

# Learn Prompting Documentation

Learn Prompting website: [learnprompting.org](https://learnprompting.org)

Learn Prompting is an innovative platform dedicated to providing high-quality online courses tailored for individuals and businesses to effectively utilize Generative AI for prompt engineering. With a proven track record of serving a diverse global community, Learn Prompting has empowered over a million learners worldwide. A significant achievement for Learn Prompting was the successful organization of HackAPrompt, a prestigious global competition supported by major AI companies. This event not only highlighted Learn Prompting's dedication to innovation but also generated a valuable dataset crucial for prompt engineering research. By expanding its offerings to include topics such as AI safety, Learn Prompting strives to promote access to education, making knowledge and skill development accessible and impactful for learners worldwide.

Prompt engineering has rapidly emerged as an essential field due to its transformative role in optimizing and controlling the performance of language models. Utilizing prompt engineering with Generative AI demonstrates how the innovative use of language, coupled with computational power, can redefine human-machine interactions. It poses several benefits to both individuals and enterprises in various domains, increasing productivity and efficiency in daily tasks and operations. Additionally, it improves customer experiences across various domains and builds better conversational AI systems. Therefore, this skill is greatly sought for, creating a new area of education for prompt engineering, showing enormous potential. As this field gets more popular, many platforms provide learning opportunities in AI, such as OpenAI, DeepLearningAI, LinkedIn, etc.

## Courses

Course	Instructor	Level	Price	Type
ChatGPT for Everyone	Sander Schulhoff Shyamal Anadkat	Beginner	Free	Prompting/AI
Introduction to Prompt Engineering	Sander Schulhoff Fady Yanni	Beginner	Plus	Prompting
Introduction to Prompt Hacking	Sander Schulhoff Fady Yanni	Beginner	Plus	Prompting
Introduction to Generative AI	Sander Schulhoff Fady Yanni	Beginner	Plus	Prompting
Image creation with DALL E 3	Camryn Streib Sander Schulhoff	Beginner	Plus	Prompting
AI Safety	Sander Schulhoff	Beginner	Plus	AI
Boost Your Day-to-day Efficiency with Generative AI	Sander Schulhoff Fady Yanni	Beginner	Plus	Prompting
Introduction to LLMs	Sander Schulhoff Fady Yanni	Beginner	Plus	Prompting
Introduction to Generative AI Agents	Sander Schulhoff	Intermediate	Plus	Prompting/AI
Prompt Engineering for Marketing	Brian Paul	Intermediate	Plus	Prompting
Runway ML for Everyone	AJ	Intermediate	Plus	Prompting
Introduction to RAG	Sander Schulhoff	Intermediate	Plus	Prompting/AI
Advanced Prompt Engineering	Sander Schulhoff	Advanced	Plus	Prompting
Advanced Prompt Hacking	Sander Schulhoff	Advanced	Plus	Prompting
Advanced OpenAI Playground	Sander Schulhoff	Advanced	Plus	Prompting

## Course Details

### ChatGPT for Everyone

This is the only free course offered on LearnPrompting.

Level: Beginner

Course Plan: 1 Hour

Course Overview: Learn about ChatGPT, one of the most advanced AI systems available today, and dive into the world of Generative AI.

What will you learn: ChatGPT. How to use ChatGPT, create an account, and write your first basic prompt.

Use Cases: How to use ChatGPT as your personal assistant to maximize your productivity.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus:

1

Introduction to ChatGPT

What is ChatGPT

How does ChatGPT work?

2

ChatGPT's Use Cases

Using ChatGPT as your Personal Assistant

Using ChatGPT for Everyday Writing

Boost your Productivity with ChatGPT

Content Creation with ChatGPT

3

Tactics to Write Effective Prompts

Detailed breakdown of a Prompt

Giving Instructions and Assigning Roles

Tips for Optimal Prompts

4

Ethics, AI Safety, and Limitations

Recognizing the Limitations of ChatGPT

Ethical and Responsible Use

Case Studies

### Introduction to Prompt Engineering

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn about the basics of Prompt Engineering, and how to effectively communicate with AI.

What will you learn: Prompting. The Fundamentals of Prompting & Prompt Engineering

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus:

1

What is Prompt Engineering?

What is a Prompt?

What is Prompt Engineering?

Why should we use Prompt Engineering?

2

Understanding LLMs

What are LLMs?

How LLMs Work

Capabilities

Limitations

3

Basic Prompting Techniques

Elements of a good prompt

Chain of Thought

Zero-Shot

Few-Shot

4

Combining techniques and Case Studies

Examples of Prompts

Try-it-yourself

Case Studies

## Introduction to Prompt Hacking

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn about the basics of Prompt Hacking, one of the biggest vulnerabilities in Large Language Models (LLMs), and Prompt Defense techniques.

What will you learn: Prompt Hacking. How to Prompt Inject and Jailbreak Large Language Models.

Skills you will gain: Prompt Injection, Jailbreaking, GPT 3.5, ChatGPT

Course Syllabus:

1

Introduction

What is Prompt Hacking?

What is the difference between Prompt Hacking and Jailbreaking?

2

## Introduction to Prompt Injection Attacks

What is Prompt Injection?

Potential Threats

How we get Prompt Injected

3

Preventing Injections in LLMs

Not Trusting User Input

Post-prompting and the Sandwich Defense

Few-Shot Prompting Defense

Non-Prompt-based Techniques

4

Other Prompt Hacking Concepts

Prompt Leaking

Jailbreaking

## Introduction to Generative AI

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn about the conceptual fundamentals of Generative AI for a business setting.

What will you learn: GenAIs. How different GenAIs work. Conceptual Fundamentals. Get deep enough to apply to your prompts.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

How they work

Learn how GenAIs work.

Learn about different ones.

2

Understand GenAI capabilities

3D Generation

Audio Generation

Video Generation

## Image Creation with DALL·E 3

Level: Beginner

Course Plan: 3 Days

Course Overview: Unlock the full potential of DALL·E 3 with advanced techniques for creating high-quality images, including logos, pixel art sprite sheets, and more.

What will you learn: Image Prompting - Create prompts for image generation.  
Applications - Create unique logos and pixel art sprite sheets. Gen-ID - Obtain consistent image generations.

Skills you will gain: DALL·E 3, Prompt Engineering, ChatGPT, GPT 3.5, GPT 4

Course Syllabus:

1

Advanced Prompting Techniques

Prompts for specific image types.

Enhanced detail and specificity in prompts.

2

Creating Logos

Logos for brand identity.

Logo styles and themes.

3

Pixel Art Sprite Sheets

Pixel art for game characters.

Sprite sheets with multiple animations.

4

Gen-ID for Consistency

Gen-ID for series consistency.

Gen-ID in different image scenarios.

## AI Safety

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn about the ethical considerations and safety protocols in modern AI applications.

What will you learn: Safety. Use Generative AI safely in your life and job.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus:

1

Introduction to AI Safety

AI Safety Concerns

Historical Context and Importance

2

Technical Aspects of AI Safety

Safe AI Design Principles

Robustness and Reliability

Avoiding and Mitigating Risks

3

Ethical and Societal Implications  
Ethical Frameworks in AI  
Societal Impact and Responsibilities  
Case Studies in Ethical AI Use

4

Keeping your Enterprise Safe  
AI Safety Strategies  
AI Governance and Policy  
Collaborative Safety Strategies

## Boost Your Day-to-Day Efficiency With Generative AI

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn how to get more done and improve your daily efficiency using practical AI skills.

What will you learn: Efficiency. How to use Generative AI to automate daily tasks.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

Efficiency Assessment

Calculating total time spent on tasks currently

Assignment

2

Streamline Text-Based Tasks

Text-based tasks

Powerpoints

Presentations

Research

Summarization

3

Streamline Audio & Visual Tasks

Image Generation

Audio Generation

Slidedeck Generation

4

Streamlining Coding Tasks

Debugging Code

Documentation Writing

Introduction to LLMs

Level: Beginner

Course Plan: 3 Days

Course Overview: Learn about the conceptual fundamentals of Large Language Models for a business setting.

What will you learn: LLMs - How different LLMs work. Conceptual Fundamentals - Get deep enough to apply to your prompts.

Skills you will gain: ChatGPT, Prompt Engineering, GPT 3.5, GPT 4

Course Syllabus

1

How they work

Learn how LLMs work.

Learn about different ones.

2

Understand LLM capabilities

Summarization

Classification

Content Generation

3

Understand how they learn

Fine-Tuning

Pre-Training

RLHF

## Introduction to Generative AI Agents

Level: Intermediate

Course Plane: 1 Hour

Course Overview: Learn about the origin of Generative AI Agents, as well as the 4 different types and how to implement your own.

What will you learn: Agents. Understand and Build Generative AI Agents

Use Cases: See Generative AI Agents Applied to Real World Tasks

Skills you will gain: Agents, ChatGPT, Prompt Engineering, Prompt Flow, GPT 4

Course Syllabus

1

Introduction to Generative AI Agents

What are Generative AI Agents

How do Generative AI Agents work?

2

What are the four types of Generative AI Agents?

Observation-based Agents

Tool use Agents



Code-based Agents

Retrieval-Augmented Generation Agents

## Prompt Engineering for Marketing

Level: Intermediate

Course Plan: 3 Days

Course Overview: Unlock the Power of AI to Revolutionize Your Marketing Strategies and Campaigns

What will you learn: Marketing. How to do marketing more efficiently with Generative AI.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

Fundamentals of Prompting for Marketing

Applying Prompt Engineering to Marketing

Using AI to Craft Great Web Copy

Optimizing SEO

Generating Brand Aligned Social Media Materials

Introduction to Image Prompting for Marketing

2

Text Content Creation

Web Copy Crafting

Email and Social Media

Interactive Content Techniques

3

Image Prompting

Image Prompting Basics

Brand-aligned Visuals

## Runway ML for Everyone

Level: Intermediate

Course Plan: 3 Days

Course Overview: Dive into the world of multimedia creation with our Runway ML course, designed to equip you with the skills to master image, video, and audio tools.

This guide will enable beginners to manipulate and generate content using the forefront of generation AI media.

What will you learn: Video Prompting. The Fundamentals of Image & Video Generation.

Skills you will gain: Prompt Engineering, Runway ML, Video Editor

Course Syllabus

1

Images

Text To Image  
Image to Image  
Erase and Replace  
Image Variation  
Backdrop Remix  
Expand Image  
Infinite Image  
Upscale Image  
Add color

2

Video  
Text To Video  
Video to Video  
Inpainting  
Color Grade  
Super Slow Motion  
Green Screen  
Frame Interpolation  
Blur Faces  
Scene Detection

3

Audio  
Clean Audio  
Remove Silence  
Transcript  
Subtitles  
Generative Audio

## Introduction to RAG

Level: Intermediate

Course Plan: 1 Hour

Course Overview: Learn about the basics of RAG, including agentic RAG and vector databases.

What will you learn: RAG. Understand and Build RAG systems

Use Cases: See RAG systems Applied to Real World Tasks

Skills you will gain: Agents, RAG, Prompt Engineering, Prompt Flow, GPT 4

Course Syllabus

1

Introduction to Retrieval-Augmented Generation

What is RAG

How does RAG work?

2

What is the difference between RAG and Agentic Rag?

Agentic RAG allows the agent to decide what information to pull in.

3

What are vector databases

GenAI integrated databases that allow for better retrieval.

## Advanced Prompt Engineering

Level: Advanced

Course Plan: 3 Days

Course Overview: Learn how to craft Complex and Efficient Prompts for Sophisticated AI Applications.

What will you learn: Advanced Prompting. The most advanced prompting techniques, from research.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

In-Context Learning

Basics of Few-Shot Prompting

Factors Influencing Performance in Few-Shot In-Context Learning

Self-Generated In-context Learning Prompting (SG-ICL)

2

Thought Generation Prompting

Basics of Thought Generation Prompting

Chain-of-Thought Prompting (CoT)

Thread-of-Thought Prompting (ThoT)

Contrastive Chain-of-Thought Prompting (CCoT)

Self-Ask Prompting (SA)

Tabular Chain of Thought Prompting (Tab-CoT)

3

Problem Decomposition Prompting

Basics of Problem Decomposition Prompting

Least-to-Most Prompting (LtM)

Plan-and-Solve Prompting (PaS)

Program-of-Thoughts Prompting (PoTh)

4

Self-Criticism Prompting

Basics of Self-Criticism Prompting

Self-Evaluation Prompting (SE)

Self-Refine Prompting (SR)  
Chain-of-Verification Prompting (COVE)  
System 2 Attention Prompting (S2A)  
Rephrase and Respond Prompting (RaR)  
Re-reading Prompting (RE2)

## Advanced Prompt Hacking

Level: Advanced

Course Plan: 3 Days

Course Overview: Learn about Advanced Prompt Hacking techniques and the vulnerabilities of Large Language Models (LLMs) to exploits like Jailbreak attacks, Prompt Injection attacks, and Cognitive Hacking.

What will you learn: Prompt Hacking. Bleeding edge prompt hacking techniques, directly from our published research.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

Fundamentals of Prompt Hacking

Simple Instruction Attacks

Compound Instruction Attacks

Refusal Suppression Attacks

Distractor Instructions Attacks

Project & Quiz

2

Contextual Hacking

Context Switching Attacks

Separator Attacks

Context Termination Attacks

Project & Quiz

3

Cognitive Hacking & Few-Shot

Few-Shot Attacks

Cognitive Hacking Attacks

Virtualization Attacks

Project & Quiz

4

Miscellaneous Attacks

Context Overflow Attacks

Recursive Attacks

Project & Quiz

# Advanced OpenAI Playground

Level: Advanced

Course Plan: 3 Days

Course Overview: Learn about the advanced features of the OpenAI Playground and how to use it to build custom GPTs & Chatbots

What will you learn: OpenAI Playground. How to OpenAI's prompting IDE.

Skills you will gain: ChatGPT, Prompt Engineering, DALL·E 3, GPT 3.5, GPT 4

Course Syllabus

1

OpenAI Playground Features

Overview

Presets

Refusal Suppression Attacks

Revisiting History

2

How to use Chat Mode

Temperature and Top P

Maximum Length and Stop Sequences

Frequency and Presence Penalty

Project & Quiz

3

How to use Assistant Mode

Creating your First Assistant

How to Send a Message

Project & Quiz

4

Assistant Settings & Specifications

Name, Instructions and Model

Tools: Functions, Code Interpreter, Retrieval

Project & Quiz

## Instructors

### Sander Schulhoff

Founder & CEO, Learn Prompting

His guide (LearnPrompting.org) is listed as a recommended resource by OpenAI and Google and has been featured in Forbes as the best course to learn Prompt Engineering. As a researcher, he has authored multiple award-winning papers alongside experts from OpenAI, Microsoft, ScaleAI, the Federal Reserve, HuggingFace, and others.

### Fady Yanni

Co-founder & COO at Learn Prompting

Fady Yanni is the Founder & COO of Learn Prompting, the leading Prompt Engineering resource which has taught over 3 million people how to effectively communicate with AI. Previously, he was the Head of Fundraising at the Farama Foundation, the open-source maintainers of every major Reinforcement Learning library, including OpenAI's flagship project, Gym.

### Camryn Streib

Game Designer

Alongside her work with Learn Prompting, Camryn is a Game Designer, XR Researcher, and Artist with a Background In Immersive Media Design and Psychology. Through her experience in emerging creative fields, she has published work in Rockstar Games “GTA V”, Indie Game Studio “The Verse”, and more.

### Shyamal Anadkat

Applied AI at OpenAI

Shyamal Anadkat is a Member of the Applied AI Team at OpenAI, the creators of the fastest growing product ever and the most advanced AI model to date, ChatGPT. His work on the Applied AI team focuses on safely integrating OpenAI's technologies into various applications globally. Shyamal holds a Master's degree in Artificial Intelligence from Duke University.

### Brian Paul

Marketing Expert

Brian Paul is an experienced digital marketer and AI artist, using his skillset to grow brands online. Brian has worked with e-commerce brands, non profits, and startups to help them achieve their marketing goals. He is passionate about the intersection of Generative AI and creativity.

AJ

Creative Producer

Alongside his work as a Creative Producer at Learn Prompting, AJ is an XR researcher and developer. He has previously co-founded a startup, Spray, that allowed people to express themselves through augmented reality art.

## Pricing

	Limited	Plus	Team	Enterprise
Price	Free	\$21 per month, billed annually.	\$25 per seat per month, billed annually.	Contact sales for pricing (customized based on needs).
Size	Individual	Individual	2-99	100+
Target Audience	For individuals just getting started with learning AI	For people who are serious about becoming AI-powered	For teams and departments who want to become AI-First and basic administration	For organizations driving company-wide AI transformation. Includes enterprise-grade security, administration, and LMS integration
Features	<ul style="list-style-type: none"> <li>- Access to free courses.</li> <li>- No certificates of completion.</li> </ul>	<ul style="list-style-type: none"> <li>-Access to our entire course library, including Plus Courses</li> <li>-Earn Certificates of Completion for all courses</li> <li>-Use our in-course AI Playground with AI Tutor</li> <li>-Complete engaging, hand-graded AI projects</li> <li>-Join the largest AI Learning Discord community</li> <li>-Receive priority customer support</li> </ul>	<ul style="list-style-type: none"> <li>- Everything in the Plus plan.</li> <li>- Scalable support for multiple users, suitable for collaborative learning.</li> </ul>	<ul style="list-style-type: none"> <li>- Everything in the Plus and Teams plans.</li> <li>- Personalized learning paths with tailored projects.</li> <li>- Access to an admin dashboard.</li> <li>- Dedicated customer success manager.</li> <li>- Advanced analytics and reporting capabilities.</li> <li>- Single Sign-On (SSO) through Okta, Auth0, Azure, and more.</li> <li>- LMS/LXP integrations</li> </ul>

### Earn a Certificate of Completion

By upgrading to Learn Prompting Plus, you automatically receive a certificate of completion for every course you complete. These certificates can easily be shared on LinkedIn, Twitter, or any other social platform to showcase your new skillset.

## Prompt Engineering Guide



Welcome to Learn Prompting's Introductory Course on Generative AI and Prompt Engineering!

Generative AI is the world's hottest buzzword, and we have created the most comprehensive (and free) guide on how to use it. This course is tailored to non-technical readers, who may not have even heard of AI, making it the perfect starting point if you are new to Generative AI and Prompt Engineering. More experienced readers will find valuable insights within our later modules.

First, a bit of history:

The first version of Learn Prompting came out in October 2022 (before ChatGPT!), making it one of the first guides on prompt engineering. We believe it is the first, but it is hard to be certain.

It is now cited by Google, Microsoft, Wikipedia, O'REILLY, Salesforce, and used by most Fortune 500 and major consulting companies. Our academic research on prompting and security is cited by OpenAI and the US Government (NIST). We recently released the largest survey report on prompting ever<sup>2</sup> and are currently updating the guide to cover this material.

This guide that you are currently reading is completely free and open-source, but we also have a selection of paid courses, with more in-depth and video content. If you have ever seen another prompt engineering course/guide, we estimate that ~50% of them use content from our open-source content base. We are honored to support the prompt engineering community, including our 3M+ users and 40K+ Discord members.

Now onto learning:

Generative AI (GenAI) refers to Artificial Intelligence that can be used to create new content such as articles or images, which previously only humans could do. In short, GenAI can create stuff. GenAI is expected to significantly change the way we work and live (your job may be affected)

With so much buzz floating around about Generative AI and Prompt Engineering (PE), it is hard to know what to believe.

We have scoured the internet to find the best research-backed techniques and tools for prompt engineering. We are constantly refining our guide, to ensure that we provide you with the latest information. Now, Let's see how GenAI can save you hours in an instant, with a short example.

## Motivating Example

Our favorite way of saving time with GenAI is automatically writing emails. By automating email responses, email editing, and cold outreach, we save hours each week. By sending an AI the following prompt, we can get it to generate a full-length, formal email.

## Tip

A prompt is basically an instruction you give to an AI. We will learn more about them in the next lesson.

I am the CEO of a medium-sized company. Write a short email that is humorous yet professional to my regional manager. Ask them to: - send me an up-to-date list of our paper stock - organize a meeting this week with other regional managers - let me know how the company-wide AI workshop went at their office

## AI Output

Subject: Paper, Power Meetings, and AI Shenanigans

Dear [Regional Manager's Name],

I trust this email finds you in high spirits and not buried under a mountain of paperwork. Speaking of paper, I've been having some wild dreams about our paper stock lately. I dreamt we ran out of paper and had to write our reports on banana leaves! To prevent this tropical nightmare from becoming a reality, could you kindly send me an up-to-date list of our paper stock?

Next on the agenda, I've been feeling a bit lonely in my ivory tower and thought it would be a great idea to have a meeting with all the regional managers this week. I promise, no trust falls or awkward icebreakers, just good old-fashioned business talk. Please organize this meeting at a time that suits everyone.

Lastly, I've been hearing whispers about the company-wide AI workshop at your office. I'm curious to know how it went. Did the machines rise against their human overlords or are we still safe? Please share your thoughts and any feedback you received.

Looking forward to your prompt response. Remember, the fate of our paper supply, the success of our meeting, and the future of humanity (concerning AI) rests in your hands. No pressure!

Best,

[Your Name] [Your Position]

The AI easily writes an email that is both humorous and professional. By modifying the prompt, we can make it change the style as we see fit. We can even make it copy how we write. We can also make it edit emails that we have already written! With all of these abilities, GenAI saves us hours in email writing each week. See more information on writing emails with Gen AI.

### Ethos and Philosophy

We will now give a broad overview of the rest of the course, including our ethos and philosophy, our teaching style, and a list of modules. This course is open source (anyone can see the code), and built by a diverse community of researchers, translators, and hobbyists. Development is led by Sander Schulhoff, a NLP/RL researcher from the University of Maryland, and the CEO of LearnPrompting. We believe that AI should be accessible to everyone and described clearly and objectively. To this end, we have written a comprehensive course free of excessive jargon and hype.

### How We Teach

Our approach to teaching prompt engineering is guided by three fundamental principles. 1) We emphasize practicality; we focus on research-backed, practical techniques that you can immediately incorporate into your projects and applications. 2) We always include accessible examples, which clarify how and when to use different techniques. 3) Finally, we believe strongly in collaborative learning. You can join our Discord community to find a learning buddy or ask questions. Some readers find that posting about their learning journey on Twitter helps them learn faster. Tag us @learnprompting!

### Modules

Here is the content you can expect to learn in this guide:

Basics: Introduction to prompt engineering and fundamental techniques

Applications: Simple, practical applications of prompt engineering

Intermediate: Research-based PE techniques with moderate complexity

Applied Prompting: Comprehensive PE process walkthroughs contributed by the community members

Advanced Applications: Powerful, and more complex applications of prompt engineering

Reliability: Enhancing the reliability of Large Language Models (LLMs)

Image Prompting: Prompt engineering for text-to-image models, such as DALL-E and Stable Diffusion

Prompt Hacking: Hacking, but for prompt engineering

Tooling: A review of various prompt engineering tools and IDEs


Prompt Tuning: Refining prompts using gradient-based techniques

Miscellaneous: A collection of additional topics and techniques related to prompt engineering

Article rating system

We have implemented a rating system for articles based on their level of difficulty and the extent of technical knowledge needed:

 Beginner; no programming required

 Easy; basic programming knowledge may be necessary, but no specialized expertise

◆ Intermediate; programming skills and some domain knowledge required (e.g., calculating logarithmic probabilities)

◆◆ Advanced; programming expertise and in-depth domain understanding needed (e.g., reinforcement learning techniques)

Please note that even for ◆ and ◆◆ articles, you can generally grasp the content without prior domain expertise, though it may be helpful for implementation.

Feedback

The single most important part of this course is your feedback!

If you have any questions, comments, or suggestions, you can:

Make an issue on GitHub

Email us at [team@learnprompting.org](mailto:team@learnprompting.org)

Ask in the Discord community

Ping us on Twitter

Your feedback helps us improve the course for everyone.

Conclusion

It is time to get started with your Generative AI learning Journey. Click the Introduction to AI button at the bottom left of this page to continue (or click the following link for the Basics Introduction).

Welcome to the Basics Section of the Prompt Engineering Guide.

This section is designed to introduce you to prompt engineering, a critical skill when working with generative AI models such as ChatGPT, Gemini, Cohere Chat, Claude, and more. Through this guide, you'll gain foundational knowledge about these AI tools and the basic techniques needed to harness their potential effectively.

The guide provides a non-technical introduction to Generative AI (GenAI), covering prompting strategies, popular GenAI tools, and practical ways to integrate GenAI into your everyday life. Whether you're a complete beginner or someone looking to enhance your skills, this guide will help you get started quickly. As you progress, the subsequent modules will deepen your knowledge and refine your prompting techniques for various AI use cases.

Below is a summary of the key topics covered in this guide. Click on any section to jump directly to that topic.

#### Key Sections of the Guide

**Introduction to AI:** A brief introduction to Artificial Intelligence (AI) and Generative AI, explaining how these systems work and their impact.

**Getting Started with ChatGPT:** Learn how to set up and use ChatGPT for various tasks, from simple queries to advanced functions like summarizing text and solving problems.

**Learn Prompting Embeds:** An interactive tool that allows you to experiment with different prompts directly on the Learn Prompting website to improve your prompting skills.

**Prompt Engineering:** Discover the fundamentals of prompt engineering, a critical skill for working with generative AI models like ChatGPT and DALL-E, and learn how to craft effective prompts.

**How to Write an Effective Prompt?:** A practical guide with tips and techniques to improve the quality of your AI's responses, whether you're writing, coding, or generating images.

**Giving Instructions:** This guide dives into instruction prompting, explaining how to provide clear, concise instructions to get the desired output from generative AI models.

**Assigning Roles:** Learn how to use role prompting to assign specific roles to AI models, helping you control the tone, style, and accuracy of the generated content for various tasks.

**Shot-Based Prompting:** Explore zero-shot, one-shot, and few-shot prompting techniques. Learn how providing examples to the AI can improve accuracy, along with real-world applications of each method.

**Parts of a Prompt:** A detailed breakdown of the key components of a prompt, including examples and tips to help you structure your prompts for optimal results.

**Combining Techniques:** Discover how to combine different prompting techniques, such as context, instructions, and examples, to enhance the AI model's ability to handle more complex tasks.

**Chatbots vs. LLMs:** Learn the key differences between chatbots and large language models (LLMs), exploring why chatbots are often the preferred interface for interacting with LLMs.

**Priming Prompt:** Priming chatbots involves structuring prompts to guide the chatbot's responses. Learn how to use this technique to influence the behavior and output of chatbots for specific goals.

**Limitations of LLMs:** While LLMs are powerful, they have limitations. This document covers common challenges like hallucinations, biases, and prompt hacking, and offers strategies to work around them.

**Beyond LLMs: Generative AI Applications Beyond Text Data:** Explore the full range of generative AI capabilities beyond text generation, including image, audio, and video creation, and how these applications are shaping industries.

**Problem Solving with GenAI:** Learn the Learn Prompting Method, a structured approach to problem-solving using generative AI, from identifying the right tools to refining prompts through testing.

**Moving Forward: Beyond the Basics:** A sneak peek into advanced prompt engineering techniques and applications that will help you deepen your skills and expertise as you move beyond the basics.

**Learn Prompting Embeds**

## Introduction

This guide will walk you through setting up and using the Learn Prompting Embed, an interactive tool that allows you to test prompts directly on the Learn Prompting website.

We'll cover:

What is the Learn Prompting Embed?

Get Set Up

Get an OpenAI API Key

Using the Embed

Conclusion

## FAQ

### 1. What is the Learn Prompting Embed?

The ChatGPT website is great, but wouldn't it be even better to write and test prompts right here on this website? With our Learn Prompting Embeds, you can! Keep reading to see how you can set it up. We'll be using these interactive embeds throughout most of our articles.

### 2. Get Set Up

Here's what the embed looks like:

embed

You should see a similar embed just below this paragraph. If it's not visible, try enabling JavaScript or switching to a different browser. Still no luck? Reach out to us on Discord and we'll help you troubleshoot.

If you see the embed, click Generate. If it's your first time, you'll be prompted to sign in with your Google account.

Note

We currently only support Google Authentication, but we're working on integrating all providers!

For Learn Prompting Plus subscribers: If you have a Learn Prompting Plus subscription, use the same email to sign in.

For non-subscribers: If you're not a Learn Prompting Plus subscriber, the setup process involves adding your OpenAI API key. Here's how to find it.

### 3. Get an OpenAI API Key

Go to [platform.openai.com/account/api-keys](https://platform.openai.com/account/api-keys).

Sign up or sign into your OpenAI account.

Click Create new secret key to generate a key. You'll see a string of text like this:

API key

Copy and paste this key into the embed on this site and click Submit.

Note

If you need to update your API key, clear your browser cookies and re-enter the new key.

Now, you're all set! You can use the embeds throughout the site. Keep in mind that OpenAI charges for each prompt. If you've just created a new account, you'll get three months of free credits. After that, don't worry – it's very affordable. You can generate about 7,000 words for just \$0.02 <sup>1</sup>

See OpenAI pricing information

Caution

Never tell anyone your API key, since they could charge your account with prompts.

#### 4. Using the Embed

Let's see how to use the embed. Edit the "Type your prompt here" field in the embed.

It's just like using ChatGPT, except you can't have long conversations. In this basic guide, we use these embeds to demonstrate prompt engineering techniques.

You can see four pieces of information under the Generate button. The left one, 'gpt-3.5-turbo' is the model (gpt-3.5-turbo is the technical name for ChatGPT). The three numbers are LLM settings, which we will learn about in a few articles. If you would like to make your own embed, click the edit this embed button.

#### 5. Conclusion

Learn Prompting Embeds make it easier to experiment with prompts without leaving the course site. But if you prefer ChatGPT, you can keep using that. Just remember to save your API key since OpenAI shows it only once.

#### 6. FAQ

What are Learn Prompting Embeds?

Learn Prompting Embeds are a tool to test prompt engineering techniques directly on the Learn Prompting website.

Do I have to use Learn Prompting Embeds?

No, you can continue using the ChatGPT interface if that's your preference.

What do I need to set up to use Learn Prompting Embeds?

To use Learn Prompting Embeds, you just need an OpenAI API key, which you can create on the OpenAI website.



## Website Overview

The "Learn Prompting" platform provides comprehensive courses on prompt engineering, a key skill for interacting with AI models like ChatGPT. The site emphasizes:

Core topics: Basics of prompt engineering, intermediate techniques, and advanced methods like prompt hacking, image prompting, and reliability strategies.

Interactive features: Playgrounds for practicing prompt engineering, exploring use cases for tools like GPT-3, and testing prompts.

Learning formats: On-demand courses, live workshops, and free materials for all skill levels.

Community and resources: Discord integration for peer collaboration, links to tools like PromptTools, and research articles

### Key Features and Navigation

#### Courses and Modules

Courses are divided into beginner, intermediate, and advanced sections.

Topics include:

Zero-shot, one-shot, and few-shot prompting.

Image and text-based prompt engineering.

Tooling and model-specific techniques

## Prompt Engineering

Prompt engineering is the process of structuring an instruction that can be interpreted and understood by a generative artificial intelligence (AI) model. A prompt is natural language text describing the task that an AI should perform. A prompt for a text-to-text language model can be a query such as "what is Fermat's little theorem?", a command such as "write a poem in the style of Edgar Allan Poe about leaves falling", or a longer statement including context, instructions, and conversation history.

Prompt engineering may involve phrasing a query, specifying a style, choice of words and grammar, providing relevant context or assigning a role to the AI such as "act as a native French speaker".

When communicating with a text-to-image or a text-to-audio model, a typical prompt is a description of a desired output such as "a high-quality photo of an astronaut riding a horse" or "Lo-fi slow BPM electro chill with organic samples". Prompting a text-to-image

model may involve adding, removing, emphasizing, and re-ordering words to achieve a desired subject, style, layout, lighting, and aesthetic.

In 2018, researchers first proposed that all previously separate tasks in NLP could be cast as a question answering problem over a context. In addition, they trained a first single, joint, multi-task model that would answer any task-related question like "What is the sentiment" or "Translate this sentence to German" or "Who is the president?"

In 2021, researchers fine-tuned one generatively pretrained model (T0) on performing 12 NLP tasks (using 62 datasets, as each task can have multiple datasets). The model showed good performance on new tasks, surpassing models trained directly on just performing one task (without pretraining). To solve a task, T0 is given the task in a structured prompt, for example If {{premise}} is true, is it also true that {{hypothesis}}? ||| {{entailed}}. is the prompt used for making T0 solve entailment.

A repository for prompts reported that over 2,000 public prompts for around 170 datasets were available in February 2022.

In 2022 the chain-of-thought prompting technique was proposed by Google researchers.

In 2023 several text-to-text and text-to-image prompt databases were publicly available.

Text-to-text

Chain-of-thought

According to Google, Chain-of-thought (CoT) prompting is claimed to be a technique that allows large language models (LLMs) to solve a problem as a series of intermediate steps[20] before giving a final answer. In 2022, Google also claimed that chain-of-thought prompting improves reasoning ability by inducing the model to answer a multi-step problem with steps of reasoning that mimic a train of thought.

Chain-of-thought techniques hypothetically allow large language models to overcome difficulties with some reasoning tasks that require logical thinking and multiple steps to solve, such as arithmetic or commonsense reasoning questions, according to announcements from Google and Amazon.

For example, given the question "Q: The cafeteria had 23 apples. If they used 20 to make lunch and bought 6 more, how many apples do they have?", Google claims that a CoT prompt might induce the LLM to answer "A: The cafeteria had 23 apples originally. They used 20 to make lunch. So they had  $23 - 20 = 3$ . They bought 6 more apples, so they have  $3 + 6 = 9$ . The answer is 9."

As originally proposed by Google, each CoT prompt included a few Q&A examples. This made it a few-shot prompting technique. However, according to a researchers at Google and the University of Tokyo, simply appending the words "Let's think step-by-step", has also proven effective, which makes CoT a zero-shot prompting technique. OpenAI claims that this prompt allows for better scaling as a user no longer needs to formulate many specific CoT Q&A examples.

When applied to PaLM, a 540B parameter language model, Google claims that CoT prompting significantly aided the model, allowing it to perform comparably with task-specific fine-tuned models on several tasks, achieving state of the art results at the time on the GSM8K mathematical reasoning benchmark. According to Google, it is possible to fine-tune models on CoT reasoning datasets to enhance this capability further and stimulate better interpretability.

Example:

Q: {question}

A: Let's think step by step.

Other techniques

Chain-of-thought prompting is just one of many prompt-engineering techniques. Various other techniques have been proposed. At least 29 distinct techniques have been published.

Chain-of-Symbol (CoS) Prompting

A research collaboration between Westlake University, the Chinese University of Hong Kong, and the University of Edinburgh has claimed that chain-of-Symbol prompting in conjunction with CoT prompting assists LLMs with its difficulty of spatial reasoning in text. In other words, using arbitrary symbols such as ' / ' assist the LLM to interpret spacing in text. This is claimed to assist in reasoning and increases the performance of the LLM.

Example:

Input:

There are a set of bricks. The yellow brick C is on top of the brick E. The yellow brick D is on top of the brick A. The yellow brick E is on top of the brick D. The white brick A is on top of the brick B. For the brick B, the color is white. Now we have to get a specific

brick. The bricks must now be grabbed from top to bottom, and if the lower brick is to be grabbed, the upper brick must be removed first. How to get brick D?

B/A/D/E/C

C/E

E/D

D

Output:

So we get the result as C, E, D.

Few-shot learning

A prompt may include a few examples for a model to learn from, such as asking the model to complete "maison → house, chat → cat, chien →" (the expected response being dog), an approach called few-shot learning.

Generated knowledge prompting

Generated knowledge prompting first prompts the model to generate relevant facts for completing the prompt, then proceed to complete the prompt. The completion quality is usually higher[citation needed], as the model can be conditioned on relevant facts.

Example:

Generate some knowledge about the concepts in the input.

Input: {question}

Knowledge:

Least-to-most prompting

Least-to-most prompting[35] prompts a model to first list the sub-problems to a problem, then solve them in sequence, such that later sub-problems can be solved with the help of answers to previous sub-problems.

Example:

Input:

Q: {question}

A: Let's break down this problem:

1.

Self-consistency decoding

Self-consistency decoding performs several chain-of-thought rollouts, then selects the most commonly reached conclusion out of all the rollouts. If the rollouts disagree by a lot, a human can be queried for the correct chain of thought.

#### Complexity-based prompting

Complexity-based prompting performs several CoT rollouts, then select the rollouts with the longest chains of thought, then select the most commonly reached conclusion out of those.

#### Self-refine

Self-refine prompts the LLM to solve the problem, then prompts the LLM to critique its solution, then prompts the LLM to solve the problem again in view of the problem, solution, and critique. This process is repeated until stopped, either by running out of tokens, time, or by the LLM outputting a "stop" token.

#### Example critique:

I have some code. Give one suggestion to improve readability. Don't fix the code, just give a suggestion.

Code: {code}

Suggestion:

#### Example refinement:

Code: {code}

Let's use this suggestion to improve the code.

Suggestion: {suggestion}

New Code:

#### Tree-of-thought

Tree-of-thought prompting generalizes chain-of-thought by prompting the model to generate one or more "possible next steps", and then running the model on each of the possible next steps by breadth-first, beam, or some other method of tree search.

#### Maieutic prompting

Maieutic prompting is similar to tree-of-thought. The model is prompted to answer a question with an explanation. The model is then prompted to explain parts of the explanation, and so on. Inconsistent explanation trees are pruned or discarded. This improves performance on complex commonsense reasoning.

#### Example:

Q: {question}

A: True, because

Q: {question}

A: False, because

#### Directional-stimulus prompting

Directional-stimulus prompting includes a hint or cue, such as desired keywords, to guide a language model toward the desired output.

Example:

Article: {article}

Keywords:

Article: {article}

Q: Write a short summary of the article in 2-4 sentences that accurately incorporates the provided keywords.

Keywords: {keywords}

A:

#### Prompting to disclose uncertainty

By default, the output of language models may not contain estimates of uncertainty. The model may output text that appears confident, though the underlying token predictions have low likelihood scores. Large language models like GPT-4 can have accurately calibrated likelihood scores in their token predictions, and so the model output uncertainty can be directly estimated by reading out the token prediction likelihood scores.

But if one cannot access such scores (such as when one is accessing the model through a restrictive API), uncertainty can still be estimated and incorporated into the model output. One simple method is to prompt the model to use words to estimate uncertainty. Another is to prompt the model to refuse to answer in a standardized way if the input does not satisfy conditions.[citation needed]

#### Prompting to estimate model sensitivity

Research consistently demonstrates that LLMs are highly sensitive to subtle variations in prompt formatting, structure, and linguistic properties. Some studies have shown up to 76 accuracy points across formatting changes in few-shot settings. Linguistic features significantly influence prompt effectiveness—such as morphology, syntax, and lexico-semantic changes—which meaningfully enhance task performance across a variety of tasks. Clausal syntax, for example, improves consistency and reduces uncertainty in knowledge retrieval. This sensitivity persists even with larger model sizes, additional few-shot examples, or instruction tuning.

To address sensitivity of models and make them more robust, several methods have been proposed. FormatSpread facilitates systematic analysis by evaluating a range of plausible prompt formats, offering a more comprehensive performance interval. Similarly, PromptEval estimates performance distributions across diverse prompts, enabling robust metrics such as performance quantiles and accurate evaluations under constrained budgets.

Automatic prompt generation

Retrieval-augmented generation

This section may be confusing or unclear to readers. In particular, it dives into the technical vector implementation before positioning the overall concept. Please help clarify the section. There might be a discussion about this on the talk page. (July 2024) (Learn how and when to remove this message)

Two-phase process of document retrieval using dense embeddings and Large Language Model (LLM) for answer formulation

Retrieval-augmented generation (RAG) is a two-phase process involving document retrieval and answer formulation by a Large Language Model (LLM). The initial phase utilizes dense embeddings to retrieve documents. This retrieval can be based on a variety of database formats depending on the use case, such as a vector database, summary index, tree index, or keyword table index.

In response to a query, a document retriever selects the most relevant documents. This relevance is typically determined by first encoding both the query and the documents into vectors, then identifying documents whose vectors are closest in Euclidean distance to the query vector. Following document retrieval, the LLM generates an output that incorporates information from both the query and the retrieved documents. This method is particularly beneficial for handling proprietary or dynamic information that was not included in the initial training or fine-tuning phases of the model. RAG is also notable for its use of "few-shot" learning, where the model uses a small number of examples, often automatically retrieved from a database, to inform its outputs.

Graph retrieval-augmented generation

GraphRAG with a knowledge graph combining access patterns for unstructured, structured and mixed data.

GraphRAG (coined by Microsoft Research) is a technique that extends RAG with the use of a knowledge graph (usually, LLM-generated) to allow the model to connect

disparate pieces of information, synthesize insights, and holistically understand summarized semantic concepts over large data collections.

It was shown to be effective on datasets like the Violent Incident Information from News Articles (VIINA). By combining LLM-generated knowledge graphs with graph machine learning, GraphRAG substantially improves the comprehensiveness and diversity of generated answers for global sensemaking questions.

Earlier work showed the effectiveness of using a knowledge graph for question answering using text-to-query generation. These techniques can be combined to search across both unstructured and structured data, providing expanded context and improved ranking.

Using language models to generate prompts

Large language models (LLM) themselves can be used to compose prompts for large language models.

The automatic prompt engineer algorithm uses one LLM to beam search over prompts for another LLM:

There are two LLMs. One is the target LLM, and another is the prompting LLM.

Prompting LLM is presented with example input-output pairs, and asked to generate instructions that could have caused a model following the instructions to generate the outputs, given the inputs.

Each of the generated instructions is used to prompt the target LLM, followed by each of the inputs. The log-probabilities of the outputs are computed and added. This is the score of the instruction.

The highest-scored instructions are given to the prompting LLM for further variations. Repeat until some stopping criteria is reached, then output the highest-scored instructions.

CoT examples can be generated by LLM themselves. In "auto-CoT", a library of questions are converted to vectors by a model such as BERT. The question vectors are clustered. Questions nearest to the centroids of each cluster are selected. An LLM does zero-shot CoT on each question. The resulting CoT examples are added to the dataset. When prompted with a new question, CoT examples to the nearest questions can be retrieved and added to the prompt.

In-context learning

Prompt engineering can possibly be further enabled by in-context learning, defined as a model's ability to temporarily learn from prompts. The ability for in-context learning is an



emergent ability of large language models. In-context learning itself is an emergent property of model scale, meaning breaks[64] in downstream scaling laws occur such that its efficacy increases at a different rate in larger models than in smaller models.

In contrast to training and fine-tuning for each specific task, which are not temporary, what has been learnt during in-context learning is of a temporary nature. It does not carry the temporary contexts or biases, except the ones already present in the (pre)training dataset, from one conversation to the other. This result of "mesa-optimization" within transformer layers, is a form of meta-learning or "learning to learn".

### Text-to-image

See also: Artificial intelligence art § Prompt engineering and sharing

In 2022, text-to-image models like DALL-E 2, Stable Diffusion, and Midjourney were released to the public. These models take text prompts as input and use them to generate AI art images. Text-to-image models typically do not understand grammar and sentence structure in the same way as large language models, and require a different set of prompting techniques.

### Prompt formats

A text-to-image prompt commonly includes a description of the subject of the art (such as bright orange poppies), the desired medium (such as digital painting or photography), style (such as hyperrealistic or pop-art), lighting (such as rim lighting or crepuscular rays), color and texture.

The Midjourney documentation encourages short, descriptive prompts: instead of "Show me a picture of lots of blooming California poppies, make them bright, vibrant orange, and draw them in an illustrated style with colored pencils", an effective prompt might be "Bright orange California poppies drawn with colored pencils".

Word order affects the output of a text-to-image prompt. Words closer to the start of a prompt may be emphasized more heavily.

### Artist styles

Some text-to-image models are capable of imitating the style of particular artists by name. For example, the phrase in the style of Greg Rutkowski has been used in Stable Diffusion and Midjourney prompts to generate images in the distinctive style of Polish digital artist Greg Rutkowski.

### Negative prompts

Demonstration of the effect of negative prompts on images generated with Stable Diffusion

Top: no negative prompt

Centre: "green trees"

Bottom: "round stones, round rocks"

Text-to-image models do not natively understand negation. The prompt "a party with no cake" is likely to produce an image including a cake. As an alternative, negative prompts allow a user to indicate, in a separate prompt, which terms should not appear in the resulting image.

Non-text prompts

Some approaches augment or replace natural language text prompts with non-text input.

Textual inversion and embeddings

For text-to-image models, "Textual inversion" performs an optimization process to create a new word embedding based on a set of example images. This embedding vector acts as a "pseudo-word" which can be included in a prompt to express the content or style of the examples.

Image prompting

In 2023, Meta's AI research released Segment Anything, a computer vision model that can perform image segmentation by prompting. As an alternative to text prompts, Segment Anything can accept bounding boxes, segmentation masks, and foreground/background points.

Using gradient descent to search for prompts

In "prefix-tuning", "prompt tuning" or "soft prompting", floating-point-valued vectors are searched directly by gradient descent, to maximize the log-likelihood on outputs.

Prompt injection

Main article: Prompt injection

See also: SQL injection and Cross-site scripting

Prompt injection is a family of related computer security exploits carried out by getting a machine learning model (such as an LLM) which was trained to follow human-given instructions to follow instructions provided by a malicious user. This stands in contrast to the intended operation of instruction-following systems, wherein the ML model is intended only to follow trusted instructions (prompts) provided by the ML model's operator.