, scripts, musical pieces, emails, letters, etc.
- Language translation: LLMs can be used for language translation in a more accurate and efficient manner than traditional methods.
- Text summarization: LLMs can be used to generate concise and accurate summaries of text.
- Question answering: LLMs can be used to respond to questions in an informative way, even if these are open-ended, challenging, or unusual ones.

LLMs are still in development, but they have the potential to revolutionize the way we interact with computers, and they are expected to play an increasingly significant role in our lives in the coming years. Some examples of large language models include (as of March 2024):

- GPT by OpenAI.
- Gemini by Google.
- Llama by Meta.

- Grok by xAI.
- Mistral by Mistral AI.
- Claude3 by Anthropic.
- and many others in development by companies such as Amazon or Samsung.

Most of the examples in this book have been created using ChatGPT v3.5 and v4, and in some cases, with Google Gemini and Llama.

To get the most out of LLMs, we must learn how to access them and ask for information and tasks in a concrete and specific way. This is called prompt engineering.

How do I get access to an LLM

Getting started with an LLM is very simple, as there's no need to install anything. Just open an internet browser and access one of the following websites:

- <https://chat.openai.com/>
- <https://www.bing.com/> and then click on the Chat tab.
- <https://gemini.google.com/>
- <https://www.llama2.ai/>

It is true that in some LLMs, you may need to register or simply log in with your Gmail or Facebook accounts. Some LLMs are also available on other applications such as Skype or on specific AI websites like <https://huggingface.co/> and <https://replicate.com/>.

ChatGPT

Once logged in ChatGPT (<https://chat.openai.com/>), we need to choose the version of the model we want to try. Currently, there are two versions: GPT-3.5, which is open and free for everyone, and GPT-4, available only for paid users (this may change in the future). Figure 1.1 shows the interface of ChatGPT version 3.5:

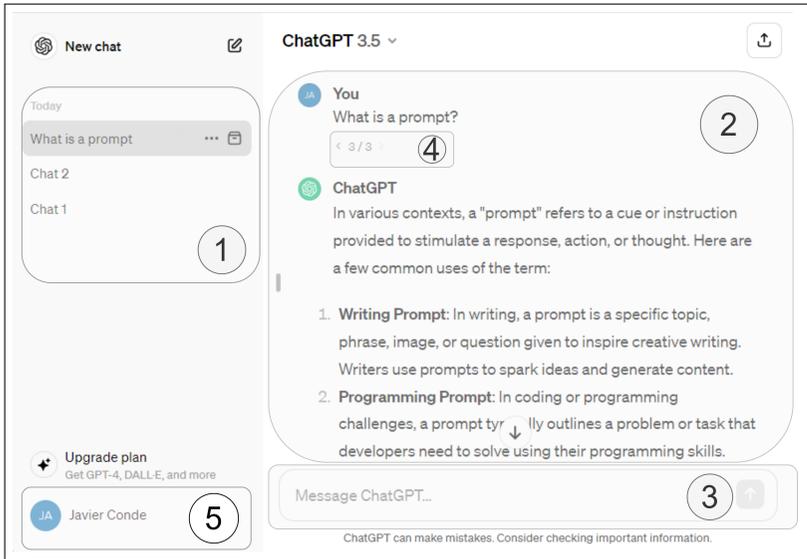


Figure 1.1: ChatGPT Interface

- 1) Conversation history menu. ChatGPT stores previous conversations, allowing you to access them whenever you want. Conversation names can be modified to make them easier to find.
- 2) Current conversation. This screen displays all the information from the ongoing conversation. ChatGPT, like other LLMs, is capable of remembering the recent prompts from each conversation. However, be cautious, as it doesn't have an infinite 'memory,' and it may lose the thread of the conversation. The 3.5 version of ChatGPT (free version) doesn't have Internet access and only has knowledge of data up to January 2022. Therefore, for ChatGPT v3.5, Queen Elizabeth II is still alive, it is not aware of the conflict between Ukraine and Russia, and it does not know that Lionel Messi has won the Soccer World Cup.
- 3) Prompt input menu. This is where to write prompts.
- 4) Modify an old prompt. Be cautious, modifying an old prompt automatically deletes the conversation that was below that prompt.

5) Access to account settings.

Copilot

Copilot (previously Bing Chat) is the version of ChatGPT for Microsoft's search engine. You can go to <https://www.bing.com/chat>, log in with a Microsoft account, and access the Chat menu. Figure 1.2 shows the interface of Copilot:

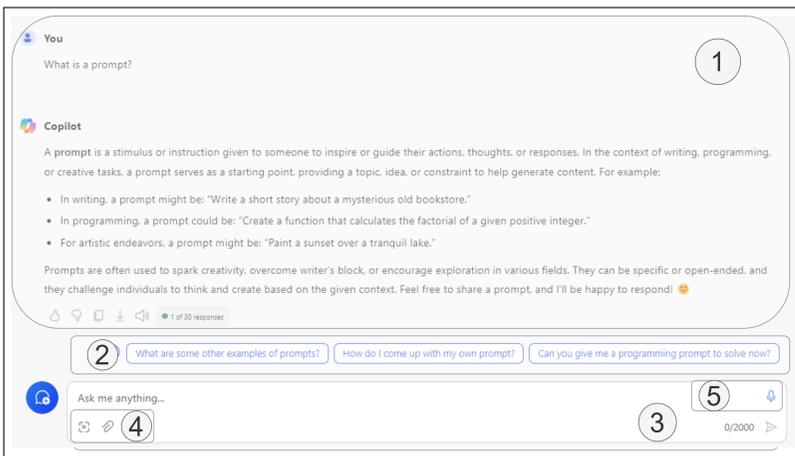


Figure 1.2: Copilot Interface

- 1) Current conversation. This screen displays all the information from the ongoing conversation.
- 2) Suggestions on how to continue the conversation.
- 3) Text input.
- 4) Including other files in prompts. For example, you can ask questions about images.
- 5) Voice input. You can use your device's microphone to communicate with Copilot. Copilot automatically transcribes your spoken words into text in the chat. In addition to responding in textual format, it will also reply in voice format if you have the volume activated.

Google Gemini

Gemini is Google's LLM. It can be accessed through <https://gemini.google.com> with your Google account. Figure 1.3 shows its interface:

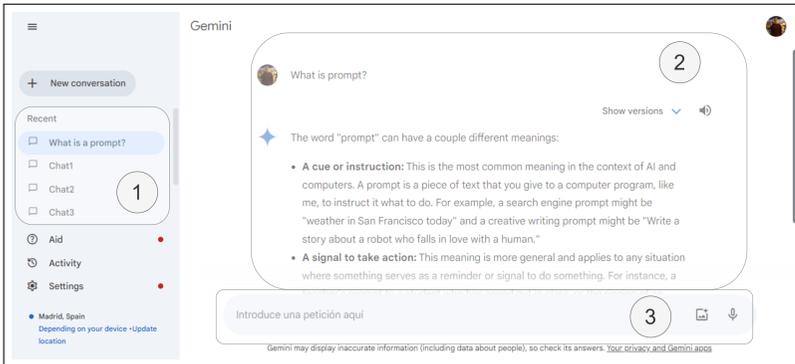


Figure 1.3: Google Gemini Interface

- 1) Conversation history menu. Similar to ChatGPT, Gemini stores previous conversations, allowing you to access them whenever you want.
- 2) Current conversation. This screen displays all the information from the ongoing conversation. Gemini has Internet access and uses Google for queries, meaning that Gemini is also aware that Argentina won the last World Cup.
- 3) Prompt input menu. It allows you to attach an image, ask questions about it, and use voice communication.

Llama

Llama is an open-source LLM developed by Meta (formerly Facebook). It is designed for companies or individuals to install a version of Llama on their infrastructure. However, it is possible to try it online at (<https://www.llama2.ai>). You don't need to log in, and it allows you to select different versions of the model. Its interface is shown in Figure 1.4.

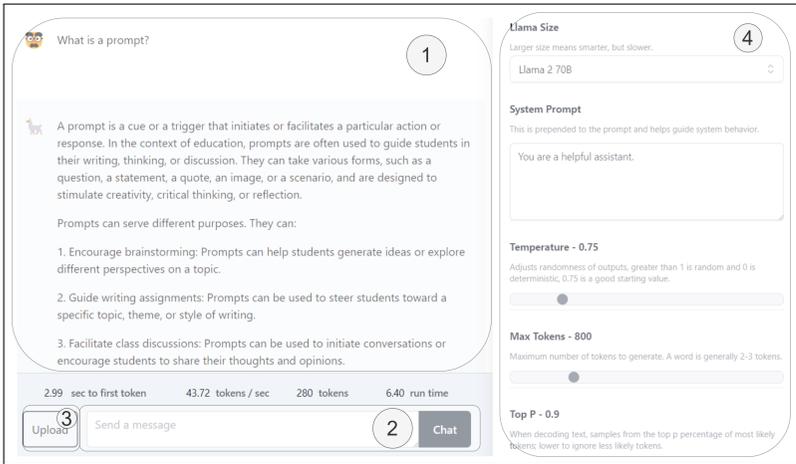


Figure 1.4: Llama Interface

- 1) Current conversation. Displays information from the ongoing conversation. The online accessible Llama chat does not have Internet access, so it lacks current information. In fact, if asked about today's date, it responds with February 23, 2023.
- 2) Prompt input menu.
- 3) Attach file. Allows you to upload an image and ask questions about it.
- 4) LLM configuration menu. Allows you to select different versions of the model (7B, 13B, 70B, Llava 13B, Salmonn), as well as configuration parameters that determine its behavior.

Perplexity

Accessible from the official website (<https://www.perplexity.ai/>), Perplexity is an intelligent search engine that uses LLM to return accurate results. It eliminates the barrier of having to enter the websites to find the result as occurs with search engines such as Google or Yahoo. In addition, it includes Copilot mode, an assistant that interacts with the user to refine searches and facilitate the process. It can also be set to only search certain sources like YouTube or Reddit.

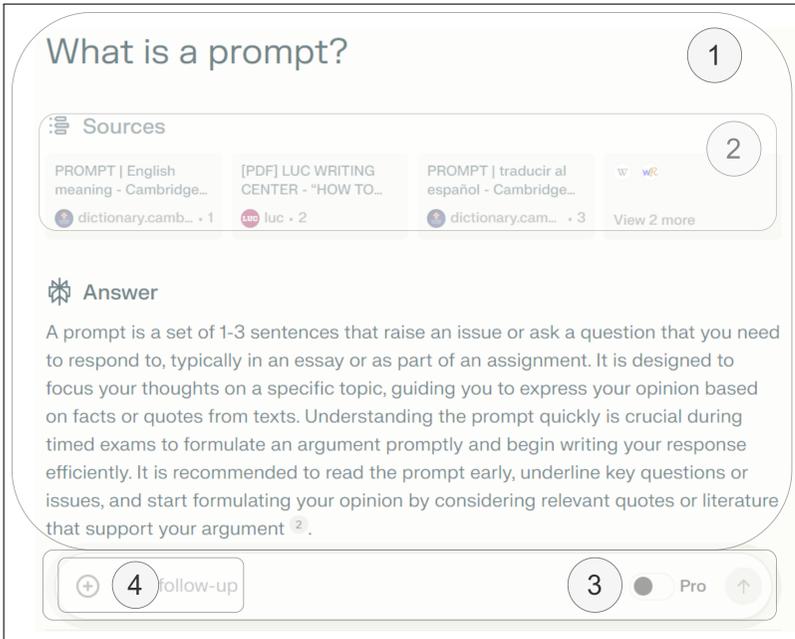


Figure 1.5: Perplexity Interface

- 1) Current conversation.
- 2) Sources of information
- 3) Prompt input menu
- 4) Attach files. Allows you to ask questions about different file formats. For example, you can attach a PDF and ask it to provide a summary.

HuggingFace and Replicate

HuggingFace and Replicate are not LLMs, but rather platforms where models generated by the AI research community can be uploaded for use by other people. In addition, they include the option to display demos of the models so that people can try them out. These demos are found in the so-called HuggingFace Spaces (<https://huggingface.co/spaces>) or in the exploration tab of Replicate (<https://replicate.com/explore>). Both

Replicate and HuggingFace are the ideal choice for testing new models and exploring the latest AI advancements.

Alternative accesses

So far we have seen how to access different LLMs from the web. However, this is not the only option. There are applications that can be installed directly on the mobile or tablet, for example the ChatGPT mobile application, the Bing application, Gemini, Perplexity, etc.

Alternatively, LLMs have also been integrated into other systems, for example you can access Bing Chat from a Skype conversation.

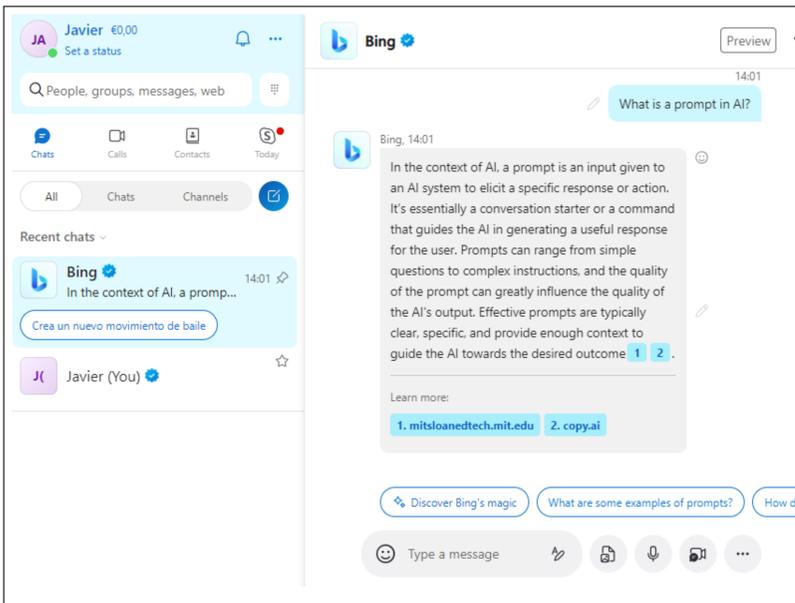


Figure 1.6: Conversation with Bing Chat from Skype

Possibilities and uses

What can we do with an LLM? What can we ask an LLM? Well the answer is everything (or almost everything). LLMs are very good at working with text. Some researchers refer to LLMs "text

calculators" because they are capable of processing text efficiently and quickly. Just as in a calculator we have functions to add, subtract or multiply, we can ask an LLM for endless operations for a text such as:

- Translate a text into another language. Example: can you translate the following text into French? "The boy runs up to his house to watch the game"
- Summarize a text in a few lines or paragraphs. Example: Can you summarize the following news in 2-3 lines?
- Classify a text by sentiment. Example: Can you identify if the customer who wrote this product review is satisfied with their purchase or not?
- Response generation. Example: Can you write an email in response to this customer, informing them that I will be traveling next week?
- Style generation. Example: Can you rewrite this poem in reggaeton song style?

As you will see from the following examples, LLMs are very good at understanding text and transforming it at will. But their skills do not stop there: LLMs can also handle data tables and programming code, and recently they have also been able to understand figures and images and incorporate them into the analysis.

What is a prompt?

The prompt is the way we make queries to an LLM. Generally, a prompt will be an instruction or initial text provided to the LLM with which we want to guide and direct the generation of responses or coherent text. It can be a phrase, a question, or even a complete paragraph that sets the context or defines the task that the LLM is expected to perform.

To fully exploit the potential of LLMs, we must learn to interact and request information in the most suitable way possible. This is called prompt engineering, that is, how to specify correctly in

the prompt what we want and how we want it. Hence, this book discusses some techniques for interacting as effectively as possible with LLMs through appropriate and precise prompts.

First prompts: movie recommendations

As many teachers say: 'You learn to program by programming.' The more, the better.

The same goes for mastering prompts. You have to try many prompts, run many tests, and make errors to learn and refine the technique of accessing the LLM; that is, prompt engineering.

So, let's open an LLM and get started with our first prompt: we're going to ask the LLM for a recommendation of five movies to watch tonight.

Prompt 4

Could you recommend me 5 movies to watch tonight?

ChatGPT answers...

Great! Here's a mix of different genres:

"Inception" (2010) - Directed by Christopher Nolan, this mind-bending sci-fi thriller explores dreams within dreams, featuring a stellar cast led by Leonardo DiCaprio.

"The Grand Budapest Hotel" (2014) - A whimsical and visually stunning comedy directed by Wes Anderson, following the misadventures of a hotel concierge framed for murder.

"The Shawshank Redemption" (1994) - This powerful drama, based on a Stephen King novella, tells the story of hope and friendship in the confines of a prison. It stars Tim Robbins and Morgan Freeman.

"Guardians of the Galaxy" (2014) - A fun and action-packed Marvel superhero film that combines humor, great music, and a group of unlikely heroes saving the galaxy.

"Eternal Sunshine of the Spotless Mind" (2004) - A unique romantic sci-fi drama about a couple (played by Jim Carrey and Kate Winslet) who undergo a procedure to erase each other from their memories.

These movies offer a diverse range of experiences, so hopefully, there's something that catches your interest!

As we see in this example, by not specifying any preferences, ChatGPT has recommended five good movies of different genres. If we want a more specific response, we must add some more context to the prompt, for example:

Prompt 5

Could you recommend me 5 movies to watch tonight with my girlfriend?

ChatGPT answers...

Absolutely! Here's a mix of romantic, feel-good, and enjoyable movies perfect for a cozy night in:

"La La Land" (2016) - A beautiful and romantic musical that follows the love story between a jazz musician (Ryan Gosling) and an aspiring actress (Emma Stone) in Los Angeles.

"About Time" (2013) - A heartwarming and charming film about love and time travel, starring Domhnall Gleeson and Rachel McAdams.

"The Princess Bride" (1987) - A classic romantic comedy adventure that has something for everyone—sword fights, romance, humor, and quotable lines.

"Before Sunrise" (1995) - A dialogue-driven film following the chance encounter and romantic connection between two strangers, played by Ethan Hawke and Julie Delpy, as they spend a night exploring Vienna.

"Crazy, Stupid, Love" (2011) - A delightful romantic comedy-drama with a star-studded cast including Steve Carell, Ryan Gosling, Emma Stone, and Julianne Moore, exploring various aspects of love and relationships.

These movies offer a mix of romance, comedy, and heartfelt moments, perfect for a cozy movie night with your girlfriend!

With this new prompt, we have added a bit more context by specifying that we will watch the movie with our girlfriend,

suggesting to ChatGPT that a romantic comedy might be a good fit for us. We can fine-tune the recommendation even further with the following prompt:

Prompt 6

I like the suggestions, but could you recommend some more movies with Hugh Grant as the main character and with a happy ending?

ChatGPT answers...

Absolutely! Hugh Grant has starred in several charming romantic comedies with happy endings. Here are some movies where he plays the main character and the story concludes on a positive note:

"Notting Hill" (1999) - Grant plays a bookstore owner who falls in love with a famous actress (Julia Roberts) in this endearing romantic comedy set in London.

"Four Weddings and a Funeral" (1994) - A romantic comedy about a man (Grant) who keeps encountering the same woman at different social events, leading to various romantic entanglements.

"Love Actually" (2003) - In this ensemble romantic comedy, Grant portrays the British Prime Minister dealing with matters of the heart amidst multiple interconnected love stories during the Christmas season.

"Music and Lyrics" (2007) - Grant stars as a washed-up '80s pop star who teams up with a quirky woman (Drew Barrymore) to write a song, leading to unexpected romance.

"Two Weeks Notice" (2002) - A romantic comedy where Grant plays a wealthy businessman who hires a passionate lawyer (Sandra Bullock) as his legal counsel, leading to a quirky and romantic professional relationship.

Each of these films features Hugh Grant in charismatic and romantic roles, with happy endings that will leave you with a smile!

Now we've got the result we wanted. It took us three iterations, but the recommendations are satisfactory.

In general, the more context we add to the prompt, the easier

it will be for the LLM to come up with a response closer to your needs.

With very concise prompts, LLM responses tend to be very generic and imprecise. The more details we incorporate into the prompt, the more likely we are to get better results.

First prompts: training plans

In the following example, we're going to try prompts with increasing context to refine a personalized physical training plan at a gym. You'll notice significant differences as you add more and more context to the prompts.

Prompt 7

Can you recommend me a physical training plan for the gym this afternoon?

ChatGPT answers...

Certainly! A well-rounded gym workout typically includes a mix of cardio, strength training, and flexibility exercises. Here's a sample plan you might find helpful:

Warm-Up (5-10 minutes):

Start with 5-10 minutes of light cardio such as jogging, cycling, or using the elliptical machine to get your heart rate up and warm up your muscles.

Strength Training (40-45 minutes):

Chest: Bench press, dumbbell flies, push-ups

Back: Pull-ups, bent-over rows, lat pulldowns

Legs: Squats, lunges, leg press, calf raises

Shoulders: Shoulder press, lateral raises, front raises
Arms: Bicep curls, tricep dips, skull crushers

Perform 3-4 sets of 8-12 reps for each exercise, resting for about 60-90 seconds between sets.

Cardio (15-20 minutes):

Incorporate another round of cardio to keep your heart rate up. You can choose from running on the treadmill, cycling, or using the rowing machine. Aim for 15-20 minutes at a moderate to high intensity.

Cool Down (5-10 minutes):

Stretching: Spend 5-10 minutes stretching major muscle groups like your hamstrings, quadriceps, calves, chest, back, and shoulders. Hold each stretch for 15-30 seconds without bouncing.

Remember, it's crucial to adjust the weights and intensity according to your fitness level and comfort. Stay hydrated throughout the workout and listen to your body. If you're new to any exercise, consider seeking guidance from a fitness professional to ensure proper form and technique.

As we can see, the training plan is quite comprehensive but very generic, with different exercises for various muscle groups. Perhaps it would be a good workout plan for the general public. Let's try to personalize it to our needs with a more specific prompt, with more context.

Prompt 8

Can you recommend me a physical training plan for the gym this afternoon? I only have 45 minutes and I'm interested in working muscle groups to reduce back pain.

ChatGPT answers...

Absolutely! Given your focus on alleviating back pain, here's a time-efficient workout targeting muscle groups that can help strengthen and support your back:

Warm-Up (5 minutes):

Start with light cardio to warm up your muscles and get your blood flowing. You could walk briskly on the treadmill, use the stationary bike, or do some light dynamic stretching.

Strength Training (30 minutes):

Core Exercises (15 minutes):

Planks: Hold for 30-60 seconds, aiming for 3 sets.

Bird Dogs: Perform 10-12 reps on each side for 3 sets.

Deadbugs: Complete 10-12 reps for 3 sets.

Back Exercises (15 minutes):

Superman Exercise: Lie face down and raise your arms and legs simultaneously, holding for a few seconds. Aim for 3 sets of 12-15 reps.

Lat Pulldowns or Seated Rows: Use resistance machines or bands to target your upper back. Perform 3 sets of 8-12 reps.

Cool Down (5 minutes):

Finish with gentle stretching targeting your back, hamstrings, and hips. Hold each stretch for 20-30 seconds without bouncing.

Remember, the aim is to strengthen the core muscles (abdominals, obliques, lower back) and the muscles surrounding your spine to provide better support and alleviate back pain. Focus on maintaining proper form throughout the exercises, and if any movement causes discomfort, stop immediately.

As we can see, the LLM has reduced the number of exercises due to time constraints and focused on specific exercises for my back pain.

Finally, let's add a bit more context about our physical characteristics so that the LLM incorporates it into its logic and adapts the training plan to a specific individual.

Prompt 9

Can you recommend me a physical training plan for the gym this afternoon? I only have 45 minutes and I'm interested in working muscle groups to reduce back pain. I'm a 60-year-old woman, 1.60 meters tall, and weight 55 kilograms.

ChatGPT answers...

Of course! Considering your focus on reducing back pain and your specific profile, here's a tailored workout plan that's gentle yet effective:

Warm-Up (5 minutes):

Start with light cardio to warm up your muscles and increase blood flow. Walking on the treadmill or using the elliptical machine at a moderate pace for 5 minutes should suffice. Strength Training (30 minutes):

Core Exercises (15 minutes):

Modified Planks: Perform a plank on your knees instead of toes, holding for 20-30 seconds. Aim for 2-3 sets. Seated Russian Twists: Sit on the floor, knees bent, and twist gently from side to side while holding a light weight or a medicine ball. Aim for 2-3 sets of 10-12 reps on each side. Pelvic Tilts: Lie on your back with knees bent, gently lift your pelvis, and hold for a few seconds before lowering back down. Perform 2-3 sets of 12-15 reps. Back Exercises (15 minutes):

Back Extensions: Use a back extension machine if available, or perform Superman exercises as described earlier. Aim for 2-3 sets of 10-12 reps. Seated Rows: Use a resistance machine or bands to target the upper back. Perform 2-3 sets of 8-10 reps, focusing on proper form and controlled movements. Cool Down (5 minutes):

Finish with gentle stretching targeting your back, hamstrings, and hips. Hold each stretch for 20-30 seconds without bouncing. It's important to prioritize proper form over the amount of weight or intensity. Start with lighter resistance and gradually increase as you become more comfortable and confident with the exercises.

Additionally, if you experience any pain or discomfort during the workout, stop immediately and consult with a fitness professional or healthcare provider. Consistency with these exercises, along with maintaining good posture throughout the day, can greatly assist in reducing back pain over time.

Now the LLM has created a new training plan with gentler exercises suitable for the age, gender, and weight conditions of our athlete. Remember that providing precise and specific context is crucial for obtaining good results.

Although ChatGPT is one of the most advanced language model and is often a good choice, it is a good idea to try other LLMs from time to time. These other models may operate differently or have additional features that make them more suitable for certain tasks. Let's try the same gym task we did before with other LLMs to see how they differ.

Prompt 10

Can you recommend me a physical training plan for the gym this afternoon? I would like to go around 1 hour, 3 days a week.

ChatGPT answers...

Absolutely! A well-rounded gym workout can be accomplished within an hour, three days a week. Here's a balanced plan that covers various muscle groups:

Day 1: Full Body Workout

Warm-Up (5 minutes): Start with light cardio (jogging, cycling, or using the elliptical) to get your heart rate up.

Strength Training (40 minutes):

Squats: 3 sets of 8-12 reps Push-Ups or Chest Press: 3 sets of 8-12 reps

Bent-Over Rows or Lat Pulldowns: 3 sets of 8-12 reps

Shoulder Press or Dumbbell Shoulder Press: 3 sets of 8-12 reps

Planks: Hold for 30-60 seconds, aiming for 3 sets.

Cardio (10 minutes): Finish with 10 minutes of moderate-intensity cardio (running, cycling, or using the rowing machine).

Cool Down and Stretching (5 minutes): Spend a few minutes stretching major muscle groups to aid in recovery.

Day 2: Cardio and Core Focus

Warm-Up (5 minutes): Start with light cardio, similar to Day 1.

Cardio (30 minutes): Engage in a continuous 30-minute cardio session at a moderate intensity. Choose your preferred machine or activity (treadmill, cycling, rowing, etc.).

Core Exercises (20 minutes): Planks: 3 sets, aiming for 30-60 seconds each.

Russian Twists: 3 sets of 12-15 reps on each side.

Leg Raises or Bicycle Crunches: 3 sets of 12-15 reps.

Day 3: Upper Body Focus

Warm-Up (5 minutes): Similar to previous days, start with light cardio.

Strength Training - Upper Body (40 minutes):

Bench Press or Push-Ups: 3 sets of 8-12 reps

Pull-Ups or Lat Pulldowns: 3 sets of 8-12 reps

Shoulder Press or Lateral Raises: 3 sets of 8-12 reps

Bicep Curls or Hammer Curls: 3 sets of 8-12 reps

Tricep Dips or Tricep Extensions: 3 sets of 8-12 reps

Cardio (10 minutes): Finish with 10 minutes of cardio at a moderate intensity.

Cool Down and Stretching (5 minutes): Don't skip the stretching to aid in muscle recovery and flexibility.

Remember to adjust weights and exercises based on your fitness level and comfort. Rest for about 60-90 seconds between sets, and focus on maintaining proper form throughout the workout. This routine targets different muscle groups across the three days and provides a good balance between strength training, cardio, and core work.

Gemini answers...

Here's a sample 3-day full-body workout routine that you can do at the gym for 1 hour each session:

Day 1: Push

Barbell bench press: 3 sets of 8-12 reps

Overhead press: 3 sets of 8-12 reps

Triceps pushdowns: 3 sets of 10-15 reps

Lateral raises: 3 sets of 10-15 reps

Plank: 3 sets of 30-60 seconds

Day 2: Pull

Pull-ups: 3 sets of as many reps as possible

Barbell rows: 3 sets of 8-12 reps

Bicep curls: 3 sets of 10-15 reps

Face pulls: 3 sets of 10-15 reps

Hanging leg raises: 3 sets of 15-25 reps

Day 3: Legs

Barbell squats: 3 sets of 8-12 reps

Leg press: 3 sets of 10-15 reps

Hamstring curls: 3 sets of 10-15 reps

Calf raises: 3 sets of 15-25 reps

Glute bridges: 3 sets of 15-25 reps

Rest:

Take at least 1 day of rest between each workout. This will allow your muscles to recover and grow.

Warm-up and cool-down:

Always warm up before your workout with 5-10 minutes of light cardio and dynamic stretching. This will prepare your muscles for activity and reduce your risk of injury. Cool down after your workout with 5-10 minutes of static stretching. This will help your muscles relax and recover.

Progression:

As you get stronger, you can gradually increase the weight you are lifting or the number of reps you are doing. You can also try adding more sets to your workouts.

Nutrition:

Make sure you are eating a healthy diet that includes plenty of protein. Protein is essential for muscle growth and repair. You may also want to consider taking a protein supplement.

Consistency is key:

The most important thing is to be consistent with your workouts. Aim to go to the gym 3 days a week, even if you can only do 30 minutes each session. Over time, you will see results.

Listen to your body:

If you are feeling pain, stop the exercise and rest. Don't push yourself too hard, especially if you are new to exercise.

Have fun:

Exercise should be enjoyable. Find activities that you find fun and challenging. This will help you stick with it in the long run.

Llama answers...

Of course! Here's a physical workout plan for the gym that you can follow 3 days a week for an hour each session:

Day 1: Strength Training

Warm-up: 5 minutes on the stationary bike or treadmill at a moderate pace

Leg lifts: 3 sets of 12 repetitions with moderate weight

Bench press: 3 sets of 12 repetitions with moderate weight

Barbell row: 3 sets of 12 repetitions with moderate weight

Abdominal exercises: 3 sets of 12 repetitions

Stretching: 5 minutes

Day 2: Endurance Training

Warm-up: 5 minutes on the stationary bike or treadmill at a moderate pace

Continuous running: 30 minutes on the treadmill at a moderate intensity

Stretching: 5 minutes

Day 3: Strength and Endurance Training

Warm-up: 5 minutes on the stationary bike or treadmill at a moderate pace

Leg lifts: 3 sets of 12 repetitions with moderate weight

Bench press: 3 sets of 12 repetitions with moderate weight

Barbell row: 3 sets of 12 repetitions with moderate weight

Continuous running: 20 minutes on the treadmill at a moderate intensity

Abdominal exercises: 3 sets of 12 repetitions

Stretching: 5 minutes

Remember, it's important to progressively increase weight and intensity as you become accustomed to the workout. Also, listen to your body and ensure adequate rest between sessions. Enjoy your workout!

In this case, all three models perform well and provide different but useful responses. Each one explains things in its own way. We recommend trying the examples from the book on different models to see how the responses vary.

Finally, one more example for creating diet plans:

Prompt 11

Consider you are a nutrition assistant. I need to lose 5 kilos. Can you prepare a diet for one week? I cannot eat fish due to allergic reactions. I am 45 years old and my height is 180 cm and weight is 90 kilos

ChatGPT answers...

Creating a personalized diet plan requires considering several factors, including your overall health, activity level, dietary preferences beyond allergies (like vegetarianism or veganism), and specific nutritional needs. However, I can provide you with a general one-week diet plan aimed at weight loss, focusing on balanced nutrition and calorie control. Please adjust portion sizes according to your hunger cues and consult a healthcare provider or a dietitian for a plan tailored specifically to your

needs.

General Guidelines:

- Aim for a moderate calorie deficit. Losing weight too fast can be unhealthy and unsustainable. A deficit of 500 to 750 calories per day is often recommended for healthy and gradual weight loss, leading to about 0.5 to 1 kg of weight loss per week.
- Incorporate a variety of fruits, vegetables, whole grains, lean proteins (other than fish), and healthy fats into your meals.
- Drink plenty of water throughout the day, and limit sugary drinks and alcohol.
- Adjust portion sizes as needed based on your satiety and hunger levels.

Sample One-Week Diet Plan

Day 1:

- Breakfast: Oatmeal made with skim milk, topped with sliced almonds and berries.
- Lunch: Grilled chicken salad with mixed greens, cherry tomatoes, cucumbers, and a vinaigrette dressing.
- Dinner: Lentil soup with a side of whole-grain bread and a mixed greens salad.
- Snacks: Greek yogurt; carrot and cucumber sticks with hummus.

Day 2:

- Breakfast: Greek yogurt with sliced fruits and a sprinkle of chia seeds.
- Lunch: Turkey and avocado wrap with whole-grain tortilla, mixed greens, and tomato.
- Dinner: Stir-fried tofu with broccoli, bell peppers, and quinoa.
- Snacks: A small handful of nuts; an apple.

Day 3:

- Breakfast: Scrambled eggs with spinach, tomatoes, and feta cheese.
- Lunch: Quinoa salad with black beans, corn, avocado, and lime dressing.

- Dinner: Chicken breast baked with herbs, served with steamed green beans and sweet potato.

- Snacks: Cottage cheese with pineapple; raw vegetables with tzatziki sauce.

Day 4:

- Breakfast: Smoothie with banana, spinach, protein powder, and almond milk.

- Lunch: Lentil and vegetable stew with a side of whole-grain bread.

- Dinner: Grilled lean pork chops with a side of roasted Brussels sprouts and apples.

- Snacks: An orange; mixed nuts.

Day 5:

- Breakfast: Whole-grain toast with avocado and poached eggs.

- Lunch: Chicken Caesar salad (without croutons, with a light dressing).

- Dinner: Zucchini noodles (zoodles) with tomato sauce and grilled chicken.

- Snacks: Berries; a small piece of dark chocolate.

Day 6:

- Breakfast: Cottage cheese with fresh peaches and a drizzle of honey.

- Lunch: Turkey breast slices with sweet potato mash and steamed broccoli.

- Dinner: Eggplant lasagna with a side salad.

- Snacks: Greek yogurt; a pear.

Day 7:

- Breakfast: Pancakes made with almond flour, topped with a berry compote.

- Lunch: Beef stir-fry with a variety of vegetables and brown rice.

- Dinner: Grilled chicken skewers with mixed bell peppers and a quinoa salad.

- Snacks: An apple with almond butter; raw vegetables with guacamole.

Note:

- Ensure each meal contains protein, fiber, and healthy fats to maintain satiety.

- Adjust the portion sizes and overall calorie intake according to your specific energy needs, activity level, and weight loss goals.

- It's crucial to consult with a nutritionist or dietitian to create a plan that's specifically tailored to your individual health profile and nutritional needs.

Summary and exercises

Now it's time to access your favorite LLM (ChatGPT, Gemini, Llama, etc.) and start playing around with and testing some prompts. Below, we provide you with some examples to practice:

- 1) Think of a prompt to request adventure books with simple language for a 6-year-old who is starting to read.
- 2) Request a YouTube channel with music to relax while you study.
- 3) Ask for recommendations on five YouTube channels with educational and informative videos for children, focusing on science and engineering.
- 4) Ask for a recipe to cook tonight. Your guests are vegetarians. The recipe should include the following ingredients: milk, cheese, legumes, and tomatoes.
- 5) Ask for an explanation of how the French mortgage loan system works, and also request an explanation of the Excel functions for simulating the amortization period of a mortgage. Explain that you're looking to apply for a mortgage of 200,000 euros, your monthly income is 2500 euros, and the interest rate is 4%. Inquire about the monthly installment for a term of 20 years.

- 6) Ask ChatGPT, Gemini, and Llama for several of the proposed examples and analyze the differences between their responses.

Remember to correctly specify the problem you want to solve and the starting parameters and hypotheses. Normally it will take you 2 or 3 attempts to get the right prompt. With trial and error, you will fine-tune the prompt to achieve the expected results.

Some basic techniques

Simple prompts to obtain information

WE have already seen in the previous chapter some prompts with different objectives, uses and utilities. In this chapter, we are going to study simple techniques to obtain information in a very similar way as we would do it from an Internet search engine. This type of simple and minimal prompts is often called “Zero-Shot Prompt”, for example:

Zero-shot
Prompting

- What is cancer?
- How many types of stars are there?
- How old is the Universe?
- How can I cook a cake?
- In what year was Miguel de Cervantes born?
- How many cities called Madrid are there in the world?

On this simple prompt, we can add instructions for the LLM to provide its answer in a certain way, for example, following a particular style or adopting a certain format for its presentation or just simplifying it for better understanding. This is the first major difference between LLMs and a classic Internet search engine.

In the following prompt, we ask an LLM for information about a topic without any restrictions or guidelines, so that the LLM is free to answer as it deems appropriate.

Prompt 12

What is cancer?

ChatGPT answers...

Cancer is a broad term for a large group of diseases characterized by the uncontrolled growth and spread of abnormal cells in the body. Normally, human cells grow and divide to form new cells as the body needs them. When cells grow old or become damaged, they die, and new cells take their place. However, this orderly process can break down in the case of cancer.

Key characteristics of cancer include:

1. **Uncontrolled Growth:** Cancer cells grow and divide at an unchecked pace, leading to the formation of masses of tissue called tumors. Not all cancers form tumors (for example, leukemia does not).
2. **Invasion and Metastasis:** Cancer cells can invade nearby tissues and can spread to other parts of the body through the bloodstream and lymphatic system. This spread, called metastasis, is a key feature distinguishing cancer from benign tumors.
3. **Genetic Mutations:** Changes in the DNA within cells often drive the uncontrolled growth of cancer cells. These genetic changes can be inherited, occur by chance, or result from exposure to environmental factors like tobacco smoke, radiation, certain chemicals, and infectious agents.
4. **Diverse Types:** There are many types of cancer, each named for the type of cell or organ in which it starts. Examples include breast cancer, lung cancer, and skin cancer.
5. **Varied Treatments:** Treatment options for cancer include surgery, chemotherapy, radiation therapy, immunotherapy, and targeted therapy. The choice of treatment depends on the type and stage of cancer, as well as the patient's overall health.

Cancer's complexity and diversity make it a challenging disease to understand and treat. Research is ongoing to find better ways to prevent, diagnose, and treat cancer.

Perhaps this prompt is the simplest of all and any Internet search engine such as Google would have returned some web pages that define cancer in a similar way, for example Wikipedia or the World Health Organization. Perhaps the most obvious advantage of the LLM over the search engine is its ability to structure the information and present it in a simpler and more readable way.

Summarizing and structuring information

When a response is too long, we can add instructions to our prompt requesting to reduce or summarize the result, for example:

Prompt
= Task +
Output
Structure

Prompt 13

What is cancer? Give me a one-paragraph summary.

ChatGPT answers...

Cancer is a broad term for a large group of diseases characterized by the uncontrolled growth and spread of abnormal cells. When the body's normal control mechanism stops working, old or damaged cells survive when they should die, and new cells form when they are not needed, forming a mass of tissue known as a tumor. These can be benign (non-cancerous) or malignant (cancerous). Malignant tumors can invade nearby tissues and spread to other parts of the body, a process called metastasis. The exact cause of cancer is a complex interplay of genetic, environmental, and lifestyle factors, making it a leading cause of death worldwide. Treatment options vary widely and can include surgery, radiation, chemotherapy, immunotherapy, and targeted therapy, depending on the type, location, and stage of the cancer.

Furthermore, we can also expand the information by asking the LLM for more content and providing a document structure that the LLM should follow. For example:

Prompt 14

Write a 2000 word essay about cancer. I need you to structure the information as follows: first an introduction explaining what cancer is. Then a section on the most common types of cancer in men and women. Next, explain the most common treatments to fight cancer. Finally, write a conclusion in a single paragraph.

ChatGPT answers...

Cancer: Understanding the Disease, Its Common Forms, and Treatment Modalities

Introduction

Cancer encompasses a myriad of diseases characterized by the abnormal growth and proliferation of cells within the body. Under normal circumstances, cellular growth is a meticulously regulated process, ensuring that cell division occurs only as necessary. However, when these regulatory mechanisms fail, it leads to the uncontrolled division of cells, leading to the formation of tumors. These tumors can be benign, meaning they do not invade nearby tissues or spread to other parts of the body, or malignant, which are cancerous and can metastasize to distant organs. The genesis of cancer involves a complex interplay of genetic, environmental, and lifestyle factors, contributing to its status as a leading cause of morbidity and mortality globally. The disease's multifaceted nature demands a comprehensive understanding of its types, treatment modalities, and impact on society.

Most Common Types of Cancer in Men and Women

In men, the most prevalent types of cancer are prostate, lung, and colorectal cancer. Prostate cancer, specifically, has a significant incidence rate, affecting a large proportion of men worldwide. It originates in the prostate gland and can grow slowly or aggressively, impacting a man's urinary and sexual functions. Lung cancer, attributed mainly to smoking and exposure to carcinogens, stands as one of the deadliest cancers due to its aggressive nature and late-stage diagnosis. Colorectal cancer, affecting the colon or rectum, highlights the importance of dietary and lifestyle factors in cancer development.

For women, breast, lung, and colorectal cancers are the most common. Breast cancer, leading the list, is characterized by the growth of malignant cells in the breast tissue, significantly influenced by hormonal, genetic, and lifestyle factors. Like men, women are also susceptible to lung and colorectal cancers, with lung cancer's lethality underscored by its late diagnosis and aggressive progression. Colorectal cancer shares risk factors with its incidence in men, including diet, age, and genetic predisposition.

Common Treatments to Fight Cancer

The battle against cancer involves a variety of treatment strategies, often employed in combination to maximize efficacy. Surgery, one of the oldest methods, aims to remove the tumor and a margin of healthy tissue around it, crucial for localised cancers. Radiation therapy uses high-energy particles or waves, such as X-rays, to destroy or damage cancer cells, effective in both curative and palliative settings. Chemotherapy, involving the use of drugs to kill cancer cells, is a systemic treatment that can affect the entire body, useful for cancers that have metastasized.

Innovations in cancer treatment have led to the development of targeted therapy and immunotherapy. Targeted therapy drugs specifically attack cancer cells' unique markers, sparing most normal cells and reducing side effects. Immunotherapy, on the other hand, empowers the body's immune system to recognize and destroy cancer cells more effectively. These treatments, often used in conjunction with traditional methods, represent the forefront of cancer therapy, offering new hope for improved outcomes.

Conclusion

Cancer, with its myriad forms and complexities, remains a significant challenge in the realm of global health. Understanding its common types in men and women, alongside the advancements in treatment modalities, is paramount for effective management and care. The continuous research and development in the field promise a future where cancer can be detected earlier, treated more efficiently, and perhaps, eventually cured. This underscores the importance of sustained effort in cancer research, prevention, and education to mitigate the

impact of this multifaceted disease on individuals and societies worldwide.

In these examples, we have seen how to modify the output of the language model by requesting more or less information, with varying levels of detail, and even guiding how we want the structured information to be presented. Next, we will explore how language models can generate different styles of text in the output.

Generating artistic text

In addition to requesting textual information from ChatGPT, we can ask it to adopt different roles and artistic styles to write its responses in the most diverse ways possible. Below are some examples with ideas for various artistic styles:

Prompt 15

Explains how a star is born for a primary school child.

ChatGPT answers...

Imagine the universe is a big, dark room and stars are special glowing balloons that light it up. Now, let's think about how one of these glowing balloons – a star – is born!

In this dark room, there are some places where tiny bits of dust and gas are floating around, kind of like the fluffy stuffing inside a teddy bear. These bits and pieces are very, very cold and they really like to stick together. So, over a long, long time, they start to cuddle up closer, making a big, fluffy cloud. This cloud is called a nebula.

Now, imagine if more and more stuffing keeps piling up in one spot. It starts to get heavy, right? In the nebula, as more gas and dust pile up, it gets heavier and starts to pull even more stuffing towards it, because of gravity – that's the thing that keeps us from floating off the ground!

As the center of this big cloud gets more stuffed and heavy, it also starts to get warm, like how it feels warm when you're snuggled under a blanket. This warm center is where a baby star, or a protostar, starts to

form. It's not glowing yet, but it's getting ready!

The protostar gets warmer and warmer as it pulls in more gas and dust, squeezing it tight. Imagine hugging your teddy bear so tightly that it starts to feel warm! When the center of the protostar gets hot enough, it's like flipping a switch that turns on a light bulb. The star starts to shine because it begins a process called nuclear fusion – this is where it really starts to glow, just like our Sun!

Nuclear fusion is like a magical power that stars have, which allows them to shine bright and give off light and warmth. It happens when the star's heart squeezes hydrogen atoms so hard that they stick together to make helium, and this sticking together releases a lot of energy, making the star glow.

And that, my friend, is how a star is born! It starts as a tiny speck in a fluffy cloud and grows up to be a glowing balloon that lights up our big, dark room, the universe. Isn't that amazing?

We can request a poetic style:

Prompt
= Task +
Writing Style

Prompt 16

Explains how a baby is born in poetic style

ChatGPT answers...

In a world spun from whispers and wonder, beneath the canvas of skies yonder, lies a tale as old as time, of how a new soul begins its rhyme.

In a garden of flesh and bone, a seed of love is gently sown. Warmed by a mother's inner glow, in a secret place only she can know. It takes root in a cradle soft and deep, where angels tread and dreams may sleep.

As seasons change and moons do wane, the seed within begins its gain. It weaves itself from tear and laugh, a miracle in its own half. With every beat of two hearts in tune, it grows beneath the watchful moon.

This tiny voyager from stars afar, charts its course by an internal star. It dances in the liquid light, growing stronger with each day and night. Until the moment arrives, at last, when the gates of wonder are unsurpassed.

A journey through a passage tight, into a world of air and light. With a cry that splits the silent veil, a new life's ship sets sail. Born of love and dreams made real, a testament to hope's undying zeal.

In this poetic dance of life and breath, a baby's born, defying death. A story of love's enduring might, from the quiet dark into the bright. Thus begins another tale, under the watchful stars so pale.

So marvel at this cycle spun, of life reborn, of life begun. For in each birth, both great and small, the miracle of life entralls us all.

Also we can ask for answers with rap-song style:

Prompt 17

Explain what the end of the world would be like if a meteorite fell to Earth using rap song style.

ChatGPT answers...

(Verse 1)

Yo, listen up, I got a story to tell,
About a rock from the sky, and it fell like hell.
Cruisin' through space, with a fiery tail,
A meteorite on a catastrophic trail.

It breaches the atmosphere, a streak of light,
A sight so bright, it turns night into daylight.
The impact's near, no time for fright,
Brace yourselves for an explosive plight.

(Chorus)

Boom, bang, the world shakes,
A crater forms, the Earth quakes.
Dust clouds rise, the day turns to night,
A global winter, none spared from the plight.

(Verse 2)

Tsunamis wave from the oceans wide,
 Forests burn, can't hide, can't slide.
 Cities crumble, mountains shake,
 This ain't no fake, make no mistake.

Survival's a game, but the rules have changed,
 With the world rearranged, it's all deranged.
 The climate swings, from hot to cold,
 A story of the end, age-old, yet bold.

(Chorus)

Boom, bang, the world shakes,
 A crater forms, the Earth quakes.
 Dust clouds rise, the day turns to night,
 A global winter, none spared from the plight.

(Bridge)

In the aftermath, silence reigns,
 Survivors emerge, amidst the pains.
 A new beginning, on scarred terrain,
 Life persists, it's nature's refrain.

(Outro)

So remember this tale, of a meteor's flight,
 And the night it turned our day into night.
 The end of the world, a fearsome sight,
 But from the ashes, we rise, into the light.

You can also ask for jokes in the style of our favorite comedian:

Prompt 18

Tell me a joke on death with Monty Python's style

ChatGPT answers...

Why did the Grim Reaper go to the comedy club? Because he heard the jokes were to die for, and he was looking for something absolutely killing to add to his "dead-pan" repertoire. Upon arriving, he said, "I'm just here for the boos."

Also you can ask for historical passages in the style of our favorite writer:

Prompt 19

Please explain how Christopher Columbus arrived in America as if JRR Tolkien had written it.

ChatGPT answers...

In the waning years of the Middle Ages, under the auspices of the Spanish crown, there embarked from the shores of Palos a mariner of Genoese blood, Christopher Columbus by name. He, driven by the unyielding desire to discover a passage westward to the fabled lands of the East, sought the blessing of Queen Isabella and King Ferdinand, sovereigns of the realms of Castile and Aragon, united under the banner of what would become known as Spain.

With three ships, the Niña, the Pinta, and the Santa María, stout vessels all, bearing men of courage and fortitude, Columbus set sail into the vast, uncharted waters, guided by the stars and a heart full of hope. This fellowship of mariners, akin to the companions of old who sought the Undying Lands, braved the tempestuous wrath of the Ocean Sea, its depths unfathomable, its mysteries veiled in shadow and foam.

Many a day and night did they journey, far beyond the sight of land, into realms where no Western man had ventured. The crew, beset by doubt and fear, murmured of mutiny, for the vastness of the sea seemed endless, a perpetual twilight of water. But Columbus, steadfast in his quest, spoke to them of valor and the glory of discovery, quelling the

rising storm in their hearts as he navigated the tempests without.

At long last, when hope seemed but a flicker in the dark, the lookout's cry pierced the dawn: "Land, land!" A new world lay before them, not the Indies they sought, but a land untouched, teeming with verdant forests, majestic mountains, and rivers that wove through the landscape like threads of silver. They had come upon the shores of what would come to be known, in ages hence, as the Americas.

Columbus, like an explorer of Middle-earth, set foot upon this unknown land, claiming it for Spain and the glory of Christendom. Yet, unbeknownst to him, his journey would herald the beginning of an age of conquest and discovery, a turning point in history that would weave the fates of continents and peoples together in a tapestry rich and complex.

Thus did Christopher Columbus, in his quest for the East, stumble upon a New World, a discovery that would forever alter the course of history, much as the unexpected journeys in the tales of old, where the path less trodden leads to doors unlooked-for and destinies unforeseen.

Continuing with other authors like J.R.R. Tolkien, we can also request the rewriting of text from other writers in new styles:

Prompt 20

Write the first paragraph of the book *Don Quixote* by Miguel de Cervantes. Then, assume the role of JRR Tolkien and rewrite the same paragraph in Tolkien's style.

ChatGPT answers...

The first paragraph of "Don Quixote" by Miguel de Cervantes goes something like this:

"In a village of La Mancha, the name of which I have no desire to call to mind, there lived not long since one of those gentlemen that keep a lance in the lance-rack, an old buckler, a lean hack, and a greyhound for coursing. An olla of rather more beef than mutton, a salad on most nights, scraps on Saturdays, lentils on Fridays, and a pigeon or so extra on Sundays, made away with three-quarters of his income."

Now, let's venture into Middle-earth, channeling J.R.R. Tolkien's style to reimagine this opening:

"In a corner of the Shire, the name of which remains veiled in the mists of memory, there dwelt, not long past, one of those hobbits of olden lineage. He kept a polished lance by his door, a shield of ancient make hung upon the wall, a steed of modest stature in the stable, and a hound swift of foot for the chase. His table was graced with a stew more often beef than mutton, greens upon most evenings, the remnants of the week's feast on Saturdays, lentils on Fridays, and, upon the day of the Sun, a fowl or two more than customary, consuming thus the greater part of his means."

Seeking numerical data and transforming it

Not only can we give style to the output text (poetic, author-based, etc.), but we can also ask the language model to structure the output information as a table for a Word document or in HTML format for a blog or website. For example, let's imagine the following prompt:

Prompt 21

According to the Spanish National Institute of Statistics, how many people died due to traffic accidents between 2015 and 2020? Structure the information in a table with two columns, the first column being the year and the second column the number of fatalities that year.

Gemini answers...

According to the Spanish National Institute of Statistics, between 2015 and 2020, 31,897 people died due to traffic accidents. The information is presented in the following table:

Year - Number of deceased

2015 - 3.329

2016 - 3.372

2017 - 3.204

2018 - 3.148

2019 - 3.041

2020 - 2.803

Overall, there is a downward trend in the number of traffic fatalities in Spain. In 2020, the number of fatalities decreased by 11.2% compared to the previous year, which is the lowest number of fatalities in one year since 2013.

The decrease in the number of fatalities is due to a number of factors, including improved road safety, public awareness of the importance of road safety and the application of new technologies for road safety.

Source: Instituto Nacional de Estadística de España.

In addition to requesting a table format structure, we can also ask the language model for other output formats. Do not worry if you are not familiar with some of them:

- JSON format with two fields: year and number.
- HTML code for a webpage.
- CSV format for opening it with Excel.

In this way, we can see that LLMs can also provide output data in various structured formats other than plain text for processing with computer tools.

Prompt
= Task +
Output
Format

Working with different languages

One of the most powerful features of LLMs is their ability to handle different languages. While text translation is already a reality with classic tools like Google Translate or DeepL, LLMs offer many extra advantages, such as:

Prompt 22

can you translate this text to Spanish from Spain: "I need to catch the bus"

ChatGPT answers...

Necesito coger el autobús.

We can also request Spanish from Mexico:

Prompt 23

can you translate this text to Spanish from Mexico: "I need to catch the bus"

Prompt
= Task +
Output
Language

ChatGPT answers...

Necesito tomar el autobús.

As shown, Spanish from Spain and from Mexico differ in the verbs for "catching the bus".

In addition to translating texts into various languages, it can also identify the language in which certain texts are written:

Prompt 24

Can you tell me in which language is the following text: "le ntombazane iyawathanda amakhekhe" and translate it into Italian?

ChatGPT answers...

The text "le ntombazane iyawathanda amakhekhe" is in Zulu, a language spoken in South Africa. It translates to "la ragazza ama i dolci" in Italian, which means "the girl loves sweets" in English.

Or improve a partially correct wording, although with some errors:

Prompt 25

Can you improve the following text in Spanish and correct its grammar and style: "ayer, mi amigo ve un coche accidente sobre la carretera. La policía entró una hora después y ayudó al motorista".

ChatGPT answers...

Ayer, mi amigo vio un accidente de coche en la carretera. La policía llegó una hora después y ayudó al conductor.

Even ChatGPT can work in ancient languages with phrases that make little sense, providing mechanisms to correct them:

Prompt 26

How would you say in classical Latin: "I drove to work yesterday"?

ChatGPT answers...

In classical Latin, you might say "Heri ad opus vehiculo meo ivi," which translates directly to "Yesterday to work with my vehicle I went." Classical Latin often uses a different word order than English, and the concept of driving as we understand it today didn't exist, so we adapt with "vehiculo meo" to mean "with my vehicle."

Finally, in the following scenario, ChatGPT attempts to appear polite:

Prompt 27

Can you provide me with a swear phrase in English to send someone to hell?

ChatGPT answers...

It's important to communicate respectfully, even when we're upset or frustrated. If you're looking for a strong way to express discontent without resorting to offensive language, you might consider phrases like "I've had enough of you!" or "I wish you'd just leave me alone!" These can convey strong feelings without crossing into rudeness.

There are many more examples where we can observe the power of LLMs working with different languages. They can help us compose emails in colloquial or formal style in another language, correct texts with typical lexical errors, and even

work with classical languages like Greek or Latin. The reader is encouraged to explore other uses of LLMs in language handling.

Summary and exercises

In summary, in this chapter, we have explored various ways to enhance a simple prompt by adding elements to expand, structure, or summarize the output information. We have also studied methods to give different styles to the output text and various formats for its integration into databases, web pages, or spreadsheets. Finally, we have studied the potential of LLMs in multilingual text processing.

To conclude, the reader is encouraged to practice what they've learned in this chapter by trying to create prompts for the following cases. Don't make just one attempt! LLMs are incredibly responsive to changes, so try different approaches.

- 1) Ask it to explain what a derivative is in mathematics and then ask it to summarize it in simple language for children.
- 2) Ask it to explain to you why children have nightmares at night in a single paragraph.
- 3) Ask it to write a 2,000-word report on the economy in the Eurozone over the past year. Specify that it should include an introduction, a section on GDP, another on inflation, another on public debt and finally a paragraph with conclusions.
- 4) Ask it to write a poem about your town or city. Add context explaining how your town or city and its natural surroundings are. Afterward, you can try asking him to write it as different poets would: William Shakespeare or Francisco de Quevedo.
- 5) Ask it to rewrite the lyrics of your favorite song in the style and language of Stephen King.
- 6) Ask it to show you how to order a glass of wine in ancient Rome in Latin.
- 7) Ask it to write 10 basic phrases for a trip to China, including how to ask for the bill at a restaurant, request directions to a

specific hotel for a taxi driver, or inquire about the cost of an umbrella in a store.

Advanced techniques

IN this chapter, we will explore more sophisticated prompting techniques with various uses and applications. These include techniques for creative writing and composition, problem-solving using simple mathematics and reasoning. We also delve into techniques for interpreting sentiments in texts or assigning values between 0 and 10 to these texts for various purposes.

Mimicking historical figures and assuming roles

One of the most interesting features of LLMs is to request them to take on a specific role and mimic that role. Below, we illustrate this case with a simple question about the meaning of friendship:

Prompt
= Task +
Character
Role

Prompt 28

What is friendship?

Gemini answers...

Friendship is a close relationship between people who share common interests and offer each other trust, support, and affection. It's more than just an acquaintance; it involves a deeper bond built on mutual respect and understanding. Here are some key aspects of friendship:

- Reciprocity: Friends give and take from each other. They offer help and support when needed and expect the same in return.
- Trust and emotional intimacy: Friendships involve a level of trust where you feel comfortable sharing your thoughts and feelings, even vulnerabilities, knowing they won't be judged.

- Shared interests and activities: Friends often enjoy spending time together doing things they both find fun or interesting. These shared experiences can strengthen the bond.

- Respect and understanding: Friends value each other's individuality and perspectives, even when they disagree.

The nature of friendships can vary depending on the people involved. Some friendships might be close and intense, while others might be more casual and relaxed. Friendships can also change and grow over time.

And a condensed version of 100 words for ChatGPT:

Prompt 29

¿What is friendship? Please answer in 100 words.

ChatGPT answers...

Friendship is a cherished bond between individuals, marked by feelings of care, respect, and affection. Unlike relationships defined by blood or law, friendships are chosen connections that enrich our lives. They are built on mutual trust, understanding, and support, flourishing through shared experiences, joys, and challenges. Friends act as confidants, cheerleaders, and advisors, offering a shoulder to lean on and laughter to share. This bond evolves over time, strengthened by loyalty and the willingness to navigate life's ups and downs together. In essence, friendship is a treasure, providing companionship, joy, and a sense of belonging, making our journey through life richer and more meaningful.

Next, we're going to ask ChatGPT to respond as Aristotle would.

Prompt 30

Assume the role of Aristotle to explain what friendship is. Generate a 100-word response.

ChatGPT answers...

In the eyes of Aristotle, friendship stands as a cornerstone of human flourishing, essential to a life well-lived. It transcends mere utility or fleeting pleasure, embodying a mutual recognition of goodness and a shared commitment to virtue. True friends seek the best for each other, for their bond is rooted in the noblest of reasons: virtue itself. Such friendships are rare, demanding time and familiarity to cultivate, for they are based not on need or convenience but on the mutual appreciation of each other's character. In this perfect form of friendship, we find a reflection of the highest good, as friends become mirrors to each other's souls, encouraging growth towards virtue and the fulfillment of our potential.

And now, respond as Frodo Baggins from The Lord of the Rings.

Prompt 31

Assume the role of Frodo from Lord of the Rings to explain what friendship is. Generate a 100-word response.

ChatGPT answers...

In the heart of Middle-earth, I, Frodo of the Shire, have come to understand that friendship is the very essence of courage and hope. It's the unspoken vow to walk through darkness and face fears not alone, but hand in hand with those who believe in you, even when you falter. My journey to Mount Doom was borne not just on my feet, but on the steadfastness of Sam, the loyalty of Merry and Pippin, and the valor of all who stood by us. True friendship is the light that guides through the darkest tunnels, the warmth in the coldest nights. It's the strength found not in oneself, but shared among comrades who dare to dream the same impossible dream.

Let's switch ChatGPT's role to Gandhi:

Prompt 32

Assume the role of Gandhi to explain what friendship is. Generate a 100-word response.

ChatGPT answers...

In the spirit of Gandhi, friendship is a profound expression of love, truth, and non-violence. It is not merely a bond of mutual affection but a sacred trust, a journey together towards greater understanding and peace. True friendship requires us to see the light within each other, even during our darkest times, and to support one another in the pursuit of truth and righteousness. It calls for the courage to be vulnerable, to share our fears and hopes, and to listen with an open heart. Friendship, in its essence, is an act of constant forgiveness, a tender look which becomes a habit. It transcends physical presence, thriving on a spiritual connection that nurtures our soul, guiding us towards a more compassionate and selfless life.

And finally, for a Buddhist:

Prompt 33

Assume the role of a Buddhist to explain what friendship is. Generate a 100-word response.

ChatGPT answers...

From a Buddhist perspective, friendship is a profound connection that mirrors the principles of loving-kindness (Metta), compassion (Karuna), sympathetic joy (Mudita), and equanimity (Upekkha). True friends guide each other along the path to enlightenment, sharing wisdom and offering support in the face of life's suffering and impermanence. They cultivate a selfless bond, free from attachment and ego, fostering mutual growth and understanding. Friendship in Buddhism is seen as a treasure, enriching our spiritual journey, encouraging us to practice mindfulness and ethical living. It is through this sacred connection that we learn to see the interconnectedness of all beings, nurturing peace and harmony within ourselves and the world around us.

As we can see, in each case, the LLM assumes a different role in explaining friendship from the point of view of different characters, based on their philosophy, beliefs, and personal experiences. The answers have a common denominator but are adapted to the experiences and philosophy of the different characters.

Likewise, in physics, we could ask about gravity for different physicists, according to their theories and convictions:

Prompt 34

Assume the role of Sir Isaac Newton in explaining gravity.

ChatGPT answers...

In the character of Sir Isaac Newton, allow me to elucidate upon the fundamental nature of gravity, a force most pervasive yet invisible that governs the motion of celestial bodies and the earthly sphere alike. Conceive, if you will, an apple falling from a tree; it is not merely by chance that it descends towards the earth rather than taking flight towards the heavens. This phenomenon is the work of gravity, a natural force of attraction that all masses exert upon one another, proportional to their masses and inversely proportional to the square of the distance between their centers.

It was upon witnessing such an ordinary event as an apple's descent that my thoughts were directed to the universal application of this force. Thus, I postulated that this same force which draws the apple to the ground also commands the majestic orbit of the moon around the Earth and the planets around the sun. Hence, gravity is the invisible hand that maintains the order of the cosmos, ensuring the celestial bodies move in an elegant, predictable fashion. This understanding laid the groundwork for the laws of motion and universal gravitation, principles that illuminate the workings of the universe and the natural world.

Prompt 35

Assume Albert Einstein's role in explaining gravity.

ChatGPT answers...

In the guise of Albert Einstein, I shall elucidate the enigmatic force known as gravity, which until my time had been comprehended through the lens of Sir Isaac Newton's laws of motion and universal gravitation. However, my theory of General Relativity provides a novel interpretation. Picture, if you will, the fabric of space-time, an invisible, four-dimensional weave that encompasses the universe. Massive objects, such as planets and stars, distort this fabric much like a heavy ball placed on a trampoline. This curvature of space-time is what we perceive as gravity. It is not merely a force pulling objects together but the shape of space-time itself directing the paths that objects follow. Thus, when Earth orbits the Sun, it is not being 'pulled' in the traditional sense, but rather following the curved geometry of space-time created by the Sun's immense mass. This revolutionary perspective not only explains the force of gravity but also the motion of planets and the bending of light, offering profound insights into the very structure of the universe.

Not only can we ask ChatGPT to take on the role of a person, but also, as computer experts, we can request it to behave like a Linux terminal or as a database to which we want to make queries.

Learning with small examples

In the Few-Shot Prompting (FSP) technique, the prompt includes various examples of a task, and the LLM is expected to interpret and learn from these examples to solve it. Below is an example for text classification by negative or positive sentiment:

Prompt
= Task
Examples

Prompt 36

The ice cream is very good: Positive

This camera is terrible: Negative

New York is awesome: Positive

This book is a bit bland:

ChatGPT answers...

Negative

In this case, no task to be performed has been specified, some examples have simply been presented and the LLM is expected to interpret what to do with them to complete the sentence.

Furthermore, we can observe that the LLM is capable of identifying feelings in texts. Another example along this line:

Prompt 37

Below is a review of a coffee shop. I would like you to tell me the 3 most likely feelings of the person who wrote the review in order of importance:

Neighborhood coffee shop, nice atmosphere and good customer service.

They always play romantic music at breakfast time. Nice to hear music from two decades ago from time to time.

The place is clean.

When I order coffee they don't look at me like they're doing me a favor. It's nice too.

I always have breakfast there when I can.

Recommended

ChatGPT answers...

1. Satisfaction: The reviewer appreciates the atmosphere, cleanliness, and customer service of the coffee shop, indicating a general feeling of satisfaction with their experiences there.
2. Nostalgia: The mention of enjoying romantic music from two decades ago suggests a sense of nostalgia, enjoying the connection to the past that the music provides.
3. Appreciation: The reviewer values the respectful treatment received when ordering coffee, indicating appreciation for good service and the overall welcoming environment of the shop.

Prompt 38

Below is a review of a coffee shop. If the text contains a positive review, I would like you to generate a polite response thanking the customer. If it is negative, I would like you to generate a polite response with an apology:

Neighborhood coffee shop, nice atmosphere and good customer service.

They always play romantic music at breakfast time. Nice to hear music from two decades ago from time to time.

The place is clean.

When I order coffee they don't look at me like they're doing me a favor. It's nice too.

Whenever I can, I have breakfast there.

Recommended

ChatGPT answers...

Thank you so much for taking the time to leave us this wonderful review! We're thrilled to hear that you enjoy the atmosphere, our selection of music, and the level of customer service at our coffee shop. It's our goal to make every visit a pleasant experience, and we're glad to know we've succeeded with you. We appreciate your kind words and your recommendation. Looking forward to welcoming you back for many more breakfasts. Thank you for choosing us for your mornings!

Assigning numerical values to texts

In addition to classifying texts discretely (positive or negative), we can also ask you to assign values from 0 to 10 for certain problems. This helps us make comparisons between similar but different elements, for example:

Prompt 39

Give me a summary of the movie Quo Vadis and tell me if the character of Nero resembles the real Nero of ancient Rome.

ChatGPT answers...

"Quo Vadis" is a historical drama set in the time of the Roman Empire, under the rule of Emperor Nero. The story, based on the novel by Henryk Sienkiewicz, focuses on the love between a Roman general, Marcus Vinicius, and a Christian woman, Lygia. As their love story unfolds, it is set against the backdrop of Nero's tyrannical reign, highlighting the persecution of Christians and the decadence and corruption of the Roman court. The film showcases Nero's infamous acts, such as his artistic pretensions, the burning of Rome, and his persecution of Christians, blaming them for the fire.

The character of Nero in "Quo Vadis" does capture several historical aspects of the real Nero's personality and reign. Historical records depict Nero as a complex figure known for his cruelty, extravagance, and vanity. He was an aspiring artist and performer, and there are accounts of him forcing the Roman elite to attend his lengthy performances. The great fire of Rome in 64 AD, which led to the persecution of Christians under his rule, is one of the most notorious episodes associated with his reign. However, like many historical figures, Nero's life and actions have been subject to various interpretations and exaggerations over time.

While "Quo Vadis" includes historical elements true to Nero's character and reign, it also incorporates dramatic embellishments typical of historical fiction. The movie portrays Nero in a manner consistent with traditional historical views of him as a tyrant and persecutor of Christians, aligning with many historical sources. However, it is essential to note that our understanding of Nero is based on historical accounts that may themselves carry biases, as they were often written by his contemporaries or later historians with their own perspectives and agendas.

Next, we force a comparison and force a numerical value:

Prompt 40

From 0 to 10 where 0 is not at all similar and 10 is totally similar, how much would you say the character of Nero in Quo Vadis resembles the real Nero who lived in the Roman Empire?

ChatGPT answers...

I would rate the resemblance of Nero's character in "Quo Vadis" to the real Nero of the Roman Empire around a 7. The film captures several historically documented aspects of Nero's personality and reign, such as his tyranny, persecution of Christians, and self-indulgence. However, the portrayal also incorporates dramatic elements and interpretations that may not fully align with historical complexities or the nuances of his character. While it presents a view of Nero that is consistent with many historical sources, it's important to remember that these sources themselves can be biased or incomplete.

This way, we can leverage the extensive knowledge of LLMs (history, cinema, etc.) for an initial draft of a comparative critique between two different themes with common elements.

Arranging elements

In addition to assigning numerical values based on degrees of similarity to things that resemble each other, we can ask it to arrange situations by probability, for example:

Prompt 41

Imagine you are a police officer in charge of solving a murder crime. Order me from highest to lowest which factor is most important in identifying the killer: person with some positive or negative sentimental tie to the victim, someone who stands to benefit financially from the victim's death, someone accidental who happened to be passing by.

ChatGPT answers...

In solving a murder crime, the priority in evaluating suspects typically follows this order, from highest to lowest importance:

1. Person with some positive or negative sentimental tie to the victim: Statistically, most crimes, especially homicides, are committed by someone known to the victim. Emotional or sentimental ties, whether positive (such as a family member, friend, or lover) or negative (such as an ex-partner or a known adversary), often provide strong motives for murder. These relationships can encompass a range of emotions, including love, jealousy, revenge, or hatred, making individuals within this category the most likely suspects.
2. Someone who stands to benefit financially from the victim's death: Financial gain is another common motive for murder. This can include beneficiaries of life insurance policies, inheritors of estates, or individuals involved in business dealings with the victim. While this motive is significant, it is typically considered after examining those with close personal ties to the victim, unless there is compelling evidence to prioritize this motive higher.
3. Someone accidental who happened to be passing by: While it's not impossible for a murder to be committed by a random individual or someone with no apparent connection to the victim, this scenario is less common compared to murders committed by acquaintances or for financial gain. These cases often require a different set of investigative approaches, focusing on evidence left at the scene, witness testimonies, and surveillance footage to establish any potential links between the victim and the perpetrator.

Understanding the relationship dynamics, financial entanglements, and the victim's social circle often provides crucial insights into the motive, which is key to solving the crime.

Next, another example where we request to order specific causes of death:

Prompt 42

Rank the following causes of death in order from most deadly to least deadly in Spain: death by lightning, death by plane crash, death by terrorist act, death by colon cancer, death by suicide.

ChatGPT answers...

Based on general patterns and statistical data, the ranking of causes of death in Spain from most deadly to least deadly would likely be as follows:

1. Death by colon cancer: As a common form of cancer, colon cancer accounts for a significant number of deaths annually, making it a leading cause of cancer-related mortality.
2. Death by suicide: Suicide rates vary by country, but it remains a significant cause of death worldwide, including in Spain, and often surpasses the number of deaths from certain types of accidents or individual acts of violence.
3. Death by terrorist act: While the impact of terrorist acts can be severe and highly publicized, the number of deaths from terrorism is generally lower than the leading natural causes of death and suicides, especially when looking at long-term averages.
4. Death by plane crash: Fatalities from plane crashes are relatively rare, especially compared to common causes of death like diseases or suicide, due to the high safety standards in aviation.
5. Death by lightning: Deaths by lightning strikes are extremely rare, making it the least deadly on this list. The odds of being struck by lightning in a given year are low, and fatalities are even less common.

This ranking is based on the typical frequency and impact of these causes of death. Specific data can vary year by year, and certain events might temporarily alter these rankings, but this order reflects general patterns observed over time.

Planning and approximate calculations for day-to-day routines

LLMs can also assist in performing simple calculations and basic estimations, although it's important to be careful in this aspect as reasoning and logic are not their strong suits.

Below is an example regarding planning for a barbecue:

Prompt 43

I want to have a barbecue for 50 guests and I need your help with the shopping list. First we will grill assorted vegetables (onion, zucchini, bell pepper and mushrooms) for starters. Then we will cook meat (sausages and chicken thighs). How much of each item do I need to buy for the 50 people?

ChatGPT answers...

For a barbecue for 50 guests, it's important to plan for enough food without going overboard. Here's a suggested shopping list based on typical serving sizes:

Assorted Vegetables for Starters:

- Onion: 1 medium onion serves about 2-3 people, so you might need around 17-25 onions.
- Zucchini: 1 medium zucchini serves about 2-3 people, so around 17-25 zucchinis should suffice.
- Bell Pepper: 1 bell pepper serves about 2-3 people, thus around 17-25 bell peppers will be needed.
- Mushrooms: About 1/4 pound (4 ounces) per person, so you'll need around 12.5 pounds of mushrooms.

Meat:

- Sausages: Assuming 1.5 sausages per person (some might eat 1, some 2), you'll need about 75 sausages.
- Chicken Thighs

: Assuming half the guests prefer chicken, and estimating 2 thighs per person (since they might be smaller and some might take more), you'll need around 50 servings. Considering some might eat more or less, buying about 100 chicken thighs should cover it.

This estimate assumes that everyone will partake in both the vegetables and meat equally. Adjust the quantities based on your knowledge of your guests' dietary preferences (e.g., vegetarians, big meat eaters, etc.). Also, consider adding extra for guests with larger appetites or for unexpected plus-ones. It's always better to have a little too much than not enough, especially if you can manage leftovers efficiently.

Another example, this time for a wedding budget:

Prompt 44

Assume the role of financial planner. How much would it cost me to get married in a mid-range restaurant in Madrid Spain? Calculate a cost for the banquet assuming 100 guests, a 15-day honeymoon in New York and a wedding attire budget for the bride and groom.

ChatGPT answers...

As a financial planner, let's break down the potential costs for your wedding in Madrid, Spain, including the banquet for 100 guests, a 15-day honeymoon in New York, and wedding attire for both the bride and groom. Please note that the costs can vary widely based on choices and specifics, so I'll provide estimates based on a mid-range budget.

Wedding Banquet in Madrid

- Banquet Cost: Mid-range restaurants in Madrid might charge between €50 to €120 per person for a wedding banquet. This would include food, drinks, and possibly some basic decorations.
- Total for 100 guests: €5,000 to €12,000

15-day Honeymoon in New York

- Flights: Economy flights from Madrid to New York could range from €500 to €1,000 per person round trip, depending on the season and how

early you book.

- Total for 2: €1,000 to €2,000
- Accommodation: Mid-range hotels in New York can cost between €150 to €300 per night.
- Total for 15 nights: €2,250 to €4,500
- Daily Expenses (meals, transportation, entertainment, etc.): Approximately €200 to €300 per day for two.
- Total for 15 days: €3,000 to €4,500

Wedding Attire

- Bride's Attire (dress, shoes, accessories): A mid-range budget could range from €1,000 to €3,000.
- Groom's Attire (suit, shoes, accessories): A mid-range budget could be around €500 to €1,000.

Summary of Estimated Costs

- Banquet: €5,000 to €12,000
- Honeymoon (including flights, accommodation, and daily expenses): €6,250 to €11,000
- Wedding Attire for Both: €1,500 to €4,000
- Total Estimated Cost: €12,750 to €27,000

These estimates provide a broad range based on mid-range options. The actual costs can vary significantly based on personal preferences, specific choices, the time of year, and how far in advance you plan and book services. For a more precise estimate, it's best to start contacting vendors and venues directly. Additionally, consider potential savings from booking packages or negotiating discounts for services like photography, music, and flowers.

Assisting in reasoning step by step

ChatGPT is a natural language model trained on Internet text that generates plausible text by predicting words one after another.

Consequently, language models often struggle when tasked with complex calculations or reasoning that involves multiple mathematical steps.

A solution that users have found is simply asking the language model to perform the task step by step, adding to the prompt the message: "let's think step by step". Naturally, this doesn't make the model think step by step! But it prompts it to generate a series of steps with logic between them that will likely lead to the correct solution or at least a solution more similar to the correct one.

This technique is known as *Chain-of-Thoughts (CoT)*. Let's look at some examples:

Prompt =
Task + Let's
think step by
step

Prompt 45

Car A costs 30,000 euros, uses 7 liters of gasoline every 100 km and has a durability of 20 years. Car B costs 25,000 euros, spends 6 liters of gasoline every 100 km and has a durability of 17 years. Assuming that I drive 10,000 km per year and the price of gasoline is 1.5 euros per liter, which car is more profitable to buy? First calculate the total cost of gasoline for each year, then multiply it by the number of years, and finally add the purchase price. Finally divide the total by its duration. Let's think step by step.

ChatGPT answers...

Let's go through the calculations step by step for both cars:

Car A:

- Annual cost of gasoline: For driving 10,000 km, Car A, which uses 7 liters of gasoline every 100 km, would require 700 liters of gasoline. With the price of gasoline at €1.5 per liter, the annual fuel cost would be €1,050.
- Total cost of gasoline over the car's durability (20 years): $€1,050 * 20 = €21,000$.
- Adding the purchase price of €30,000, the total cost comes to €51,000.
- Dividing this total cost by its durability (20 years) gives us an annual

cost of €2,550.

Car B:

- Annual cost of gasoline: For the same distance, Car B, which consumes 6 liters of gasoline every 100 km, would need 600 liters of gasoline annually. Thus, its annual fuel cost would be €900.

- Total cost of gasoline over the car's durability (17 years): $€900 * 17 = €15,300$.

- Including the purchase price of €25,000, the total cost is €40,300.

- Dividing this total by its durability (17 years) results in an annual cost of approximately €2,371.

Comparing the two, Car B is more economical with a lower annual cost of approximately €2,371 compared to Car A's €2,550.

Sometimes, it is even beneficial to guide the LLM with a prompt that compels it to solve the problem step by step in a specific manner:

Prompt 46

I need you to calculate the number of kilometers to travel with a car to have a traffic accident. Let's think step by step. First you have to find the number of traffic accidents in Spain in 2022 and we call that number X. Then, you have to find the number of vehicles (trucks, cars and motorcycles included) registered in Spain in 2022, and we call that number Y. Then, you have to find the average number of kilometers traveled by a vehicle and we call it Z. With the parameters X, Y, Z we will calculate the number of kilometers per accident as $Y*Z/X$. Let's think step by step.

ChatGPT answers...

Okay, let's calculate the number of kilometers to travel with a car to have a traffic accident in Spain in 2022.

Step 1: Number of traffic accidents.

According to the DGT report, 114,551 traffic accidents with victims occurred in Spain in 2022. Of these, 1,145 were fatal.

Step 2: Number of registered vehicles registered

According to the National Statistics Institute (INE), in 2022 there were a total of 37,718,354 registered vehicles in Spain, of which 29,168,532 were passenger cars.

Step 3: Average number of kilometers traveled

According to a study by the Mapfre Foundation, the average number of kilometers traveled by a vehicle in Spain in 2022 was 14,000.

Step 4: Calculation of the average number of kilometers traveled by a vehicle in Spain in 2022.

Substituting the calculated values in the formula, we obtain that the number of kilometers to be traveled by a car to have a traffic accident in Spain in 2022 is $Y*Z/X = 29,168,532*14,000/1,145 = 3,415,427,040/1,145 = 303,204.28$

Result

The result is that, on average, a car travels 303,204 kilometers in Spain before having a traffic accident.

Discussion

This result should be interpreted with caution, as it does not take into account other factors that may influence the probability of having an accident, such as the age of the driver, the type of vehicle, and the type of vehicle.

Sometimes, we may find ourselves asking the LLM a question that we have already solved ourselves a hundred times. In such cases, we want to see if the LLM follows our reasoning or provides a different methodology. If the task is complex, we can also leverage our expertise by providing the model with examples along with the question on how to solve the task.

This technique can be combined with previous ones like 'Think step by step' by sending examples along with the step-by-step solution, forcing the model to provide a very similar solution.

The number, order, and type of examples are crucial factors.

Below, we combine the use of examples (Few-Shot Prompting) with step-by-step reasoning (Chain-of-Thoughts):

Prompt 47

An apartment of 100 meters and 4 rooms costs 200000 and another of 150 meters and 3 rooms costs 240000 and another of 80 meters and 2 rooms costs 95000 euros. How much would an apartment of 100 meters and 2 rooms cost? Let's think step by step.

ChatGPT answers...

To estimate the cost of a 100 square meter, 2-bedroom apartment, we need to find a way to relate the price to the size of the apartment and the number of rooms. However, with only three reference data, we do not have enough information to establish an exact formula that takes into account both variables (size and number of rooms) accurately.

However, we can try to make a simplified estimate using the price per square meter as a base and assuming that the number of rooms does not significantly affect the price per square meter, which is a very general assumption and may not reflect the actual real estate market.

First, let's calculate the price per square meter of each apartment:

1. Apartment of 100 meters and 4 rooms:

$$\frac{200,000 \text{ euros}}{100 \text{ meters}} = 2,000 \text{ euros/meter}$$

2. Apartment of 150 meters and 3 rooms:

$$\frac{240,000 \text{ euros}}{150 \text{ meters}} = 1,600 \text{ euros/meter}$$

3. Apartment of 80 meters and 2 rooms:

$$\frac{95,000 \text{ euros}}{80 \text{ meters}} = 1,187.50 \text{ euros/meter}$$

Now, if we take the average of these prices per square meter, we obtain:

$$\text{Average price} = \frac{2,000 + 1,600 + 1,187.50}{3} \text{ euros/meter}$$

$$\text{Average price per meter} = \frac{4,787.50}{3} \text{ euros/meter}$$

$$\text{Average price per meter} \approx 1,595.83 \text{ euros/meter}$$

Using this average price per square meter, we can estimate the cost of a 100 square meter, 2-bedroom apartment:

$$\text{Estimated cost} = 100 \text{ meters} \times 1,595.83 \text{ euros/meter}$$

$$\text{Estimated cost} \approx 159,583 \text{ euros}$$

Therefore, based on this very simplified estimate and assuming that the number of rooms does not significantly change the price per square meter, a 100 square meter, 2-bedroom apartment could cost around 159,583 euros. However, it is important to keep in mind that the actual price can vary significantly depending on factors such as location, quality of construction, amenities and the current real estate market.

Finally, a (made-up) statistical study looking at the impact of smoking on life expectancy.

Prompt 48

Assume the role of mathematical and statistical expert. I have two samples of patients, one of smokers and one of non-smokers. For the sample of smokers, the ages at death are: (89, 76, 56, 65, 90, 45). For the non-smokers, the ages at death are: (99, 67, 88, 84). Can you tell me if smoking has an impact on life expectancy according to this sample? Solve the problem step by step and tell me on average how much longer a smoker lives than a non-smoker according to these samples.

ChatGPT answers...

The average age at death for smokers in this sample is approximately 70.2 years, while for non-smokers, it's approximately 84.5 years. This suggests that, according to these samples, non-smokers live about 14.3 years longer on average than smokers. This difference may indicate an

impact of smoking on life expectancy, but it's important to note that this conclusion is based on a small sample size and does not account for other potential influencing factors. Further statistical analysis with a larger sample size and controlling for other variables would be necessary to draw more definitive conclusions.

Summary and exercises

In this chapter, we have explored advanced prompting techniques, including step-by-step reasoning (Chain of Thoughts), with examples (Few-Shot Prompting), the explanation of different concepts from the perspectives of various roles or characters, the ability to classify and order texts, and text generation based on the group it has been classified into.

Below, the reader is presented with a series of exercises to practice the concepts explained. There is no single solution, so it is recommended to practice several times with the same exercise, exploring the different responses obtained.

- 1) Ask it to tell you what recipes you can make with the food you have in the fridge.
- 2) Ask it to rank the characters of the Fellowship of the Ring from most to least relevant in the story.
- 3) Ask it to explain the concept of God from the perspective of the most important philosophers (Aristotle, Saint Thomas Aquinas, Kant, Nietzsche, etc.).
- 4) Ask for the best tourist route to visit Madrid and its surroundings in three days.
- 5) Ask it to tell you what to pack for a trip to Siberia with a budget of 800 euros.
- 6) Ask it to explain how to estimate the number of atoms in the universe, thinking step by step, based on the number of galaxies and stars in each galaxy.
- 7) Ask it to take on the role of a psychologist and explain how to talk to a friend who has lost a loved one in the family.

Use cases and applications

THE use cases for ChatGPT are countless and cover practically any topic or task where text generation is needed. In this chapter we compile some examples that aim to highlight this versatility and show the reader the multiple possibilities of LLMs.

LLMs can serve as a great personal assistant. If you're a programmer, it can help you with coding and enhance your productivity. If you're an investor, it can assist in interpreting company data. If you're a teacher, it can help you create multiple-choice questions and examples for exams and classes. If you're a lawyer, the LLM can read complex laws and indicate the specific article of a law that contains what you're looking for.

In short, the LLM can aid you in your day-to-day tasks and make you more productive. As mentioned earlier, the LLM won't do your job for you, but it can help you a lot.

Below are several examples.

Laws, contracts and claims

Legal documents often tend to be cumbersome and difficult for most people to understand. Their wording is directly beyond the reach of ordinary mortals. Below we show some very common examples and assess how ChatGPT can be helpful to us.

Understanding the implications of a contract

One of the figures that appears in mortgages is that of the guarantor; however, many people do not understand all the implications of guaranteeing a mortgage loan. In this example,

we ask ChatGPT to review a clause in a mortgage contract and explain the risks of acting as a guarantor in that contract.

Prompt 49

Pursuant to this clause

The joint and several bond agreed in the present contract, and which contains the express waiver of the surety/s to the benefits of division, exclusion and order, implies for express waiver of the guarantor/s to the benefits of division, excusion and order, implies for the same/s that it/they are liable before the BANK for all the economic consequences of the economic consequences of the contract (debt for all the concepts; for principal, ordinary and/or delay interest ordinary and/or of delay, commissions, expenses, etc.) in the same terms as the borrower, so that he/she/they are liable to the BANK for all the borrower, so that, in the event of non-payment by the borrower and/or termination and early maturity of the loan, the borrower shall of the loan, the guarantor(s) is/are responsible for the totality of the borrower's debt of the borrower, without the BANK having to proceed judicially before against the borrower, nor the borrower having the borrower or that the borrower has become insolvent due to insufficient assets.

If I act as guarantor, what risks do I assume?

ChatGPT answers...

As a guarantor under this clause, you assume several significant risks:

1. Joint and Several Liability: You are jointly and severally liable with the borrower for all obligations under the contract. This means the bank can pursue you for the entire amount of the debt, not just a portion, without having to first seek payment from the borrower.
2. Waiver of Defenses: You waive the benefits of division, exclusion, and order. Typically, these defenses allow a guarantor to request that the creditor first exhaust all options against the primary debtor or divide the responsibility among multiple guarantors. By waiving these, you give

up the right to insist the bank pursue the borrower first or share liability equally among all guarantors before being held responsible.

3. Full Debt Liability: You are liable for the full scope of the debt, including principal, interest (both ordinary and of delay), commissions, expenses, etc. Essentially, you are on the hook for everything the borrower owes to the bank.

4. Immediate Responsibility: In the event of the borrower's default or if the loan is terminated and matures early, you are immediately responsible for repaying the full debt. The bank does not need to sue the borrower first or prove the borrower is insolvent due to insufficient assets.

Acting as a guarantor, especially under such stringent terms, places you in a position where you could potentially be responsible for significant financial obligations should the borrower fail to meet their responsibilities. It's essential to fully understand these risks and consider your ability to cover the debt if required before agreeing to serve as a guarantor.

We see how ChatGPT can help us understand the clauses of the contracts we sign, explaining them in a language that is understandable to us.

Drafting a Parking Space Lease Agreement

Another common scenario is drafting a contract, for example, for the rental of a parking space. While it is true that it's easy to find examples on the internet, ChatGPT can create a customized contract for us, as we see below.

Prompt 50

Can you draw up a contract for the rental of a parking space with a deposit of one month, a deposit of 30 euros for the loan of the remote control and with a clause for the price to be updated with the Inflation?

ChatGPT answers...

Sure, here's a basic template for a parking space rental agreement that includes the elements you've mentioned. Please note, this is a simple example and may need adjustments to comply with local laws and specific needs. It's highly recommended to have a legal professional review or create any contract to ensure it's legally binding and fits your requirements.

—

PARKING SPACE RENTAL AGREEMENT

This Agreement is made and entered into on [Date], by and between [Landlord's Name], hereinafter referred to as the "Landlord", and [Tenant's Name], hereinafter referred to as the "Tenant".

Whereas, the Landlord desires to lease the parking space to the Tenant, and the Tenant desires to rent the parking space from the Landlord under the terms and conditions as set forth herein;

Now, Therefore, for and in consideration of the covenants and obligations contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Parking Space Description: The parking space located at [Address/Location of Parking Space], hereinafter referred to as the "Parking Space".
2. Term: The term of this Agreement shall commence on [Start Date] and shall continue until [End Date], unless sooner terminated pursuant to the provisions hereof.
3. Rent: The Tenant agrees to pay the Landlord a monthly rent of [Amount] euros for the use of the Parking Space. The rent is payable on the first day of each month in advance.
4. Deposit:
 - The Tenant shall pay a deposit of one month's rent ([Amount] euros) at the time of signing this Agreement, to be held by the Landlord as security for the performance of the Tenant's obligations under this Agreement.

- An additional deposit of 30 euros shall be paid by the Tenant for the loan of the remote control for the Parking Space. This deposit is refundable upon the return of the remote control in good working condition at the end of the Agreement.

5. Inflation Clause: The monthly rent shall be subject to an annual adjustment in accordance with the inflation rate published by [Relevant Authority/Institution], not to exceed [Percentage]% of the current rent per annum. The adjusted rent shall become effective on the anniversary date of this Agreement.

6. Use of Parking Space: The Parking Space shall be used exclusively for the parking of one passenger vehicle. No other storage or use is permitted.

7. Termination:

- Either party may terminate this Agreement by giving [Notice Period, e.g., 30 days] written notice to the other party.

- In the event of termination, the Tenant shall return the remote control and vacate the Parking Space by the termination date. Failure to return the remote control in good working condition will result in the forfeiture of the remote control deposit.

8. Liability: The Tenant agrees to indemnify and hold the Landlord harmless from any and all claims, including those of third parties, arising out of the Tenant's use of the Parking Space.

9. Governing Law: This Agreement shall be governed by and construed in accordance with the laws of [Jurisdiction/Country].

10. Amendments: Any amendments to this Agreement must be in writing and signed by both parties.

IN WITNESS WHEREOF, the parties hereto have executed this Parking Space Rental Agreement as of the date first above written.

Landlord: Date:

Tenant: Date:

—

Remember, this template is a starting point. Specific terms, conditions, and legal requirements may vary depending on your location and

situation. Consulting with a legal expert is crucial to ensure your contract is valid and enforceable.

In this case, ChatGPT provides us with a contract template containing the requested clauses, significantly simplifying the drafting process.

Drafting a complain

Another task that unfortunately we have to carry out occasionally and is not easy is drafting complaints that reference existing regulations and are accurate but firm. Let's see how ChatGPT drafts a complaint.

Prompt 51

In my community of neighbors, some neighbors do not respect the regulations and take their dogs out into the street and common areas without being leashed. Can you write a letter of complaint highlighting that the regulations are not being complied with and that this behavior generates risks for the rest of the neighbors? The letter should be polite but at the same time firm.

ChatGPT answers...

Certainly! Here's a polite yet firm letter of complaint regarding the issue of dogs not being leashed in common areas:

—

Dear Neighbors,

I hope this letter finds you well and enjoying our shared community spaces. I am writing to address a concern that has been observed and shared by several residents regarding the adherence to our community regulations, specifically concerning the management of pets within our common areas and streets.

It has come to our attention that there have been instances where dogs are taken out and allowed to roam freely without being leashed. While we all understand and appreciate the joy pets bring into our lives, it is

also crucial to remember the importance of following the community rules that we have agreed upon. These rules are in place not just for the welfare of our pets but also for the safety, comfort, and well-being of all residents.

Allowing dogs to roam unleashed in the streets and common areas poses risks that we must all consider seriously. It can lead to uncomfortable or even dangerous situations for both the pets themselves and for residents, especially children and those who might be fearful or allergic to animals. Additionally, it undermines the sense of order and respect for shared spaces that we strive to maintain in our community.

We kindly remind all pet owners to ensure their dogs are leashed at all times when in common areas and streets, as per our community regulations. This simple act of consideration goes a long way in preventing potential accidents, promoting a safer environment, and demonstrating respect for your neighbors' peace of mind.

We believe that our community is a special place because of its residents' willingness to live harmoniously and respect one another. We trust that everyone will understand the importance of adhering to this rule and cooperate to ensure our community remains a safe and pleasant place for all.

Should you have any questions or require clarification on this matter, please do not hesitate to reach out to the community management. We are more than willing to discuss and provide further information to ensure mutual understanding and compliance.

Thank you for your attention to this matter and your cooperation. Together, we can continue to make our community a wonderful place to live for everyone.

Warm regards,

[Your Name]

[Your Contact Information]

[Resident/Position in the Community Association]

—

This letter balances the need to address the violation of regulations with a respectful tone, encouraging cooperation and compliance for the benefit of the entire community.

Once again, ChatGPT is capable of composing a letter that can serve as a starting point for the complaint.

Education

Another task in which ChatGPT can be very useful is in the educational environment, both for students and teachers. For instance, ChatGPT can assist in summarizing content, explaining it with examples to enhance understanding, and evaluating knowledge. Below, we demonstrate some of these possibilities with simple examples.

Assessing Our Knowledge

We can start by asking ChatGPT to propose math exercises for a child.

Prompt 52

Can you propose 10 math problems for children 6 year old?

ChatGPT answers...

Certainly! Here are 10 math problems suitable for a 6-year-old. These problems focus on basic arithmetic, counting, and simple logic, which are appropriate for their age group.

Math Problems for a 6-Year-Old

1. Counting Stars: If you see 3 stars in one part of the sky and 2 more stars in another part, how many stars do you see in total?
2. Apple Picking: You have 4 apples and your friend gives you 3 more apples. How many apples do you have now?
3. Toy Cars: There are 5 toy cars in a box. If you take out 2 toy cars, how many are left in the box?

4. Sharing Cookies: If you have 10 cookies and you want to share them equally between you and your friend, how many cookies will each of you get?
5. Balloon Count: You have 8 balloons. 2 balloons pop. How many balloons are left?
6. Penny Jar: If you put 2 pennies in a jar and then add 3 more pennies, how many pennies are in the jar?
7. Number Sequence: What number comes next in this sequence: 1, 2, 3, 4, ...
8. Finding Differences: You see 7 birds on a tree. 3 fly away. How many birds are left on the tree?
9. Lemonade Stand: You have 5 cups of lemonade. You sell 2 cups. How many cups do you have left?
10. Birthday Party: You invite 4 friends to your birthday party. 2 more friends ask if they can come too. How many friends are coming to your party in total?

These problems encourage counting, basic addition and subtraction, and understanding quantities in a fun and engaging way.

ChatGPT also knows about laws:

Prompt 53

Can you generate a quiz with four multiple-choice questions on fundamental aspects of the American Constitution?

ChatGPT answers...

Certainly! Here's a quiz with four multiple-choice questions covering fundamental aspects of the American Constitution.

Quiz: The American Constitution

Question 1: What year was the United States Constitution ratified?

- A) 1776

- B) 1787

- C) 1791

- D) 1804

Question 2: Which of the following principles is NOT explicitly outlined in the United States Constitution?

- A) Separation of powers

- B) Judicial review

- C) Federalism

- D) The right to privacy

Question 3: How many amendments does the United States Constitution currently have?

- A) 10

- B) 27

- C) 33

- D) 50

Question 4: Which amendment provides for the right to bear arms?

- A) First Amendment

- B) Second Amendment

- C) Fourth Amendment

- D) Eighth Amendment

Answers:

Question 1: B) 1787

Question 2: D) The right to privacy

Question 3: B) 27

Question 4: B) Second Amendment

These questions touch on the ratification date, the principles outlined in the Constitution, the number of amendments, and specific rights guaranteed by the amendments.

Summarizing the content

Let's go back to the Constitution and see if ChatGPT can summarize some of the content that we need to study.

Prompt 54

Can you summarise the first amendment of the US Constitution in 300 words?

ChatGPT answers...

The First Amendment to the United States Constitution is a pivotal part of the Bill of Rights, ratified on December 15, 1791. It safeguards fundamental freedoms that are crucial to the democratic framework of the United States. This amendment prohibits Congress from enacting laws that would infringe upon the freedom of speech, the press, the right to peaceably assemble, and the right to petition the government for a redress of grievances. Additionally, it ensures that Congress cannot make laws respecting an establishment of religion, or prohibiting the free exercise thereof, thereby enshrining the principle of separation of church and state.

The First Amendment's protection of speech and expression is broad and includes not only verbal and written expression but also symbolic actions. This protection is not absolute; certain types of speech, such as obscenity, defamation, and incitement to violence, do not receive protection under the First Amendment. The freedom of the press allows for the dissemination of information and opinions without governmental restraint, a cornerstone of a transparent and accountable government.

The clause regarding religion is twofold: it prevents the government from establishing an official religion (the Establishment Clause) or interfering with individuals' practice of their faith (the Free Exercise Clause). This dual protection ensures both a public sphere free from governmentally imposed religion and a private sphere where religious freedom can be exercised.

The rights to assemble peaceably and to petition the government are foundational to the democratic process, allowing citizens to express their views, demand change, and engage in various forms of protest and

advocacy without fear of retribution from the state.

Overall, the First Amendment embodies the essence of American democratic ideals by protecting the freedoms that allow for a vibrant and open society, where ideas can be freely exchanged, and the government remains responsive to the will of the people.

The result is a summary that can be useful to us. Additionally, if we have a specific text that ChatGPT is not familiar with, we can also ask it to generate a summary for us.

Communication

Another area where it's necessary to generate a large amount of text is communication. From an individual perspective, for example, by composing emails. In the institutional context, it can be very helpful when creating press releases. Let's do a little test.

Emails and letters

One of the most common tasks for many of us is composing and responding to emails and messages from others. This takes up a considerable amount of our time, which we can reduce with the help of ChatGPT. Let's see an example.

Prompt 55

Can you write a fun birthday party invitation?

ChatGPT answers...

You're Invited to a Blast of a Birthday Bash!

Hey there, Awesome Human!

Mark Your Calendars!

Date: [Your Party Date Here]

Time: [Your Party Time Here]

Venue: [Your Party Venue Here] - Where the fun never ends, and the magic begins!

Prepare yourself for an adventure into the realm of sheer joy and unstoppable giggles as we celebrate [Name]'s Birthday! We're turning the fun up to 11, and you're on the VIP list for this exhilarating journey.

What's On The Agenda?

- A Quest for Treasure: Unleash the inner explorer with a treasure hunt that'll take you to the four corners of [Venue]!

- The Great Feast: Indulge in a spread that would make kings and queens jealous.

- Dance-off Showdown: Bust a move, break it down, and let the rhythm take control in the ultimate dance-off!

- Cake Time: No explanation needed. It's cake. Glorious, delicious cake.

Dress Code: Come as you are or dress as your favorite character from any universe. Whether you're a superhero, a pirate, or a wizard, let your imagination run wild!

RSVP: By [RSVP Date] to [Your Contact Information] - let us know if you can make it to the party of the century!

Don't forget to bring your biggest smiles, your wildest dance moves, and your appetite for fun (and cake!). This is one party you won't want to miss. Let's make some unforgettable memories and celebrate [Name]'s special day together!

See you there, where the fun explodes, and the laughter never ends!

With joy and anticipation,

[Your Name]

Similarly, by providing an email, we can ask ChatGPT to write a response to the emails we receive. Let's ask it to write an email to excuse our absence from a meeting.

Prompt 56

Can you write an e-mail excusing my presence at a meeting due to an unforeseen event?

ChatGPT answers...

Subject: Apology for Missing Today's Meeting

Dear [Recipient's Name],

I hope this message finds you well. I am writing to inform you and express my sincere apologies for not being able to attend the meeting scheduled for today, [Date], regarding [Meeting Topic].

Unfortunately, an unforeseen event has arisen that requires my immediate attention and presence, making it impossible for me to join you and the team as planned. I understand the importance of this meeting, and it was certainly not my intention to miss such a crucial discussion.

To ensure that my absence does not hinder our progress, I have taken the following steps:

- I have reviewed the agenda and provided my input and comments on [Specific Topics/Items] to [Colleague's Name], who has kindly agreed to represent my views during the discussion.
- I am also available to assist with any follow-up actions or to provide further clarification on the points I submitted to [Colleague's Name].
- I will make sure to catch up on the meeting notes and any decisions made today. Additionally, I would appreciate it if we could schedule a brief call or meeting at your earliest convenience to discuss any critical outcomes and how I can contribute to the next steps.

I regret any inconvenience my absence may cause and thank you for your understanding and support in this matter. I value our work and collaboration greatly and look forward to contributing to our shared goals in any way I can.

Please extend my apologies to the rest of the team, and let them know I am fully committed to catching up and contributing to the ongoing projects.

Thank you for your comprehension.

Best regards,

[Your Name]

[Your Position]

[Your Contact Information]

The email isn't bad, and if we provide more details about the unexpected event or the meeting, ChatGPT will give us a better result.

Finally, we can ask ChatGPT to write a draft letter of recommendation for an employee we know.

Prompt 57

Can you generate a letter of recommendation of an employee that works with me: he is very hard worker and clever, he can learn almost anything (he likes self-studying). His background is mathematics and computer science. He also works well in teams and has good communication skills, and knows a bit of French

ChatGPT answers...

Certainly! Below is a template for a letter of recommendation that you can customize for your employee:

—

[Your Name]

[Your Position]

[Your Company/Organization]

[Company Address]

[City, State, Zip Code]

[Email Address]

[Phone Number]

[Date]

[Recipient's Name]

[Recipient's Position, if known]

[Company/Organization Name]

[Company Address]

[City, State, Zip Code]

Dear [Recipient's Name],

I am writing to wholeheartedly recommend [Employee's Name] for any position requiring hard work, intelligence, and a strong proficiency in mathematics and computer science. As [Your Position] at [Your Company/Organization], I have had the pleasure of working closely with [Employee's Name] for [duration of employment], during which time he has consistently impressed me with his work ethic, quick learning ability, and excellent team collaboration skills.

[Employee's Name] has a solid foundation in mathematics and computer science, which he has skillfully applied to a variety of projects in our organization. His passion for self-study and continuous improvement is remarkable; he is always on the lookout for new skills to learn and ways to enhance his current expertise. This self-driven approach to personal and professional development has made him an invaluable asset to our team.

Moreover, [Employee's Name] possesses strong communication skills, both in written and verbal forms, making him an effective communicator with team members, management, and stakeholders. His ability to explain complex concepts in an understandable manner has greatly facilitated team projects and contributed to the success of our endeavors.

In addition to his technical skills and work ethic, [Employee's Name] is also proficient in French, which has proven beneficial in our interactions with French-speaking partners and clients. His ability to bridge language barriers has enhanced our team's effectiveness in international projects.

[Employee's Name] is a true team player, always ready to lend a hand to his colleagues and contribute positively to the team atmosphere. His optimistic attitude and ability to work well under pressure have made him a go-to person for challenging projects.

In conclusion, I have no reservations in recommending [Employee's Name] for any position or endeavor that he chooses to pursue. I am

confident that he will bring the same level of dedication, intelligence, and skill to his future roles as he has shown during his tenure with us. Please do not hesitate to contact me if you require further information.

Sincerely,

[Your Name]

[Your Position]

[Your Company/Organization]

—

Feel free to adjust the details to better fit the individual you're recommending and the specifics of his accomplishments within your organization.

Drafting a text based on some data

In our day-to-day lives, we often deal with data that we need to analyze and discuss. For example, a company's sales data, customer satisfaction indicators, student results—the list is endless. These tasks consume time, both for analyzing the data and then documenting the analysis in a report or note. Therefore, a bit of assistance wouldn't hurt. Let's see if ChatGPT can help with this.

Prompt 58

Please write an analysis of the following table of data:

2020 2021 2021 2022 2023

Number of students 24 19 25 30 30

Males 14 11 14 16 16

Females 10 9 11 14

Average grade 5.5 5.7 5.9 5.9 6.1

ChatGPT answers...

The provided table outlines data over a period from 2020 to 2023, detailing the number of students, their gender distribution, and their average grades over these years. Let's analyze the data step by step.

1. Trend in Student Enrollment:

- The number of students has generally increased over the period, starting from 24 students in 2020 and rising to 30 by 2023. There was a slight decrease in 2021 to 19 students but then a steady increase in the following years.

2. Gender Distribution:

- The number of male students has shown a slight fluctuation but indicates an overall increasing trend from 14 in 2020 to 16 in 2023. Despite a drop to 11 in 2021, numbers recovered and grew in the following years.

- Female students' numbers initially decreased from 10 in 2020 to 9 in 2021, then increased to 14 by 2022. The data for females in 2023 is missing, preventing a complete analysis for that year.

3. Average Grade:

- There's been a gradual improvement in the average grade, starting from 5.5 in 2020 and reaching 6.1 by 2023. This suggests an enhancement in academic performance over the years, with a steady increase in the average grade.

Observations:

- The overall trend shows growth in both enrollment and academic performance. The dip in student numbers in 2021 could be attributed to external factors, but the subsequent recovery indicates resilience and potential growth in the student body.

- The gender distribution reveals that while both male and female enrollments have increased, the pattern for males has been more consistent. The reason for the drop in female students in 2021 and the lack of data for 2023 needs further investigation.

- The improvement in average grades over the years is a positive sign, indicating either an improvement in teaching methods, student

dedication, or both. The consistent upward trend is a good indicator of educational quality and student achievement.

Limitations:

- The missing data for female students in 2023 makes it difficult to provide a full analysis of gender distribution for that year.
- Without additional context or data (e.g., changes in curriculum, teaching staff, or student demographics), it's challenging to pinpoint the exact reasons behind the trends observed.

Conclusion:

The data reflects an overall positive trend in both student enrollment and academic performance from 2020 to 2023, despite a temporary drop in 2021. The increase in average grades suggests improvements in educational outcomes, a goal for any educational institution. Further analysis, particularly with complete data for 2023 and additional contextual information, would provide a more in-depth understanding of the underlying factors influencing these trends.

Administration and numbers

Another task that generally feels tedious is management and administration, especially when dealing with numbers. For instance, when grappling with a spreadsheet or making financial decisions. Let's see if ChatGPT can lend us a hand.

Formulas in Excel

Sometimes we need to turn to Excel to perform calculations or process data, for instance, to track monthly expenses, create a budget, or, for teachers, calculate grades. When it comes to entering a new formula, it can be challenging. Let's see if ChatGPT can help us.

Prompt 59

Can you give me the formula in excel that if A1 is greater than A2 add A1, A2 and A3 divide by three and otherwise return the sum of twice A2 and A3 divided by three?

ChatGPT answers...

You can use the following Excel formula to achieve the described calculation:

$$=IF(A1 > A2, (A1 + A2 + A3) / 3, (2*A2 + A3) / 3)$$

This formula checks if A1 is greater than A2. If true, it adds A1, A2, and A3, then divides the sum by 3. If not, it sums twice A2 and A3, and divides that sum by 3.

ChatGPT is capable of providing us with the formula through a very simple prompt. In general, ChatGPT can assist us not only with Excel but also if we want to program. In fact, one of the uses of AI is to help programmers write programs more efficiently.

We can also encounter the inverse problem, receiving an Excel sheet that we have to use but not understanding the formulas. Let's try with the formula we just created.

Prompt 60

Can you explain in a nutshell what this Excel formula does: $IF(A1>A2; (A1+A2+A3)/3; (2*A2+A3)/3)?$

ChatGPT answers...

This Excel formula evaluates whether the value in cell A1 is greater than the value in cell A2. If this condition is true, it calculates the average of the values in cells A1, A2, and A3 by adding them together and dividing the sum by 3. If the condition is not true (meaning A1 is not greater than A2), then it calculates a new value by doubling the value in A2, adding the value in A3, and dividing the result by 3. Essentially, this formula decides between two different operations based on the comparison of values in A1 and A2, then applies the chosen operation to generate a result.

Once again, ChatGPT is able to interpret the Excel formula and explain it in a simple and coherent manner.

Doing calculations

Calculations are another task that often feels tedious and can lead us to waste money. Let's say we want to understand the impact of different options on our family expenses, but we don't have the exact data on our consumption, and we're fine with having an approximate estimate. Let's see if ChatGPT can make an initial estimation.

Prompt 61

For an average family with two small children, what approximate annual savings can we make by buying milk 20 euro cents cheaper?

ChatGPT answers...

To estimate the annual savings for a family by buying milk 20 euro cents cheaper, we need to make a few assumptions about the family's milk consumption. Let's assume the following:

- Each member of the family consumes an average of 0.25 liters (a glass) of milk per day.
- There are 4 members in the family, so total daily consumption is 1 liter (0.25 liters * 4).

Now, let's calculate the annual savings:

1. Daily savings: If they save 20 euro cents per liter, then daily savings are 0.20 euros (since they consume 1 liter a day).
2. Annual savings: Multiply the daily savings by the number of days in a year (365).

Let's calculate the annual savings.

By buying milk 20 euro cents cheaper, an average family with two small children can approximate an annual savings of 73 euros.

We see that ChatGPT can be helpful even when we don't know

our exact consumption. In this case, we see that saving on milk is equivalent to saving on parsley.

In the next case, we request a budget for a home renovation:

Prompt 62

Assume the role of real estate analyst and home renovation expert. How much would it cost to renovate an entire kitchen? Prepare a budget that includes changing plumbing and pipes, new floor and wall and kitchen furniture. The kitchen is 15 square meters in size.

ChatGPT answers...

Creating a budget for renovating a 15 square meter kitchen involves considering various factors including the cost of materials, labor, and the quality and complexity of the finishes desired. The costs can vary widely based on geographic location, the extent of changes, and the choice between standard, mid-range, or luxury finishes. For the sake of this budget, we'll use average costs for a mid-range renovation in a generic location. Remember, these are estimates and actual costs can vary.

1. Changing Plumbing and Pipes:

- New plumbing and pipes can be a significant cost, especially if the layout is being changed significantly. This might include moving a sink or installing additional water lines for an ice maker in a refrigerator.
- Estimated Cost: \$3,000 - \$5,000

2. New Flooring:

- Options include tiles, hardwood, laminate, or vinyl. Prices vary greatly, but we'll estimate for mid-range quality tiles.
- Estimated Cost: \$20 per square meter** for materials and installation, totaling \$300 for 15 square meters.

3. Wall Treatment:

- This could include paint, backsplash tiles, or other finishes. Backsplash tiles can add both aesthetic and functional improvements.
- Estimated Cost for Painting: \$500

- Estimated Cost for Backsplash: \$800 (including materials and labor)

4. Kitchen Furniture:

- This includes cabinets, countertops, and possibly an island. The cost can vary greatly based on the materials (e.g., laminate, wood, granite) and whether the cabinets are custom or stock.

- Estimated Cost: \$5,000 - \$15,000

5. Appliances and Extras:

- Not included in the initial question but significant in kitchen renovations. This includes a refrigerator, oven, range, dishwasher, etc.

- Estimated Cost: \$5,000 - \$8,000 for mid-range appliances.

6. Labor Costs:

- Labor costs can vary, but for a project of this scale, they can be significant, especially for specialized work like plumbing.

- Estimated Labor Cost: 20-30% of the total project cost

Total Estimated Budget:

- Plumbing and Pipes: \$4,000 (average)

- Flooring: \$300

- Wall Treatment: \$1,300 (combined painting and backsplash)

- Kitchen Furniture: \$10,000 (average)

- Appliances (if considered): \$6,500 (average)

Assuming labor costs are included in each section, the total without appliances would be \$15,600. With appliances, this could rise to approximately \$22,100.

Note: This is a broad estimation. Prices can vary widely based on location, choices made during the selection of materials, and changes in market conditions. Always get multiple quotes from contractors and consider hiring a designer or architect for detailed planning and accurate estimates.

With this example, we can get a rough idea of the indicative price to evaluate proposals received from various companies.

Companies

In the previous examples, we focused on the personal use of ChatGPT. Let's now explore some use cases within the business world. Again, the potential applications are countless, so we'll just touch on a few to showcase the immense potential of LLMs in enhancing productivity.

A significant portion of daily tasks in businesses is administrative and involves text writing. For instance, to manage the hiring of an individual by a human resources department, we need, as a first step, a description of the profile required for the position to be filled. Let's see if ChatGPT can help us.

Prompt 63

Can you prepare a job description for a human resources manager of a company in the industrial sector that has a national presence and plans for international development?

ChatGPT answers...

Job Title: Human Resources Manager

Location: [City, Country] - With potential for international travel.

Company Overview:

[Company Name] is a dynamic and growing company in the industrial sector with a strong national presence and ambitious plans for international development. Our commitment to innovation, excellence, and employee empowerment fuels our mission to be a leader in our industry. We believe that our people are our greatest asset, and we are seeking a skilled Human Resources Manager to lead our HR efforts and support our expansion.

Position Summary:

The Human Resources Manager will play a pivotal role in developing and executing our human resources strategy in support of the overall business plan and strategic direction of the company, specifically in the areas of succession planning, talent management, change management, organizational and performance management, training

and development, and compensation. The HR Manager will provide strategic leadership by articulating HR needs and plans to the executive management team, shareholders, and the board of directors.

Key Responsibilities:

- Develop and implement HR strategies and initiatives aligned with the overall business strategy.
- Bridge management and employee relations by addressing demands, grievances, or other issues.
- Manage the recruitment and selection process to support the company's growth and international expansion.
- Support current and future business needs through the development, engagement, motivation, and preservation of human capital.
- Develop and monitor overall HR strategies, systems, tactics, and procedures across the organization.
- Oversee and manage a performance appraisal system that drives high performance.
- Maintain pay plan and benefits program.
- Assess training needs to apply and monitor training programs.
- Ensure legal compliance throughout human resource management.
- Promote corporate values and shape a positive culture.

Qualifications:

- Proven working experience as HR Manager or other HR Executive.
- People-oriented and results-driven.
- Demonstrable experience with HR metrics.
- Knowledge of HR systems and databases.
- Ability to architect strategy along with leadership skills.
- Excellent active listening, negotiation, and presentation skills.
- Competence to build and effectively manage interpersonal relationships at all levels of the company.

- In-depth knowledge of labor law and HR best practices.
- Degree in Human Resources or related field; Master's degree preferred.

We Offer:

- A competitive salary and benefits package.
- Opportunities for professional growth and international travel.
- A dynamic and supportive work environment where you can make a significant impact.

Application Process:

Qualified candidates are invited to send their resume, cover letter, and any relevant certifications to [insert email address or application link here] by [application deadline].

[Company Name] is an equal opportunity employer. We celebrate diversity and are committed to creating an inclusive environment for all employees.

The result is not bad at all. We already have a description that we can refine or adapt.

Summary and exercises

In this chapter, we have explored applications of LLMs in various personal and professional contexts. We encourage you to continue practicing with the following exercises:

- 1) Write a prompt requesting a recipe for a cooking blog. Explain that you would like a step-by-step recipe for making salmon sushi and ask for some YouTube channel suggestions related to Japanese cuisine.
- 2) Write a prompt requesting an estimate of the taxes you would have to pay for a gross annual salary of 40,000 euros in Spain. You should aim to obtain a monthly net value considering that you live in Madrid (regional deductions) and are married with three children (deductions for a large family)
- 3) You need to conduct a study on the legal situation in various

countries. Write a prompt to create a news article covering the existing legislation regarding penalties for murder in countries like Thailand, Spain, and the USA. You need to know the approximate penalties for a murder that occurred in a bar, where an intoxicated person stabbed another intoxicated person during a brawl.

- 4) Ask what the recommended dosage of antibiotics would be for a 6-year-old girl who weighs 24 kilograms and has a urinary tract infection.
- 5) Introduce the text of a current political news and request an optimistic and a pessimistic headline.
- 6) Ask for 10 exercises on systems of equations with two equations and two unknowns to practice. Also, request solutions to verify the results.
- 7) Ask for a plan to visit Paris in 3 days. Request recommendations for the most interesting places, considering that you want to visit at most one museum. Also, ask for recommendations for typical French dishes and restaurants where they serve them.
- 8) Ask to draft a CV with your skills, education, and experience. Additionally, request to write a cover letter for an artificial intelligence consulting company.

Playing with images

GENERATIVE AI not only works with text, it can also analyze, modify or generate images. In this chapter we are going to see some practical examples of using ChatGPT (version 4) to process and generate images. We can ask it to generate an image from a text description but we can also drag an image into the ChatGPT interface and ask it a question about the image.

Medical images

Asking for advice on oral health

We start with a photo of the mouth to see if ChatGPT can advise us on our oral health. We can take a picture of our mouth with our mobile phone and ask ChatGPT for advice.

Prompt 64

In the attached image, do you think the teeth are well cared for and healthy?

ChatGPT answers...

I cannot provide a medical diagnosis or make definitive statements about a person's oral health. However, I can offer some general observations based on the image:

- Coloration: The teeth appear to be relatively uniform in color, with no obvious dark spots that often indicate decay or damage.



Figure 6.1: Gums

- Cleanliness: There are no visible signs of plaque or tartar buildup in the areas that can be seen, which might suggest good oral hygiene.
- Gingiva: The gum line looks pink, although there are areas that appear to be more reddish, which could indicate some inflammation.
- Tooth structure: There is no visible evidence of fractures or major damage to the teeth.

It is important to remember that these observations are superficial and based only on what is visible in the image. Only a dental health professional can provide an accurate assessment of the condition of the teeth and overall oral health after an in-person examination.

We can see that in the medical aspect, ChatGPT is very careful when making recommendations or diagnoses. However, we can observe that ChatGPT is able to analyze the image and provide us with a fairly accurate diagnosis, although perhaps the gums are a bit receded.

Interpreting an x-ray

Continuing with medical applications, let's see if ChatGPT can interpret an x-ray. To do this, we give ChatGPT an x-ray of a smoker's lungs, but we don't tell it.

Prompt 65

Attached is an x-ray of a person's lungs. Assume the role of a medical specialist. What can you tell me about this person's lungs?



Figure 6.2: X-ray of a person's lungs

ChatGPT answers...

I am not trained to interpret medical images or provide medical diagnosis or advice. However, I can give you a general idea of how a physician might approach a chest x-ray:

A medical specialist, in evaluating a chest X-ray, would look for patterns that might indicate normal or abnormal conditions. For example, he or she would look for clarity of the lung fields, visibility of structures such as the mediastinum, the shape and size of the heart, and the presence of any opacity, consolidation or signs of lung disease such as pneumonia, COPD or masses that might suggest tumors.

On the image provided, if areas of increased density or staining are noted, the physician might consider a variety of differential diagnoses and would likely recommend additional testing or refer the patient to a specialist for further evaluation.

If you have specific concerns about this X-ray or lung health in general, I encourage you to consult a licensed physician who can offer a professional interpretation and advice based on an in-person examination and a thorough review of the patient's medical history.

Prompt 66

Would you say the image corresponds to a smoker yes or no?

ChatGPT answers...

I cannot provide an interpretation or diagnosis based on an X-ray, as this is beyond my capabilities and also requires specialized medical knowledge. A specialist physician would use his or her training to interpret the x-ray in the context of the patient's medical history, symptoms and other tests. Smoking may be one of many factors that the physician would consider when assessing lung health, but it is not possible to determine if someone is a smoker from an X-ray image alone. In addition, changes in the lungs visible on an X-ray may be due to a variety of causes, not just smoking.

For a proper evaluation, please consult a healthcare professional.

Again, ChatGPT is very careful about medical matters, although it does show that it has identified spots in the lungs. Most commercial artificial intelligence tools have been designed to avoid offensive responses or not to provide information that could lead to liability for the company. In this example we see how ChatGPT insists that we must contact a healthcare professional.

Analyzing text within images

Next, we look at ChatGPT's ability to recognize text within images and interpret it.

A blood test

Prompt 67

Can you explain these blood test results?

	Reference values	Initial	Postchemotherapy	Post-transplant
Hemoglobin (g/dL)	12.0–15.3	9.0	11.5	11.5
Mean corpuscular volume (fL)	80.0–97.0	100	94.2	92.9
Leukocytes ($\times 10^9/L$)	4.0–11.0	7.24	4.45	5.56
Platelets ($\times 10^9/L$)	150–450	134	143	101
Reticulocytes (%)		3.3	ND	2.2
Activated partial thromboplastin time (sec)	31	>100.0	73.8	36.6
Prothrombin time (PT) (sec)	11.6	13.3	11.9	11.1
PT ratio (INR)		1.14	1.02	0.96
D-dimers ($\mu\text{g/mL}$)	0.0–0.25	<0.15	<0.15	<0.15
Urea (mg/dL)	10–50	29	25	39
Creatinine (mg/dL)	0.5–1.1	0.9	0.75	0.75
Calcemia (mg/dL)	8.6–10.2	10.0	10.2	9.6
Lactate dehydrogenase (U/L)	208–378	195	179	154
Albumin (g/dL)	3.2–4.8	3.6	4.4	4.6
AST/ALT (U/L)	10–49	13/17	20/23	20/21
GGT (U/L)	<38	13	19	32
Total bilirubin (mg/dL)	<1.0	0.14	0.17	0.13
Iron ($\mu\text{g/dL}$)	50–170	107.9	144	ND
Ferritin (ng/mL)	10–291	50.4	1039	ND
B12 vitamin (pg/mL)	210–910	537	ND	ND
Folate (ng/mL)	>5.4	9.8	ND	ND
Factor V (%)	50–100	84	ND	ND
Factor VII (%)	70–130	118	120	165
Factor VIII (%)	50–150	45	89	174
Factor IX (%)	50–130	28	88	190
Factor XI (%)	50–130	21	79	173
Factor XII (%)	70–130	11	70	247
vWF: func (%)	40.3–125.9 (ORh+)	375	219	211
vWF: Ag	42.0–140.6 (ORh+)	461	240	210
Fibrinogen (mg/dL)	200–400	242	392	257
Beta-2 microglobulin (mg/L)	1.0–2.4	4.10	3.70	2.77
IgG/IgA/IgM (mg/dL)	751–1560/82–453/46–304	3420/11/16	1020/43/464	500/~5.0/20
Kappa/Lambda (mg/dL)	629–1350/313–723	2800/32 (K/L:87,5)	464/94 (K/L:4,96)	123/52 (K/L:2,37)
Col/epinephrin (seg)	71–118	>300	>300	ND
Col/ADP (seg)	85–165	>300	260	ND
Lupus anticoagulant	Negative	Positive	Positive	Negative

ND = Not determined; Func = functional; AG = Antigen; vWF = von Willebrand factor.

Figure 6.3: A Blood test

ChatGPT answers...

The image depicts a table of blood test results with three columns indicating reference values, initial results, post-chemotherapy results, and post-transplant results. Here's a brief explanation:

- Hemoglobin (g/dL): It's within normal range post-chemotherapy and post-transplant.
- Mean corpuscular volume (fL): Indicates the average size of red blood cells. It remains consistent throughout.

- Leukocytes ($10^9/L$): White blood cell count is higher than normal initially but returns to normal post-chemotherapy and post-transplant.
- Platelets ($10^9/L$): Platelet count is within normal range post-chemotherapy and slightly lower post-transplant.
- Reticulocytes (%): Post-chemotherapy data is not determined (ND); post-transplant, it's slightly lower than the initial value but within normal range.
- Coagulation tests (APTT, PT INR, and D-dimers): Assess blood clotting. Initially, APTT is high, indicating a potential clotting problem, but normalizes post-chemotherapy and post-transplant. PT INR is stable and within normal range. D-dimers are initially elevated, suggesting possible clot formation or breakdown, but are normal post-therapy.
- Kidney function tests (Urea, Creatinine): Both are initially elevated but normalize, indicating improved kidney function.
- Liver function tests (Calcemia, LDH, Albumin, AST/ALT, GGT, Total bilirubin): Initially, some liver function tests are abnormal but improve post-therapy, suggesting a resolving condition or response to treatment.
- Iron and related tests: Initially high iron but ferritin (iron storage protein) is normal. Post-chemotherapy, iron remains high, but ferritin is not determined.
- Vitamin levels (B₁₂, Folate): Initially normal but not determined post-therapy.
- Coagulation factors (V, VII, VIII, IX, XI, XII, vWF:Ag, vWF:func, Fibrinogen): Mostly within the normal range post-therapy, indicating normal blood clotting ability.
- Immunoglobulins (IgG/IgA/IgM): Immunoglobulin levels are antibodies; here they fluctuate but generally remain within the reference range or elevated, which might be reflective of an immune response or immunosuppression post-transplant.
- Complement components (C₃, C₄): Part of the immune system, initially elevated and remain so post-therapy.
- Adrenaline/Noradrenaline (Catecholamines): Initially very high but lower post-transplant.

- Autoantibodies (Lupus anticoagulant): Initially positive, indicating a potential autoimmune disorder, but negative post-transplant, which is an improvement.

The presence of 'ND' indicates that the test was either not done or the results were not available at the time of reporting. Overall, the post-treatment and post-transplant results show an improvement in many parameters, indicating a response to treatment. However, interpretation of blood test results should be done by a qualified medical professional who can consider the full clinical context.

The nutritional value of a food

Next, we provide an image with the nutritional value of baby food (but we don't tell it), even in other languages.

Prompt 68

According to this document, is it a healthy food or not?

NUTRITIONAL INFO	
Approx. composition per 100g	
Energy	382.91 KCal
Carbohydrates	77.93 g
Sugars	6.37 g
Of which added sugar	0 g
Protein	10.35 g
Total Fat	3.31 g
Dietary Fibre	19.62 g
Calcium	392.61 mg
Iron	8.81 mg

Figure 6.4: Nutritional value of a baby food

ChatGPT answers...

The uploaded nutritional information shows a food item with the following contents per 100g:

- Energy: 382.91 KCal
- Carbohydrates: 77.93 g
- Sugars: 6.37 g
- Of which added sugar: 0 g
- Protein: 10.35 g
- Total Fat: 3.31 g
- Dietary Fibre: 19.62 g
- Calcium: 392.61 mg
- Iron: 8.81 mg

Here's a quick assessment based on the numbers:

- High in Dietary Fiber: With 19.62 g of dietary fiber, this food is excellent for digestive health.
- Good Protein Content: 10.35 g of protein is a decent amount for a plant-based source.
- Low in Fat: It's low in total fat, which can be beneficial for those watching their fat intake.
- No Added Sugars: The absence of added sugars is a positive sign, although the natural sugar content is present but not excessive.
- High in Carbohydrates: The high carbohydrate content suggests it's energy-dense, which might be good for active individuals or those needing quick energy.
- Rich in Calcium and Iron: These micronutrients are essential for bone health and oxygen transport, respectively.

Whether a food is considered "healthy" depends on the context of your overall diet and your specific nutritional needs. For someone who is very active, this could be a beneficial source of energy and nutrients. However, for someone on a low-carbohydrate diet or who is less active, the high carbohydrate content might be less suitable. The food seems to be rich in fiber and micronutrients and low in fats, which are generally positive attributes. However, "healthy" is not a one-size-fits-all term, and it's best to consider how this food fits into your overall dietary pattern.

Always consider variety, portion sizes, and balance with other foods you consume throughout the day.

Translation from Latin

We already know ChatGPT's skills in language translation. Now let's see how well it does translating from a photo.

Prompt 69

Can you translate this Latin inscription for me?



Figure 6.5: Latin inscription

ChatGPT answers...

The Latin inscription on the image reads as follows.:

SPQR

IMP. CAESARI NERVAE F

TRAIANO

OPTIMO PRINCIPI

This translates as:

Senatus Populusque Romanus (The Senate and the Roman People)

To emperor César Nerva,

Trajano,

The best ruler.

This is a typical dedication formula praising Trajan, a Roman emperor considered one of the 'good emperors' by history. The abbreviation SPQR refers to the phrase *Senatus Populusque Romanus*, which was the emblem of the Roman State, referring to the government of the republic shared between the Senate and the Roman People. IMP is an abbreviation of *Imperator*, which is the title of Emperor. F is probably short for *Filius*, meaning son, indicating that Trajan is the son of his predecessor, Nerva. *Optimo Principi* is an honorific title meaning the best ruler.

In this case, the translation is incorrect. It translates into Spanish as: "The Senate and the Roman people to Emperor Caesar Trajan, son of Nerva, the best leader." Additionally, the translation does not identify the "F," which means "filius" (son). However, in the explanation, it does refer to the inscription being dedicated to Trajan, although in the translation, it states that it is addressed to "Emperor Caesar Nerva." It seems that Latin is challenging for ChatGPT, but nevertheless, it is capable of providing us with relevant information about the inscription.

Processing an invoice

The invoices, expense claims, and other paperwork are another headache for many managers. Let's see if ChatGPT can help us process them, for example, from a scanned image.

Prompt 70

On the following invoice, can you give me a table with the following information: company, total cost, invoice number and date?

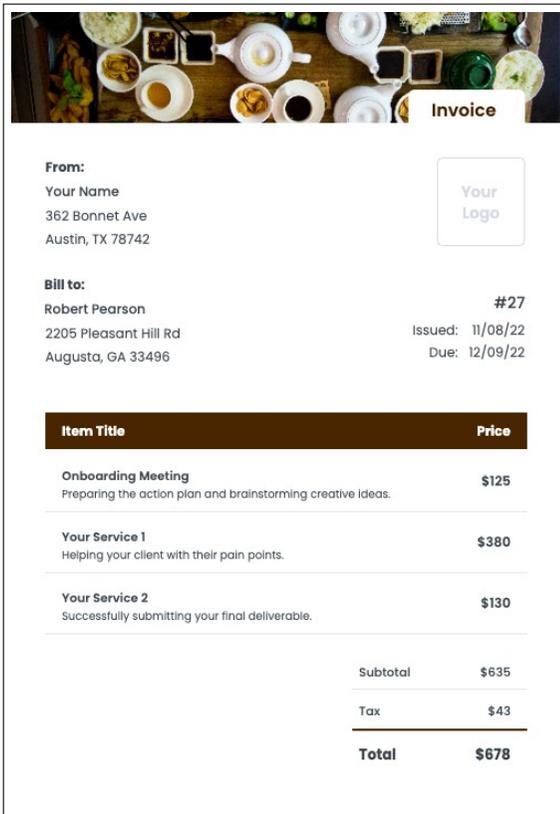


Figure 6.6: An invoice

ChatGPT answers...

Based on the provided invoice, here's the table with the requested information:

| Company | Total Cost | Invoice Number | Invoice Date |

| Your Name | 678|27|11/08/22|

Note that "Your Name" and "Your Logo" are placeholders for the actual company name and logo which should be there.

Et voilà, it seems that ChatGPT is capable of extracting data from an invoice and save us a lot of time. We have to check how reliable ChatGPT's results are, but it looks like we will be able to let it handle a lot of the administrative tasks where we have to

extract image data.

Analyzing graphics

ChatGPT is also capable of interpreting graphs in general and processing them.

Population pyramid

In the following example, we see how ChatGPT is able to interpret socio-economic graphs and process them.

Prompt 71

What information does this image provide?

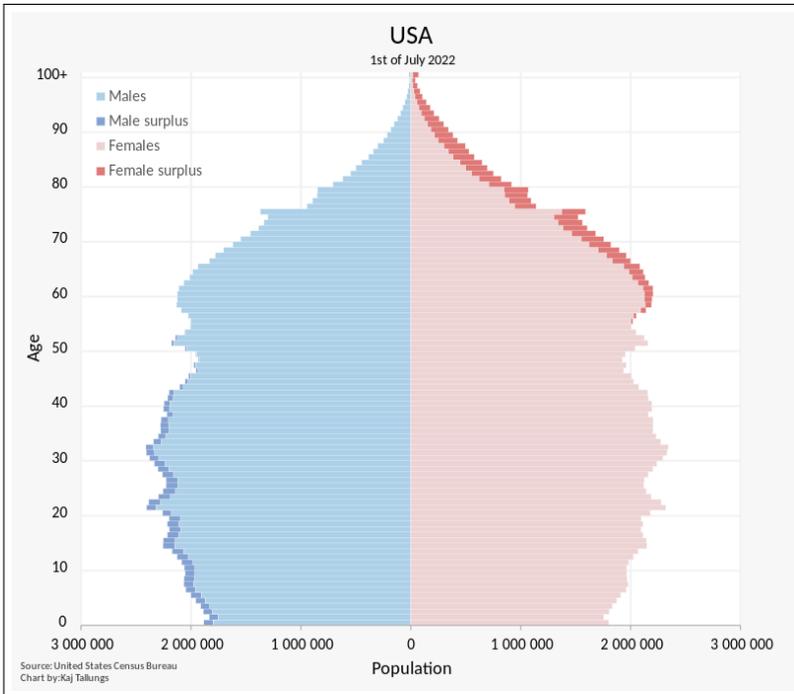


Figure 6.7: USA population 2022

ChatGPT answers...

This image is a population pyramid for the United States as of July 1st, 2022. It shows the distribution of the population across various age groups, separated by gender. Here's a breakdown of the information it provides:

- The left side of the pyramid shows the male population, with each horizontal bar representing a different age group. The length of the bar correlates with the number of males in that age group.
- The right side of the pyramid shows the female population, again with each horizontal bar representing a different age group.
- The term "surplus" appears to indicate where one gender has a larger population than the other within a certain age group.
- "Male surplus" is shown in a darker blue on the left side where there are more males than females.
- "Female surplus" is shown in a darker red on the right side where there are more females than males.
- The population is presented in millions, as indicated by the numbers along the horizontal axis at the bottom.
- The age groups are listed on the vertical axis, ranging from 0 at the bottom to 100+ at the top.

Such population pyramids are often used by demographers to understand the age distribution of a population, which can have implications for planning in areas such as education, healthcare, and workforce development.

Prompt 72

Can you make a graph of what the population pyramid would look like in 20 years?

ChatGPT answers...

To project a population pyramid 20 years into the future, we would need to make assumptions about birth rates, death rates, and migration

patterns over that time period. Since I don't have access to specific demographic models or data projections, I can't create an accurate graph. However, typically, demographers would consider the following trends to make such a projection:

1. **Aging Population:** As a population ages, you would expect to see a larger proportion of the population in the older age brackets due to improvements in healthcare and longevity.
2. **Birth Rates:** If birth rates decline, you would see fewer younger people, leading to a top-heavy pyramid.
3. **Immigration:** The levels and age patterns of immigration can significantly affect the shape of the population pyramid.
4. **Death Rates:** Changes in mortality rates can affect the number of people in each age cohort, especially in older age groups.

These factors combined would result in a population pyramid that may look different from today's, often with a bulge moving up as the large current adult population gets older, and potentially narrower bases if birth rates decline.

To create a simple estimation without detailed data, I can shift the current population distribution 20 years older and then make some assumptions to narrow the younger cohorts to reflect a potential decline in birth rates. Would you like me to proceed with these general assumptions to give you a rough idea?

Prompt 73

Yes please

ChatGPT answers...

Here are two population pyramids:

- On the left, the original pyramid as a simulated baseline representing the population in 2022.
- On the right, the projected pyramid representing a rough estimate of what the population distribution could look like in 2042, given the general assumptions about aging, reduced birth rates, and increased

mortality starting at age 60.

Please note that these graphs are based on hypothetical data and simple assumptions for illustrative purposes. Actual future population pyramids would require more sophisticated demographic modeling and real-world data.

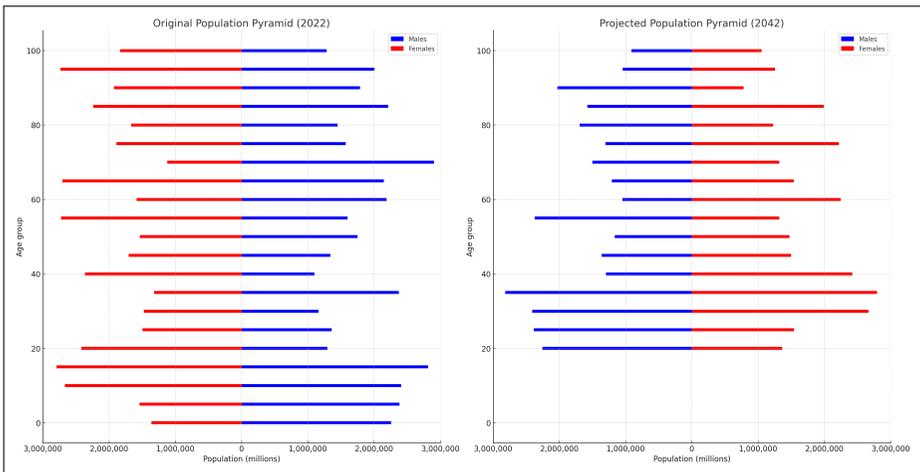


Figure 6.8: USA Population (forecasted by ChatGPT) for year 2042

As shown, ChatGPT has been able to imagine a pyramid (not very realistic in our opinion) where the majority of the population aged between 40 and 50 years has transitioned into old age, and where there are no births in the US.

Financial analysis

We can also request analysis of financial charts such as the following chart of the US stock market.

Prompt 74

Can you explain to me what the average annual growth rate is in this image?



Figure 6.9: Performance of the Standard and Poors 500 index of the U.S. economy

ChatGPT answers...

The image shows a semi-logarithmic chart of the SP 500 index over time, which is useful for visualizing exponential growth rates like those commonly found in stock markets.

To calculate the average annual growth rate (AAGR) from this chart, you would typically follow these steps:

1. Identify the starting and ending values of the index.
2. Determine the number of years over which the growth occurred.
3. Use the formula for AAGR:

$$\text{AAGR} = \left(\left(\frac{\text{Ending Value}}{\text{Starting Value}} \right)^{\frac{1}{\text{Number of Years}}} - 1 \right) \times 100\%$$

However, in this semi-logarithmic chart, the y-axis (price axis) is logarithmic, meaning each step up on the y-axis represents a doubling of the value. Therefore, visually identifying the exact values on a semi-log

chart can be challenging, and it would be more accurate to use the actual data points.

Since I can't visually extract precise numbers from this chart, I can't provide the exact AAGR. If you have the numerical data for the S&P 500's starting and ending values and the timeframe, I can calculate the AAGR for you. Would you be able to provide those details?

Prompt 75

Yes, in 1918 the value is 8 and in 1993 the value is 1024.

ChatGPT answers...

The average annual growth rate (AAGR) of the S&P 500 between 1918 and 1993, based on the values you provided, is approximately 6.68% per year.

The result is correct.

Eyeing trend analysis

More chart analysis

Prompt 76

Analyzing the trend in this graph, what would CO₂ emissions be like in the year 2030?

ChatGPT answers...

The graph shows the evolution of CO₂ emissions in gigatonnes (Gt CO₂) globally from 1990 to about 2019. The line connects the annual data points and shows a general upward trend in CO₂ emissions.

To project CO₂ emissions in the year 2030 based on this graph, one would normally perform a regression analysis using historical data to predict future values. However, I cannot perform a regression analysis without the exact numerical data.

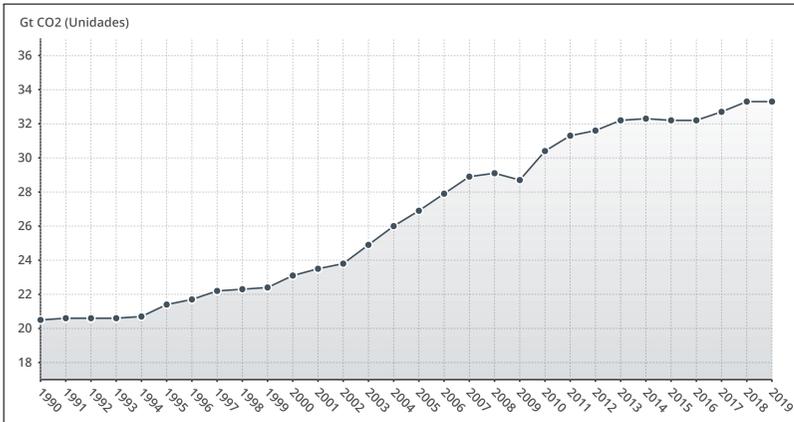


Figure 6.10: Evolution of CO₂ emissions

That said, the trend in the graph appears to be sublinear, suggesting that growth is not steady but is slowing slightly. This could be the result of climate change mitigation measures, such as increased energy efficiency, a shift to cleaner energy sources, or a combination of economic factors and sustainability policies implemented globally.

If the slowing trend continues, we could expect CO₂ emissions to grow at a slower rate around 2030 than in previous decades. However, to make a quantitative prediction would require calculations based on existing data.

If you want a rough projection, I could make a visual estimate based on the current trend of the chart, but keep in mind that this would be highly speculative and does not replace a proper statistical analysis. Would you like me to proceed with a visual estimate?

Prompt 77

Yes, please make a visual estimate.

ChatGPT answers...

Based on the visual trend of the graph provided and linear extrapolation, it is estimated that CO₂ emissions could reach

approximately 47.5 Gt in 2030. It is important to note that this is a simplified estimate and does not take into account possible changes in policies, technology or economic events that could significantly affect CO₂ emissions in the future.

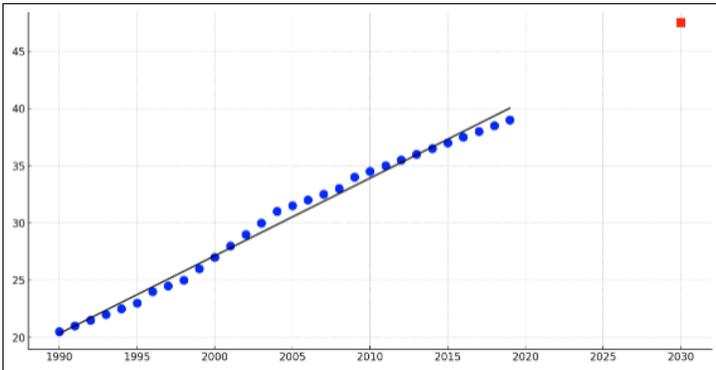


Figure 6.11: CO₂ predictions for year 2030 according to ChatGPT

ChatGPT has been able to interpret the values and generate an estimate for the year 2030.

Analyzing general images

Appraising a damaged car

Changing context, let's see if ChatGPT can help us assess the damage to a car that has suffered an accident.

Prompt 78

The image in the figure shows a damaged car. I need you to draw up a damage report as if you were an expert and give me an estimate of how much it would cost to repair each damaged element.



Figure 6.12: Wrecked car

ChatGPT answers...

As an artificial intelligence model, I do not have the ability to perform an accurate damage assessment of a vehicle or provide a repair estimate based on an image. However, I can give you a general example of how an appraiser might describe the damage and the items that would typically be considered for an estimate:

Damage Report for Accident Vehicle

- Vehicle Description:

- Make: [Vehicle Make]

- Model: [Model of Vehicle]

- Year: [Model Year]

- Color: White

Damaged Elements:

1. Front Fascia.

- Damage: The front fascia has tears and detachment of the structure.

- Repair: Replacement of the front fascia and painting to match the original color of the vehicle.

2. Headlight (affected side):

- Damage: Headlight is broken and non-functional.

- Repair: Headlight replacement and adjustment of the lighting system.

3. Front fender (affected side):

- Damage: Deformation and possible paint damage.

- Repair: Straightening or replacement of the fender and repainting.

4. Front wheel (affected side):

- Damage: Wheel is deformed and unsafe for use.

- Repair: Replace the wheel and check the suspension system and alignment.

5. Front Suspension (affected side): Damage: Possible internal damage due to deformation of the wheel.

- Damage: Possible internal damage due to impact.

- Repair: Detailed inspection and replacement of damaged components.

6. Hood: Repair: Detailed inspection and replacement of damaged components.

- Damage: Slight to moderate deformation.

- Repair: Hood straightening or replacement and repainting.

n:Cost of Repair:

Repair costs can vary considerably depending on the region, the workshop, the availability of spare parts, whether the parts are new or used, and whether original or alternative parts are chosen. A qualified surveyor would evaluate the vehicle in person and consult current price lists for parts and labor to provide a detailed estimate.

To get a true estimate of the damage and repair costs, I would recommend that you take the vehicle to a reputable repair shop or contact your insurance company to have a professional appraiser perform the evaluation.

It seems that ChatGPT is able to identify the damages caused by the accident, although it is reluctant to provide us with an approximate budget. We insist:

Prompt 79

Can you provide an approximate estimate for the repair of each of the damages?

ChatGPT answers...

Unfortunately, I cannot provide an accurate cost estimate without specific information on labor and parts prices in your area, and without being able to inspect the vehicle to assess the full extent of internal and external damage. Repair costs can vary greatly depending on multiple factors, including where you are located, the make and model of the car, the availability and type of parts (original or generic), and the shop's hourly labor rate.

However, I can give you a very general idea of how an appraiser might break down the costs based on the type of damage:

Front fascia: The cost can vary from a few hundred to over a thousand dollars depending on the model of the vehicle and whether the part is original or a replica.

2. Headlight: An original headlight can cost from \$200 to \$1000 or more, not including installation.

3. Front Fender: Repair or replacement could cost from \$150 to \$500, plus the cost of paint and labor.

4. Front Wheel: The replacement of a wheel can range from \$100 for a basic steel wheel to over \$1000 for a high-end alloy or performance wheel.

5. Front Suspension: If components need to be replaced, you could be looking at a range of \$300 to \$1500 or more, depending on the complexity of the suspension system.

6. Hood: A hood could cost anywhere from \$250 for a generic replacement to \$1000 or more for an original hood, plus the cost of paint and labor.

These prices are only estimates based on typical market ranges and should be used as a reference only. For an accurate quote, it would be necessary to have an automotive appraiser physically evaluate the

vehicle and consider all pertinent factors. I recommend that you take the vehicle to an auto body and paint shop to get an accurate evaluation and quote based on your local rates and costs.

Like in previous examples, we see that ChatGPT is very cautious and doesn't cease to warn us about the limitations of the information it provides. Nevertheless, it seems it could be useful to draft an initial report, helping the expert reduce the time required to issue a report.

Comparing mobile phones

Prompt 80

Take on the role of an expert blogger in technology and cell phones. Can you make a comparison of these four cell phones? At the end, draw up an order with the best value for money.

Price	\$1,419 ⁹⁹	-8% \$1,269 ⁹⁹ <small>List: \$1,379⁹⁹</small>	\$1,419 ⁹⁹	\$860 ⁰⁰
Delivery	—	—	—	—
Customer Ratings	4.1 ★★★★★ 415	4.6 ★★★★★ 6,413	4.1 ★★★★★ 415	4.1 ★★★★★ 415
Fingerprint Reader	4.5 ★★★★★	4.3 ★★★★★	4.5 ★★★★★	4.5 ★★★★★
Battery Life	4.4 ★★★★★	4.5 ★★★★★	4.4 ★★★★★	4.4 ★★★★★
Face Recognition	4.3 ★★★★★	4.3 ★★★★★	4.3 ★★★★★	4.3 ★★★★★
Value For Money	3.9 ★★★★★	4.2 ★★★★★	3.9 ★★★★★	3.9 ★★★★★
Brightness	4.4 ★★★★★	—	4.4 ★★★★★	4.4 ★★★★★
Sold By	Amazon.com	Amazon.com	Amazon.com	Amazon.com
Display Size	6.8 inches	6.8 inches	6.8 inches	6.2 inches
Memory Capacity	512 GB	512 GB	512 GB	256 GB
Model Name	Galaxy S24 Ultra	Galaxy S23 Ultra	Galaxy S24 Ultra	Galaxy S24
Operating System	Android 14, One UI 6.1	Android 13.0	Android 14, One UI 6.1	Android 14, One UI 6.1
Connectivity Tech	5G, NFC, Bluetooth, USB, Wi-Fi	Bluetooth, Wi-Fi, NFC, USB	5G, NFC, Bluetooth, USB, Wi-Fi	5G, NFC, Bluetooth, USB, Wi-Fi
Display Type	AMOLED	AMOLED	AMOLED	AMOLED

Figure 6.13: Comparing mobile phones

ChatGPT answers...

Certainly! Based on the provided image, here's a comparative overview of the four cell phones listed:

1. Galaxy S24 Ultra - Price: \$1,419.99

- Customer Ratings: 4.1 stars from 415 reviews
- Fingerprint Reader: 4.5 stars
- Battery Life: 4.4 stars
- Face Recognition: 4.3 stars
- Value For Money: 3.9 stars
- Brightness: 4.4 stars
- Display Size: 6.8 inches
- Memory Capacity: 512 GB
- Operating System: Android 14, One UI 6.1
- Connectivity Tech: 5G, NFC, Bluetooth, USB, Wi-Fi
- Display Type: AMOLED

2. Galaxy S23 Ultra

- Price: \$1,269.99 (after an 8% discount from the list price of \$1,379.99)
- Customer Ratings: 4.6 stars from 6,413 reviews
- Fingerprint Reader: 4.3 stars
- Battery Life: 4.5 stars
- Face Recognition: 4.3 stars
- Value For Money: 4.2 stars
- Brightness: Not available
- Display Size: 6.8 inches
- Memory Capacity: 512 GB
- Operating System: Android 13.0
- Connectivity Tech: Bluetooth, Wi-Fi, NFC, USB

- Display Type: AMOLED

3. Another Galaxy S24 Ultra

- Price: \$1,419.99

- Customer Ratings: 4.1 stars from 415 reviews

- Fingerprint Reader: 4.5 stars

- Battery Life: 4.4 stars

- Face Recognition: 4.3 stars

- Value For Money: 3.9 stars

- Brightness: 4.4 stars

- Display Size: 6.8 inches

- Memory Capacity: 512 GB

- Operating System: Android 14, One UI 6.1

- Connectivity Tech: 5G, NFC, Bluetooth, USB, Wi-Fi

- Display Type: AMOLED

4. Galaxy S24

- Price: \$860.00

- Customer Ratings: 4.1 stars from 415 reviews

- Fingerprint Reader: 4.5 stars

- Battery Life: 4.4 stars

- Face Recognition: 4.3 stars

- Value For Money: 3.9 stars

- Brightness: 4.4 stars

- Display Size: 6.2 inches

- Memory Capacity: 256 GB

- Operating System: Android 14, One UI 6.1

- Connectivity Tech: 5G, NFC, Bluetooth, USB, Wi-Fi

- Display Type: AMOLED

When it comes to value for money, we have to consider not just the cost, but also the features and benefits of each model. The Galaxy S23 Ultra appears to stand out with a high customer rating and a good value-for-money score. Even though its operating system is slightly older (Android 13.0 compared to 14 on the S24 models), it offers a similar display size and memory capacity as the more expensive S24 Ultra models, but at a significantly lower price—especially considering the 8% discount, making it \$1,269.99.

Best Value for Money: Galaxy S23 Ultra

- It's the most cost-effective option, given its lower price after discount and its high customer satisfaction ratings.
- It retains high-end features such as a large display size and significant memory capacity, which align closely with the more expensive S24 Ultra models.
- The small difference in the operating system version is unlikely to impact the average user significantly.

In conclusion, if a customer is looking for the best balance between price and performance, the Galaxy S23 Ultra is a smart choice. However, if the latest operating system and maximum storage are must-haves, and budget is less of a concern, the Galaxy S24 Ultra models would be suitable options. The Galaxy S24 might be an alternative for those wanting a cheaper option and can manage with less internal storage.

Incredible. Not only ChatGPT was capable of recognizing all text in the figure, but it has also generated an accurate piece of writing that can be used for a technology blog.

Evaluating an essay by a primary school child

Evaluating student work is a repetitive and very laborious task. Could ChatGPT help teachers with these tasks to improve their objectivity?

Prompt 81

In the following essay by a sixth grader, I need you to evaluate with a score from 0 to 10 the following aspects: clarity, lexical richness, spelling mistakes. Suppose you are a very demanding language and literature teacher.

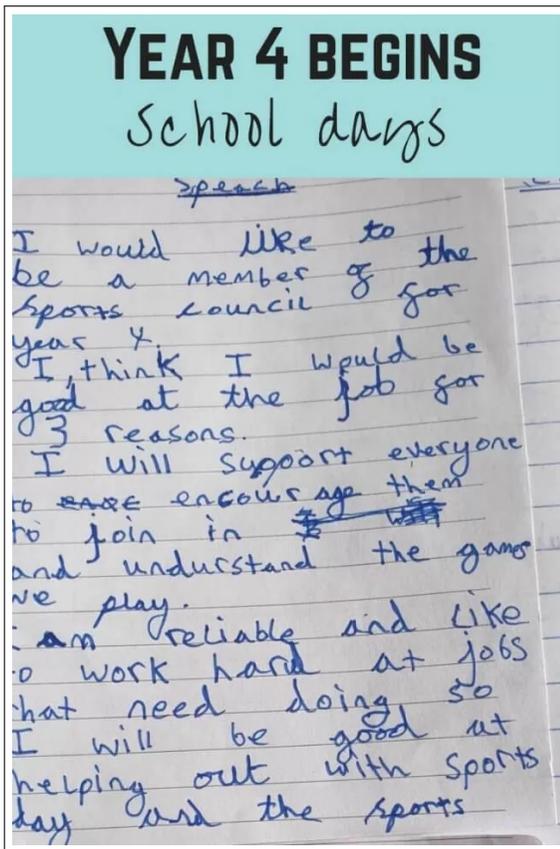


Figure 6.14: Writing a sixth grader

ChatGPT answers...

Based on the provided image of a handwritten essay by a sixth grader, I'll evaluate it on clarity, lexical richness, and spelling mistakes.

Clarity (0-10): The essay conveys the student's desire to join the sports council and lists reasons supporting their candidacy. The message is straightforward, with intentions and justifications clearly stated. There are some issues with the flow due to crossed-out words and minor grammatical errors, but the overall intent comes through. Score: 7

Lexical Richness (0-10): Lexical richness refers to the range and variety of vocabulary used. In this essay, the vocabulary is relatively simple, which is expected for a sixth grader. There are no complex words or phrases that show a high level of lexical variety. However, the student uses subject-specific words like "sports council" and "reliable," indicating an attempt to use relevant vocabulary. Score: 6

Spelling Mistakes (0-10): There are visible corrections in the text, indicating awareness of some spelling mistakes. However, since the image is partially obscured, it's hard to evaluate the entire text accurately. From the visible portion, there appears to be a minor mistake with the word "encourage," initially misspelled and then corrected. Given the visibility and assuming the rest of the text follows a similar pattern, the student seems to have a decent grasp of spelling but with occasional errors. Score: 7

Please remember, assessments like these can be subjective, and it's essential to provide constructive feedback that encourages improvement, especially for young learners.

ChatGPT is capable of reading hand-written text, understand the contents and provide an accurate evaluation along with an explanation of the scores.

Math exercises

Below, some math exercises from a second-grade elementary student. We do not specify more than the following prompt:

Prompt 82

Explain to me if my son has solved these exercises well.

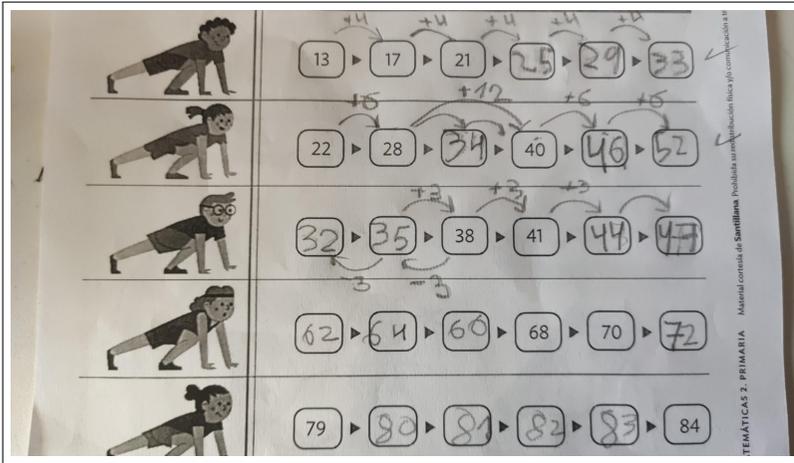


Figure 6.15: Exercises of mathematical series

ChatGPT answers...

The image shows a series of number sequence exercises where the objective is to identify the pattern and complete the missing numbers. I will analyze each row and tell you if the exercises have been solved correctly.

First row: The sequence increases by 4 each time ($13 + 4 = 17$, $17 + 4 = 21$, etc.). It seems to be correctly solved with the sequence continuing up to the number 29.

Second row: The sequence increases by 6 each time ($22 + 6 = 28$, $28 + 6 = 34$, etc.). However, there is an error in the sequence; the number after 34 should be 40 ($34 + 6 = 40$), but 46 has been written. Therefore, the number 46 is incorrect; the correct number should be 40.

Third row: The sequence increments first by 3 and then by 4, alternately. The number after 32 should be $32 + 3 = 35$, but 25 has been written, which is incorrect. Therefore, the correct sequence should be 32, 35, 39, and so on.

4. Fourth row: The sequence seems to decrease first by 2 and then by 3, alternately. The number 62 is followed by 61 (should be $62 - 2 = 60$), and then 60 is followed by 68 (should be $60 - 3 = 57$), which is incorrect. The correct sequence should be 62, 60, 57, and so on.

Therefore, it appears that there are errors in the sequences of the second, third and fourth rows. The first row is correct.

Here ChatGPT is mistaken, as the exercises are solved correctly. Additionally, it has failed to identify and analyze the fifth row of series present in the photo. Nevertheless, its ability to interpret the image and deduce the intention behind each exercise is impressive.

A word search

We change the subject again and we are going to set ChatGPT a new challenge: to solve a word search. This requires ChatGPT to understand what an alphabet soup is, to be able to read the letters with their horizontal and vertical positions, and to find valid words.

Prompt 83

Can you identify Spanish words in this alphabet soup?

ChatGPT answers...

There appears to have been a technical error in attempting to extract the text from the alphabet soup. Given the nature of an alphabet soup, which contains words in multiple directions and possibly overlapping, the task of identifying words is something that generally cannot be done with OCR and requires visual inspection.

If you want me to look for specific words, I can try to search for them visually. Otherwise, if you have a set of words you want to search for in the alphabet soup, you could provide them to me and I could help you search the image for them.

We are offered the possibility of searching for specific words. Let's try.

Prompt 84

Can you find the word VAGO?



Figure 6.16: Alphabet soup

ChatGPT answers...

I am going to visually look up the word "VAGO" in the alphabet soup you have provided. Allow me a moment to do this.

After visually reviewing the alphabet soup, I can confirm that the word "bum" is present. It is found in the fifth row starting from the top and goes from left to right.

Here ChatGPT has made a mistake, as the word 'VAGO' is in the eighth row. Once again, it seems that ChatGPT still has a few things to improve. It's not surprising, it's only a little over a year old!

Checkmate

Chess is one of the classic examples where successive machines have attempted to surpass the great masters of all time. Let's see how ChatGPT performs.

Prompt 85

Can you explain to me what happened in this chess game and who is the winner?

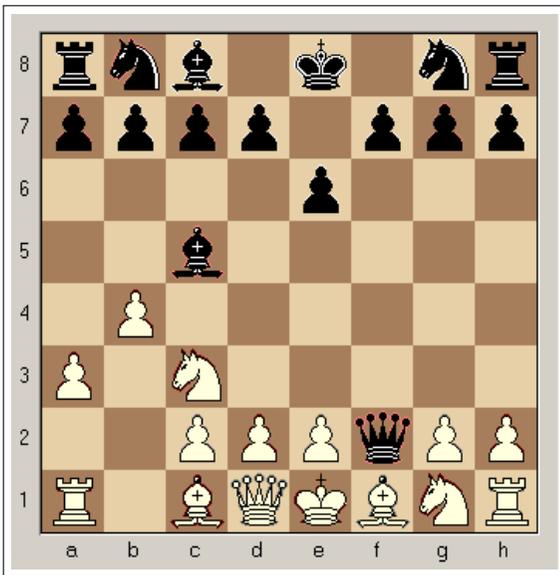


Figure 6.17: Chess

ChatGPT answers...

The picture shows a chess position right at the end of a game. The black side has checkmated the white side. The white king on e1 is in check by the black queen on d2, and there is no move that white can make to escape the check:

1. There is no piece that can capture the black queen.
2. No piece can block the check, since the queen and king are on adjacent squares.
3. The white king cannot move to any square that is not threatened by the black queen.

Since it is a checkmate, the game is over and the winner is the player with the black pieces. This is a classic example of a "corridor checkmate",

where a rook or queen checkmates an enemy king that is blocked by its own pieces and cannot escape to any free square.

In this case, ChatGPT is able to analyze the image, identify the pieces and their positions as well as the move. It seems that ChatGPT could be a good chess player.

Explaining a joke from a comic

Now let's see if ChatGPT is able to understand a joke from an image in a comic. We're not making it easy for it!

Prompt 86

Can you explain to me what is going on in this photo and what is the joke if there is one?



Figure 6.18: A joke

ChatGPT answers...

In the cartoon, a mother asks her son if he enjoyed his first day at school, to which the son responds with surprise, asking if he has to go back again tomorrow. The humor here comes from the son's unexpected

interpretation of "first day," as if he thought school was only for a single day, rather than the start of an ongoing daily routine. The joke plays on the common comedic trope where children are often unaware of or reluctant about the realities of daily school attendance.

Interesting, it seems ChatGPT has some sense of humor.

Interpreting landscape images

We make it a little more challenging with some ambiguity.

Prompt 87

What season of the year would you say is in this image?

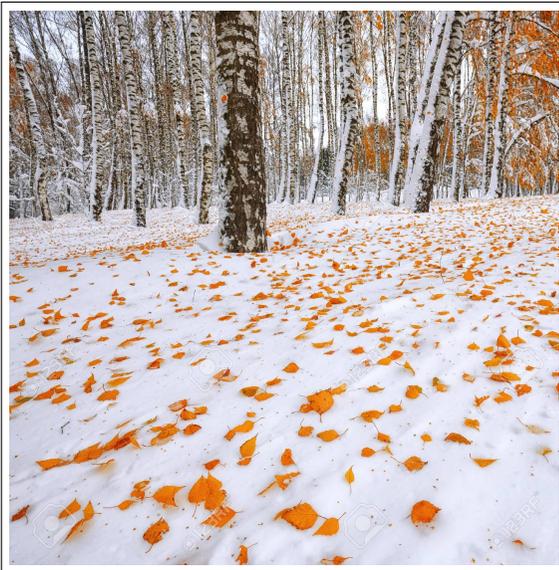


Figure 6.19: Snowy landscape

ChatGPT answers...

The image shows a scene that could be considered late autumn or early winter. This is inferred because there is snow on the ground, suggesting that there has already been a typical winter snowfall, but there are still

orange autumn leaves on the snow, indicating that not all the leaves have fallen from the trees, which is characteristic of autumn. These conditions usually occur when the seasons are in transition.

We see it's not so easy to fool ChatGPT; it notices the presence of snow (winter) and fallen leaves (autumn) and provides a coherent result.

Facial recognition

Next, we attempt to evaluate ChatGPT's ability in facial recognition.

Prompt 88

In this image, can you tell me what feelings the person is showing in each case?



Figure 6.20: Sentiment analysis and facial recognition

ChatGPT answers...

In the image, it appears that the person is expressing a range of different emotions and reactions through their facial expressions:.

1. First row, left: Disbelief or confusion.

2. First row, center: Happiness or mild satisfaction.
3. First row, right: Irony or mockery.
4. Second row, left: Looking up may indicate thought or reflection.
5. Second row, center: Seriousness or neutrality.
6. Second row, right: Contentment or restrained laughter.

These interpretations may vary depending on the context and the individual perception of the observer. Human facial expressions are complex and can convey multiple emotions simultaneously.

It's amazing what ChatGPT is capable of doing. Perhaps in the future, ChatGPT will also be able to detect lies from images.

More reasoning games

Prompt 89

Is there a dead person in this image? Do you think he committed suicide or was it a murder? Justify your answer



Figure 6.21: Murder or suicide?

ChatGPT answers...

The image shows an illustrated crime scene for a riddle or game, in which you must determine whether the person was the victim of suicide or murder. Here is my analysis based on the visible elements:

- The person is on the ground with a pool of what appears to be blood near the head, indicating a violent death.
- The fallen chair could suggest a struggle or that it was knocked over in the process of death.
- There is a note on the table that could be interpreted as a suicide note or a clue left by the killer.
- The gun in the person's hand could suggest suicide, but it could also have been placed there by someone else to simulate a suicide.
- The open window and the presence of a suitcase could imply that someone entered or exited through the window or that the person was preparing for a trip.
- The television on and the phone ringing suggest that the death occurred suddenly.

These elements can be interpreted in different ways, and without more information, it is difficult to come to a definitive conclusion. In real life, a full investigation would be necessary, including examining physical evidence, conducting an autopsy, and interviewing possible witnesses or suspects. In the context of a game or riddle, participants are encouraged to look for hidden details or clues that may solve the proposed mystery.

The analysis of the image is quite comprehensive, although there are some errors. There is no suitcase visible, and the chair is not fallen. The gun in the left hand suggests that, if the person is right-handed, it has been deliberately placed there (nobody shoots themselves with the other hand). Again, ChatGPT remains cautious in its response.

Prompt 90

If you had to give a value from 0 to 10 where 0 is certain suicide and 10 is certain murder, what value would you give?

ChatGPT answers...

As an AI assistant, I do not have the ability to form opinions or make subjective judgments as a human being would. My opinion is based on logical analysis of the available information. In the image presented, there are elements that could be indicative of both suicide and murder. For example, a gun in the victim's hand could suggest suicide, but other elements such as an open window or a fallen chair could hint at the possibility of murder.

Given that the image is an illustration and possibly part of a riddle, and that I do not have the ability to examine the evidence the way a forensic investigator would, any number I provided would be completely arbitrary and would not reflect a realistic assessment of the scene.

If this were an exercise in logic in the context of a game and not expected to make a decision based on actual forensic evidence, one might assign an intermediate number such as a 5 to reflect this uncertainty. But I must emphasize that this number would have no basis in forensic analysis and would be merely speculative in the game setting.

Artistic creation

We are now delving into the use of artificial intelligence for more creative tasks. In image creation, besides ChatGPT and DALL-E, there are many other tools with similar capabilities from companies like Adobe, Canva, etc.

To generate images with ChatGPT, it's important to first write the subject of said image (for example, a dog in a bakery) and then add information about what we want to guide the tool. To illustrate this technique, we will try to generate various styles of the same image, and we will see how well the AI represents them. If you want your image to have a very specific style, like that of a well-known artist such as Monet or Picasso, you can also define it

so that DALL-E adapts to that style. Of course, the more detailed the description, the more accurate the result will be.

The structure of a good prompt for generating images consists of the following:

- **Subject** (a person, object, animal, character...)
- **Action** (what he is doing, describing the context, e.g. "riding on a motorcycle, wearing a summer hat...")
- **Style** (3D rendering, impressionist, anime, disney, fantasy, photography, illustration...)
- **Artist** (add the name of a specific artist to serve as a reference, you can add several to match their styles)

We will try different styles using a dog in a bakery as the base prompt.

Prompt 91

A dog tending in a bakery, disney style, detailed, realistic, animation

Prompt 92

A dog attending in a bakery, illustration drawn by a child, crayons.

Prompt 93

A dog attending to a bakery, cubist painting, drawn by Picasso.

Prompt 94

A dog attending a bakery, drawing made with a single line, simple, minimalist, few details.



Figure 6.22: Example of an image generated by DALL-E for the prompt: "A dog attending a bakery, disney style, detailed, realistic, animation".



Figure 6.23: Example of an image generated by DALL-E for the prompt: "A dog attending a bakery, illustration drawn by a child, crayons".



Figure 6.24: Example of an image generated by DALL-E for the prompt: "A dog attending in a bakery, cubist painting, drawn by Picasso".



Figure 6.25: Example of an image generated by DALL-E for the prompt: "A dog attending a bakery, drawing made with a single line, simple, minimalist, few details".

A dog attending a bakery, post-impressionist painting,

Painted by Van Gogh.



Figure 6.26: Example of an image generated by DALL-E for the prompt: "A dog attending in a bakery, post-impressionist picture, painted by Van Gogh".

Prompt 96

A dog serving in a bakery, anime style

Prompt 97

A dog whose head is made of bread and pastels, surrealist painting.

Prompt 98

A golden retriever dog, standing at the table of a bakery delivering freshly baked bread to customers, realistic, detailed photo.

With this simple example of the dog in the bakery, we have seen how we can generate different types of images by choosing



Figure 6.27: Example of an image generated by DALL-E for the prompt: "A dog serving in a bakery, anime style".



Figure 6.28: Example of an image generated by DALL-E for the prompt: "A dog whose head is made of bread and cakes, surrealistic painting".

multiple details and aspects. Like ChatGPT, these tools have revolutionized the fields of graphic design, art, advertising, architecture, and generally all disciplines where graphic



Figure 6.29: Example of an image generated by DALL-E for the prompt: "A golden retriever dog, standing at a bakery table delivering freshly baked bread to customers, realistic photograph, detailed".

representation is a fundamental component. After images, the next step is creating video from text, which in the future could lead us to generate a series or movie from a script; as we can see, artificial intelligence seems to have no limits.

More artistic creation

Prompt 99

Can you change the shades of pink to blue in this room?

ChatGPT answers...

Sure enough, here is the room with the pink tones changed to various shades of blue.

As can be seen, ChatGPT has attempted to recreate a similar (but not identical) room in shades of blue, which is not exactly what we wanted.

More examples:



Figure 6.30: Pink room



Figure 6.31: Blue room

I have few ingredients in the fridge and I want to make a stew with chickpeas, egg, green beans, blood sausage, carrots and potatoes. Can you show me how this stew would look like?

ChatGPT answers...

Here is the illustration of the stew with the ingredients available to you. It is shown in a clay pot to highlight its homey and hearty character.



Figure 6.32: Stew

It looks more like a painted composition than an actual recipe. We can also create logos for different types of companies or to decorate jerseys for various types of clubs.

Prompt 101

I need you to create a logo with a yellow tiger and a red dragon for a martial arts club.

ChatGPT answers...

Here is the logo with a yellow tiger and a red dragon for a martial arts club.



Figure 6.33: Logo for martial arts

Next, a sign for a coffee shop:

Prompt 102

I need a banner for a coffee shop called Cafetería Asturias. The banner should have bright and flashy colors, with an image that evokes Asturias, for example an orreo, and with a typical medieval font style.

ChatGPT answers...

Here is the banner for "Cafetería Asturias" you requested. It features bright colors and includes an image that evokes Asturias, with a medieval style typography for the name of the cafe.

A horror mythology image to print a poster.



Figure 6.34: Cafeteria Asturias

Prompt 103

I need an image for a poster related to mythological horror beings. It should include a hydra, a dragon, a werewolf, a gorgon, a vampire and Jack the Ripper.

ChatGPT answers...

Here you have the poster that combines mythological beings of terror in a composition of dark and ominous atmosphere.



Figure 6.35: Horror collage

We can also create wallpapers for our audio conferences or as desktop backgrounds.

Prompt 104

I need a cybersecurity and hacker related wallpaper with matrix style.

ChatGPT answers...

Here's the Matrix-style cybersecurity and hacker-themed wallpaper.



Figure 6.36: Wallpaper

The possibilities are endless.

Summary and exercises

In this chapter, we have explored the possibilities offered by ChatGPT in handling images, both in interpreting and solving problems, as well as in artistic creation. It is recommended to continue practicing with new examples:

- 1) Show it a hieroglyph in Egyptian and ask it to explain it to you.
- 2) Show it some Chinese characters and ask him to translate them for you.
- 3) Show it an X-ray of a spine and ask if it's misaligned or not..
- 4) Show it a picture of a tree you don't know and ask it to tell you what tree it is and its characteristics.

- 5) Show it the nutritional information of a chocolate bar and ask it to approximate the Nutriscore value for that product.
- 6) Ask it to draw a superhero similar to Batman (ChatGPT can't work with copyrighted images) hugging a child he just saved from a dog bite.
- 7) Ask for an image of dragons playing basketball on Mars.
- 8) Ask for a design of a perfume bottle with citrus tones. The perfume should evoke beauty, nature, and tranquility.
- 9) Think of a funny image for a comic-style T-shirt, for example, a chicken next to a fried egg (which was his friend Pepe) asking him what happened to him.

Audio, conversations, customization, limits and risks

THE web is not the only way to utilize AI models, and chat is not the only mode of interacting with them. In this final chapter, we will discuss other ways to use LLMs and other more advanced topics that have not been covered in the previous chapters, as well as customization options or the risks and limits of this technology.

Alternative uses

Thanks to the mobile version or the paid version of ChatGPT, we have alternative ways to make the most of the models. In this section, we will describe them and give you ideas for using them.

Audio

The first one is through audio messages (similar to WhatsApp) and is only available for the mobile application of ChatGPT. To use it, simply tap the microphone icon as shown in the Figure 6.1, and it will start recording until we tap again.

Indeed, it is an incredibly useful feature for transcribing anything, but it becomes even more powerful when combined with the model. The possibilities are endless; you can use it to better prepare a presentation or to organize your thoughts and generate a draft of an article.

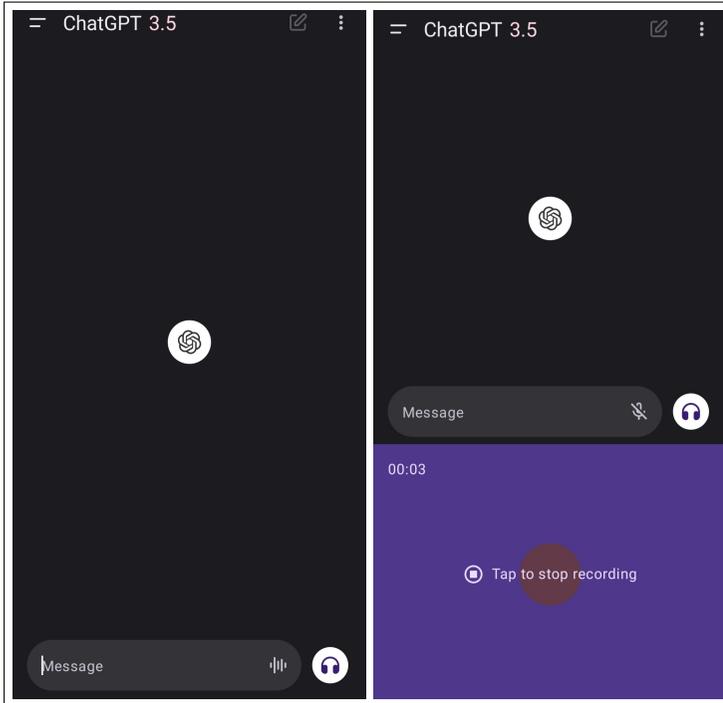


Figure 6.1: Screenshot showing the use of audio messages.

Prompt 105

I need help with a presentation. I will share the details below and I want your advice on how to make it better. Also, can you think of questions people might ask during the presentation?

ChatGPT answers...

Of course, I will be happy to help you with your presentation. Please share the details of your presentation, including the topic, target audience and estimated duration, and I will be happy to provide you with tips on how to improve it. Also, I can help you anticipate some possible questions the audience might ask, but I need more information about the content of the presentation to do this effectively. Please provide the details and I will be ready to help you.

You can even use it to record group conversations or with other people. For example, a family member explaining a complex recipe to you and asking ChatGPT to help you understand it better.

Prompt 106

I am now going to record my grandmother explaining a recipe to me. Please organize the recipe in a readable way and add tips or recommendations to it.

ChatGPT answers...

Got it! Here's the recipe organized in a readable way, along with some tips to make it easier:

Recipe by [name of recipe]

Ingredients:

[List of ingredients]

Instructions:

Preparation: ...

Conversation

Another very interesting way to interact with the model is through audio conversation. It's similar to a phone conversation with the model; the application gives you the option to choose from various different voices that will make you doubt if it's not actually a real person. To initiate it, you should click on the headphones and switch to the application's interface. Different images will be displayed depending on the model's state: listening, thinking, or speaking. At any time, you can interrupt it simply by tapping the screen again while it's talking or thinking. In Figure 6.2, you can see an example.

This mode is much better than text when you want short and quick answers to your questions. For example, a very useful application is using it to practice a new language. Simply start speaking in the desired language, and the model will switch and

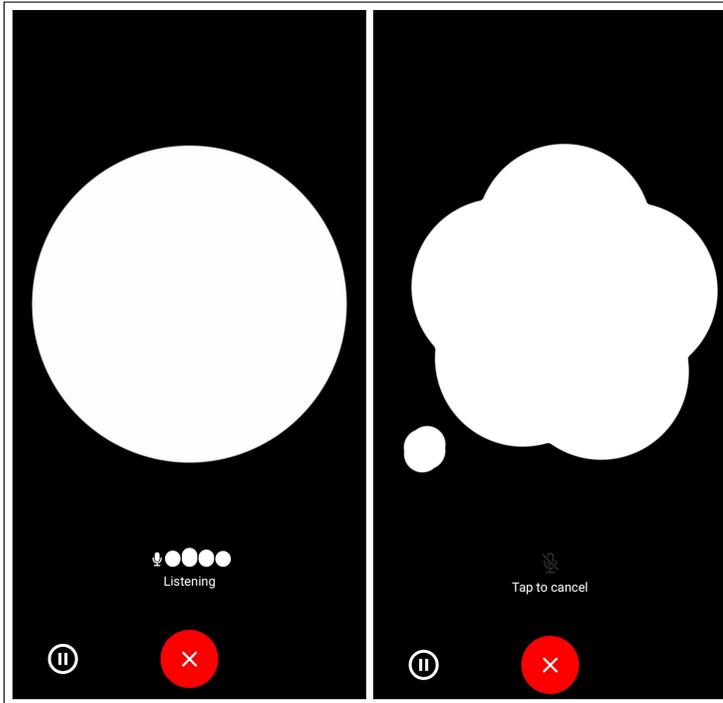


Figure 6.2: Screenshot showing the conversation mode.

respond to you in the same language. You can customize this experience a lot by describing a situation you want to simulate and the role you want the model to assume. Below, we provide an example you can use:

Prompt 107

I'd like to practice my conversation skills by simulating an everyday conversation with you. In this scenario, you will play the role of a coffee shop employee, interacting with customers and dealing with typical coffee shop situations. I will be a customer. Please guide me in using vocabulary related to customer service and coffee preparation. Start the conversation by welcoming me and asking what I would like to order.

ChatGPT answers...

Of course! I'd be happy to help you practice your conversation skills in a coffee shop scenario.

Coffee Shop Employee: Good morning! Welcome to our coffee shop. What can I get started for you today?

Of course there are thousands of other applications that you can try, for example to practice how to handle a negotiation or to practice a future situation by simulating it.

Prompt 108

Let's simulate a negotiation situation in which I want to practice my skills. You will assume the role of a landlord who insists on a rent of 2000€ without allowing any works in the space. I will act as a potential tenant interested in discussing the possibility of reducing the cost of the rent and carrying out minimal works to adapt the premises to my needs. Your objective is to maintain a firm stance, defend your initial conditions and present solid arguments against my proposed modifications.

ChatGPT answers...

Of course, I can assume the role of the owner in this negotiation simulation. Here is my initial position: the rent of the premises is 2000€ per month and I am not willing to allow any work in the space. I am sure this is a fair price given the location and the characteristics of the premises. What is your proposal to discuss these conditions?

Customized instructions

Perhaps there will come a point where you use these tools every day and you would like to customize the model's responses to your liking or to the tasks you perform. This can be done automatically by starting a conversation using the "custom instructions" option, as shown in Figure 6.3.

The information you input will be sent to the model

Customize ChatGPT

Custom Instructions ⓘ

What would you like ChatGPT to know about you to provide better responses?

0/1500

How would you like ChatGPT to respond?

0/1500

Enable for new chats

Cancel
Save

Figure 6.3: Sample of available plugins.

automatically when starting the conversation. The first option is used to provide the model with more information about you so that it can respond to you in a more personalized way. For example: your occupation, preferences, etc. The second option is much more interesting; it is used to give commands to the model, which it will rigorously follow. For example, you can set rules for your children to use this language model more safely: "Respond in a simple and friendly manner. Use words that a small child of 10 years old can understand. Avoid any adult topics."

Prompt 109

Who was Napoleon?

ChatGPT answers...

Napoleon was a very important man in history. He was a leader of France a long time ago. He was like a very powerful general and then he became an emperor. He did many things in Europe, like fighting in wars and changing some laws. Some people think he was a great leader, but some people are not sure. In short, Napoleon was an important leader of France in the past.

Or, for example, to add shortcuts that you need: "Every time my message starts with a -, respond with less than 20 words."

Prompt 110

-Who was Napoleon?

ChatGPT answers...

Napoleon was a French military leader and emperor who played an important role in the history of Europe.

Plugins

Throughout the book, we explore the possibilities that this technology can offer. Despite that, it is important to remember that ultimately, the LLM only produces text, with its own problems and limitations. One way to extend the capabilities of these is through the plugins offered by the OpenAI platform. Basically, they are external programs with which the model communicates to perform tasks that it could not do without them. The following image shows an example of the store where we can choose which ones we want to use. In Figure 6.4, we show some of them.

One of the main limitations of LLMs is basic mathematics, which they struggle with. As we can see in the following example, the model is unable to perform three-digit

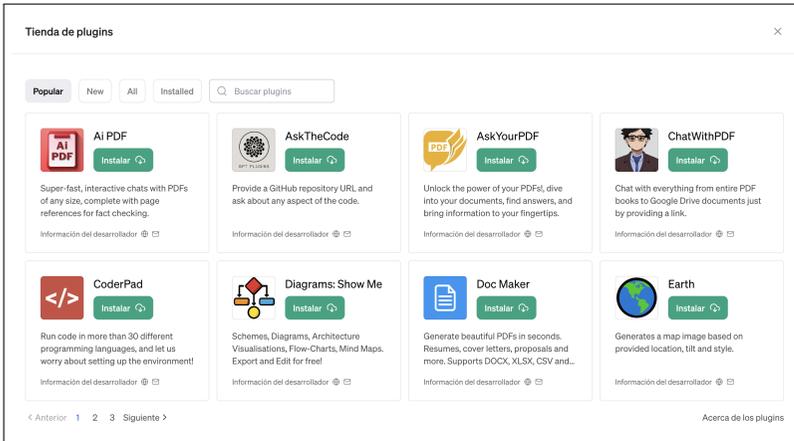


Figure 6.4: Sample of available plugins

multiplications that elementary school students can easily do.

Prompt 111

Tell me the result of the following operation: 552×788

ChatGPT answers...

437376

I made it up. The correct result is 434976.

Therefore, from the company Wolfram Alpha, they decided to create their own plugin to provide mathematical capabilities to the models. This company has a web service that solves all kinds of mathematical formulas or equations. To use it, we simply have to search for the corresponding plugin in the search bar and activate it. As shown in the following prompt:

Prompt 112

Tell me the result of the following operation: 552×788

ChatGPT answers...

434976

Now, ChatGPT has accessed Wolfram Alpha to solve the multiplication.

With the plugin activated, ChatGPT is now capable of performing more complex mathematical tasks. Let's see an example:

Prompt 113

Solve the following equation:

$$6x+y=25$$

$$2x3y=25$$

ChatGPT answers...

$x=5$ and $y=5$

Limits and risks

Throughout the book, we have seen all the capabilities that these language models have and all the problems they can solve for us in our daily lives. However, this technology also has its limits and issues, and we must be aware of them if we want to make the most of it.

A risk to be aware of is flattery in its responses. In the final phase of training, the model is trained with feedback from users. You've probably experienced this when you request several responses to the same prompt, and the platform asks which one you prefer. This way, the language model adapts to the users' preferences and learns to respond according to them. This behavior, which initially seems useful and harmless, has brought indirect problems such as flattery. In subjective opinions or aspects, the model will respond with what it thinks you want to hear, or in other words, it will give you the opinion it thinks you will like.

Companies like Anthropic have noticed this and try to avoid it. In their experiments, they have found that if the model discovers (or deciphers) your thoughts on politics, it will give you responses that it considers to be in line with your ideas.

LLMs also make mistakes, as we have seen in some examples, and the problem is that often their errors are convincing, and we may take them as valid. These erroneous yet believable responses are generally known as hallucinations, and both companies and researchers are working to eliminate them and make the responses of LLMs more reliable. To minimize hallucinations, it is often a good idea to add the following sentence to your prompt:

Prompt 114

Tell me the result of the following operation: 552×788 . If you do not know the answer, please tell me that you cannot find the answer.

ChatGPT answers...

It seems there is a technical issue with my calculation tool at the moment. Nonetheless, I can still help with the multiplication. The result of multiplying 552 by 788 is 435,216.

Still, the result is incorrect.

In conclusion

IN this book, we have tried to gather some basic tricks to learn how to use ChatGPT and other LLMs step by step. We started with simple examples and gradually introduced more advanced techniques to show the reader the immense possibilities of this new technology, which evolves day by day and never ceases to amaze us.

With what you have already learned and practiced, it is time that you seek out new prompts and applications for your daily life, both at home and at work. Just as programming is learned by programming, writing prompts is also learned by interacting extensively with LLMs, through trial and error, starting with simple questions and then moving on to more complex scenarios. Before the reader embarks on their own journey in using LLMs, we want to conclude with some advice and recommendations.

Experiment with various question and task formats, such as creative writing, problem solving, or code generation. It is helpful to read the available documentation and usage examples to gain a deeper understanding of its advanced features. Feedback is crucial, so by correcting incorrect or inaccurate ChatGPT answers, you contribute to their learning. Lastly, maintain a critical approach and be aware of the limitations of the model, ensuring that you verify the information provided and do not rely entirely on it for critical decisions.

Recall that LLMs experience sporadic hallucinations. Hallucinations in the context of ChatGPT and other language models refer to when the model generates information that is false, inaccurate, or nonsense, but does so convincingly. These responses can range from subtle errors in data or

dates to completely fictitious claims that appear convincing. Hallucinations are a known challenge in natural language processing AI and can be caused by various reasons: limitations in training data, the way a question is formulated, or inherent biases in the model. Combating hallucinations involves techniques such as adjusting training methods, improving response validation algorithms, and designing interfaces that allow users to provide feedback to correct these errors.

It's also interesting for you to learn more details about LLMs, such as their main configuration parameters like *temperature* and *top probability*. The temperature controls the degree of randomness in the LLM's responses. If set to zero, it will always choose the most probable response, while higher values allow it to choose between different responses based on their estimated probability. In other words, temperature allows us to control the "creativity" of the LLM. Another common parameter is *top probability*, which allows us to set what responses the LLM can choose: if set to 1, it can choose from all responses, but if, for example, set to 0.8, it can only choose the most probable responses that sum up to 80

Again, *top probability* allows us to control the randomness of the responses. There are also parameters that allow penalizing word repetition or setting the maximum size of the LLM's response. As you progress in using LLMs, it's convenient for you to become familiar with all these possibilities. Currently, many of these options are only accessible through the LLM's programming interface, in more advanced or paid versions, but they will likely become more accessible in the future.

But hey, that's enough of us talking so much about ChatGPT, let's let it close the book.

Prompt 115

How would you end the last paragraph of a ChatGPT book for beginners?

ChatGPT answers...

By the end of this book on ChatGPT for Beginners, you have traveled an exciting path of discovery in the vast universe of artificial intelligence. Now, you possess the tools to initiate creative conversations, explore diverse applications, and unlock the unlimited potential of language technology. Remember, this is just the starting point. Innovation never stops, and your journey into the realm of artificial intelligence has just begun - go ahead, keep experimenting, learning and creating! May this book mark the beginning of your journey into a future where the possibilities are as endless as your imagination allows.

