Module 1 - Introduction to AI

Introduction to Google AI Essentials

Google AI Essentials overview

Hello, and welcome! Google AI Essentials is a self-paced course designed for professionals across roles and industries who want to gain in-demand AI skills to supercharge their skill set and improve their productivity. No previous experience in artificial intelligence (AI) is required.

This course is taught by AI experts at Google who are dedicated to making the technology helpful for everyone. These experts will share their knowledge and insights with you as you unlock the practical applications of AI in the workplace. Throughout the course, you'll gain valuable hands-on experience using AI tools and discover powerful ways that AI can transform your daily workflow.

Elevate your skills

AI is quickly transforming today's workplace, so developing a strong understanding of the technology could give you a competitive edge in a variety of industries. AI can also help make your days at work more productive and valuable, too.

Generative AI is a specific form of AI that focuses on creating new content—like images, music, video, and text—based on examples it's been trained on. By learning to use generative AI, you can tackle routine tasks on your to-do list more efficiently, get creative inspiration when you're feeling stuck, enhance the quality of your work, and bring your ideas to life.

Course progress

Google AI Essentials has five modules:

1. **Introduction to AI** (*current module*): Discover how AI works and explore foundational AI concepts, such as machine learning. Learn about the rise of generative AI and how to

perform tasks with it. By the end of this module, you'll have an understanding of the capabilities and limitations of AI tools and how to integrate generative AI in the workplace.

2. **Maximize Productivity With AI Tools:** Leverage generative AI tools to speed up work tasks and boost your productivity. Examine the important role humans play in the effective use of AI, and understand the types of workplace tasks you can augment with AI. By the end of this module, you will be able to determine if AI is right for a given task and how to use AI to accelerate workflows.
3. **Discover the Art of Prompt Engineering:** Write effective prompts to get the output you want. Learn how to incorporate prompting techniques, such as few-shot prompting, into your work. Understand how generative AI tools produce output and the importance of evaluating output before using it. By the end of this module, you will be able to write clear and specific prompts and produce outputs that help accomplish workplace tasks.
4. **Use AI Responsibly:** Use AI responsibly by mitigating unfair biases and inaccuracies. Learn how to apply a framework of AI harms to sample workplace scenarios and recognize the security risks of using AI in the workplace. By the end of this module, you will gain an understanding of how to use AI responsibly and effectively, and a checklist to help you do it.
5. **Stay Ahead of the AI Curve:** Continue developing your skills within the current and emerging AI landscape. Learn about the ways organizations have leveraged AI and consider how these innovations may inspire your own AI-powered workplace solutions. By the end of this module, you will develop a strategy to stay up to date with future AI developments.

Course content

Each of the five modules in this course offers many types of content, including:

- **Videos** taught by AI experts at Google who share new concepts and guidance.
- **Readings** to build on concepts from the videos and introduce new ideas.
- **Activities** to apply the skills you are learning and practice using AI.
- **Graded quizzes** to measure your progress and give you valuable feedback. If needed, you can take a **graded quiz multiple times to achieve a passing score of 80% or higher.**

After you complete this course, you'll earn a certificate from Google that you can share on social networks or add to your resume!

Mark as completed

AI and the future of work

Cognitive Task

– Any mental activity, such as thinking, understanding and remembering.

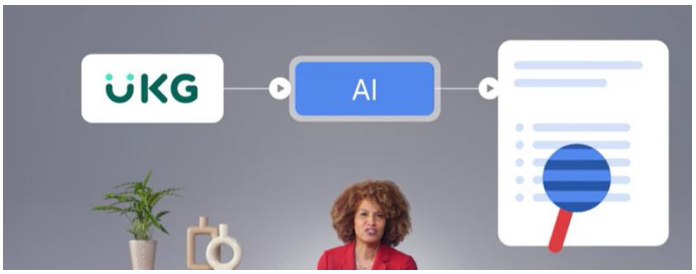
Artificial Intelligence (AI)

- Computer programs that can compute cognitive tasks typically associated with human intelligence.
- Math's with Data
- As any advanced tool, the key is to use AI to its strengths.

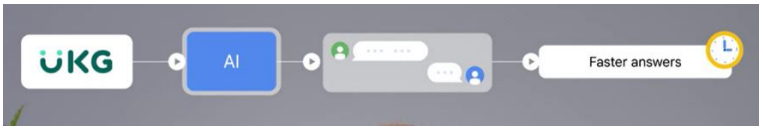
Learn from AI success stories

UKG

- UKG – provider of HR and workflow management solutions.
- Integrated AI in their products.
- UKG is improving how its employees analysis information



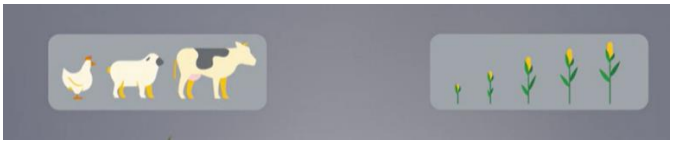
- Helps them to their work-related questions



- Manager gets better insights with informed business decisions

Jiva - Farming

- Economic uncertainty due to a various of factors.

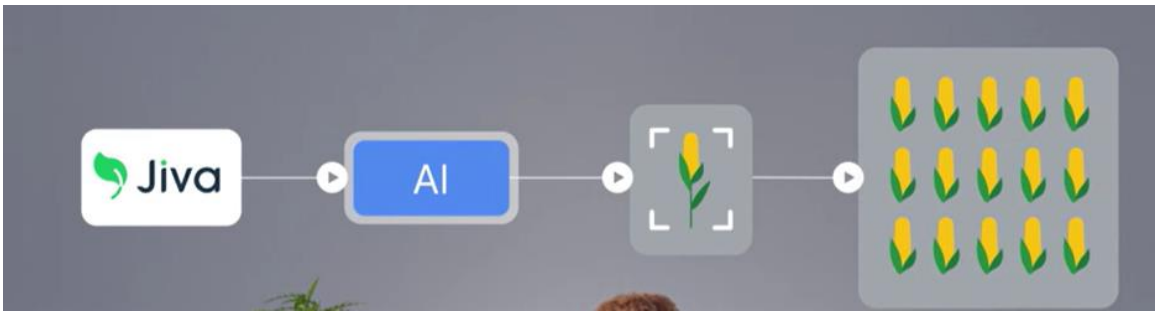


- One of frequent changes with crop and livestock yields.

- Unpredictable weather conditions

- Limited access to advanced farming techniques

- Jiva is an agricultural company focused.
- They provided AI Solutions that can assist them in achieving sustainable and reliable farming practices



- Jiva users AI tools that can diagnose crop discusses and suggest remedies.
- Farm also receive relevant AI-Powered advice that helps produce better quality crops.

Maya: The exciting world of AI

Maya: The exciting world of AI

Helpful resources and tips

To earn the Google AI Essentials certificate, you must complete all five modules in the course and pass all graded quizzes with a score of at least 80%. This reading shares best practices and tips to help you complete the course successfully.

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Healthy habits to complete the course

Establishing healthy study habits is key to effectively learning and retaining new information. To be successful in this course:

- **Be curious.** If you find an idea that gets you excited, act on it! Ask questions, take notes, search for more details online, and explore links that interest you. These steps can advance your knowledge and help you uncover opportunities.
- **Work in a quiet, distraction-free space.** Find a place that allows you to focus as you complete the course.
- **Work at your own pace.** Everyone learns differently, so you can complete this course at your own pace. Set deadlines for yourself that work with the rest of your schedule.
- **Complete all course content in order.** Concepts build on knowledge from earlier modules.
- **If something is confusing, review it again.** You can replay a video, revisit a reading, or repeat an activity as many times as needed. Bookmarking information often makes it easier to review concepts as you progress through the course.

- **Review exemplars.** Exemplars are examples of completed activities that fully meet an activity's criteria. Most activities in this course have exemplars that you can compare to your own work. Although there are often many ways to complete an activity, exemplars are designed to offer you guidance and inspiration.

Documents for course activities

To complete course activities, you'll need access to software capable of editing text documents like Google Docs or Microsoft Word. If you need help with a particular tool, try these resources:

- Google Docs help and support
- Microsoft Word help and support

Glossary

This course covers a lot of terms and concepts, some of which you may already know and some of which may be new to you. The Google AI Essentials glossary can help you review terms and prepare for graded quizzes.

Glossary

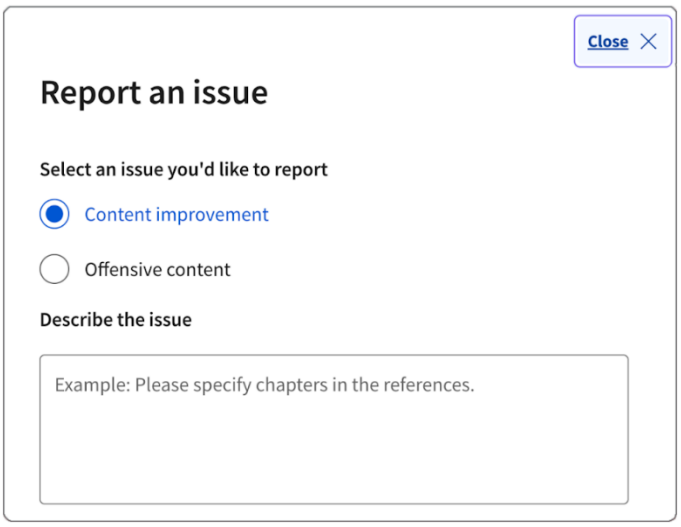
Google AI Essentials Glossary - Google Docs

Course feedback

You can share feedback on videos, readings, activities, and quizzes in a few ways. Use the **Like** or **Dislike** buttons found on the page to quickly share your thoughts about course content.

Technical support

To flag a specific issue with an item, use the **Report an issue** button, select a category, and enter an explanation. This feedback is shared with the course development team and helps us make improvements and deliver even better courses in the future.

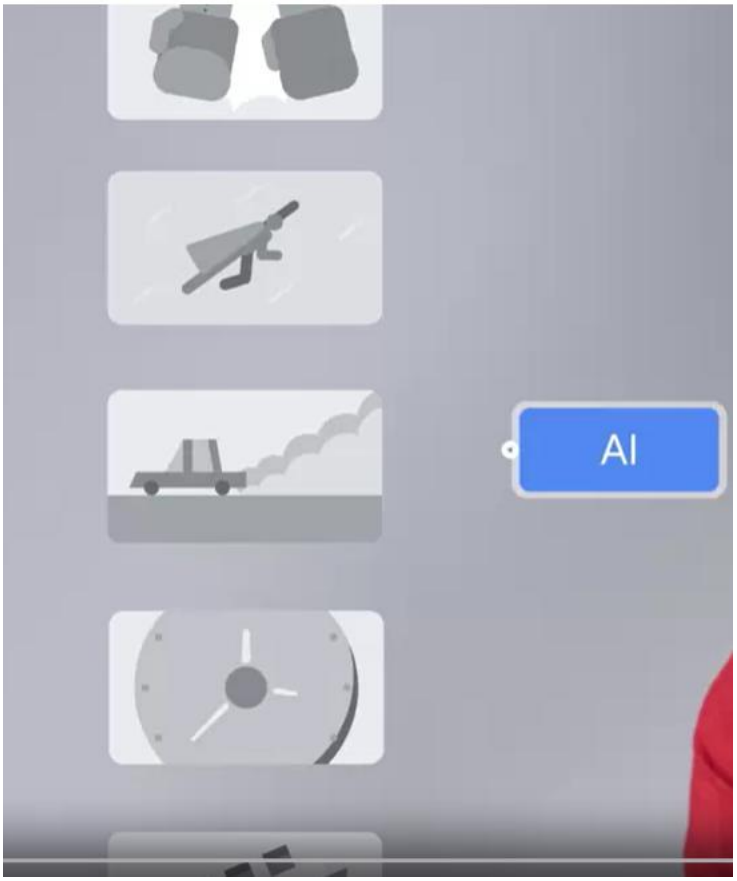


For technical help on the Coursera platform, visit the Learner Help Center. This resource contains articles, instructions, and troubleshooting steps covering a wide range of topics like completing activities, login and account questions, accessibility options, and more.

Explore how AI uses machine learning

- AI for years

- Recommendation Systems

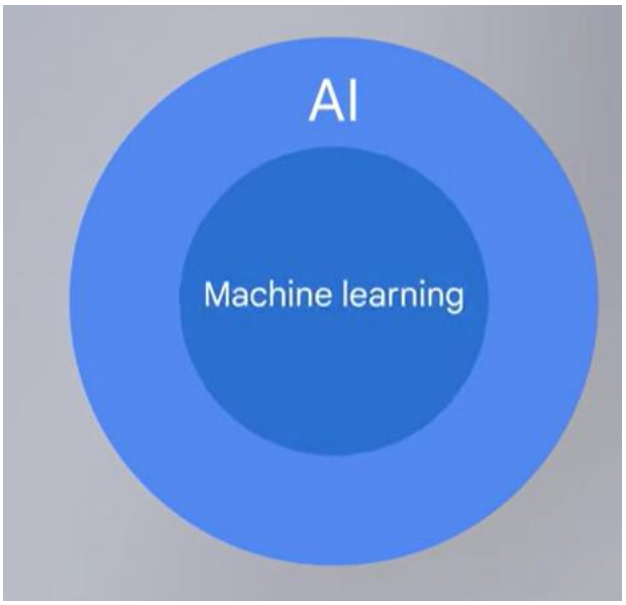


AI tool

- AI tool – AI powered software that can automate or assist users with variety of tasks

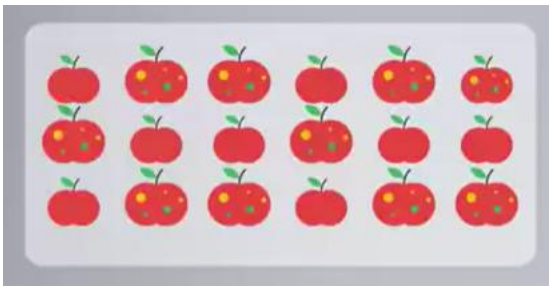
Machine learning

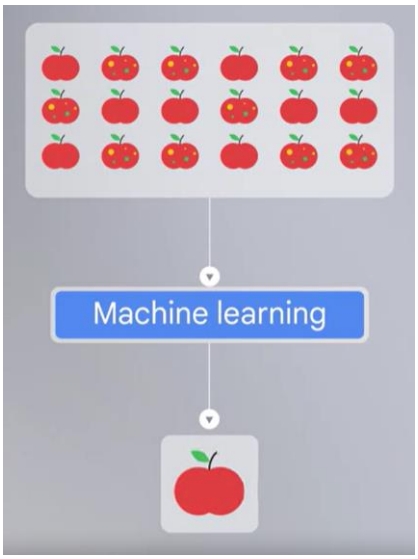
- Machine learning (ML) – A subset of AI focused on developing computer programs that can analyses data to make decisions or predictions.



Training set

- A collection of data used to teach AI.
- Factory to find and sort apples

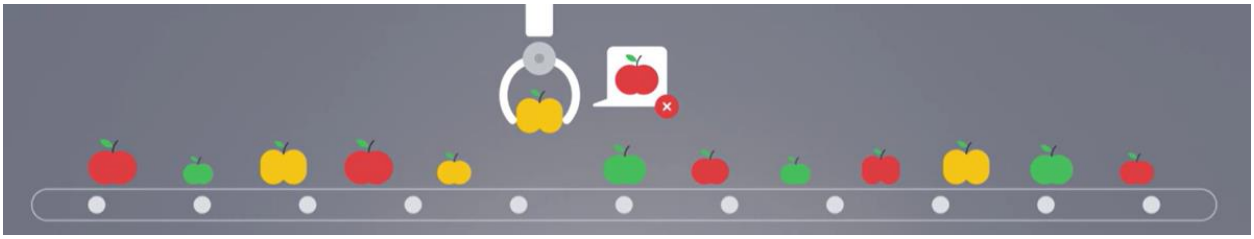




Bias

- But Training set may have potential of bias in training data
- This could unintentional cause of AI tool produce inaccurate or unintended outputs

- For example,, the AI tool that used to sort ripe apples might have leaned from training data that only contain images of specific types of red applies.
- This would be unintentional make the AI less accurate.



Foundations of generative AI

Generative AI

- AI that can generate new content, such as text, images or other media.
- It can used in natural language.

Natural Language

- The way people talk or write when communicating with each other.

Steps for Gen AI

Provide input

- Input refers to any information or data that's sent to a computer for processing
- Many Gen AI tools access text and speeches text, and some also accept images or video files.

Data is processed

Output is generated

- In form of text, images, audio or video,

Benefits of Generative AI

- Boost your productivity
- Help you avoid mistakes
- Improve your decision-making process

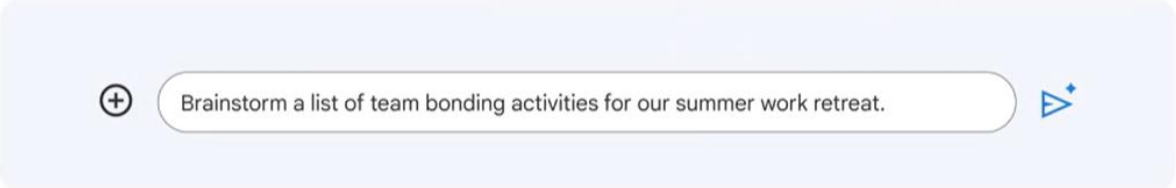
Conversation AI tool

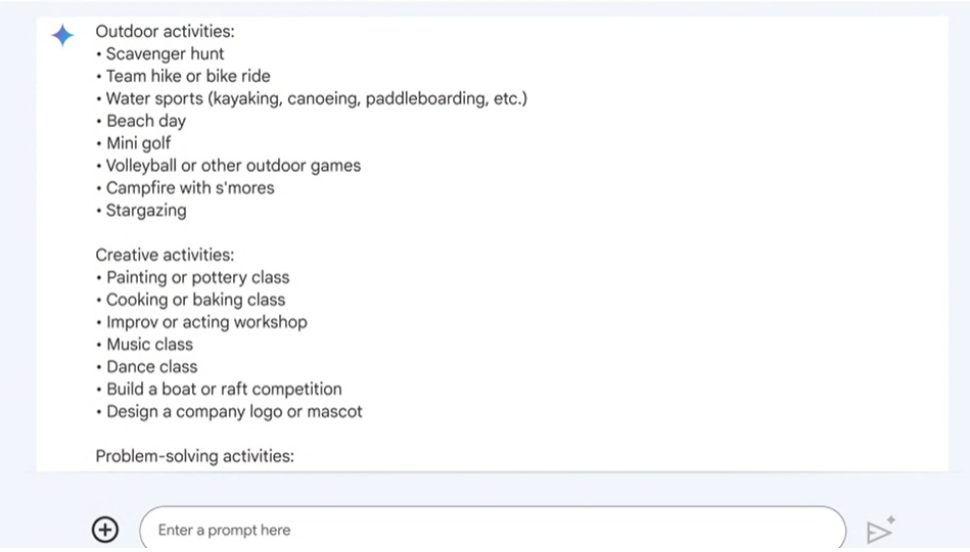
A conversational AI tool is a Gen AI tool that that **processes text requests** and **generates text responses**

Example

Google Gemini

Brainstorm a list of team bonding activities for our summer work retreat





Reading - A guide to AI and ML

Artificial intelligence (AI) and machine learning (ML) are changing the future of work. Knowing the basics of both can help you navigate this evolving landscape. You'll be able to contribute to AI-driven projects, find new ways for your organization to use AI and ML, and lead your own initiatives.

In this reading, you'll explore some of the techniques AI designers use to build AI programs. You'll deepen your understanding of ML programs and how data is used to train them. You'll also explore how ML has paved the way for generative AI.

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AI development techniques

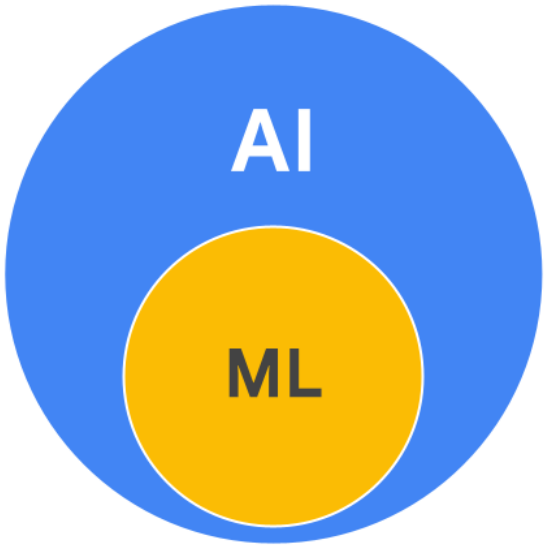
Artificial intelligence refers to computer programs that can complete cognitive tasks typically associated with human intelligence. There are two main techniques used to design AI programs:

- **Rule-based techniques** involve creating AI programs that strictly follow predefined rules to make decisions. For example, a **spam filter using rule-based techniques might block emails** that contain specific keywords using its predefined logic.
- **Machine learning techniques** involve creating AI programs that can analyze and learn from patterns in data to make independent decisions. For example, **a spam filter using these techniques might flag potential spam for the recipient to review, preventing automatic blocking**. If the recipient marks emails from trusted sources as safe, the spam filter learns and adapts its logic to include similar emails from that sender in the future.

AI tools can use **either rule-based or ML techniques**, or even a combination of both. In general, rule-based techniques are commonly used for tasks that require rigidity, such as blocking messages from untrusted senders that are obviously spam, like requests for bank transfers or private information. Conversely, ML techniques are better suited for tasks demanding flexibility and adaptability, like learning to recognize that messages from trusted senders containing typos are not spam.

Approaches to training ML programs

Recall that **machine learning** is a subset of AI. It develops computer programs that can analyze data to make decisions or predictions. AI designers often use ML in their AI programs because it doesn't have the limitations of rule-based techniques.



There are three common approaches to training ML programs:

- Supervised learning
- Unsupervised learning
- Reinforcement learning

Supervised learning

In this approach, the ML program learns from a *labeled* training set. A labeled training set includes data that is labeled or tagged, which provides context and meaning to the data. For instance, an email spam filter that's trained with supervised learning would use a training set of emails that are labeled as *"spam"* or *"not spam."* Supervised learning is often used when there's a specific output in mind.

Unsupervised learning

In this approach, the ML program learns from an *unlabeled* training set. An unlabeled training set includes data that does not have labels or tags. For instance, it might be used to analyze a dataset of unsorted email messages and find patterns in topics, keywords, or contacts.. Unsupervised learning is often used to identify patterns in data without a specific output in mind.

Reinforcement learning

In this approach, the ML program learns from feedback for its decisions. Reinforcement learning is a trial-and-error approach that's typically used for tasks that require a series of decisions, like a conversational AI tool. When a conversational AI tool gives an appropriate response to a question, it receives positive feedback from its AI designers and learns to answer similar questions in that way.

Each ML technique has its own strengths and weaknesses. AI designers may use one, two, or all three of these techniques as they develop solutions. It all depends on the type of data that's available and what's needed to solve the problem.

Generative AI

Advancements in machine learning have helped pave the way for **generative AI**—AI that can generate new content, like text, images, or other media. This type of AI often uses a combination of supervised, unsupervised, and reinforcement learning to create original content.

For instance, all three approaches play distinct roles in conversational AI tools. Supervised learning equips conversational AI tools with foundational dialogue data, enabling them to respond to common conversational cues appropriately. Unsupervised learning enables them to interpret nuances in language, like colloquialisms, that occur naturally in conversation. Reinforcement learning further strengthens these tools by allowing them to improve their responses in real-time based on user feedback. This enables them to adapt to the conversational context and engage in natural conversations.

Generative AI's ability to create and innovate offers a range of benefits to all sorts of workplaces and professions, such as marketing, product development, engineering, education, manufacturing, and research and development. These benefits include:

- **Greater efficiency:** Generative AI can automate or augment routine tasks, allowing workers to focus on other work priorities.
- **Personalized experiences:** Generative AI can tailor its interactions to individual preferences and needs.
- **Better decisions:** Generative AI can quickly analyze vast amounts of data to uncover useful insights.

These are just some of the ways that generative AI can enhance your work.

For more information

PAIR Explorables is an optional resource for anyone who wants to learn more about AI. It is a collection of interactive articles that are designed to make key AI concepts more accessible and understandable. PAIR Explorables covers a wide range of topics, including:

- Machine learning basics
- Fairness and bias in AI programs
- Data and privacy considerations in AI
- Potential risks and benefits of AI

Each article features visualizations and interactive controls that can help you explore different AI concepts and experience how they work.

Understand the capabilities and limitations of AI

Capabilities of AI

- Generate Content
- Analyze information quickly (Summarization)
- Answer questions
- Simplify day-to-day tasks

Limitations of AI

- Cant learn independently
- Can reflect or amplify biases
- Can contain inaccuracies or called as hallucinations

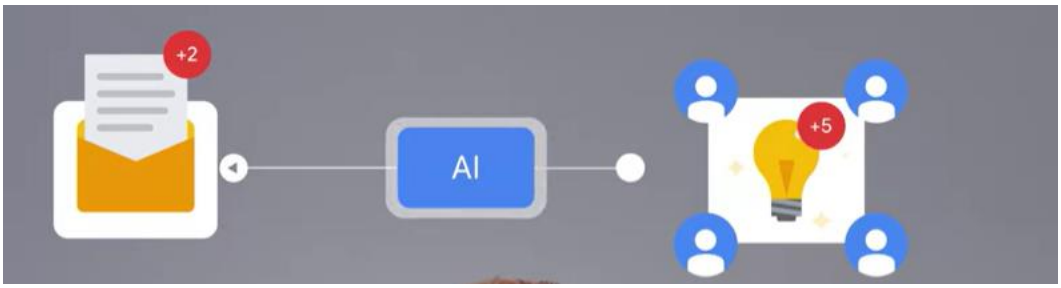
Hallucinations

- AI outputs that are NOT true.

Vint: Use AI for positive change

- AI control the wildfires.
- Deepmind

Activity: Use AI to create a work email



Use AI as collaborative tool

- AI augments our own capabilities

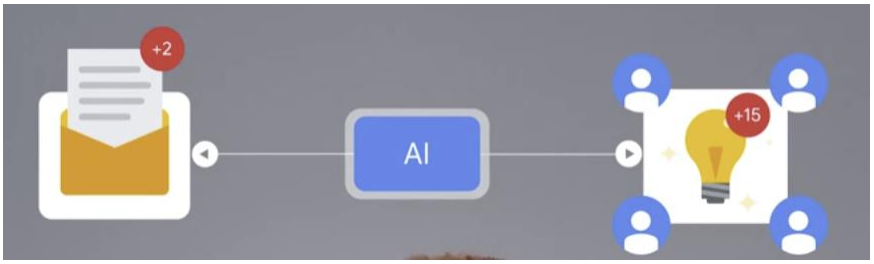
AI Augmentation

- The process of using AI to improve a work product, whether by making it easier to do or higher in quality.

Example – Tasks and brainstorming

- Simple task – manually reply to email
- Brainstorming - collaborate with co-workers

- AI can help in this

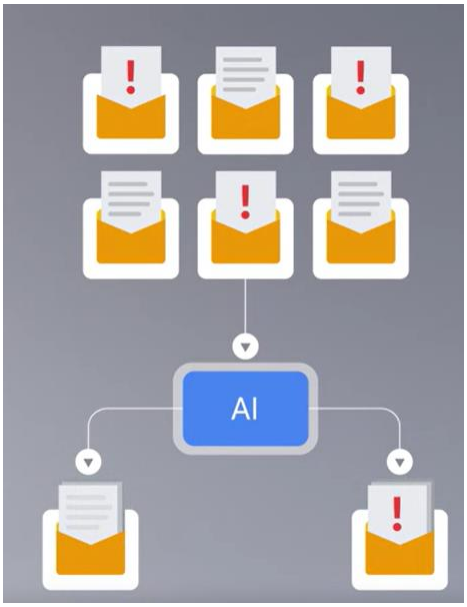


AI automation

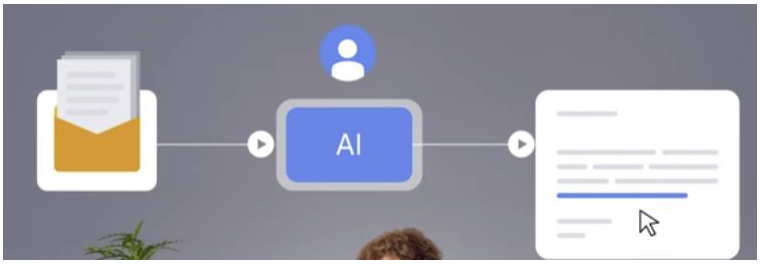
- The process of using AI to accomplish tasks, without any action the user's part.

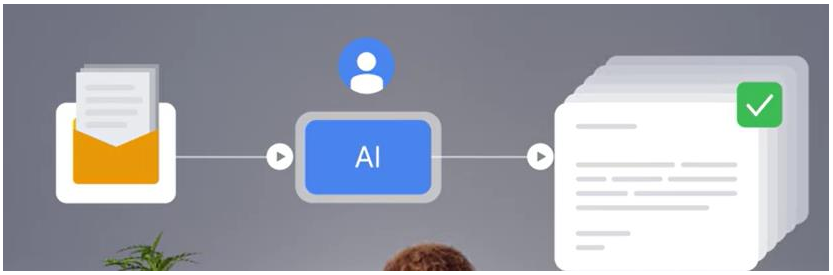
Example – customer support representative

- Received hundreds of email everyday from customer asking for help.
- They might spend a lot of time reading email and typing responses one at a time.



- Using an AI tool, they could automatically sort incoming by priority
- For emails with low priority, they could us AI to draft replies with some guidance other customer support agents or training data containing past replies, the AI could learn to quickly generate quality email responses.





- Customer representative cold focus on high-priority messages, likes ones reporting complex issues that require personal attention.

- Striking the right balance between augmentation and automation takes time, practice and thoughtful consideration.

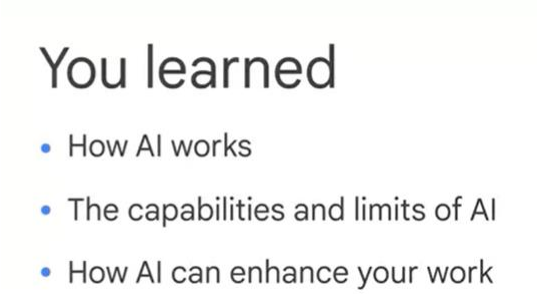
- Think of AI as a collaborative workspace that thrives on diverse perspectives
- They need to provide **human oversight** of the AI tool.
- They should collaborate of their team, such as managers who can coordinate resources for the project, members of editorial team to ensure that releases are representative of the brand's voice, and guidance from the legal time to ensure appropriate rule and regulations are followed

Aleck make daily tasks easier with AI

- Knowledge is NOT stale

Wrap Up

- AI isn't just adopting the latest tech.
- Goal should be to thoughtfully incorporate AI in a way that puts **people first** and adds value to your work,



Module 2 – Maximize Productivity with AI tools

- Leverage generative AI tools to speed up **work tasks and boost your productivity**. Examine the important **role humans play in the effective use of AI**, and understand the **types of workplace tasks you can augment with AI**.
- By the end of this module, you will be able to **determine if AI is right for a given task and how to use AI to accelerate workflows**

Learning Objectives

- Recognize how **generative AI can be used for several** different **workplace applications**.
- Describe how **AI tools are powered** by AI models to **produce outputs**.
- Identify opportunities to **leverage AI for increased productivity** and optimized work processes
- Explain the **importance of providing human oversight** when using AI tools.
- Evaluate **whether generative AI is an optimal tool** to apply to a specific task

Maximize productivity with AI tools

- AI tools are revolutionizing the way we approach work.
- These tools can offer creative solutions that help organizations and individuals tackle challenges both big and small.
- Whether you are in financial, design or manufacturing, Gen AI can streamline the processes tackle a variety of tasks and boost your productivity.

Type of Gen AI tasks

Create Content

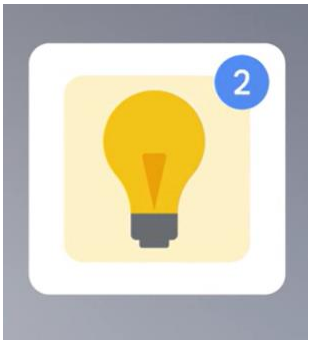
- Do you create content? Gen AI can generate images in minutes.

Data Analysis

- Is Data Analysis your thing? Gen AI can assist you with forecasting trends

Brainstorming Ideas

- May be you need help brainstorming innovative ideas.



Practical applications of Gen AI

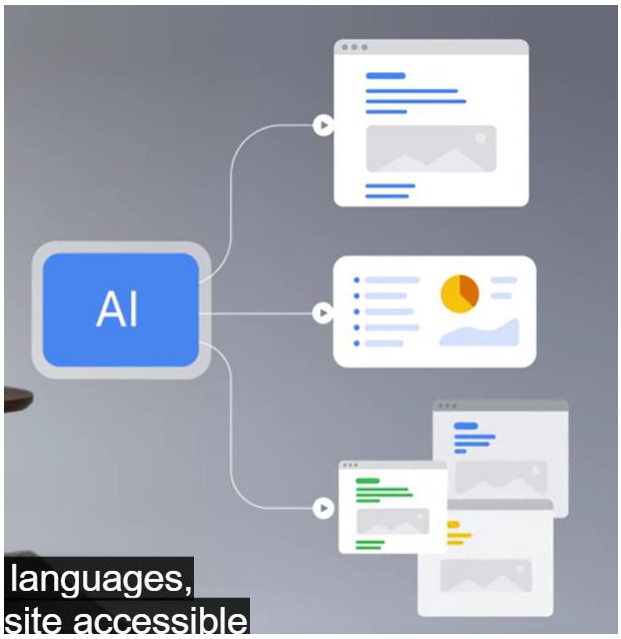
- We will explore practical applications of Gen AI that can transform the you work.
- Along the way, you will learn how to boost your productivity with AI tools.
- You will learn about using **AI responsibly** by applying a **human-in-the-loop** approach to AI.

Discover generative AI applications

- It's a collaborative tool that help you accelerate your workflow.

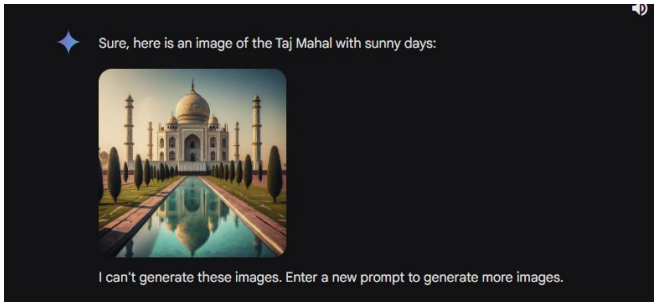
Generative AI

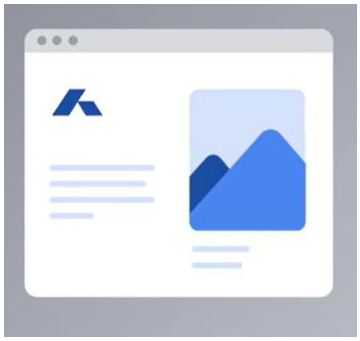
- AI that can generate new content, like text, images, or other media.
- Create endless creative applications.
- The most common Gen AI is text generators and help you variety of tasks
    - Text Generation
    - Summarize Text
    - Text Translators



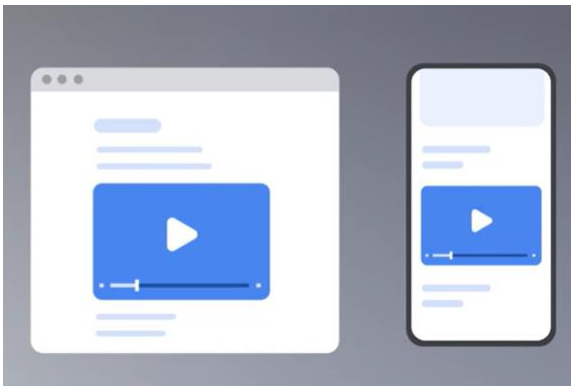
Images

- You can create image generation as well

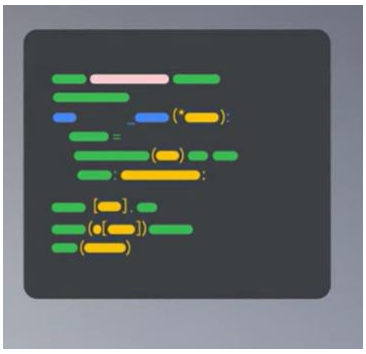


- 

Audio / Video content



Code Generator



Type of Gen AI tools

1. Text
2. Images
3. Audio
4. Video
5. Code

Tris: My favorite ways to use AI

- AI tools with responsible way
- I personally believe that AI will be the most important invention of our lifetimes.

- I use AI in my work all the time to
    - Come up with new ideas
    - To collaborate with my colleagues
    - To Change the way that I am thinking
    - Test what I do.
- One of the largest consulting firms in the world in America released a study about using generative AI to improve productivity of its workforce.

- They found that it improved people's efficiency, quality, and accuracy.
- It can be used in personal life and by kids.

Understand how AI tools work

- Different ways that can be integrated into your work routine and how they can streamline your workflows.
- The AI solution can in different ways
    - As stand-alone AI tools

- As integrated AI features
- As Custom solutions

Stand-alone AI tool with example

- Describes AI-powered software that's designed to be used its own.
- It can be accessed online or downloaded to a device with little or no technical setup.
- For e.g.
  Speeko is an AO speech coach designed to help you communicate with confidence.
  - Speeko uses AI to analyze our voice and give a feedback on how ti improve your communication skills in any setting
  - Suppose you are preparing for a job interview and want to practice answering common interview questions.
  - With Speeko, you can record yourself responding to these questions and Speeko will give you feedback aspects like
    - Clarity
    - Pacing
    - Word choice
  - Heling you learn how to communicate more effectively

integrated AI tool

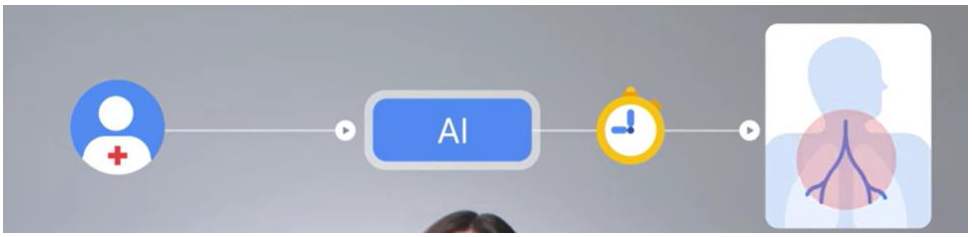
- 

Integrated AI tool with example

- An integrated AI features that refers built-in enhancement to a particular piece of software
- For example, Neural Filters is an AI tool that's built right into Adobe photoshop you edit images by blurring backgrounds adjusting colors, changing facial expressions

Custom AI Solutions with example

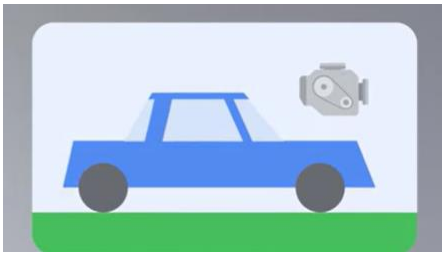
- A custom solution is an application that's tailor-made to solve a specific problem.
- For instance, John Hopkins Hospital implemented an AI solution to help doctors detect sepsis, a condition where the body has an extreme response to an infection.



- Allowed doctors to diagnose and treat patients up to six hours sooner
- AI models can be rewarding to build, but they typically require dedicated resources and buy in from your organization.
- In this course, we mainly focus on stand-alone Gen AI tools because they are readily available and often free to use and easily fit in your workstream.

AI Model with an example

- A computer program trained on a set of data to recognize patterns and perform specific tasks
- For example: think AI tool as car.



- The model provides underlying capabilities while the tools interface assists you in completing tasks.

Reading - AI models and the training process

You've already explored how AI tools are powered by AI models. In this reading, you'll gain a deeper understanding of how AI models are developed. You'll uncover the iterative process that AI designers and engineers use to train AI models from data, ensuring that AI tools work reliably. Learning more about the inner workings of AI tools will help you discuss them more accurately and confidently.

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AI tools and AI models

Terms like *AI tools* and *AI models* can be confusing because they sound similar but refer to different things. Recall that an **AI tool** is AI-powered software that can automate or assist users with a variety of tasks. An **AI model** is a computer program trained on sets of data to recognize patterns and perform specific tasks.

To better understand the relationship between these two concepts, **consider a car and its engine**.

- **The car**: An AI tool, like a car, gets you to a "destination," such as a completed task or an output. And AI designers and engineers, just like auto engineers, add various features and controls into AI tools to provide a user-friendly experience.
- **The engine**: An AI model is the underlying component that makes the "car" run. It's under the hood, you might say, processing user input and allowing you to drive the car.

Cars come in various shapes and sizes, and people choose the vehicle they drive based on their needs, like a truck to transport materials or a bus to transport riders. In a similar way, AI tools are developed for a wide range of applications, like generating text, image, or code. And whatever the tool's specific function is, it's powered by an AI model.

Note: AI tools sometimes use multiple AI models in order to have more flexibility and perform a wider range of tasks. You'll explore these types of tools later in this course.

The process of training AI models

AI designers and engineers develop AI models through a process called *training*. Here's an example of the typical steps a designer might take in this process, in this case for building a model that predicts rainfall:

1. **Define the problem to be solved.** AI designers and engineers want to predict rain to help people stay dry when commuting to and from work. They start by considering AI's capabilities and limitations before identifying an AI solution.
2. **Collect relevant data to train the model.** AI designers and engineers gather historical data of days when it rained and days when it didn't rain over the past 50 years.
3. **Prepare the data for training.** AI designers and engineers prepare the data by **labeling** important features, such as outdoor temperature, humidity, and air pressure, and then noting whether it rained. It's also common to separate the data into two distinct sets: a *training set* and a *validation set* to test with later.
4. **Train the model.** AI designers and engineers apply machine learning (ML) programs to their rain prediction model, which helps it recognize patterns in its training data that indicate the likelihood of rainfall. Those patterns might include high temperatures, low air pressure, and high humidity.
5. **Evaluate the model.** AI designers and engineers use the validation set they prepared earlier to assess their model's ability to predict rainfall accurately and reliably. Analyzing a model's performance can uncover potential issues impacting the model, such as insufficient or biased training data. If any issues exist, the AI designers and engineers may revisit an earlier step in this process to try a different approach. Once the model performs well with its validation set, the process continues to the next step.
6. **Deploy the model.** When the AI designers and engineers are satisfied with their model's performance, they deploy it in an AI tool—helping people in their city stay dry on their way to work!

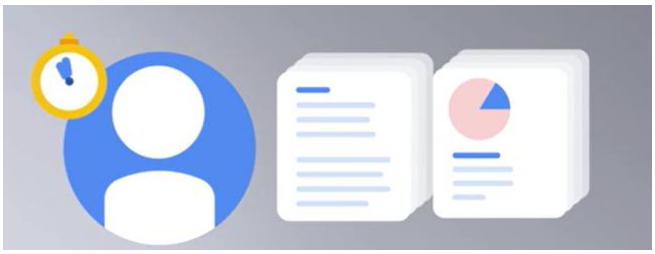
Model training is an iterative process. AI designers and engineers can repeat each step as many times as necessary and make adjustments until they create the best model possible.

But the process doesn't stop at deployment. Once users interact with a model in practical situations, the model might be exposed to new challenges. AI designers and engineers should continuously monitor and collect feedback on their models, ensuring their models continue to perform reliably and to identify areas for improvement. It's this iterative process of continual refinement that makes AI models precise and versatile, which ultimately leads to effective, reliable AI tools. When you understand how AI models are developed, you can make informed decisions about when and how to use an AI tool to accomplish your goals.

Transform your work with generative AI

- Many jobs require creativity, problem solving, and brainstorming.
- Which can be challenging or time consuming

- For e.g. You are trying your best to write, but not sure where to start.
- You overwhelmed with all the information



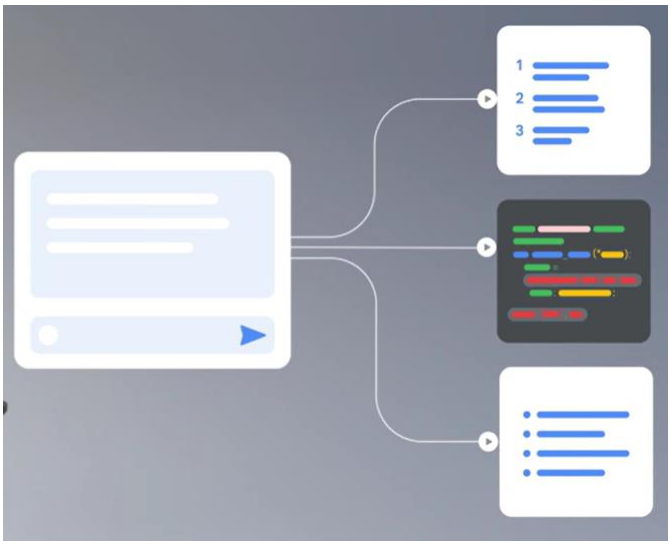
- Gen AI tools can be incredibly useful

Prompt

- Text input that provides instructions to the AI Model on how to generate output.

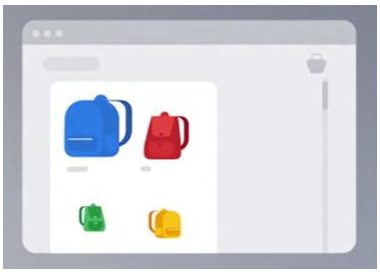
For e.g.

- IT guy to create how-to guide for a new software application.
- For troubleshoot, you can prompt the AI tool to identifying errors in the code
- Summarizing use feedback

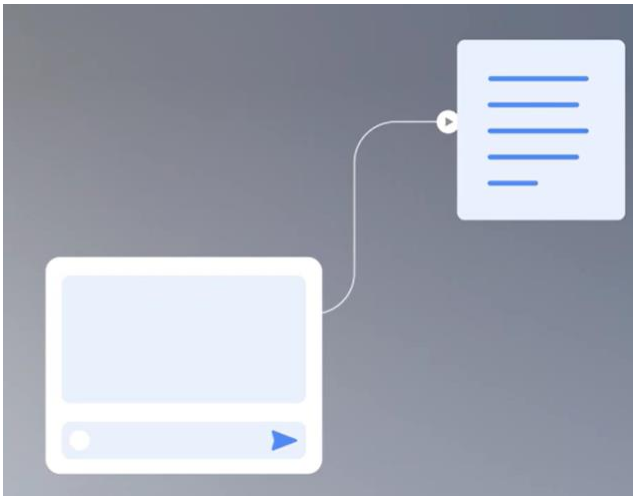
- 

For e.g.

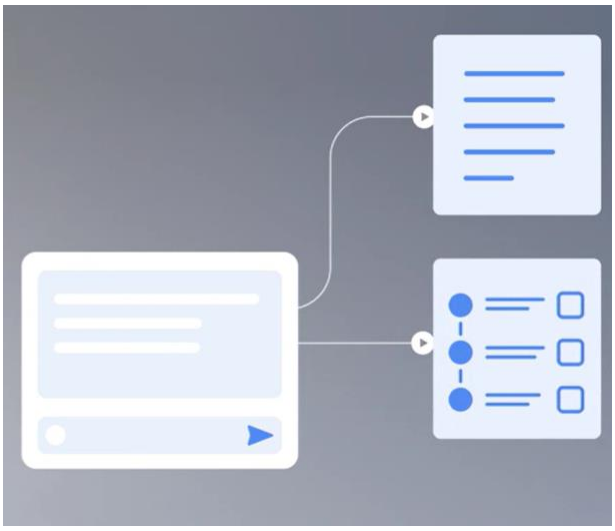
- You are starting a business selling backpacks.



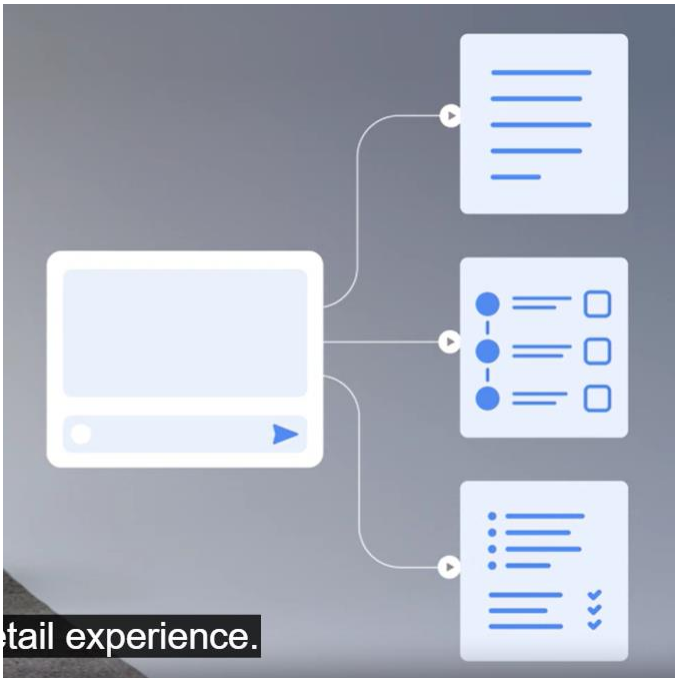
- Creating name ideas for an outdoor backpack brand. OR



- Then you could then use this tool to help you attractive investors to create comprehensive business plans that focus on backpack production.



- Create job description for sales manager.

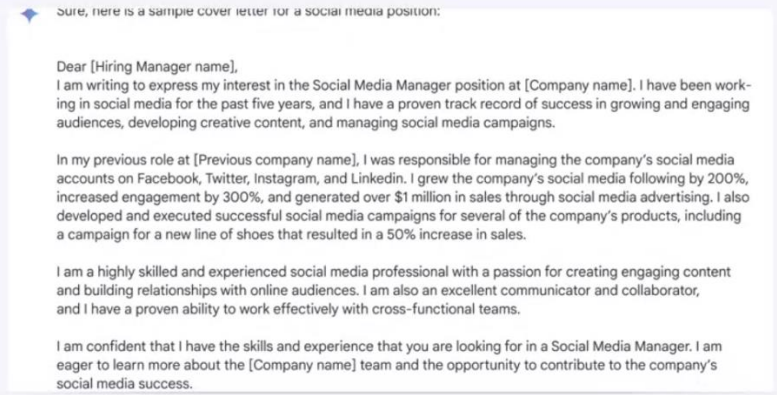


Work with Gemini

- Using Effective prompt
- For e.g. Finding a new job.

- Prompt:
    - Write a cover letter for social media position.

- You are presenting with template that you can modify / customize


Sure, here is a sample cover letter for a social media position:

Dear [Hiring Manager name],
I am writing to express my interest in the Social Media Manager position at [Company name]. I have been working in social media for the past five years, and I have a proven track record of success in growing and engaging audiences, developing creative content, and managing social media campaigns.

In my previous role at [Previous company name], I was responsible for managing the company's social media accounts on Facebook, Twitter, Instagram, and Linkedin. I grew the company's social media following by 200%, increased engagement by 300%, and generated over $1 million in sales through social media advertising. I also developed and executed successful social media campaigns for several of the company's products, including a campaign for a new line of shoes that resulted in a 50% increase in sales.

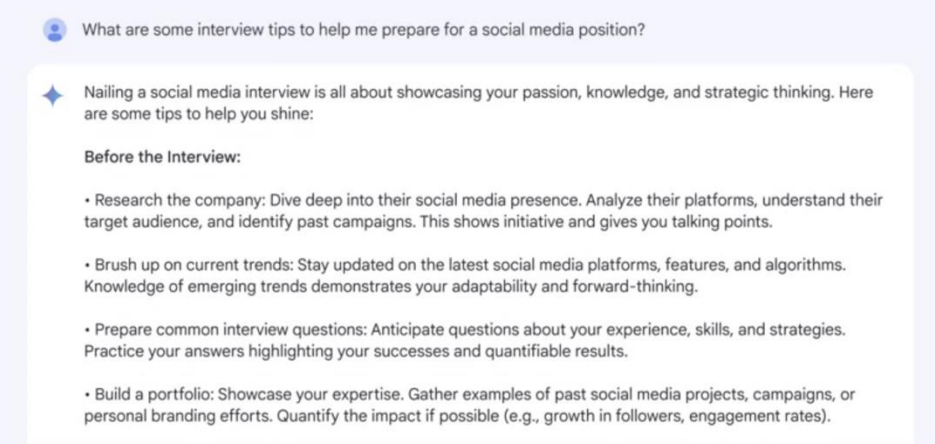
I am a highly skilled and experienced social media professional with a passion for creating engaging content and building relationships with online audiences. I am also an excellent communicator and collaborator, and I have a proven ability to work effectively with cross-functional teams.

I am confident that I have the skills and experience that you are looking for in a Social Media Manager. I am eager to learn more about the [Company name] team and the opportunity to contribute to the company's social media success.

- You got an interview all,

- Next prompt is "**What are some interview tips to help me prepare for social media position?**"

- A lot of variety of options :


What are some interview tips to help me prepare for a social media position?

Nailing a social media interview is all about showcasing your passion, knowledge, and strategic thinking. Here are some tips to help you shine:

Before the Interview:

• Research the company: Dive deep into their social media presence. Analyze their platforms, understand their target audience, and identify past campaigns. This shows initiative and gives you talking points.

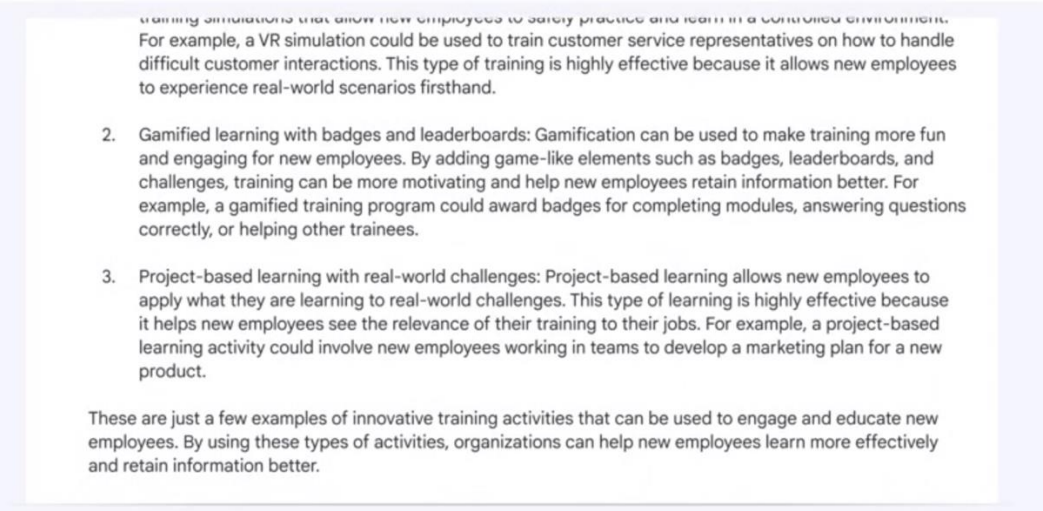
• Brush up on current trends: Stay updated on the latest social media platforms, features, and algorithms. Knowledge of emerging trends demonstrates your adaptability and forward-thinking.

• Prepare common interview questions: Anticipate questions about your experience, skills, and strategies. Practice your answers highlighting your successes and quantifiable results.

• Build a portfolio: Showcase your expertise. Gather examples of past social media projects, campaigns, or personal branding efforts. Quantify the impact if possible (e.g., growth in followers, engagement rates).

- You got new job and use new prompt
  "Suggest three innovative training activities that new employees could participate in"

-

- 

Manvinder: Ways I use AI in my work

Reading - Generative AI tools for workplace tasks

You've already learned that there are different ways to use generative AI to make workplace tasks more efficient. Generative AI can be a stand-alone tool, or you can use software with integrated-AI features. In this reading, you'll learn more about the different ways you can use generative AI in the workplace and about some of the leading available generative AI tools.

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Workplace uses for generative AI

The generative AI tools that you'll use will depend on your industry, role, and specific workplace needs. Please note that each tool's uses are not limited to the industries listed here. Also note that the cost varies for each tool. Some tools in this list are free or offer a free trial; others require a paid subscription to access. The examples that follow include whether the tool is stand-alone, integrated, or both. *Stand-alone* means it's an individual organization and tool that you can add and use in your workflow. *Integrated* means the tool is part of an existing type of software, which you'll need to access if you want to use that AI feature set.

Conversational AI tools

Conversational AI includes general-purpose tools that can simulate a human conversation, as well as provide answers to questions on a wide variety of subjects. Workers might use conversational AI tools to help with work tasks, such as brainstorming or finding answers to low-stakes questions.

Example industries: Human resources, marketing, public relations, sales, education, project management, retail, copywriting, creative writing, product management

Example tools include:

- **Anthropic Claude**
    - **Description:** Anthropic Claude can complete problem-solving tasks, like finding mathematical solutions, translating between languages, and summarizing long documents.
    - **Stand-alone or integrated:** Stand-alone
- **Gemini**
    - **Description:** Supercharge your creativity and productivity with Gemini. Chat to start writing, planning, learning and more with Google AI.
    - **Stand-alone or integrated:** Both
- **Microsoft Copilot**
    - **Description:** Integrated with Microsoft Edge, Microsoft Copilot can help with online searches to find information, compare products, and summarize web page content.
    - **Stand-alone or integrated:** Both
- **ChatGPT**
    - **Description:** ChatGPT can generate ideas, plan schedules, debug code, and proofread text.
    - **Stand-alone or integrated:** Stand-alone

Productivity and writing assistants

AI productivity and writing assistants can help with workplace tasks. They might provide grammar or spelling suggestions, generate a summary of a long document, or solve problems. Here are some examples:

- **Clockwise**
    - **Description:** Clockwise is a calendar tool that learns users' work habits to automatically schedule and manage calendar events.
    - **Example industries:** Consulting, technology, sales
    - **Stand-alone or integrated:** Stand-alone
- **Grammarly**
    - **Description:** Grammarly is a writing assistant that can help users edit and write clear, concise text.
    - **Example industries:** Creative writing, education, marketing
    - **Stand-alone or integrated:** Stand-alone
- **Jasper**
    - **Description:** Jasper is a writing assistant intended for marketing tasks, like drafting social media posts, emails, and landing page content.
    - **Example industries:** Copywriting, marketing, sales
    - **Stand-alone or integrated:** Stand-alone
- **NotebookLM**
    - **Description:** NotebookLM integrates into document apps, like Google Docs, and helps summarize or ask specific questions about text, notes, and sources.
    - **Example industries:** Content writing, finance, sales
    - **Stand-alone or integrated:** Both
- **Notion AI**
    - **Description:** Notion AI is a writing assistant built into Notion, a productivity and note-taking software tool.
    - **Example industries:** Development, marketing, product management, sales
    - **Stand-alone or integrated:** Integrated
- **AI by Zapier**
    - **Description:** AI by Zapier is a built-in productivity tool that allows AI automation to be integrated with the apps and workflows already connected through Zapier.

    - **Example industries:** Engineering, marketing, project management, technology
    - **Stand-alone or integrated:** Integrated

Code-generative AI tools

Code-generating tools can help generate, edit, or complete code for a variety of programming tasks in many different programming languages. Examples include:

- **Android Studio Bot**
    - **Description:** Built into Android Studio, Studio Bot can generate code and answer questions about Android development.
    - **Example industries:** Data science, software development, web development
    - **Stand-alone or integrated:** Integrated
- **GitHub Copilot**
    - **Description:** Built into GitHub, Copilot can write and suggest code, suggest descriptions for pull requests, translate multiple languages into code, and index repositories.
    - **Example industries:** Data science, software development, web development
    - **Stand-alone or integrated:** Both
- **Replit AI**
    - **Description:** This tool, built into Replit, is a cloud-based Integrated Development Environment (IDE) for programmers that can make suggestions, help explain code, and turn natural language into code.
    - **Example industries:** Data science, software development, web development
    - **Stand-alone or integrated:** Integrated
- **Tabnine**
    - **Description:** Tabnine can be a plugin to many popular code editors to help speed up delivery and keep code safe.
    - **Example industries:** Data science, software development, web development
    - **Stand-alone or integrated:** Stand-alone
- **Jupyter AI**
    - **Description:** Jupyter is an open-source platform for coding, and this built-in tool includes a chat interface, which can be used to generate code, fix coding errors, and ask questions about files.
    - **Example industries:** Data science, software development, web development

- **Stand-alone or integrated:** Integrated

Image- and media-generative AI tools

Media-generating AI tools help workers with tasks like generating and editing images, video, and speech. Examples include:

- **Adobe Firefly**
  - **Description:** Built into the Adobe suite, Firefly can generate and edit images.
  - **Example industries:** Design, education, marketing
  - **Stand-alone or integrated:** Integrated
- **Canva Magic Design™**
  - **Description:** Canva Magic Design is a tool that generates text and image content in Canva, an online graphic design tool.
  - **Example industries:** Design, education, marketing
  - **Stand-alone or integrated:** Integrated
- **DALL-E**
  - **Description:** Integrated with ChatGPT, DALL-E generates images from text prompts.
  - **Example industries:** Design, education, marketing
  - **Stand-alone or integrated:** Integrated
- **ElevenLabs**
  - **Description:** ElevenLabs is a speech AI tool that can generate spoken voice-over audio from text in different languages.
  - **Example industries:** Content creation, education, marketing, production
  - **Stand-alone or integrated:** Stand-alone
- **Google Ads**
  - **Description:** Google Ads helps businesses reach customers around the world, driving growth and performance. Google Ads makes it easy to create campaigns, measure impact and improve your results. Put Google AI to work for your business with the Google Ads AI Essentials. Learn more with the AI Explored video series.
  - **Example industries:** Marketing, Advertising
  - **Stand-alone or integrated:** Integrated
- **Midjourney**

    - **Description:** Integrated into Discord, Midjourney can generate images from text prompts.
    - **Example industries:** Design, education, marketing
    - **Stand-alone or integrated:** Integrated
- **Runway**
    - **Description:** Runway can generate a new video from a text prompt or edit an existing video's style or focus area, and remove people or other elements.
    - **Example industries:** Content creation, design, marketing, production
    - **Stand-alone or integrated:** Stand-alone

A final thought: This is a limited list. It's worth exploring the world of AI tools to find others that are suitable for your work.

Leverage the human-in-the-loop approach to AI

- Maintaining human oversight (a mistake) over AI is critical.

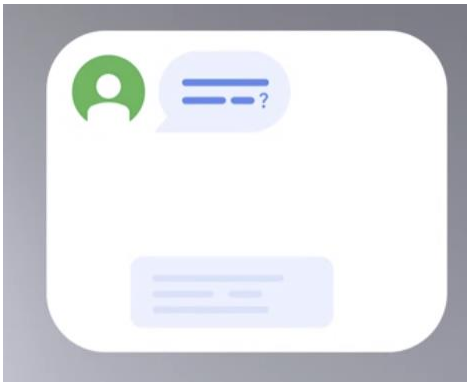
Human-in-the-loop approach

- A combination machine and human intelligence to
    - train
    - use
    - verify
    - and refine AI models.

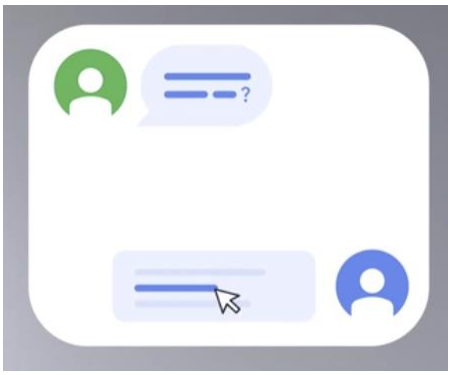
Scenarios

Insurance company uses a custom AI solution

- An insurance company uses a custom AI solution to answer customer inquires
- When a customer using their contact form, **AI drafts** an response based on specific words and phrases in the message,



- Then a **customer service agent** reviews the customer inquiry

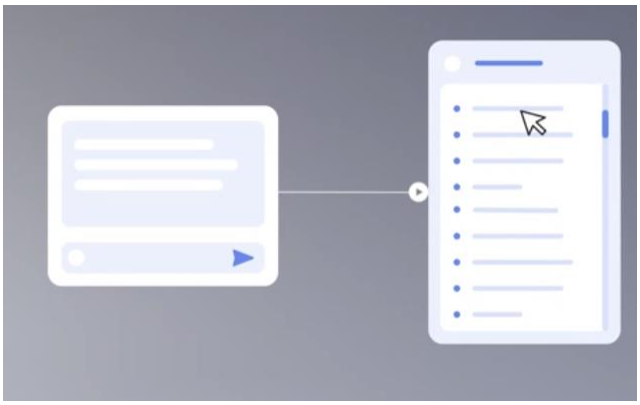


and revises the email responses necessary, before approving and then sending the message.

- Later, the development team can update the AI model based on the agents' feedback.

Business owner that's using a standalone AI tool

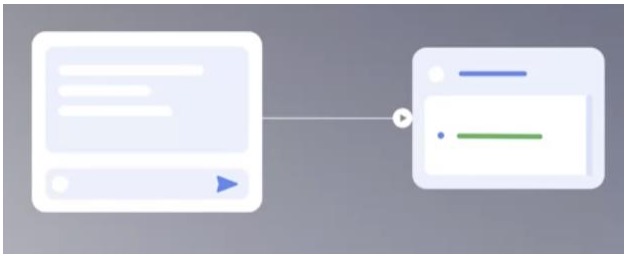
- Now, Consider a business owner that's using a standalone AI tool to draft a new brand slogan.



- They find a catchy option that really stands out.

- However, it needs a little refinement to get the phrasing just right.
- Business owners prompts the AI tool with a few extra details, and viola.

- They put together a catchy new slogan for their business.



- Oversight is essential to ensure quality.

- A human-in-the-loop approach blends the efficiency of AI tools with human insight.

Responsible AI

- The principle of developing and using AI
    - **ethically**,
    - with the **intent of benefiting people** and **society**
    - While **avoiding harm**

Knowledge cutoff

- The concept that an AI model is trained at a specific point in time, so it does not have any knowledge of events or information after that date.

- For e.g. You are financial advisor and you need to prompt an AI tool, to analyze yesterday's stock market fluctuations.

- If the tool's last training data was in 2022, it won't be able to provide you with information you asked for.

Hallucinations

- AI outputs that are not true.
- They are problematic as its leads to misinformation, misinterpretation or inappropriate responses that might damage a company's reputation or result in customer dissatisfaction .

Kathy: Explore how people improve AI models

- CodeAI
- The way I look at human-in-the-loop is a way to refine the AI's answers.

Determine if generative AI is right for the task

Assess whether to apply gen AI to a task.

- **Is the task Generative?**
- **Can the task be iterated on to achieve the best outcome?**
- **Are there resources to provide adequate human oversight?**

Scenario - Grand opening new restaurant

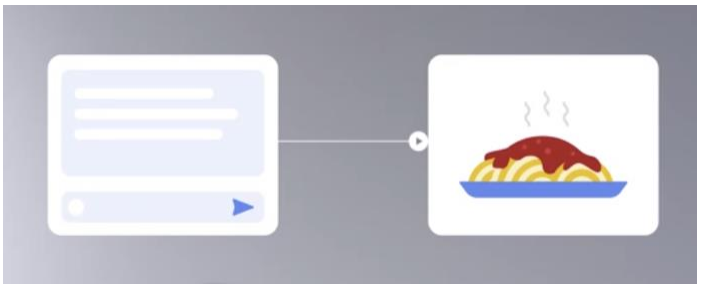
Is the task Generative?

- Imagine your preparing for the grand opening new restaurant.
- You consider using AI tool to create promotional ad for the event, but iu need some assistance to develop images.
- Q: Is task generative?
- Yes.

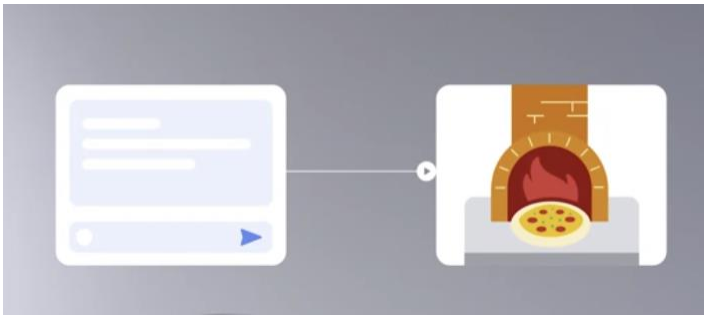
- Recall that Generative AI is a type of AI that can create new content such as text, images or other media.

Can the task be iterated on to achieve the best outcome?

- This is another yes.
- Gen AI tools allow to edit and refine your prompt as many times as you need to desire results.
- In the new restaurant example, servers Italian food and AI tool generate image of spaghetti dish.

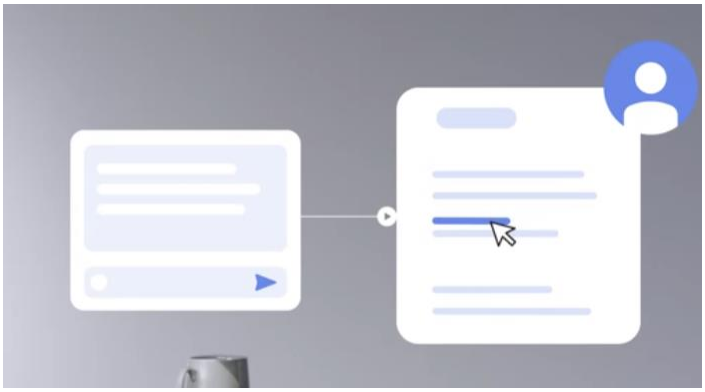


- It will be better feature your restaurant's fresh baked pizza coming out.



Are there resources to provide adequate human oversight?

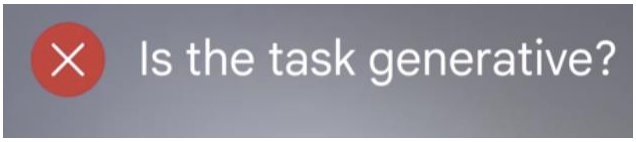
- Once again the answer is yes.
- Either you as restaurant's owner or one of the employees will need to review the AI generate ads before sharing them with Public.
- Remember that a human in the Human-in-the-loop approach should be always taken when using AI tools.
- So make sure that you or someone else on your team is able to review.



Scenario - Negotiate with local suppliers to get fair prices

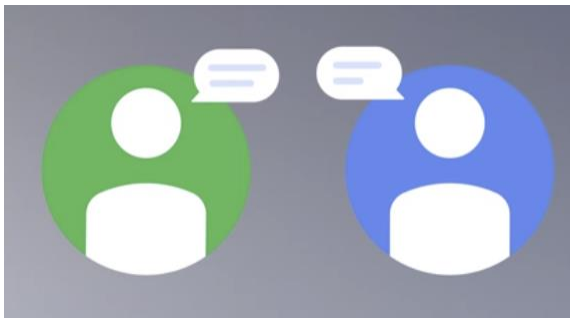
- For example, suppose you need to negotiate with local suppliers to get fair prices for the ingredients you want to use at your local restaurants.

Is the task Generative?



- No.

- Requires communication and relationship.
- Skills that require a human touch.



Reading - Decide when to use generative AI for work tasks

Generative AI can help you be more productive, create content, reduce errors, and improve the quality of your work. But it's important to evaluate whether a given AI tool is a good fit for the task you're working on. In this reading, you'll explore how to apply some simple guiding questions to practical scenarios to determine whether generative AI is right for your specific task.

* * * * * * * * * * * * * *

Guiding questions for choosing generative AI

As you might recall, asking yourself a few simple questions *before* using an AI tool can help you decide whether the tool is right for the job.

1. Is the task **generative**?
2. Can the task be **iterated** on to achieve the best outcome?
3. Are there resources to provide **adequate** human oversight?

Answering “yes” to all of these questions indicates that a task is suitable for typical generative AI use. However, a “no” to any one of these questions indicates that the task may not be suitable for generative AI, and you should find a different way to complete your task.

Examples of how to assess work tasks for generative AI use

Suppose a **social media manager for a best-selling author wants to use an AI tool to draft inspiring quotes that promote the author's latest work**. Here’s how the social media manager might ask and answer the guiding questions:

Guiding question	**Does the task fit the framework?**
Is the task generative?	Yes, the social media manager can create images and text using generative AI. Tasks are generative if they result in new content.
Can the task be iterated on to achieve the best outcome?	Yes, generative AI can create many different iterations of text and images. The social media manager can enter prompts as many times as needed for this task until they get the best results.
Are there resources to provide adequate human oversight?	Yes, the social media manager can review the AI tool's output and decide whether or not to use any of the ideas to promote the author's book, ensuring there is adequate human oversight.

Or, suppose a data analyst for a commercial real estate company wants to use an AI tool to create a formula for a spreadsheet of building maintenance records. The analyst wants to filter the data to identify buildings that are due for preventative maintenance. Here’s how they might use the guiding questions to evaluate whether generative AI is suitable for this task:

Guiding question	**Does the task fit the framework?**
Is the task generative?	Yes, this task involves generating new content: specific spreadsheet formulas based on the criteria the analyst provides.
Can the task be iterated on to achieve the best outcome?	Yes, this task can be iterated on. If a formula doesn't work as they expect, the analyst can provide additional prompts until they receive a quality output.
Are there resources to provide adequate human oversight?	Yes, after applying the spreadsheet formulas, the analyst can evaluate whether they're sorting the maintenance records correctly.

This framework of guiding questions is just a first step to evaluate whether generative AI could be suitable for your specific task. Once you determine that AI is a good fit for a task, it's important to carefully plan how to integrate these tools into your workflow.

When is generative AI not right for a task?

Generative AI tools are often designed to be helpful for a broad audience. However, this level of versatility comes at a cost.

Although these tools can help you translate text, create content, brainstorm ideas, summarize information, and even research questions, they aren't *always* suitable for these kinds of tasks. The following are types of tasks where you might answer "no" when using this framework of guiding questions:

Tasks requiring specialized knowledge

Sometimes generative AI tools lack the specialized knowledge required to perform tasks in a particular field and industry. For instance, a restaurateur wants to use an AI tool to draft a lease agreement for their new storefront. While the tool can generate text, it might lack the legal expertise to handle specific clauses and regulations, potentially leading to inaccurate or incomplete portions of the lease.

Tasks requiring knowledge of personal preferences

Generative AI tools lack awareness of people's personal preferences. Consider a training manager who's using an AI tool to create a customized lesson plan for a new onboarding workshop that caters to the needs of new employees. Without an understanding of each employee's roles or learning styles, the AI tool won't be able to produce an effective lesson plan.

Tasks requiring information beyond the last training date

Tasks that require information beyond the AI's last training date cannot be reliably addressed by generative AI tools. This is due to **knowledge cutoff**, the concept that an AI model is trained at a specific point in time, so it doesn't have any knowledge of events or information after that date. For example, a business owner who's preparing their 2025 tax documents might ask a generative AI tool to summarize the newest tax deductions available in 2024. However, if the AI tool was last trained in 2023, it won't produce a useful output because it lacks the information needed to complete this task.

Note: Some advanced AI tools use web searches to overcome knowledge cutoff, but their AI output should still be reviewed carefully.

Choosing when to integrate generative AI into your workflow requires thoughtful consideration. By using this framework of guiding questions, you can unlock new levels of efficiency, creativity, and problem-solving in your work—getting you on your way to maximizing your productivity with AI!

Reading - Use Gemini in Google Docs, Slides, Sheets, Meet, and Gmail

Discovering new AI tools is a helpful way to stay up to date with emerging technology and boost your productivity. In this reading, you'll learn about Gemini in Workspace apps, including Gmail,

Google Docs, Slides, Sheets, and Meet. You'll also explore examples of how you can prompt Gemini in Workspace apps to help you write, visualize, organize information or projects, and better connect with others.

Alt=""

Introduction to Gemini in Workspace apps

You can use Gemini in Gmail, Google Docs, Slides, Sheets, and Meet. It's available as an **add-on** for purchase for existing Google Workspace accounts. You can access Gemini in all of these Workspace apps on desktop computers. You can access Gemini in Gmail on both desktop computers and mobile devices.

Note: Even if you're not currently using an eligible Google Workspace account, you may be able to access Gemini in Workspace apps in the next activity. Gemini in Workspace apps is not yet available in certain countries and languages. For more details, refer to documentation about Where you can use Google Workspace Labs.

On the Google Workspace website, you can review information about Gemini in Workspace apps, including visual examples of its functionality and information about purchasing eligibility.

Google Docs

Google Docs is a collaborative application for creating many types of documents. You can use Gemini in Docs to perform a variety of tasks related to writing and refining documents, such as to:

- **Write text** for your document
- **Summarize the** content of your document
- **Brainstorm new ideas** to include in your document
- **Suggest stylistic** changes to existing text
- **Proofread** for grammar and spelling

For example, a real estate agent might use Gemini in Docs to help write a new blog post about a nearby town with homes for sale. They can prompt Gemini in Docs for suggestions if they have trouble getting started, or to brainstorm specific ideas. After the business owner reviews and customizes the output, they can add another prompt to proofread the post.

Gmail

Gmail is an application for sending and receiving emails. Similar to Gemini in Docs, Gemini in Gmail can help you with **writing-focused tasks**. You can prompt it to:

- **Draft emails**
- **Draft and respond** to messages on the go from your mobile device

- Edit written content by formalizing, shortening, or elaborating on existing text

For example, an account manager wants to send a department-wide invitation email for the quarterly review business meeting. The manager can prompt Gemini in Gmail with a short description of the email's purpose, such as ***invitation to the quarterly review business meeting***. Then the manager can insert the suggested text into the body of the email. The manager can also use the **Formalize** option to make the tone of the email more formal. Lastly, they can check, edit, and refine the text to better meet their needs, as well as fill in details like the date and location of the meeting.

Google Slides

Google Slides is a collaborative application for creating slide-based presentations. When working with Gemini in Slides, you can:

- Generate unique images to convey your ideas visually
- Apply specific visual styles to generated images

The owner of a small coffee shop, for example, might use Gemini in Slides to create a marketing campaign for the upcoming launch of a holiday coffee blend. The business owner can request a specific style for their images, such as a photograph with a solid background, a sketch, a watercolor painting, and more. Then, the business owner can iterate on their prompt until they generate an image in a style they want to use in their upcoming holiday ad campaign.

Google Sheets

Google Sheets is a collaborative application that lets you organize and analyze data in spreadsheets. Gemini in Sheets can help you to:

- Build trackers for a project
- Classify and analyze data

For instance, a project manager might use Gemini in Sheets to begin tracking team members' assignments. If the project manager hasn't used Sheets for this task before, or needs a new way to organize the tracker, they can prompt Gemini in Sheets to draft a new tracker with employee names, their workstreams, milestones, statuses, and notes. Gemini in Sheets can also help the project manager make changes to the tracker as projects evolve.

Google Meet

Google Meet is a video-conferencing application for face-to-face virtual meetings. You can prompt Gemini in Meet to:

- Generate captions translated to and from certain languages during meetings
- Generate unique background images

For example, a salesperson who speaks English wants to pitch their company's newest product to a client who speaks Japanese. If they decide to use Meet, Gemini in Meet can create translated

captions as the English speaker is presenting. The salesperson might also use Gemini in Meet to generate a unique video background, such as an image representing the client's industry, adding a level of personalization to the meeting.

Wrap Up

You learned

- Practical applications of Gen AI
- How to boost your productivity with AI tools
- A human-in-the-loop approach to AI
- Guided questions to help determine if Gen AO is right for a task.

Module 3 Discover the Art of Prompt engineering

Discover the art of prompt engineering

Prompt

- Text input that provides instructions to the AI model on how to generate output.
- How to design or engineer effective prompts

- How to design or engineer effective prompts to achieve more useful results from conservational AI tool.
- First, how LLMs generate output in response to outputs.
- Then, you will explore the role of prompt engineering in improving of the output.

Prompt engineering

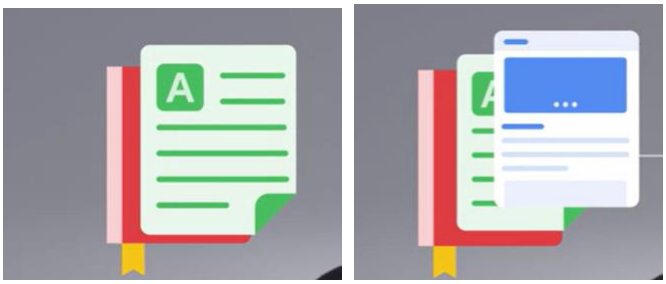
- Prompt engineering is the practice of developing effective prompts that elicit useful output from Gen AI.

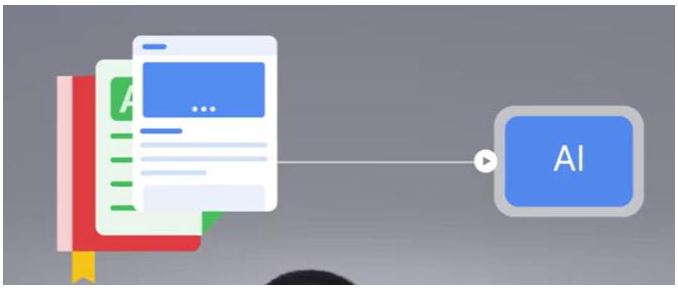
- You will learn to create and specify prompts, one the most important parts of prompt engineering
- The clearer and more specific your prompt the more likely you are get useful output.
- Another important part of prompt engineering is **iteration**.
- You will learn about evaluating output and revising your prompts.
- This will also help you get the results you need when leveraging conversational AI tool in the workspace.
- We will also explore prompting techniques called **few-shot prompting**.
- Writing effective prompts involves critical thinking and creativity.
- It can be fun a fun process, and its very important skill to practice if you want to use AI effectively in the workplace .
- Are you excited about get started on prompt engineering

Understand large language models

Large language model (LLM) - THE BRAIN

- An AI model that is trained on LARGE amounts of TEXT to identify patterns between words, concepts and phrases so that it can generate responses to prompt.
- So how LLM learn?
- An LLM is trained on millions of sources of text, including books, articles, websites and more.

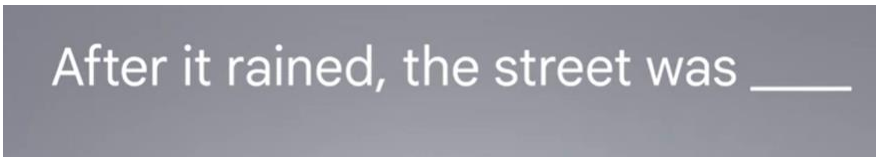




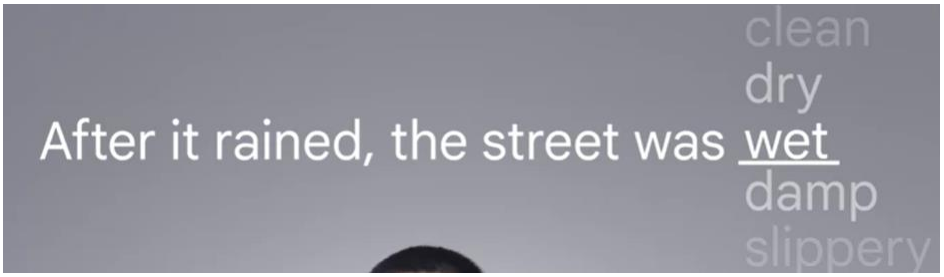
- This training helps the model learn patterns and relationships that exists in human language.
- In general, the more high quality data the model receives, the better its performance will be.
- Because LLMs can identify so many patterns in language, they can also product what word is most likely to come next in sequence of words.

An example

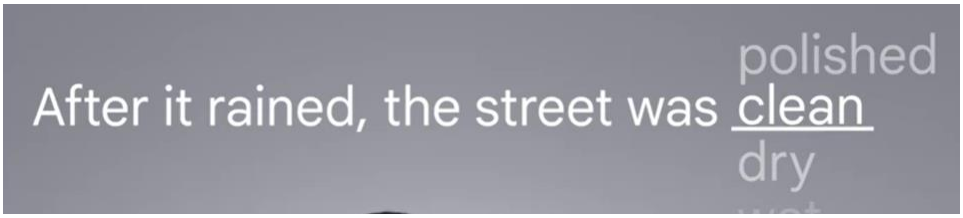
- Consider a simple example.
- After it rained, the street was _____



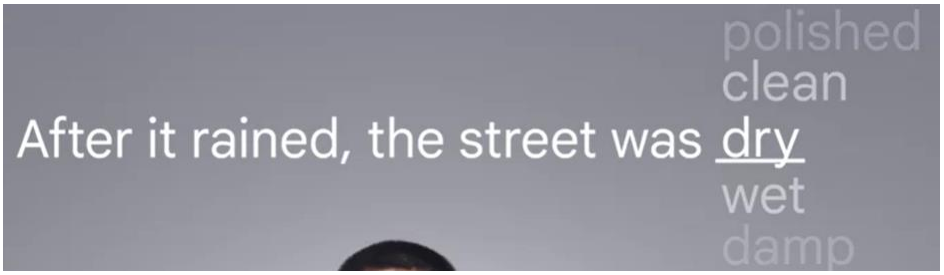
- An LLM can predict what word comes next by **computing the probabilities** for different possible words.
- Based on the available DATA, the word WET might have a higher probability.



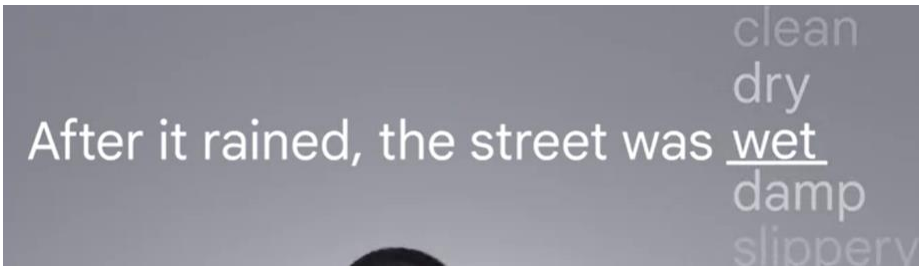
- Word clean, a lower probability



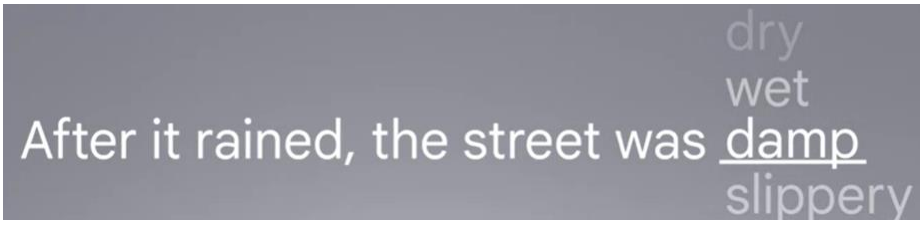
- Word dry, an extremely low probability



- In this case, LLM might complete the sentence by inserting the word with high probability of coming next in the sequence, wet.



Or another high probability word like damp.



- An LLM may vary in its response to the SAME prompt each time you use it.

- LLMs use statistics to analyze the relationships between all the words in a sequence and compute the probabilities for thousands of possible words to come next in that sequence.

- This predicate power enables LLMs to respond to questions and requests, whether the prompt is simple sentence or to develop a compelling story for a new product or ad

campaign.

- Although LLMs are powerful, you may not always get the output you want.
- Sometimes this is because of limitations in a LLMs training data,

LLM Limitations

Biases

- For example, an LLM output may be biased because of data it was trained on contains bias.
- This data may include news articles and websites that reflect the unfair biases present in society.
- Because of the data it was trained on, an LLM may be more likely to produce output that associates a professional occupation with a specific gender role. (example most of CEOs are male)
- The training data that informs an LLM can be limited in other ways as well

Not enough sufficient content

- An LLM might not generate sufficient content about a specific domain or topic because the data it was trained on does not contain enough information about that topic.

LLM to Hallucinate

- While LLMs are good at responding to many kinds of questions and instructions, they can sometimes generate text that are factually inaccurate.

Hallucinations

- AI outputs that are not true.

Example of AI hallucinations

- You need to summarize company's history.
- LLM might hallucinate and provide incorrect information about certain details such as date of company was founded or number of employees.

Factors that can contribute to hallucinations

- Quality of an LLM's training data

- Phrasing of the prompt
- Method an LLM uses.

- Don’t assume you will get the **same quality** output if you use the **same prompt** again in future.

- LLMs are Powerful tools and require human guidance for effective use.

Key Principles of effective prompt writing

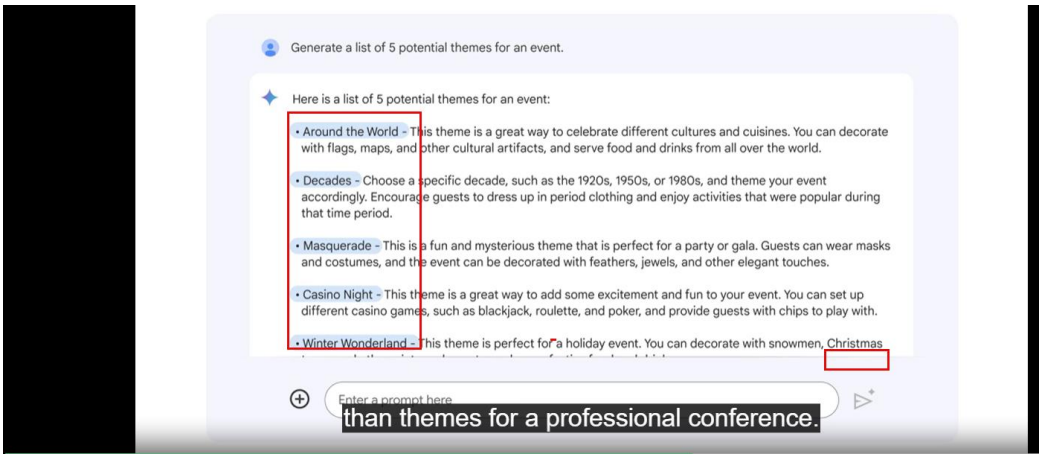
Write clear and specific prompts

- Prompt engineering involves designing the best prompt you can get the output you want to from LLM.
- Includes writing clear, specific prompts that provided relevant context

Example 1 – Naïve Prompt

- Find a Theme for upcoming conference

- Prompt:
  Generate a list of 5 potential themes for an event.

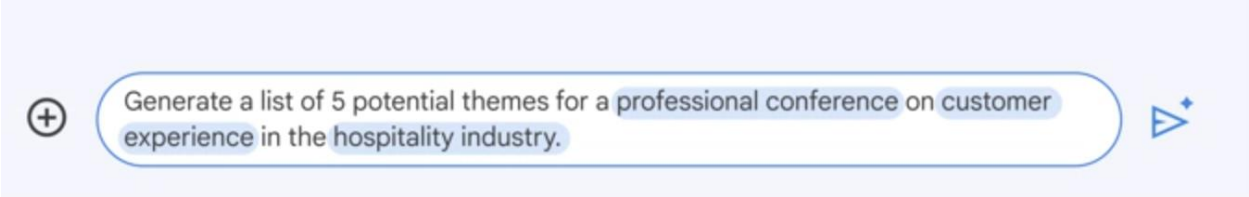
- 

- Our prompt did not give much context.

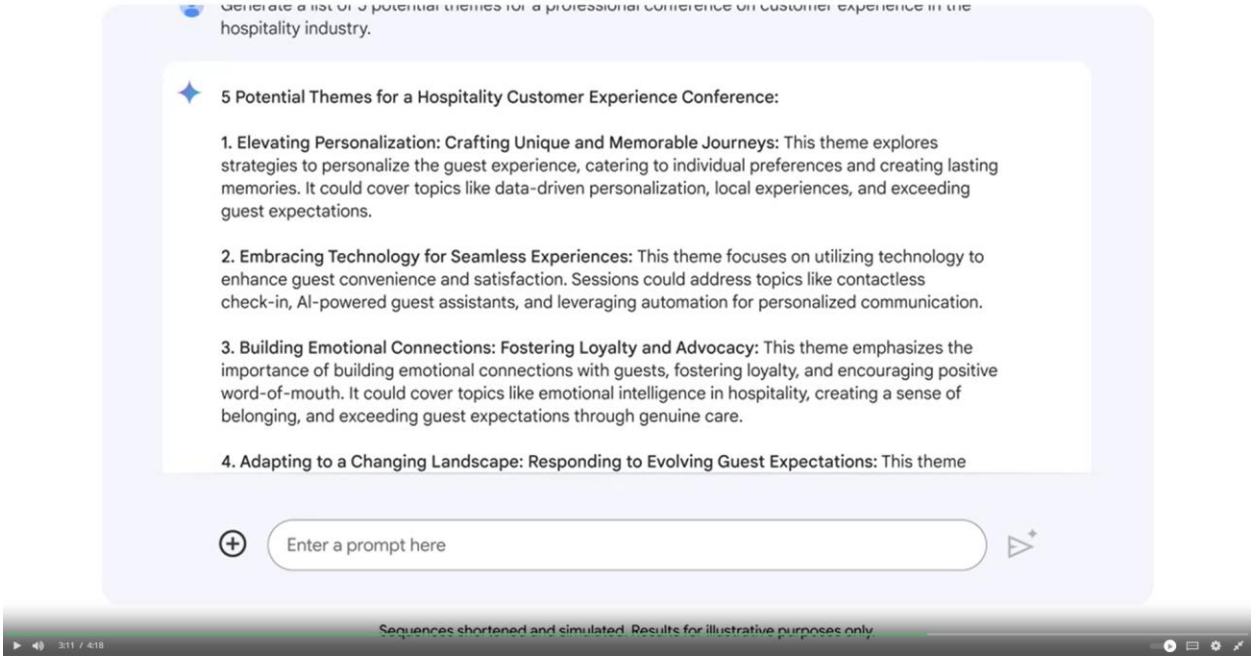
- It was not clear and specific enough.

Example 2 – Specific Prompt

- Prompt:
- Generate a list of 5 potential themes for a professional conference on customer experience in the hospitality industry.



- This is much more better and specific



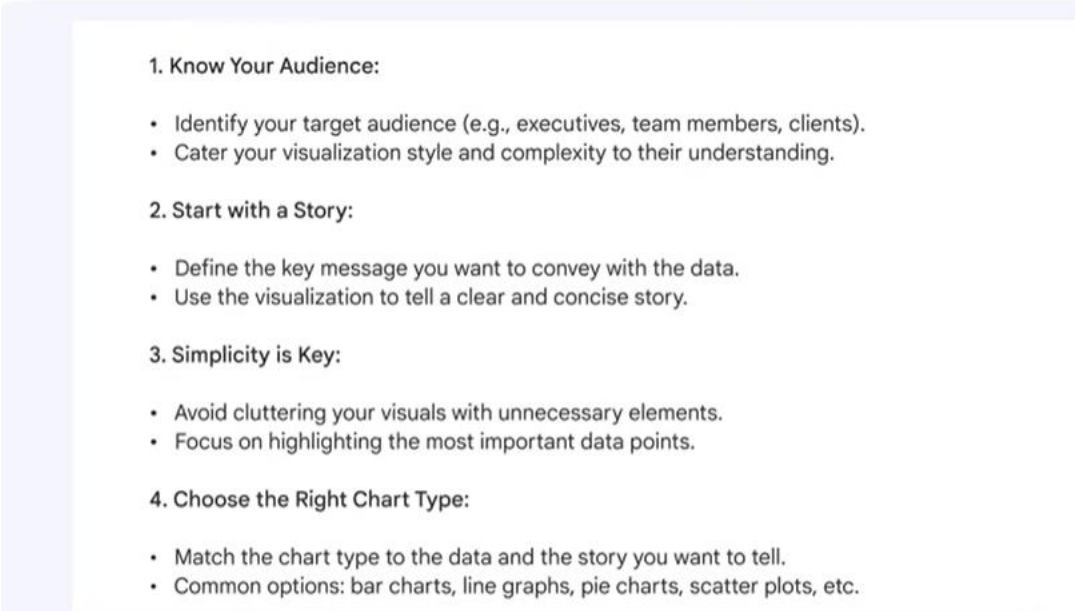
- Prompt engg. is an iterative process and needs refinement.

Leverage an LLM's capabilities at work

Content Creation

- Prompt:
  Create an outline of an article on data visualization best practices. The article is for entry-level business analysts

- Create – Verb is used to guide LLM.



1. Know Your Audience:

- Identify your target audience (e.g., executives, team members, clients).
- Cater your visualization style and complexity to their understanding.

2. Start with a Story:

- Define the key message you want to convey with the data.
- Use the visualization to tell a clear and concise story.

3. Simplicity is Key:

- Avoid cluttering your visuals with unnecessary elements.
- Focus on highlighting the most important data points.

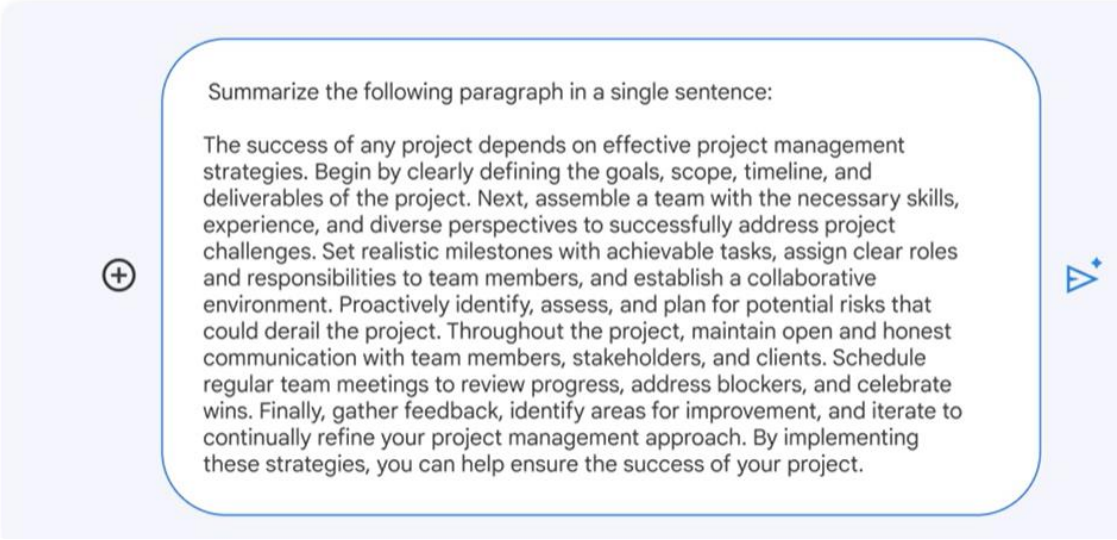
4. Choose the Right Chart Type:

- Match the chart type to the data and the story you want to tell.
- Common options: bar charts, line graphs, pie charts, scatter plots, etc.

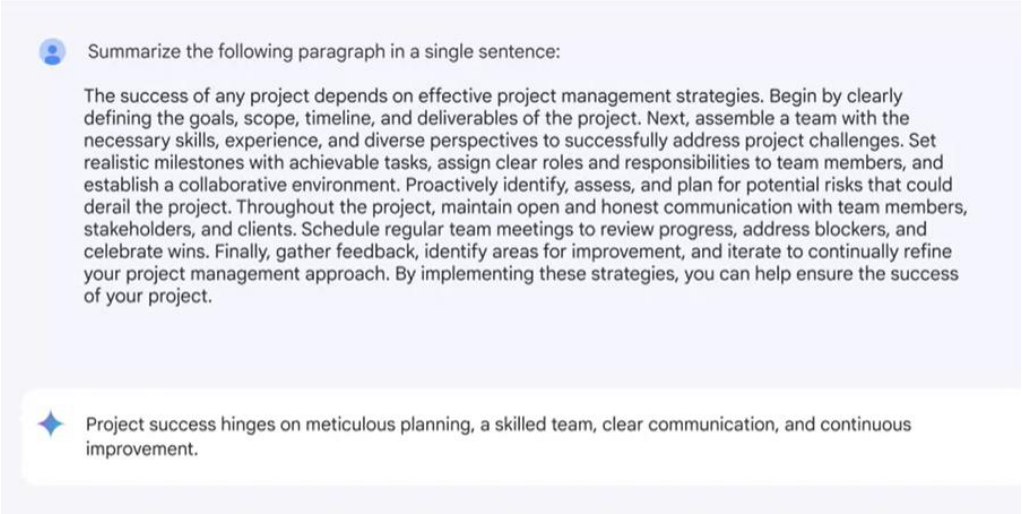
Summarization

- Prompt

  Summarize the following paragraph in a **single sentence**.
  Summarize- Verb is used
  Single sentence – specific



- Output.

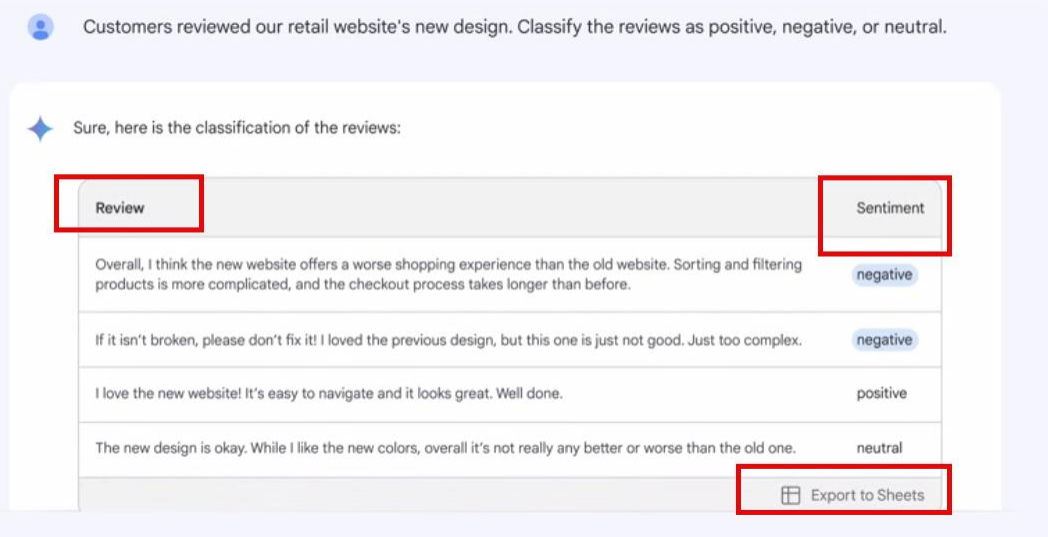


Classification

- Classify the Sentient or feeling analysis in a group of customer reviews as positive, negative, or neutral.
- Prompt:
  Customer reviewed our retail website's new design. Classify as positive, negative, or neutral.

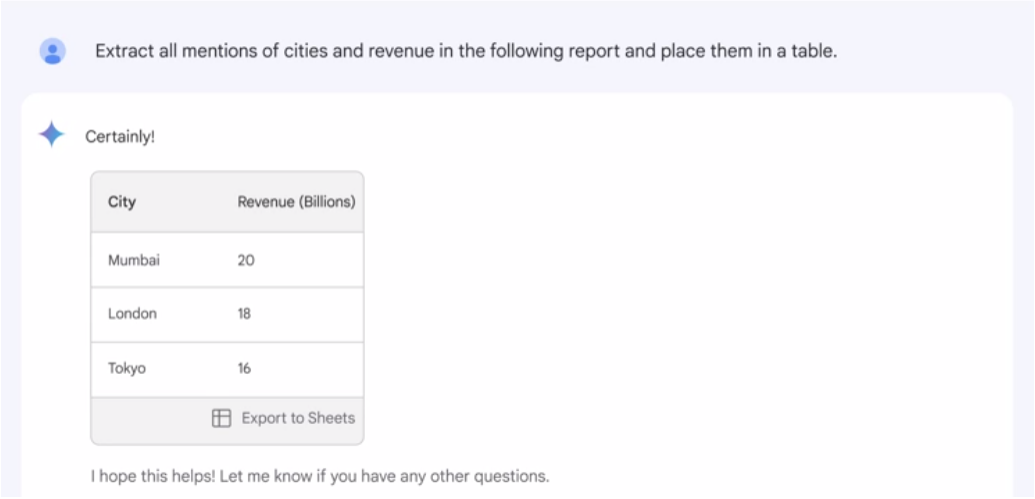
- Prompt includes the verb **classify** to guide the output and word **reviews**

  Outpout reviews negative and output.



Extraction

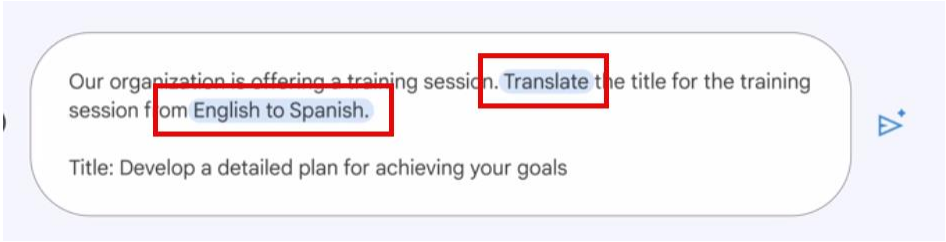
- Pulling data from text and transforming it into a structured format that's easier to understand.
- For e.g. you have a report provides information about a global organization.
- Prompt:
  Extract all mention of cities and revenue in the following report and **place** them in a **table**.

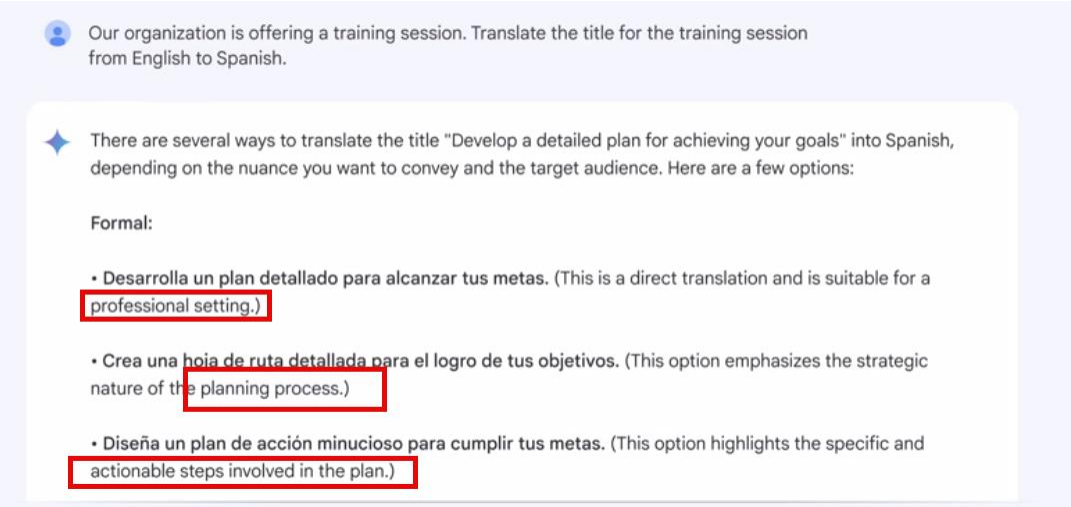


- Pulling data from text and transforming it into a structured format that's easier to understand.

Translation

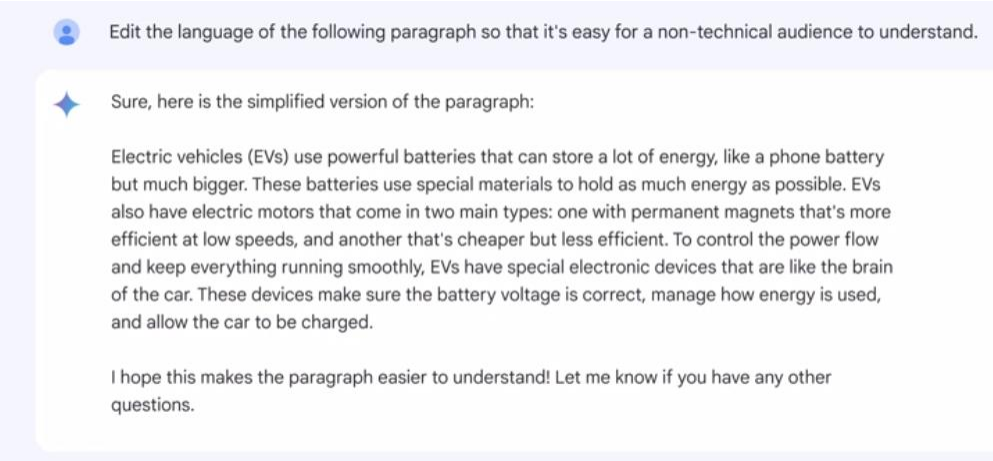
- Translate language





Editing

- Change the tone from professional to casual.
- Check if passage is grammatically correct.



Problem solving

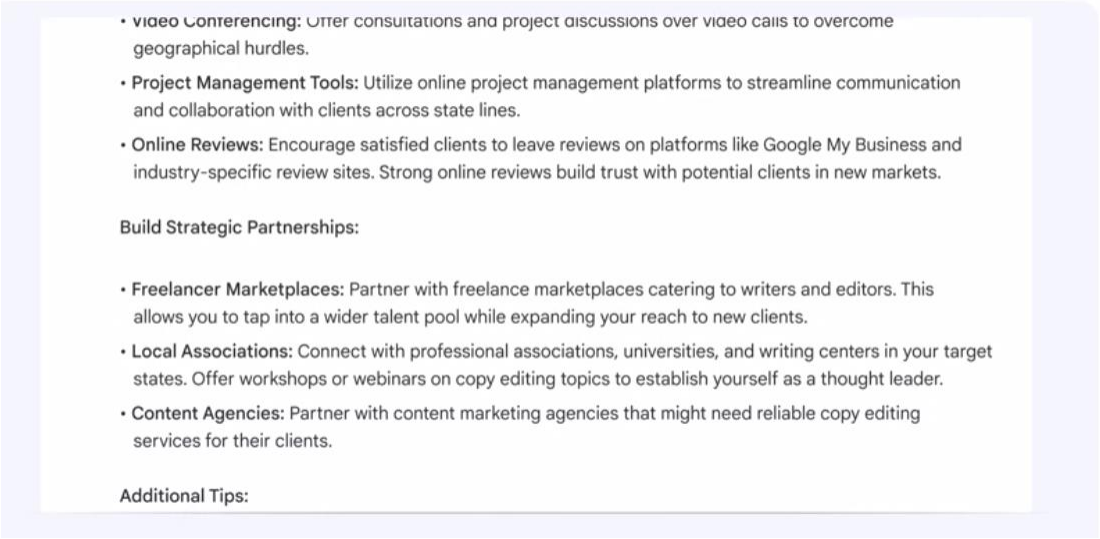
Change the tone from professional to casual.

- Check if passage is grammatically correct.

Problem solving

- Find menu for guests

- 

- 

Reading - Prompts for different purposes

Recall that a **large language model**, or **LLM**, is an AI model that is trained on large amounts of text to identify patterns between words, concepts, and phrases so that it can generate responses to prompts. As you've been learning, good prompt engineering can help guide an LLM to generate useful output for workplace tasks. In this reading, you'll further explore how to write clear and specific prompts for a variety of workplace use cases.

* * * * * * * * * * * * * *

Use cases

As you explored previously, you might use an LLM at work to help boost your productivity and creativity and complete any of these useful tasks:

- Content creation

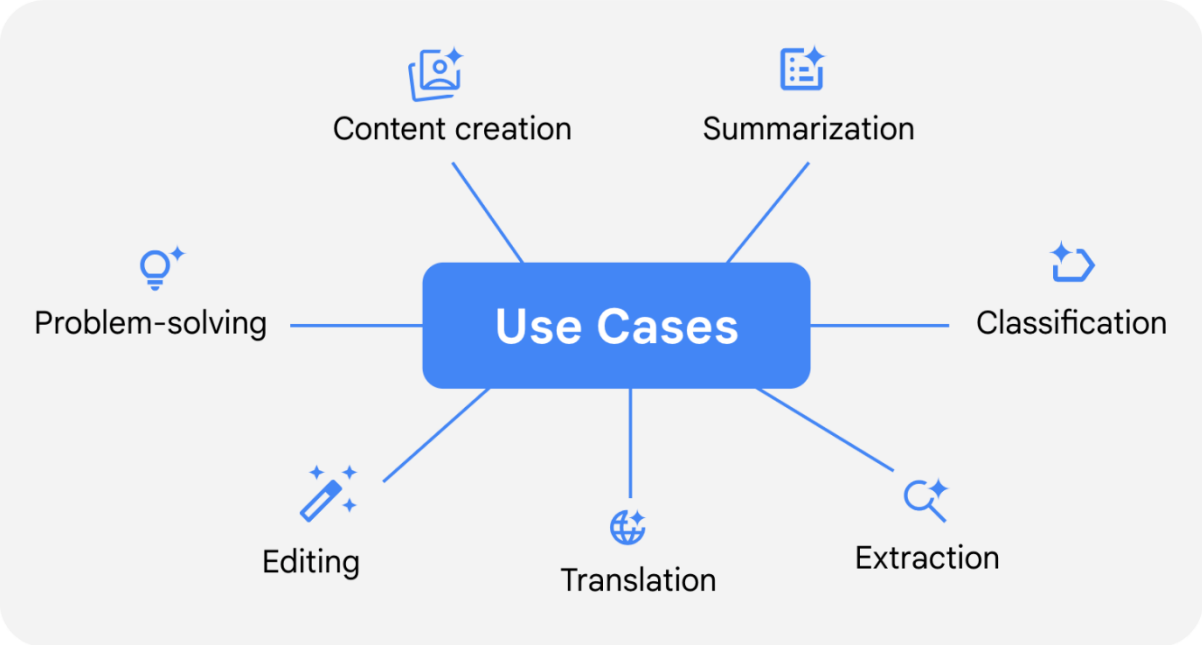
- Summarization
- Classification
- Extraction
- Translation
- Editing
- Problem-solving

Note: The following examples illustrate best practices; they aren't exact templates to copy for every situation. Your results will vary based on a number of factors, including the specific LLM you're using. Remember to **critically evaluate all LLM output** and to iterate on your **initial prompt** to get the most useful output.

In general, here's how to make your prompts more effective:

- **Consider what you want the LLM to produce**. The LLM will generate more useful output when you include a specific instruction in your prompt, like *create*, *summarize*, *classify*, *extract*, *translate*, *edit*, or *solve*.
- **Provide necessary context.** The LLM will generate more useful output when you include detailed instructions, with specific guidance about the style or format of the output you want.

Up next, you'll examine each of the use cases described earlier by considering an additional example for each.



Content creation

No matter your industry, an LLM can help you create content for a variety of purposes, such as blog posts, reports, product descriptions, and taglines. For example, suppose you're working on an ad campaign for a new line of home appliances. You can ask an LLM to help you create an engaging tagline for one of the products:

Act like you are a creative advertising professional who can apply innovative thinking to develop original taglines that project the positive qualities of a product. Create a concise tagline for a washing machine that gets clothes extra clean, has 25 settings, and fits in a small space.

The prompt begins by describing the LLM's role as a creative advertising executive. Next, the prompt clearly states that the task is to create a concise tagline for a washing machine. Finally, the prompt specifies the product features to include in the tagline.

Pro tip: Assign the LLM a role, job, or function to reinforce the purpose of the prompt and help guide the LLM to produce useful output.

Summarization

An LLM can help you summarize many types of texts: reports, customer surveys, meeting notes, emails, and more. For example, the following prompt asks an LLM to provide a summary of a lengthy email:

The following text is an email from a software vendor. Summarize its main points in a bulleted list:

"I hope this finds you well. It was a pleasure to chat with you at the conference last week.

Following up with more detail on our pricing plans. Our bronze level subscription gets you access to three of our most popular software products as well as training videos for these products. If you have additional software needs, you can subscribe at the silver level. This level allows you to choose two additional software products, with training videos on those products, as well as gets you 24-hour support on any difficulties you encounter while using the products. Finally, our gold level membership gets you access to all ten of our software products. You get training for all ten products as well as 24-hour support, and you are also the first to enjoy any beta additions to our products.

Please contact me for the pricing of the level that interests you. We offer monthly subscriptions and a reduced rate for a yearly subscription."

The prompt begins with useful context about the relevant email. Next, it clearly states that the task is to summarize the main points of the email. Finally, it specifies that the output should be formatted as a bulleted list.

Note: Be aware that LLMs can sometimes hallucinate, or produce AI outputs that aren't true. In this case, the LLM might add details to the summary that aren't included in the source email. Always evaluate LLM output for accuracy before using it.

Classification

Text classification is another common workplace application for LLMs. An LLM can help you sort customer service emails into categories based on the content of the email, categorize content in

social media posts, and analyze the sentiment or feeling of customer feedback. The following prompt asks an LLM to analyze the sentiment in a customer review:

Read these customer reviews and tell me whether the sentiment of the reviews is positive, negative, or neutral.

Customer Review: I don't know where to begin. We had reservations for 7:00 but they seated us at 7:45. Then, no one came to our table for at least 30 minutes. Our appetizer and main course were mediocre. I did love the dessert, but that wasn't enough to change our experience.

Customer Review: I love this restaurant. The food is delicious and the service is excellent.

The prompt begins by clearly stating that the task is to analyze the sentiment of a customer review and then specifies the options: positive, negative, or neutral. Then, the prompt includes the relevant reviews under the label "Customer Review."

Extraction

You can also use an LLM to pull data from text and transform it into a structured format that's easier to understand, known as extraction. For example, this prompt asks an LLM to review a blog post and extract information about products mentioned in the post.

Read the blog post below and extract all of the references to items of clothing I can buy and how much each item costs. Create a bulleted list of just these items.

Blog post: Hey everybody, I want to share what I'm wearing on campus this fall. If I'm going out for the evening, I prefer the raw selvedge denim jeans ($150) paired with the cashmere crew neck sweater ($250). For a more casual look, I like the fleece hoodie ($99) and fleece sweatpants ($129). I also love every color of the striped socks ($15). They pair well with both the jeans and the sweats.

The prompt begins by clearly stating that the task is to extract all the items of clothing mentioned in the blog with their corresponding prices. Next, the prompt specifies that the format of the output should be a bulleted list of the items. Finally, the prompt includes the relevant blog.

Translation

You can leverage an LLM to translate text between different languages very quickly. For example, the following prompt asks an LLM to help translate product descriptions from English to Spanish:

Translate our product descriptions from English to Spanish. Maintain the same structure and casual tone that is used in the English version in the Spanish translation.

Bicycle: Whether you're exploring city streets or forest paths, our sleek and durable bicycle has it all.

Rollerblades: Roll into summer in style with our smooth and stylish rollerblades.

The prompt begins by clearly stating that the task is to translate product descriptions from English to Spanish. It also specifies that the Spanish translations should maintain a similar structure and tone as the English originals. Finally, each example contains a label that introduces the product description: "Bicycle" and "Rollerblades." This format indicates that the LLM should present the output in a similar form.

Note: As a best practice, confirm that an LLM's translations are accurate by cross-checking with another translation tool.

Editing

You can also use an LLM to edit and rewrite text. The LLM can help change the tone of the text from formal to casual, or complete a grammar check. For example, the following prompt asks an LLM to help edit a technical report so that it's less jargony and easier for stakeholders to understand:

Edit the language of the following paragraph so that it's easy for a general audience to understand it. Use simpler vocabulary and grammatical structures but maintain the same ideas.

Site selection for expansion is a complex and multifaceted process. The west side site offers several advantages, including zoning for industrial use and direct access to both a major highway and railroad. However, the site is also located in a jurisdiction with a complex and time-consuming permitting process, and its distance from residential zones may necessitate higher wages to attract workers.

The prompt begins by clearly stating that the task is to edit the text to make it easier for a general audience to understand. Then the prompt specifies that the text's vocabulary and grammar should be simplified while its main content should remain the same. Finally, it includes the relevant paragraph.

Problem-solving

One more use case is problem-solving. You can use an LLM to generate solutions for a variety of workplace challenges, from analyzing sales data to planning an event. For example, the following prompt asks an LLM to help organize a program for a nonprofit organization:

We are running a community program to teach children gardening skills. The program runs from June 1 to August 15. We want the children to be able to grow plants that will be ready for harvest by the time the program ends. First, identify a list of 10 plants that can be planted and grown in that time period. Include sources that support the time to harvest for each plant.

We want the children to grow three plants. These plants should be as different from each other as possible. So next, choose three plants from the list that will provide the children with this variety.

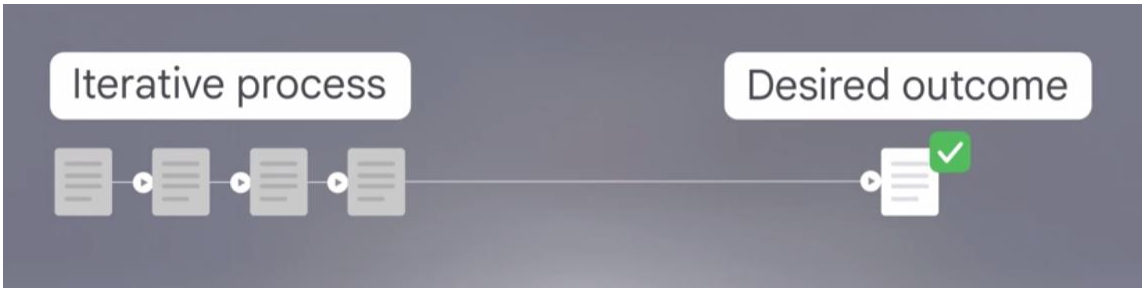
The prompt begins with useful context about the program, such as its main purpose and timeline. Next, the prompt breaks the problem down into two main steps: First, identify a list of 10 plants that fit the timeline, and second, choose three plants from the list that are unlike each other. The prompt also asks the LLM to include sources for the list of 10 plants. Asking the LLM to cite its sources in the output helps you verify the accuracy of the information used to solve the problem.

Pro tip: Break a problem down into steps to help the LLM process the request and improve the overall accuracy of the output.

Improve AI output through iteration

Iterative process

- In an iterative process, you create a first version, evaluate it, and improve upon it for the next version.
- Then you repeat these steps until you get the desired outcome.

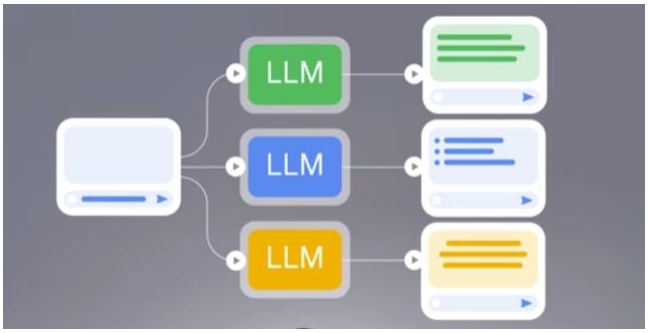


- Prompt engg often requires multiple attempts before you get the optimal output.

Consider possible reasons you might not get useful

Different LLMs

- Differences in LLMs can affect output.
- Each LLM is developed with unique training data & programming techniques.
- Different models, different models to similar prompts in different ways.



LLM limitations

Critically evaluate LLM output

- Is the output accurate?
- Is the output unbiased?
- Does the output include sufficient information?
- Is the output relevant to my project or task?
- Is the output consistent if I use the same prompt multiple times?

Experimenting with different phrases can help you obtain the most useful output.

Activity: Evaluate output and revise prompts

Techniques for prompting an LLM

Examples - (technical term: Shot)

- Examples are useful for LLM.
- Including examples in your prompt can help an LLM better respond to your request.
- It can be an especially effective strategy to get you desired output.

- In prompt engineering, the word “shot” is often used as synonym for the word “Example”

Shots prompting

- Zero Shot – Provided with examples
- One-Shot – provided one example
- Few Shots – A technique that provides two or more examples in a prompt.

- Because examples are not included **in zero-shots prompts**, the model is expected to perform the task **based only on its training data** and task description included in the

prompt.

Zero-shot prompting

- Zero-shot prompting is mostly liking to be effectively when you are seeking simple and direct responses.

- May not be effective for tasks that require the LLM to respond in a more specific, nuanced way.

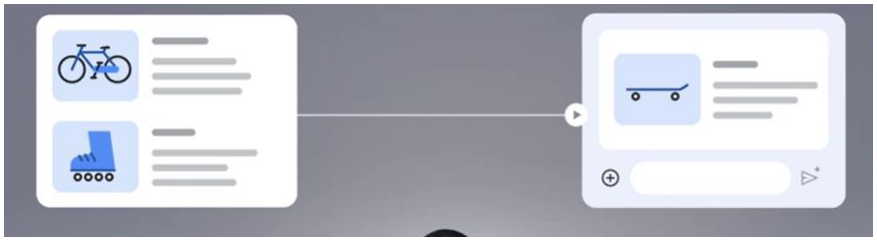
Few-Shots prompting.

- It can improve the LLMs performance by providing additional context and examples in your prompt.
- These additional examples can help clarify the desired format, phrasing, or original pattern.
- It can be useful for a range of tasks.

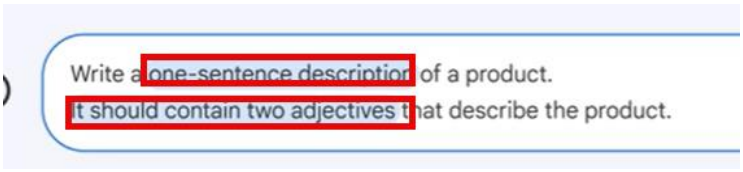
- **For Examples:**
    - To generate content in a particular style.
      Lets say you work for an online retailer. You need to write a production description for a new skateboard.

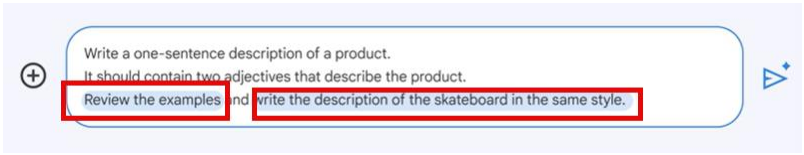
    - You already have descriptions such a bicycle and roller blades

    - You need to follow a similar style and format

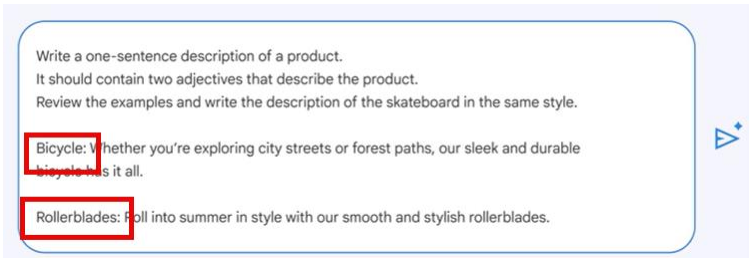


    - Prompt

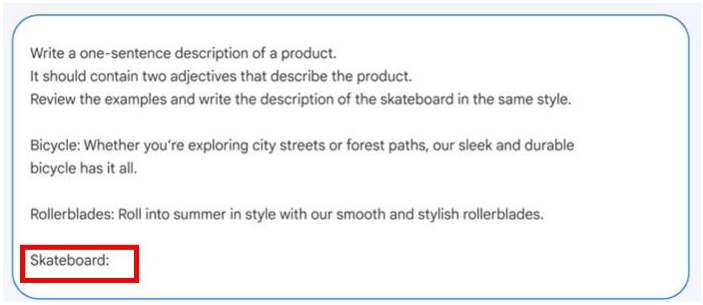




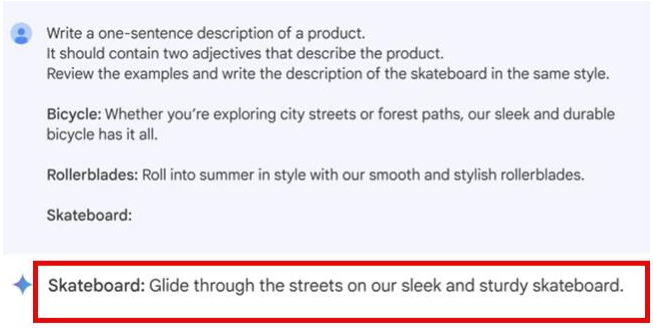
- You need labels for each product as shown below:



- For Skateboard, we expect Gemini to complete for us



- Output.
  Skateboard is the same style that we described for bicycle and rollerblades



- There is no definite number for the optimal number of examples in a prompt.
- Some LLMs can accurately reproduce patterns using only a few examples, while other LLMs need more.
- At the same time, if you include too many examples an LLM's responses may become less flexible and creative.
- They may produce the examples too closely.
- Experiment with he number of examples to include to get the best results for your specific task.

Reading: Explore chain-of-thought prompting

As you've learned, there are prompting techniques that can guide a large language model (LLM) on how to complete tasks. **Few-shot prompting** is a technique that provides two or more examples in a prompt. And **one-shot prompting** is a technique that provides a single example in a prompt.

Chain-of-thought prompting, introduced in this reading, is a third technique you can use to help a conversational AI tool solve a problem involving step-by-step reasoning. You'll first learn about the main workplace applications of chain-of-thought prompting, and how it can improve the overall quality of LLM output. Then, you'll review a detailed example of how to write a prompt using this technique.

Overview

Chain-of-thought prompting is a technique that involves requesting a large language model to explain its reasoning processes. Chain-of-thought prompting is useful for solving problems that involve step-by-step reasoning. This technique improves the quality of an LLM's answers in certain cases.

Benefits

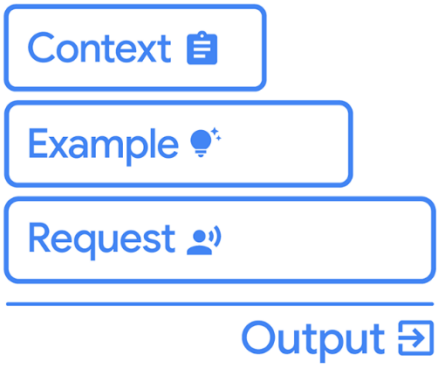
Chain-of-thought prompting has two main benefits:

1. It can improve the overall accuracy of an LLM's output. When you divide a task into more manageable steps, you help the LLM produce accurate and consistent results.
2. Instructing an LLM to break down the problem helps you understand the intermediate steps used to arrive at the solution. You can then evaluate the output more easily by reviewing each step to identify possible errors or miscalculations.

Applications

Chain-of-thought prompting is useful for solving problems that involve mathematical or logical reasoning. For example, you might use chain-of-thought prompting when you make purchasing decisions, analyze sales data, or recommend products based on customer requirements.

Prompt design



Chain-of-thought prompts often include one or more examples that demonstrate how to solve a problem in discrete steps.

Suppose you want to use an LLM to help manage your organization's annual budget. Begin your prompt with an example of the step-by-step process your team used to calculate expenditures for last year's budget. Then, instruct the LLM to calculate expenditures for this year's budget in the same manner.

Example: Create a purchasing code

Here's an example of how to design a chain-of-thought prompt for a task at work. Suppose that an organization with thousands of employees assigns purchasing codes that its employees use when buying supplies or equipment. A technical support specialist needs to create a unique purchasing code for each employee. The specialist uses an internal conversational AI tool, approved for use with company and employee information, to help them create the purchasing code with the following chain-of-thought prompt:

Our organization assigns purchasing codes by combining an employee's department and ID number. All alphabetic characters are lowercase in the purchasing code. Review the examples and then answer the question that follows in the same manner. Explain the steps involved in determining each employee's purchasing code.

Q: Tiana B works in the Marketing department and has an ID number of 9283. What is Tiana B's purchasing code?

A: The purchasing code for Tiana B is marketing9283. To determine this, first combine the department (Marketing) with the ID number (9283). This results in Marketing9283. Then, change all alphabetic characters to lowercase. This creates the purchasing code marketing9283.

Q: Sylvie E works in the Sales department and has an ID number of 2379. What is Sylvie E's purchasing code?

A:

This prompt contains three main parts. First, it provides *context*. Next, it includes an *example*. Third, it states a *request* for the LLM to answer. Let's look more closely at each part.

Provides context

The prompt first provides useful context to solve a specific problem:

Our organization assigns purchasing codes by combining an employee's department and ID number. All alphabetic characters are lowercase in the purchasing code. Review the example and then answer the question that follows in the same manner. Explain the steps involved in determining each employee's purchasing code.

The prompt describes the organization's method for creating a purchasing code. Because this is a chain-of-thought prompt, the prompt instructs the LLM to follow the example and to explain the steps that determine the purchasing code.

Includes an example

The next part of the prompt includes an example of the steps used to create a purchasing code, presented as a question and answer pair:

Q: Tiana B works in the Marketing department and has an ID number of 9283. What is Tiana B's purchasing code?

A: The purchasing code for Tiana B is marketing9283. To determine this, first combine the department (Marketing) with the ID number (9283). This results in Marketing9283. Then, change all alphabetic characters to lowercase. This creates the purchasing code marketing9283.

Presenting the example in a question and answer format makes it easier for the LLM to follow.

The question portion of the example includes relevant information about the employee's department and ID number, and asks for Tiana B's purchasing code based on this information.

The answer portion of the example demonstrates the step-by-step reasoning that the specialist wants the LLM to use to determine the purchasing code.

Note: You may not always be able to provide a useful example in your prompt. In that case, simply state that you want the LLM to explain its reasoning. The quality of your results will depend on your prompt and the specific LLM you're using. Try including the following language in your prompt to get the best results:

- "Solve the problem in a step-by-step manner."
- "Explain each step used to determine the answer."

States a request

Finally, the prompt includes the specific question the LLM should answer:

Q: Sylvie E works in the Sales department and has an ID number of 2379. What is Sylvie E's purchasing code?

A:

The question follows the pattern of the previous example to make it easier for the LLM to provide a similar answer. The field after the label "A:" is blank to indicate that the LLM should complete the answer.

Rachna: Improve prompts through exploration

Reading - Prompt engineering best practices

Large language models (LLMs) react to what we ask them — the better the input, the more useful their output. Use this guide to create effective prompts that help LLMs perform their best, so you can get the most valuable response.

Specify the task

LLMs are trained on massive amounts of data. You need to get specific about your desired result, so the model can deliver a focused output. Be clear about what you want LLMs to do by providing sufficient parameters. Use straightforward language, and structure queries in a logical way to enhance how the model interprets your request. No specific set up is best; write intuitively and focus on clarity.

Example: *Draft an informal email to my manager requesting time off.*

Provide necessary context

Context shapes how LLMs respond to a prompt by providing important information about your expectations. With relevant context, it is more likely LLMs will generate useful output.

Include key details about your request to give LLMs the information they need to generate useful output. Here are some questions to consider when writing an effective prompt:

- **Who's the target audience?** Specify relevant qualities of the audience, such as their age, profession, or level of understanding on a topic.
- **What tone should the model use?** Clarify the voice and style in which LLMs should use to most effectively convey their message. You might want an output that's casual and friendly

if you're using it to communicate with a peer, or something more professional and persuasive for clients.

- **How should LLMs structure output?** Specify the format LLMs should use to order the information it provides. You may include guidance about length or specify a type of layout, such as a bulleted list or table.
- **What's the output's goal?** Identify what you want LLMs to accomplish with a given prompt. For example, if your prompt asks the model to explain a concept, the goal might be to ensure beginners in that specific field gain a working understanding of the topic. Giving an LLM a goal will help shape the outputs to your specific needs.

Example: *Write a friendly email to my HR coworker thanking them for their collaboration on a recent project so they know their contributions were invaluable.*

Provide references

Providing LLMs with reference materials that achieve your goals or resemble what you want to create can help generate more useful outputs. Whether you're including your own work, broader sources, or both, you also want to explain clearly how these reference materials relate to your prompt for the best possible results.

Example: *Draft a list of potential campaign slogans for a sunglass company in the writing style of 1960s billboard advertisements.*

Evaluate your output

Each model has a unique training set, relies on different programming techniques, and is developed at a specific point in time. As a result, some LLMs may know more about certain topics than others or may experience a knowledge cutoff. Models can occasionally hallucinate, too.

Before you use an AI-generated output, critically assess the output to ensure it's acceptable and beneficial to you. This may involve conducting some research after LLMs produce their output. When evaluating an output, ask yourself:

- **Is this response accurate?** Confirm the information is up-to-date and factual.
- **Is this response unbiased?** Evaluate whether the response is fair and impartial, accurately represents populations, and avoids preferential treatment for certain individuals or groups.
- **Does this response include sufficient information?** Ensure the response delivers a comprehensive and satisfactory response to your query.
- **Is this response relevant to what I need?** Check that the output relates to your prompt and aligns with the context, topic, and task you outlined.
- **Is this response consistent?** Verify that your response isn't an outlier. If you aren't sure, try prompting LLMs multiple times in different ways to ensure the outputs give you similar information.

If you determine an output is unacceptable, try to add more context to the initial prompt to generate a more focused response:

Example: The output from a prompt like *What's a conditional?* might be broad, varied, or irrelevant to your needs, since that term has different meanings in various contexts.

Iteration: Instead, a prompt like *Explain 'conditionals' to a beginner coder like a textbook* would most likely produce a more targeted, useful output by specifying the audience, tone, and discipline.

Take an iterative approach

Whatever the reason, a LLM might not produce what you need the first time you ask for it. You can still arrive at your desired outcome with some iteration, by refining the initial prompt, issuing follow-up requests, or giving LLMs feedback.

To successfully revise a prompt, keep what worked and adjust the input from there. You might change some phrasing (like whether the prompt is a command or question), reorder the prompt's components (like whether you start or end with an example), or provide additional context to help narrow LLMs' responses.

Example: *Summarize the following meeting notes.*

Iteration: *Summarize the following meeting notes and identify key takeaways.*

Further iteration: *Summarize the following meeting notes, identify key takeaways, and list the most urgent action items with their deadlines.*

To efficiently issue follow-up requests, ask the model to make adjustments without repeating the initial prompt, like a back-and-forth dialogue. LLMs are able to build off of prior interactions within a conversation, which means you can focus on making targeted, individual adjustments until you have everything you need.

Example: *Summarize the following meeting notes.*

Follow-up: *What were key takeaways from this meeting?*

Second follow-up: *What are the most urgent action items and their deadlines?*

Wrap Up

- LLM output
- Clear and specific prompts
- Iteration
- Few-shot prompting

Module 4 introduction: Use AI responsibly

Responsible AI Overview

Principle of developing and using AI ethically, with the intent of benefiting people and society while avoiding harm.

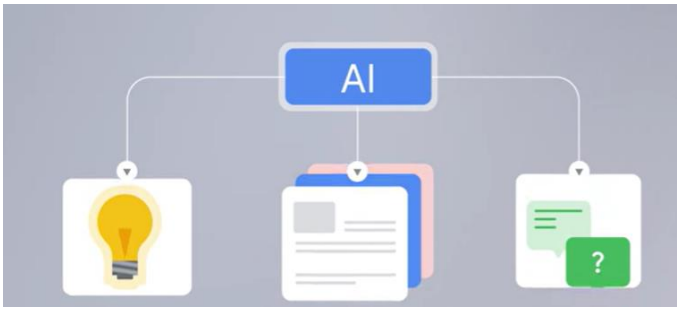
AI User

- Someone who leverages AI to complete a personal or professional task.
- AI is not perfect.

Example of Autopilot

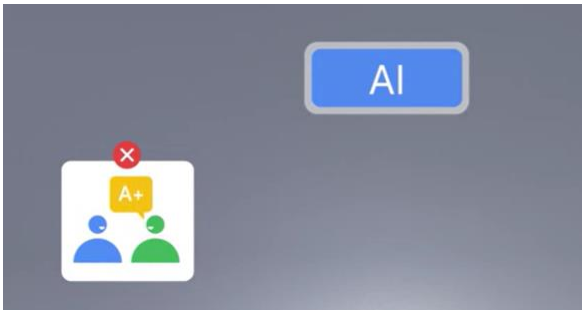
- Autopilot can help
- But still human for case of emergency landing
- Autopilot is the system
- Pilot is the user.

AI Tasks – technical aspects

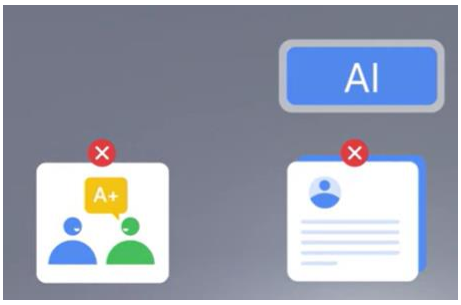
- 

What AI cant do

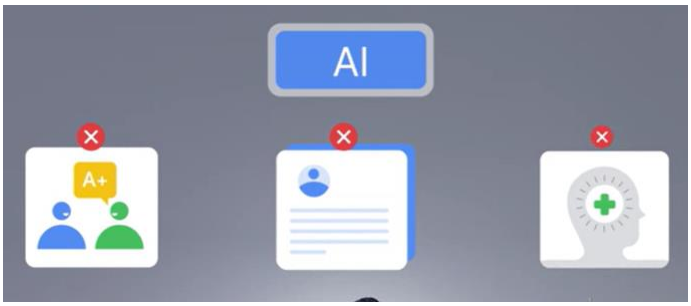
- Giving personalized performance feedback to an employee



- Which candidate to hire



- Therapy to patients



Understand bias in AI

- AI Model is trained on dataset to recognize and perform tasks, the model is as good as the data receives.

- The output from the AI tool may be affected by
    - Systemic bias
    - Data bias

Systemic bias

- A tendency upheld (confirm or support (something which has been questioned) by institutions that favors or advantages certain outcomes or groups.
- Exists within societal systems like healthcare, law, education, politics and more.

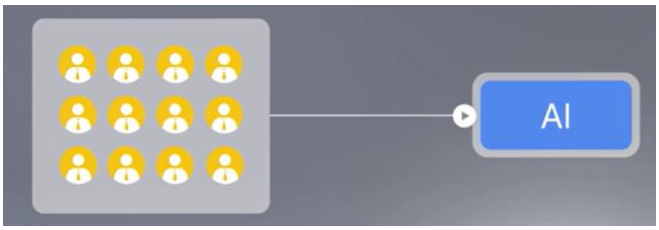
- Even people who design and train an AI model think, they are using high-quality data, the data may be already biased because humans are influenced by systemic biases.

Data bias

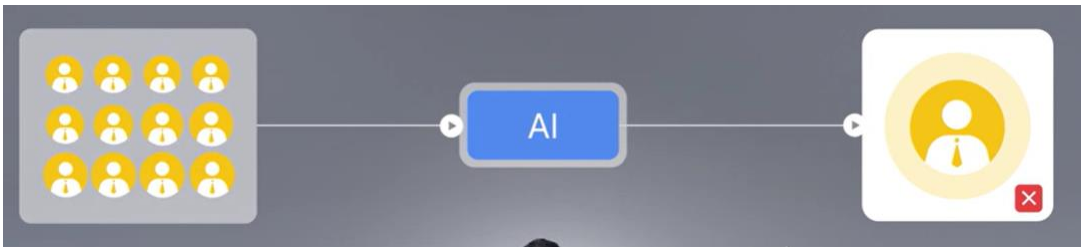
- A circumstance in which systemic errors or prejudices (opinion that is not based on reason or actual experience) lead to unfair or inaccurate information, resulting in biased outputs.

Example

- You ask an AI image generator to create a photo of a CEO



- All the images generated appear to be white males.



- Now, you might assume tat all CEOs are white men.
- Obviously, this data is biased.
- AI models are value-laden
- At present, it provides both opportunities and challenges.
- So, using it responsibly requires critical thinking and understanding about how data may be biased.

Identify AI harms

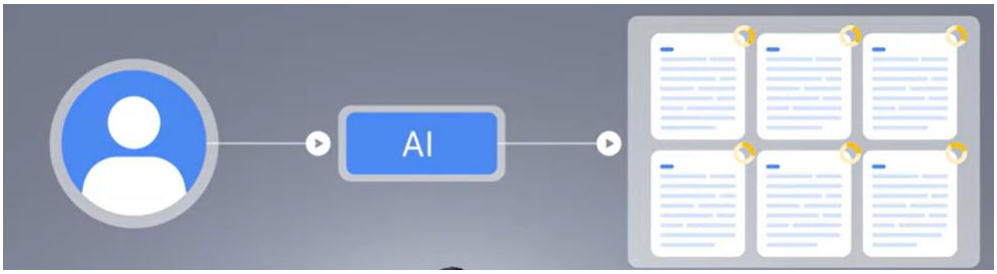
Allocative harm

- Wrongdoing that occurs when an AI system's use or behavior withholds (refuse to give (something that is due to or is desired by another)), opportunities, resources, or information in domains that affect a person's wellbeing.

- For e.g. if AI tools don't provide, the same information to everyone some people may be denied access to education, healthcare, fair housing or other opportunities.

Example

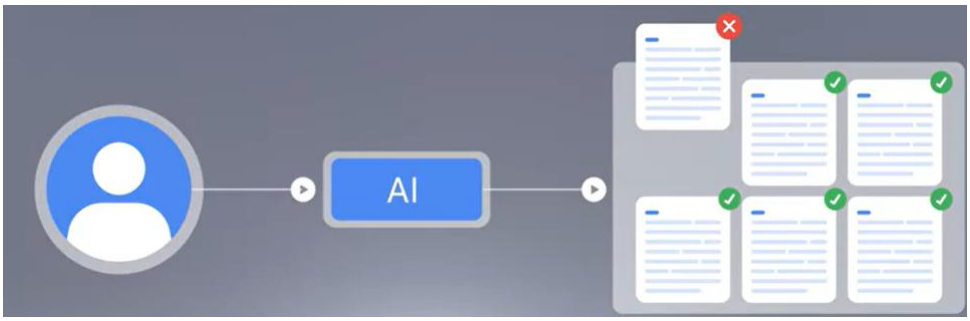
- Property manager for an apartment complex uses an AI tool to screen applications for potential tenants.



- This AI uses the **names** and other identifying information on these applications to help conduct background checks.

- One applicant is deemed (to consider or judge something in a particular way) a risk because of a low credit score.

- They are denied the apartment, and they lose the application fees.



- AI tool misidentified the applicant and a background check on the wrong person.
- The applicant has experienced allocative harm because they were denied an opportunity and lost resources, both affecting their wellbeing.

- ○ Social system
- ◉ Allocative
- ○ Deepfakes
- ○ Quality-of-service

⊗ Incorrect
Feedback: Review the video about potential AI harms.

Quality-of-service harm

- A circumstance in which AI tools do not perform well as well for certain groups of people based on their identity.

Example

- When speech recognition technology was first developed, the training data did not have many examples of patterns exhibited by people who are people who differently abled.
- So, devices often struggled to parse this type of speech but this technology is still evolving.

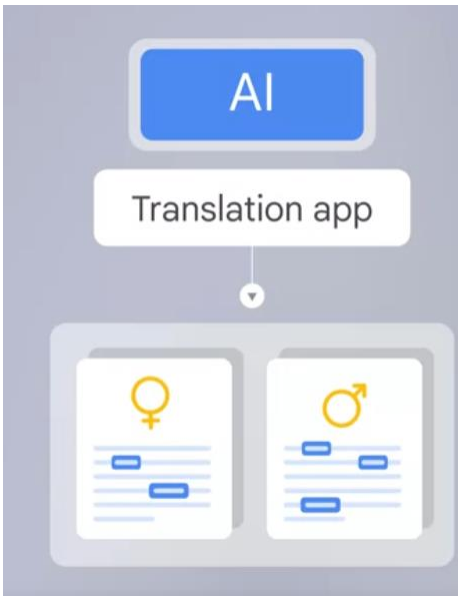
Reputational harm

- An AI tool's reinforcement of the subordination of social groups based on identities.

Example

- AI powered language translation app might associate certain words with feminine or masculine traits and choose gender specification translations based on assumptions.

- This is harmful because the result may be the erasure (the removal of writing, recorded material, or data) or alienation of social groups due to built-in biases.

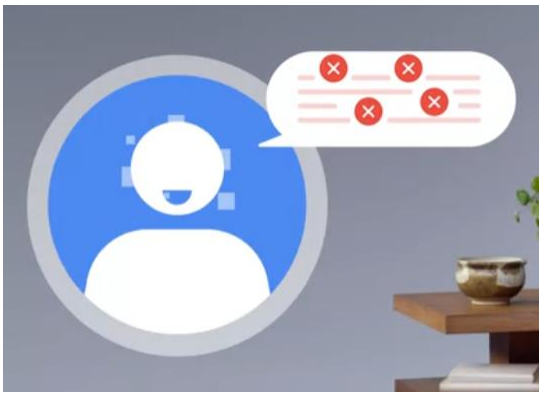


Social system harm

- Macro-level societal effects that amplify existing class, power, or privilege disparities, or cause physical harm, because of the development or use of AI tools.
- As AI-generated images become more realistic, there is a concern about spread disinformation including deep fakes

Example - Deepfakes

- AI-generated fake images or videos of real people saying or doing thing that did not do.
- Of a deepfake of school board candidate showed that person saying they did not say.



- If it went viral, causing then to lose the election, that would impact voter's perspective, the way parents feel about their school district and in general.

- Fortunately, new technology is being created t detect deepfakes.

Interpersonal harm

- The use of technology to create a disadvantage to certain people that negatively affects their relationship with others or cause a loos of one's sense of self and agency.

- Being aware of potential harm and negative outcomes is a first step to using AI responsibly

Emilio: My path to working in responsible AI

Security and privacy risks of AI

Privacy

- The right for a user to have control over how their information and data are collected, stored and used.

- For e.g. user might disclose private information to during their interactions with AI tool. Personal information might include names and addresses, medical records, history, financial and payment information.

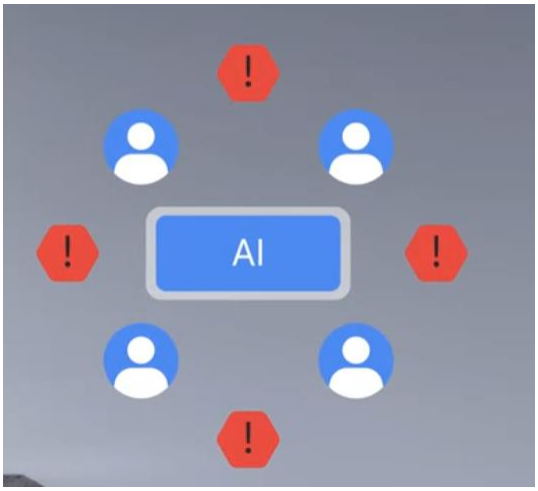
- If you are using an AI tool at your job, you might decide to include specific information, about project, stakeholders or your clients in an AI prompt to make the output more specific to your task.

- But using an AI tool in this way, can present a security risk

Security

- The act of safeguarding personal information and private data, and ensuring that the system is secure by preventing unauthorized access.

- The majority of IT industry leaders believe Gen AI might introduce new security risks and that before an organizational implements Gen AI for the first time,



organization should put enhanced security measures in place.

- As the user, there are measures you can take to help protect your own privacy and security.

- As well as that of your organization, coworkers and business partners.

Measures to protect privacy and security.

- Be aware an AI tool's terms of use or services, privacy policy and associated risks.
- Don't input personal and confidential information.
- Stay-up-to-date on the latest tools.

Reading: Bias, drift, and knowledge cutoff

A thorough understanding of concepts in responsible AI—such as bias, drift, and knowledge cutoff—can help you use AI more ethically and with greater accountability. In this reading, you'll learn how to use AI tools responsibly and the implications of unfair or inaccurate outputs.

Harms and biases

Engaging with AI responsibly requires knowledge of its inherent biases. **Data biases** are circumstances in which systemic errors or prejudices lead to unfair or inaccurate information, resulting in biased outputs. Biased output can cause many types of harm to people and society, including:

- **Allocative harm:** Wrongdoing that occurs when an AI system's use or behavior withholds opportunities, resources, or information in domains that affect a person's well-being
- **Quality-of-service harm:** A circumstance in which AI tools do not perform as well for certain groups of people based on their identity
- **Representational harm:** An AI tool's reinforcement of the subordination of social groups based on their identities
- **Social system harm:** Macro-level societal effects that amplify existing class, power, or privilege disparities, or cause physical harm, as a result of the development or use of AI tools—examples of this harm are unwanted **deepfakes**, AI-generated fake photos or videos of real people saying or doing things they did not say or do
- **Interpersonal harm:** The use of technology to create a disadvantage to certain people that negatively affects their relationships with others or causes a loss of their sense of self and agency

For example, consider this scenario: Your organization's human resources department is testing an internal AI tool that reviews resumes submitted online and determines which applicants meet the qualifications for the job. One feature the HR team is testing encourages candidates to upload a video explaining why they are qualified for the job.

Several people with open applications reached out to your organization to inform the hiring manager that they had received confirmation emails, but they had never submitted an application. The HR team also discovered that cyberhackers were attempting to apply for jobs using other people's personal identifiable information by submitting altered images and videos (deepfakes), misrepresenting themselves as candidates.

The candidates who had their information hacked feel that their privacy and sense of self have been violated by the misuse of the AI tool. The hiring manager feels duped and distrustful of the candidates. This is an example of an *interpersonal harm* because this technology is controlling the candidates' sense of self and agency and is deceiving the hiring manager. It's also using the applicants' names and images without their consent, which can affect their relationship with their community, because the people who see this video may develop an unfair and inaccurate opinion of the applicants, since it's not really them applying for the position.

Drift versus knowledge cutoff

Another phenomenon that can cause unfair or inaccurate outputs is drift.

- **Drift** is the decline in an AI model's accuracy in predictions due to changes over time that aren't reflected in the training data.

  For instance, a fashion designer might want to track trends in spending before creating a new collection. To begin tracking, they use a model built in 2015 that was trained on fashion trends and consumer habits from 2015. However, the model is no longer accurate because societal habits and fashion trends change over time. Consumer preferences in 2015 are different from today's trends. In other words, the model's predictions have drifted from *accurate* at the time of training to *less accurate* in the present day.

- Similarly, a **knowledge cutoff** is the concept that a model is trained at a specific point in time, so it doesn't have any knowledge of events or information after that date.

  For example, if you ask a generative AI tool that was trained in 2022 how much the latest smartphone costs, the model's output won't include today's newest technology—you'll only learn about smartphones that existed in 2022. So, if a model's data isn't up to date, the output won't be either.

Fortunately, knowledge cutoffs don't affect all data in a model. An AI model will likely have plenty of relevant data about historical events, famous landmarks, and acclaimed literature, for example. But as you use AI, consider whether the latest research or current events might change the accuracy of your output.

To explore biases, data, drift, and knowledge cutoffs, check out the exercise What Have Language Models Learned? from Google PAIR Explorables. There you can interact with BERT, one of the first large language models (LLMs), and explore how correlations in the data might lead to problematic

biases in outcomes. You can also check out other PAIR AI Explorables to learn more about responsible AI.

Jalon: My work on the responsible AI team

Reading: Checklist for using AI responsibly – Differently abled

Before you use AI, it's vital that you think carefully about how to do so responsibly. This ensures you're using it ethically, minimizing risks, and achieving the best outcomes. Responsible AI use involves being transparent about its use, carefully evaluating its outputs, and considering the potential for bias or errors. To help you navigate these considerations when using an AI tool, refer to this checklist.

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Shaun: Develop AI that works for everyone - Differently abled

Wrap-up

- Bias in AI Models
- Types of harms
- Tips for maintaining privacy and security.

Module 5 introduction: Stay ahead of the AI curve

The future of AI

- Access to AI has become so much easier for everyone in their everyday lives.
- Best way to get started with any of these AI tools us just pick a problem you have in your everyday life.
- Accessibility
    - Live video translation
    - Wheelchair
    - Breakdown barriers

Reading - Stay up to date with AI

The AI landscape is constantly evolving, presenting both challenges and opportunities for professionals across all industries. Staying informed about the latest advancements in AI can equip you to leverage AI's capabilities, enhance your work, and optimize your skillset. In this reading, you'll learn how to keep your AI knowledge up-to-date.

alt=""

Search for resources online

The internet contains a vast and ever-expanding supply of information on various topics, AI included. Finding relevant AI-related resources to follow will depend on your industry and the topics you want to learn about. When searching for information, it's important to consider your specific needs so that you can include specific search terms.

For example, if you want information about AI for a specific industry, include that industry in the search:

- *AI tools for coding in Python*
- *AI tools for writing business documents*
- *AI applications in healthcare*
- *AI innovations in e-commerce*
- *AI trends in cybersecurity*

Aside from searching for AI-related news that's specific to your industry, you might also consider searching for specific AI topics that interest you. You can choose to focus on areas such as:

- **New AI tools:** Exploring new AI tools as they become available and considering their potential can help you continually optimize your workflows.
- **Innovative AI usage:** Learning how others use AI creatively in their work might inspire ideas that you can apply in your own work.

- **Responsible AI practices:** There will be new developments and advice about how to use AI responsibly as the field continues to grow. For instance, it's critical to stay up to date on new laws and policies and to learn about new techniques for mitigating bias.

Regardless of your needs or interests, the key to finding relevant sources of information online is to use clear and specific searches – similar to writing effective prompts.

Evaluate resource credibility

It's important to consider the credibility of the resource you find, especially when you're learning about a trending topic or field that has recent developments, like AI.

These guidelines can help you evaluate the credibility of a source:

- **Ensure the information comes from reputable and reliable sources.** Preferably, you'll want to source information from authors with credentials in the subject, and organizations that are reputable and well-known in the field.
- **Check the publication date.** It's important to read resources that are as up to date as possible because advancements in AI happen regularly.
- **Verify the information by comparing it to other sources.** Cross-reference the information you find by checking other credible news outlets, blogs, academic and industry-specific journals to be certain that the information is correct and valid.

As you continue learning about AI, developing a critical eye for evaluating sources of information can help you make well-informed decisions when leveraging AI in your work.

Stay current with AI developments

Once you've identified and evaluated credible sources of information, here are some tips to ensure you stay current with the latest AI developments:

- **Subscribe to newsletters:** Many reputable publications offer email newsletters that deliver summaries of their latest articles straight to your inbox. This is a convenient way to stay informed without having to constantly search for new content.
- **Follow on social media:** Follow the publications and authors you find valuable on social media or professional networking platforms, like LinkedIn. This allows you to receive real-time updates on their latest publications and discussions within the AI community.
- **Engage in online communities:** Many publications and organizations have online forums or discussion boards dedicated to AI. Participating in these discussions allows you to learn from other professionals about emerging trends, share insights, and grow your professional network.
- **Set up alerts:** Some search engines and online platforms allow you to set up alerts for specific keywords or topics related to AI. When new content matching your criteria is published, you'll receive a notification, ensuring you don't miss important developments.

By implementing these strategies, you can create a **personalized information stream** that keeps you at the forefront of AI advancements. Remember, **consistent engagement is key** – dedicate a small amount of time **each week or month** to explore new resources and stay informed.

Anoop: Become AI-empowered

- AI tools are a fantastic way to improve your professional growth and development.

Take inspiration from AI innovation

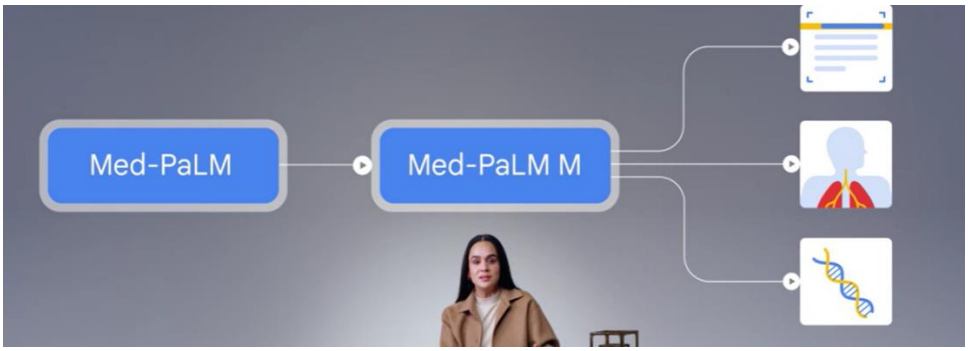
- Med-PaLM – Medical

- Created at Google and training with clinicians

Multimodal model

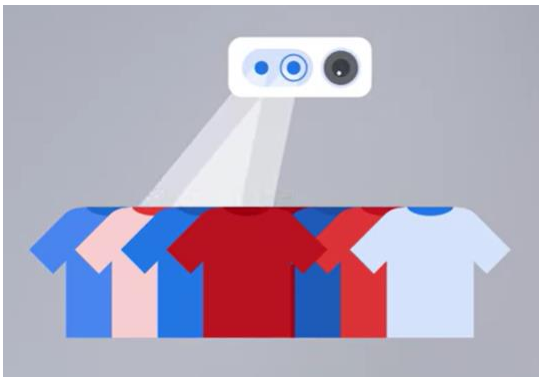
- An AI Model that can accept and learn from multiple types of input such as images, video or audio.

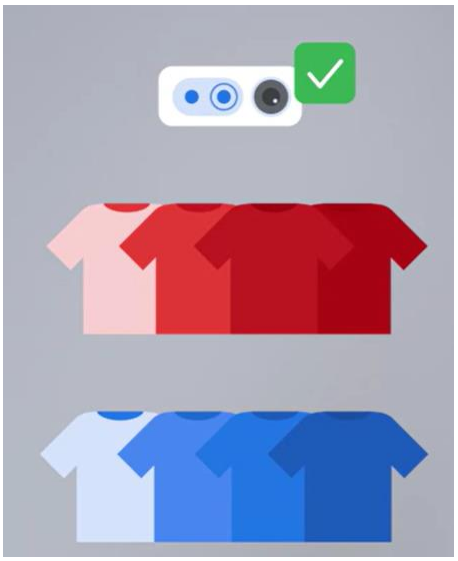
- Med-PaLM has multi modal names as Med-PaLM M



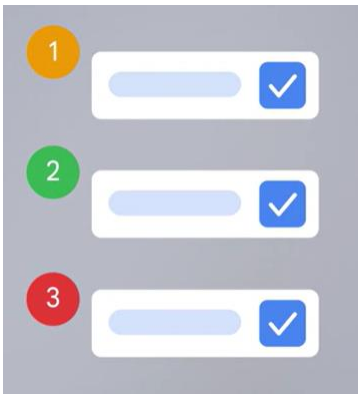
- Robotics is often use in AI.

- Startup company Refiberd is applying AI to sensor technology to help reduce textile waste.





- Organize AI tasks at work



Reena: Find inspiration in how others have used AI

- It is important to get as much points of vide at the table when you are building AI.

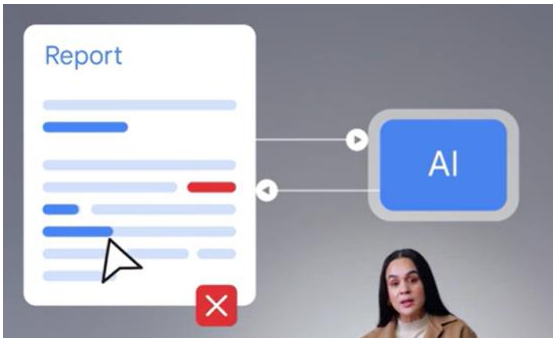
Benefits of staying up to date with AI

- Example of Mobile phone.

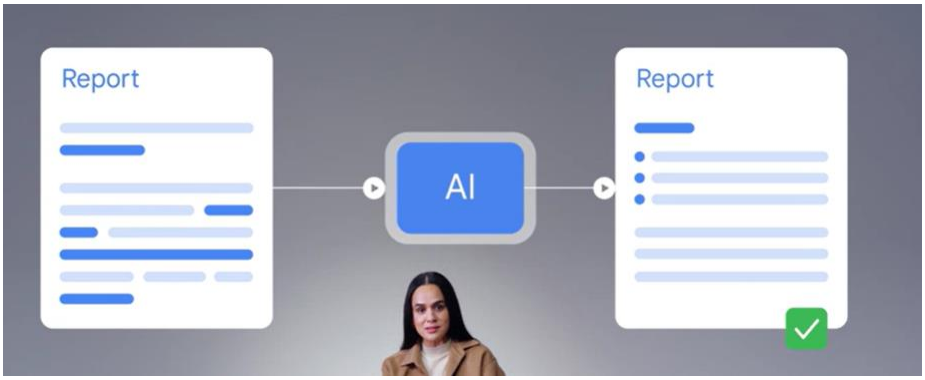
- Staying knowledge about AI as it evolves can benefit you in the workplace in multiple ways.

Creating Reports

- Help in improving you writing that has spelling and grammar errors.



- Makes you report more understandable.



Personal Growth

- Learn Python, use GitHub Copilot about Python programming language.
- GitHub Copilot may also give you suggestions on how to write code.

Developing AI related skills

- May lead to professional opportunities.
- The demand of AI-related skills is increasing across every American industry sector.

Leverage AI in your work

- Examine the tasks you do a typical day.

- Analyze your work process as a whole.
- Address challenges in your work process.

Greg: Keep exploring with AI

- I really encourage people be educated about how technology is useful.

Wrap-up

- How to evaluate new AI tools.
- Inspiring new AI innovations.
- Opportunities to leverage in the workplace.

Course Review

- Explored AI Basics
- Applied AI io work tasks.
- Helped increased productivity with AI tools.
- Wrote effective prompts.
- Used AI responsibly
- Stayed current with AI.

Reference

1. Google AI Essentials Course Link
   https://www.coursera.org/learn/google-ai-essentials/

2. Google AI Essentials Glossary
   https://docs.google.com/document/d/1SAYPpKl7QPsksYTiPC48Ou-SRUa0a-iyEsg2K6kf1fc/template/preview?resourcekey=0-Vo6a_CcsOsA_c_UEV-MOQA

3. Avoid using the term "disabilities" in course content, as it can be seen as derogatory and disrespectful. Instead, opt for more considerate and inclusive language, such as "differently abled."