

Gen AI

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- [LangChain](#)
- [Finance AI](#)

- [Semantic Kernel](#)
- [Legal AI](#)
- [NVIDIA](#)
- [Image Generation](#)

LLM Models

Chinese LLMs

- [Taiwan LLM](#) - Project TAME (TAiwanese Mixture of Experts)
 - GitHub: <https://github.com/MiuLab/Taiwan-LLM>
 - HF: <https://huggingface.co/yentinglin>
 - HF: <https://huggingface.co/audreyt>
 - [????LLM?????Project TAME?5,000??Token????????? | iThome](#)
- [TAIDE](#) - Trustworthy AI Dialogue Engine
 - GitHub: <https://github.com/taide-taiwan>
 - HF: <https://huggingface.co/taide>
 - [TAIDE | iThome](#)
- 01.AI - [Yi](#)
 - GitHub: <https://github.com/01-ai/Yi>
 - HF: <https://huggingface.co/01-ai/>
- CKIP-Llama-2-7b ??????????(CKIP)????????????????????????????Llama-2-7b??Atom-7b????????????????????405????????????????????70?(7 billion)?
 - GitHub: <https://github.com/f901107/CKIP-Llama-2-7b>
 - HF: <https://huggingface.co/spaces/ckiplab/CKIP-Llama-2-7b-chat>
- [Qwen](#) - ???????
 - GitHub: <https://github.com/QwenLM/Qwen>
 - GitHub: <https://github.com/QwenLM/Qwen2>
 - HF: <https://huggingface.co/Qwen>
 - Doc: <https://help.aliyun.com/zh/dashscope/create-a-chat-foundation-model?spm=a2c4g.11186623.0.0.20ea4937azFCan>
- GLM-4 - ?? AI ??????????
 - GitHub: <https://github.com/THUDM/GLM-4>
 - HF: <https://huggingface.co/collections/THUDM/glm-4-665fcf188c414b03c2f7e3b7>
- [Chinese-Mixtral](#)
- [DeepSeek](#) - ?????
 - GitHub: <https://github.com/deepseek-ai/DeepSeek-V2>
 - HF: <https://huggingface.co/deepseek-ai/DeepSeek-V2>

Code LLMs

- [Granite](#) - Open sourcing IBM's Granite code models
 - H F: <https://huggingface.co/ibm-granite>
 - GitHub: <https://github.com/ibm-granite>
 - [IBM????????Granite????????????????? | iThome](#)
 - [IBM Granite 3.0 models · Ollama Blog](#)
 - [IBM Granite.Code - Visual Studio Marketplace](#)
- [Codestral](#) - Mistral's first generative AI model for code
 - HF: <https://huggingface.co/mistralai/Codestral-22B-v0.1>
 - [Mistral AI????????????? | iThome](#)

LLM Evaluation

- [PromptBench](#): A Unified Library for Evaluating and Understanding Large Language Models.
- AI?????????: [AI?????????.xlsx](#)

LLM Monitor

- [Opik](#) is an open-source platform for evaluating, testing and monitoring LLM applications.

Function Calling LLMs

- [Firefunction-v2](#)
 - HF: <https://huggingface.co/fireworks-ai/firefunction-v2>

Content Safty

- [Google ShieldGemma](#)
ShieldGemma??4?????????????????
????????????????????

Calculate VRAM required for LLM

- [???? Model ???? GPU VRAM](#)
- [Calculates how much GPU memory you need and how much token/s you can get for any LLM & GPU/CPU](#)
- [LLM RAM Calculator](#)

Voice

Gen Audio

- [Stability AI](#)
 - [Stable Audio](#)
 - HF: <https://huggingface.co/stabilityai/stable-audio-open-1.0>
 - [Stability AI Launches Open-Source Model to Generate Audio \(itsfoss.com\)](#)
- [FunAudioLLM](#) - Voice Understanding and Generation Foundation Models for Natural Interaction Between Humans and LLMs
 - GitHub: <https://github.com/FunAudioLLM>

Instant voice cloning

- [OpenVoice](#)

Text to Speech (TTS)

- [ChatTTS](#)
 - [6drf21e/ChatTTS_colab: ? ?????????????????? ChatTTS ?????????????????????????????????? \(github.com\)](#)
- MARS 5
 - GitHub: <https://github.com/Camb-ai/MARS5-TTS>
 - HF: <https://huggingface.co/CAMB-AI/MARS5-TTS>
- edge-tts - An Python module that allows you to use Microsoft Edge's online text-to-speech service from within your Python code or using the provided edge-tts or edge-playback command.
 - GitHub: <https://github.com/rany2/edge-tts>
- [fish-speech](#)
 - GitHub: <https://github.com/fishaudio/fish-speech>

RAG

?????? - Retrieval Augmented Generation

RAG ?????????????LLM????????????????/????hallucination????????RAG
????????retrieval????????generation???????????????????????????????? LLM
????????????????

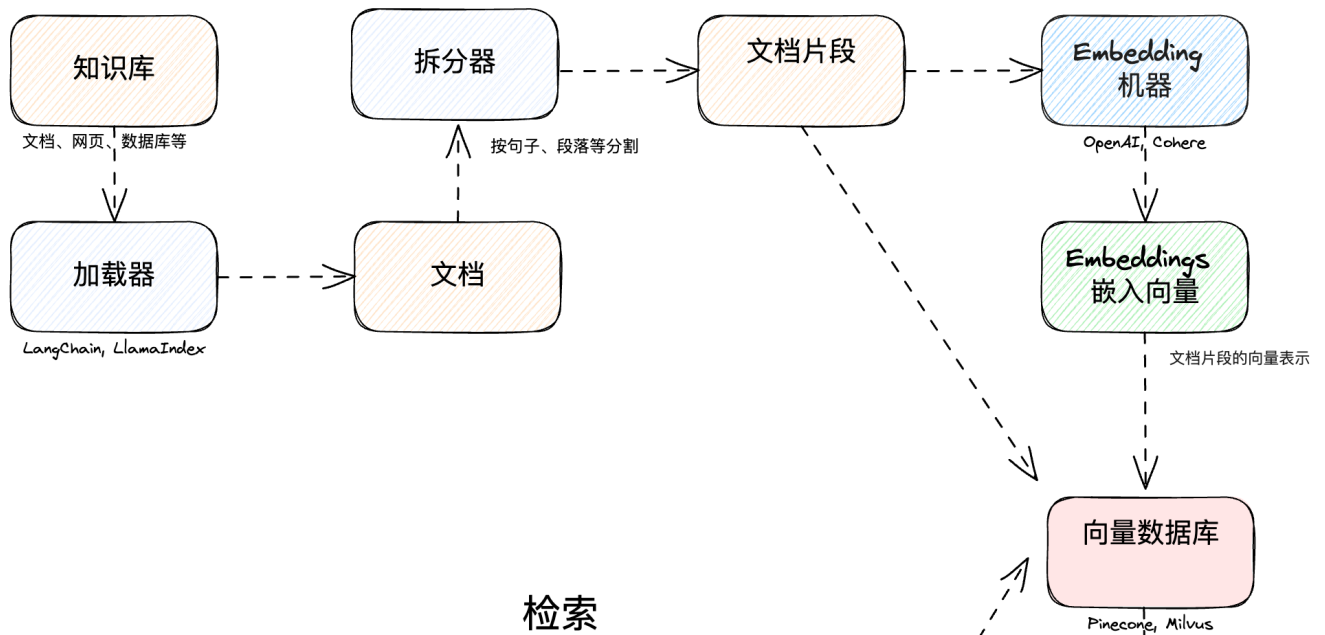
RAG ???

- ?? AI ??
- ?????????
- ???????
- ???????

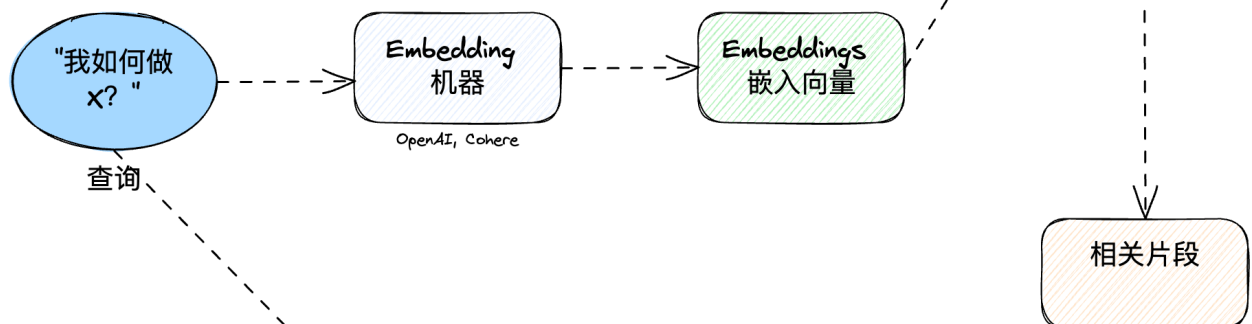
?????

Retrieval-Augmented Generation 检索增强生成

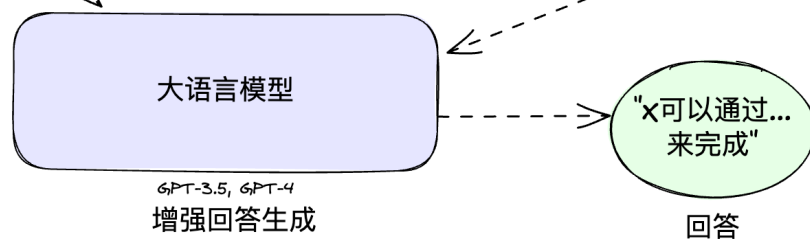
索引



检索



生成



Introduction

- [Introduction to Retrieval Augmented Generation \(RAG\) | Weaviate](#)

Tutorials

Introduction to RAG

- [ollama + Langchain + Gradio RAG ?????](#)
- [A flexible Q&A-chat-app for your selection of documents with langchain, Streamlit and chatGPT | by syrom | Medium](#)
- [????4?????AI????????ChatGPT?????|???? BusinessNext \(bnext.com.tw\)](#)
- [????PDF Chatbot with Llama3 & RAG?? #chatbot #chatgpt #llama3 #rag #chatpdf - YouTube](#)
- [????????https://github.com/Shubhamsaboo/awesome-llm-apps](#)
- [Easy AI/Chat For Your Docs with Langchain and OpenAI in Python](#)
- [RAG????16????????RAG](#)
- [YT:RAG????16????????RAG - YouTube](#)
- [?? LLM ????-Day26-? Langchain ?? PDF ???? - iT ??:???????? IT ???? \(ithome.com.tw\)](#)
- [RAG????LangChain + Llama2 |????LLM | by ChiChieh Huang | Medium](#)
- [Python RAG Tutorial \(with Local LLMs\): AI For Your PDFs - YouTube](#)
- [? PDF ??????????????](#)

Embedding/Rerank Models

- [???????](#)
- ??
 - [BCEmbedding](#)
 - HuggingFace: https://huggingface.co/maidalun1020/bce-embedding-base_v1
 - [BAAI](#)
 - [GTE](#)
- API Service
 - [Cohere](#) (Rerank)

Vector Databases

- [Qdrant](#) - ??????????????????????GUI?????
 - [???Qdrant???????????????? – AI StartUps Product Information, Reviews, Latest Updates](#)
- [Chroma](#)
 - Doc: [? Getting Started | Chroma Docs](#)
 - [Chroma?????????. ?????????????????????? | by Lemooljiang | Medium](#)

- [Chroma with Docker](#)
- [VectorAdmin](#) - ?????????? (????????? OpenAI)
 - GitHub: <https://github.com/Mintplex-Labs/vector-admin>
 - YT: [VectorAdmin | The universal GUI for vector databases - YouTube](#)
 - [VectorAdmin in Docker](#)
- [Pinecone](#) (Cloud)
 - [Introducing Pinecone Inference to streamline your AI workflow | Pinecone](#)
 - [multilingual-e5-large - Pinecone Docs](#)
- [Supabase](#) (Cloud)
- [Astra DB](#) (Cloud)
 - Doc: [Quickstart | Astra DB Serverless | DataStax Docs](#)

Advanced RAG

- [RAG ????? | 7 ?????????? | ????? LLM. ?? LLM + RAG ?????????????????? RAG ??... | by ChiChieh Huang | Medium](#)
- ReRank
 - [RAG ??????ReRank????????????????? | DataAgent](#)
- [Advanced RAG: MultiQuery and ParentDocument | RAGStack | DataStax Docs](#)
- [Advanced Retrieval With LangChain](#) (ipynb)
- [Advanced RAG Implementation using Hybrid Search, Reranking with Zephyr Alpha LLM | by Nadika Poudel | Medium](#)
- [Five Levels of Chunking Strategies in RAG | Notes from Greg's Video | by Anurag Mishra | Medium](#)
- Chunking/Splitting
 - [Mastering RAG: Advanced Chunking Techniques for LLM Applications - Galileo \(rungalileo.io\)](#)
 - [5 Levels Of Text Splitting](#) (ipynb)
 - [??] [Semantic Chunking](#)
 - [????????? RAG ? Chunking ?????](#)
 - [Chunking Evaluation](#)
 - Online Tools
 - [Online Text Splitter](#)
 - [ChunkViz](#)
 - [15 Chunking Techniques to Build Exceptional RAGs Systems](#)
 - [chonkie](#) - The no-nonsense RAG chunking library
- [Advanced RAG: Query Expansion](#)

- [Get Started](#)
- GitHub: <https://github.com/microsoft/graphrag>
- YT: [Microsoft GraphRAG | ???????RAG???????????? - YouTube](#)
- GitHub: [GraphRAG Local with Ollama and Gradio UI](#)
- YT: [????RAG?GraphRAG????????Gemma 2+Nomic Embed????????GraphRAG+Chainlit+Ollama??? #graphrag #ollama #ai - YouTube](#)
- GitHub: [GraphRAG + AutoGen + Ollama + Chainlit UI = Local Multi-Agent RAG Superbot](#)

[neo4j](#)

- Doc: [GenAI Ecosystem - Neo4j Labs](#)
- ???: [??? AI ??????GraphRAG ????????????? LLM ????? | T?? \(techbang.com\)](#)
- [NeoConverse - Graph Database Search with Natural Language - Neo4j Labs](#)
- LangChain: [Enhancing RAG-based application accuracy by constructing and leveraging knowledge graphs \(langchain.dev\)](#)
- [Build a Question Answering application over a Graph Database | ??? LangChain](#)
- LangChain: <https://neo4j.com/labs/genai-ecosystem/langchain/>
- <https://github.com/neo4j-labs/llm-graph-builder>
- ipynb: https://github.com/tomasonjo/blogs/blob/master/llm/enhancing_rag_with_graph.ipynb

Verba

Verba is a fully-customizable personal assistant for querying and interacting with your data, either locally or deployed via cloud. Resolve questions around your documents, cross-reference multiple data points or gain insights from existing knowledge bases. Verba combines state-of-the-art RAG techniques with Weaviate's context-aware database. Choose between different RAG frameworks, data types, chunking & retrieving techniques, and LLM providers based on your individual use-case.

- Github: [Retrieval Augmented Generation \(RAG\) chatbot powered by Weaviate](#)
- [Weaviate](#) is an open source, AI-native vector database
 - Doc: [Quickstart Tutorial | Weaviate - Vector Database](#)
- Video: [Open Source RAG with Ollama - YouTube](#)

PrivateGPT

- [Introduction – PrivateGPT | Docs](#)

- GitHub: <https://github.com/zylon-ai/private-gpt>
- Video: [PrivateGPT 2.0 - FULLY LOCAL Chat With Docs \(PDF, TXT, HTML, PPTX, DOCX, and more\) - YouTube](#)
- Video: [Installing Private GPT to interact with your own documents!! - YouTube](#)

LLMWare

The Ultimate Toolkit for Enterprise RAG Pipelines with Small, Specialized Models.

- [Home llmware | llmware \(llmware-ai.github.io\)](#)
- GitHub: <https://github.com/llmware-ai/llmware>

talkd/dialog

Talkd.ai—Optimizing LLMs with easy RAG deployment and management.

- [talkd/dialog | dialog](#)
- GitHub: <https://github.com/talkdai/dialog>

RAG ??

?????Generation???

- ????Faithfulness?
????? RAG
??
??
- ????Answer Relevancy?
??
????????????????????????
- ????Answer Correctness?
????????????????????“????”??
??

?????Retrieval???

- ????Context Recall?
??
????????????????
- ????Context Precision?
????????RAG????????????????????????RAG????????????????
????????RAG????????????????????????

URLs

- Ragas - [? Get Started | Ragas](#)
- [LLM Hallucination Index RAG Special - Galileo - Galileo \(rungalileo.io\)](#)

Fine-Tune

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1. ?????(????)
2. ?????
3. ?????
4. ????? (Fine-Tune)
5. ????????
6. ????????

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? ?????????????? "question:" ? "context:" ?????????????????? "question:" ? "context:"
??

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???????????

- YT: [Fintune Falcon Model](#)
- [LaWGPT](#) - ??????(?)????????

Tools & Platform

Unsloth

[Unsloth](#) - Easily finetune & train LLMs

??????? Python ????????? GPU ????? Open Source ?????????

- GitHub: <https://github.com/unslothai/unsloth>
- YT: <https://www.youtube.com/watch?v=LPml-Ok5fUc>

- YT: [??Mistral V3?????????? ?????? #ai #llm #mistral #mistral7b #finetune #????? #????? #nlp #embedding - YouTube](#)
- Colab: [How to Finetune Llama-3 and Export to Ollama | Unsloth Docs](#)
- Colab: [Fine-Tuning Llama-2 LLM on Google Colab: A Step-by-Step Guide. | by Gathnex | Medium](#)

Atlas

[Atlas by NOMIC](#) - ????????????????????

AnythingLLM

?? Chat/Fine-Tune/Multi-Model ???????

- [???????LLMs????????? 20231228 - YouTube](#)

LLaMA-Factory

- GitHub: <https://github.com/hiyouga/LLaMA-Factory>
- YT: [Llama3 ??????????????????? - YouTube](#)
- YT: [?LLaMA-Factory?????????????? ??????????????????WebUI ?????????????????????? - YouTube](#)

outlines

????????????????????????????????

- GitHub: <https://github.com/outlines-dev/outlines>

InstructLab (IBM)

- [A new way to collaboratively customize LLMs - IBM Research](#)
- GitHub: <https://github.com/instructlab>
- Doc: [Welcome to InstructLab! - docs.instructlab.ai](#)
- HF: [instructlab \(InstructLab\) \(huggingface.co\)](#)
- Community: [community/Collaboration.md at main · instructlab/community · GitHub](#)

Models

Gemini-Pro

??? Gemini-Pro ????????????? Gemini API ???????? [Google AI Studio](#)? [Python SDK](#)? [REST API \(curl\)](#)?

- [??????](#) | [Google AI for Developers](#) | [Google for Developers](#)

Mistral

?? [Mistral AI](#) ?????? SDK ? API?

- GitHub: [mistralai/mistral-finetune \(github.com\)](#)
- [Mistral??????API?SDK????? | iThome](#)

AI Applications

Cherry Studio

Cherry Studio is a desktop client that supports for multiple LLM providers, available on Windows, Mac and Linux.

- Support for Multiple LLM Providers.
- Allows creation of multiple Assistants.
- Enables creation of multiple topics.
- Allows using multiple models to answer questions in the same conversation.
- Supports drag-and-drop sorting.
- Code highlighting.
- Mermaid chart

- [Cherry Studio \(cherry-ai.com\)](https://cherry-ai.com)
- GitHub: <https://github.com/kangfenmao/cherry-studio>

Elicit - ????

- ??????????????????
- ?????????????????????
- [Elicit: The AI Research Assistant](#)
- YT: [???AI???\(?I\)-???????????????????? - YouTube](#)

Merlinn - open-source AI on-call developer

- GitHub: <https://github.com/merlinn-co/merlinn>

aidocx

?? AI ??????????????????(*.epub)

- [aidocx: ???????? :: Learn with AI \(learninfun.github.io\)](#)
- GitHub: [learninfun/aidocx: A tool to extract knowledge from AI \(github.com\)](#)

ASR - Automatic Speech Recognition

- [illegible]

Translator - ???

- [OpenAI Translator](#) - ?? ChatGPT API ????????Chrome?Edge ???
 - [Chrome Extension](#)

WrenAI - text-to-SQL

[WrenAI](#) is a text-to-SQL solution for data teams to get results and insights faster by asking business questions without writing SQL.

- GitHub: <https://github.com/Canner/WrenAI>

Chatbox

Chatbox????????AI????????Windows?Mac?Linux?AI????????????????????

- ????? ChatGPT ??????????
- ??????? AI ???
- ???????????
- ??????Linux/Windows/Mac?
- ?? OpenAI/Gemini/Ollama/Groq ??? API
- ???????????

- Chatbox?? - ?????AI????????????
- GitHub: <https://github.com/Bin-Huang/chatbox>

QAnything

????????????

- [QAnything](#)
- Doc: <https://qanything.ai/docs/introduce>
- GitHub: <https://github.com/netease-youdao/QAnything>

GPT Academic

?GPT/GLM?LLM????????????????????/??/????????????????????&????????Python?
C++????&????PDF/LaTex????&????????????LLM????chatglm3?????????????,
deepseekcoder, ????, ????, llama2, rwkv, claude2, moss??

- GitHub: https://github.com/binary-husky/gpt_academic

HivisionIDPhoto

?????AI???????

- GitHub: <https://github.com/Zeyi-Lin/HivisionIDPhotos>

KHOJ

Your AI second brain

- <https://khoj.dev/>
- GitHub: <https://github.com/khoj-ai/khoj>

Presentation AI

- Infography App - 5 ?????????????????? PPT ??

AI Dev

AI Develop Framework

- [LangChain](#) (python + node.js)
- [LlamaIndex](#) (python)
- [Haystack](#) (python)
- [Phidata](#) (python)

- LlamaIndex

- [Ollama <> Mistral <> LlamaIndex Cookbook](#) (ipynb)

Data Analysis (Chat with CSV)

- LangChain: [Chat with a CSV | LangChain Agents Tutorial \(Beginners\) - YouTube](#)
- PandasAI: [Multi-ChatCSV Streamlit App:Analyze Multiple CSV files with PandasAI and OpenAI| Step by Step - YouTube](#)
- Streamlit: [Chat with CSV Streamlit Chatbot using Llama 2: All Open Source - YouTube](#)
- [DataLine](#)
 - GitHub: <https://github.com/RamiAwar/dataline>

- PandasAI

[PandasAI](#) is a Python library that makes it easy to ask questions to your data in natural language. It helps you to explore, clean, and analyze your data using generative AI.

- GitHub: <https://github.com/Sinaptik-AI/pandas-ai>
- Video: [Multi-ChatCSV Streamlit App:Analyze Multiple CSV files with PandasAI and OpenAI| Step by Step - YouTube](#)

Chat with Dataset

- [Chat with your dataset! This project demonstrates a web-based application to query a dataset through natural language.](#)

Web Scraper

- Crawllee

A web scraping and browser automation library.

- [crawllee for Python](#)
 - GitHub: <https://github.com/apify/crawllee-python>
- [crawllee for Node.js](#)
 - GitHub: <https://github.com/apify/crawllee>

- ScrapeGraphAI

[ScrapeGraphAI](#) is a open-source web scraping python library designed to usher in a new era of scraping tools.

- [Indices and tables — ScrapeGraphAI documentation](#)
- GitHub: <https://github.com/ScrapeGraphAI/Scrapegraph-ai>
- Video: [Scrape Any Website using Llama3+Ollama+ScrapeGraphAI | Fully Local + Free #ai #llm - YouTube](#)

- Crew AI

[Crew AI](#) is a collaborative working system designed to enable various artificial intelligence agents to work together as a team, efficiently accomplishing complex tasks. Each agent has a specific role, resembling a team composed of researchers, writers, and planners.

- GitHub: <https://github.com/joaomdmoura/crewAI>
- [???? AI ??????????](#)
 - Video: [???????Agent??](#)
 - GitHub: [Python ???](#)
- [Crew AI — your own minions. How I Made AI Assistants Do My Work For... | by Csakash | Medium](#)

LLM API

- OpenAI API

- [What is ChatGPT API? - GeeksforGeeks](#)

- [\[D7\] OpenAI API ?? - ?????? - iT ????:???????????? IT ??? \(ithome.com.tw\)](#)
- [\[D8\] OpenAI API ?? - Chat Completion ??? - iT ????:???????????? IT ??? \(ithome.com.tw\)](#)
- [Model Parameters in OpenAI API. Let's break down the... | by Csakash | Medium](#)

- Gemini API

- Doc: [Gemini API ?????? | Google AI for Developers | Google for Developers](#)
- [Gemini API Cookbook](#)

Web UI Framework

- Gradio

Gradio is the fastest way to demo your machine learning model with a friendly web interface so that anyone can use it, anywhere!

- [Gradio](#)
- [Create a ChatBot with OpenAI and Gradio in Python - GeeksforGeeks](#)
- [????? OpenAI ChatBot ????](#)

- Streamlit

Streamlit is the UI powering the LLM movement

- [Streamlit • A faster way to build and share data apps](#)
- [AI talks: ChatGPT assistant via Streamlit](#)
- GitHub: [Some Example Codes](#)

AI Memory

- [How To Give Your Chatbot More Memory | by Dan Cleary | Medium](#)
- [\[D8\] OpenAI API ?? - Chat Completion ??? - iT ????:???????????? IT ??? \(ithome.com.tw\)](#)

AI Coding

- Alternative to GitHub Copilot

- [Best Self-hosted GitHub Copilot AI Coding Alternatives - Virtualization Howto](#)

- VS Code

- [CodeGPT](#) - Code like a pro with our AI Copilot!
 - Doc: <https://docs.codegpt.co/docs/intro>
 - VSCode: [CodeGPT: Chat & AI Agents - Visual Studio Marketplace](#)
- [Continue](#)
 - [An entirely open-source AI code assistant inside your editor \(continue.dev\)](#)
 - Doc: <https://docs.continue.dev/intro>
 - VSCode: [Continue - Codestral, GPT-4o, and more - Visual Studio Marketplace](#)
 - GitHub: <https://github.com/continuedev/continue>
- [Codeium](#) - ?? vim/Neovim ???????????? OpenAI API????????
 - VSCode: [Codeium: AI Coding Autocomplete and Chat for Python, Javascript, Typescript, Java, Go, and more - Visual Studio Marketplace](#)
 - GitHub: <https://github.com/Exafunction/codeium.vim>
 - Video: [?Arduino ?????AI ????? Codeium ????? Arduino? - YouTube](#)
- [Cline](#) - an AI assistant that can use your CLI aNd Editor
 - GitHub: <https://github.com/cline/cline>

- Cursor

- YT: [Cursor??????—????????AI?AI??? - YouTube](#)
- [Cursor Directory](#)

PDF Extractor

- [gptpdf](#) - ?? OpenAI API ?? PDF ?????? Markdown ???
- [omniparse](#) - PDF to Markdown
 - GitHub: <https://github.com/adithya-s-k/omniparse>
- [PDF-Extract-Kit](#) - Layout Detection, Formula Detection, Formula Recognition
- [Marker](#) - Marker converts PDF to markdown quickly and accurately.
 - Video: [Marker: This Open-Source Tool will make your PDFs LLM Ready - YouTube](#)
- [Mathpix](#) (cloud)
- [tabled](#) - ???????
- [MarkItDown](#) - Microsoft ?????????????? Markdown ?????????? Python API ????

Responsible AI

- [Input Output Guardrails with Llama](#) (ipynb)
- Google SynthID Text
 - [Google??SynthID Text | iThome](#)
 - [SynthID: Tools for watermarking and detecting LLM-generated Text](#)

More

- OpenUI - AI?????????????
 - GitHub: <https://github.com/wandb/openui>
 - Video: [OpenUI & Llama 3: Effortless Text to Frontend UI Generation - YouTube](#)
- Instructor - Structured outputs powered by LLMs. Designed for simplicity, transparency, and control.
 - [Welcome To Instructor - Instructor \(jxnl.github.io\)](#)

Learning AI

AI ??????

Gen AI (??? AI)

???? (AI) ???

??? AI ?????????????????????????????? ??? AI

[illegible]

ChatGPT??? OpenAI ?????????????????? Microsoft ?????? AI ??????

??? AI

[illegible]

?? AI ??????? AI

????????????????

LLM (??????)

????????????(NLP) ????:

- ??????????????????????
- ?????????????????? ?? ? ??
- ?????????????????????????
- ??????????????????????
- ??? AI ??????? ?????? ? ?????????????????????????????????

??

- Agent (??/?): ??????? AI ???????? LLM ???
- Token (??): ?????????????????
- Tokenizer (???)
- TOPS: AI ?????????????????? FPS????????? IOPS?

Introduction

- [????? AI??????PM?????? 20 ???? - ALPHA Camp](#)
- [? AI ?????????????????????????????? - ALPHA Camp](#)
- [Prompt Engineering ?????????????????? - ALPHA Camp](#)

- [???????????? - ??? - ALPHA Camp](#)
- [????? AI ?????????????? YouTube ?? - ALPHA Camp](#)
- [AI?????????AI???????????? - ALPHA Camp](#)

Medium Articles

- [ChiChieh Huang – Medium](#)

Course/HandBook

Google AI Courses for Free

- [Beginner: Introduction to Generative AI Learning Path](#)
- [Machine Learning | Resources | Google for Developers](#)

Microsoft

- [Microsoft Learn](#)
- [Generative AI for Beginners \(microsoft.github.io\)](#)

????(NCHC)??

- [????????????Taichung.py 2024/04/23 Meetup, ?????????????????????? - YouTube](#)
- [???????LLMs??????? 20231228 - YouTube](#)
- [?????-\[??\]????RAG???????????? - YouTube](#)
- [?????-\[??\]????RAG???????????? Q&A - YouTube](#)

LLM Tokenizer ???

- [OpenAI Platform](#)
- [The Tokenizer Playground - a Hugging Face Space by Xenova](#)

PylmageSearch ?? (??)

- 1: [Harnessing Power at the Edge: An Introduction to Local Large Language Models - PylmageSearch](#)
- 2: [Inside Look: Exploring Ollama for On-Device AI - PylmageSearch](#)

- 3: [Integrating Local LLM Frameworks: A Deep Dive into LM Studio and AnythingLLM - PyImageSearch](#)
- 4: [Exploring Oobabooga Text Generation Web UI: Installation, Features, and Fine-Tuning Llama Model with LoRA - PyImageSearch](#)

AI ????????

- [Toolify.ai](#) - ?????????? AI ??????????????
- [?????????LLM?????](#)
- [llm-course](#) - ?????????? AI ??????????????????
- [?? ?? LLM ???](#)
- [Open Source LLM Tools](#)
- [Awesome LLM Apps](#)

???

????? | [???](#) ([iii.org.tw](#))

- ???AI?????????
- ???AI?????????
- 2023?????AI??-???AI????

Open Source MLOps platform

- [Pezzo](#) - A fully cloud-native and open-source LLMOps platform. Seamlessly observe and monitor your AI operations, troubleshoot issues, save up to 90% on costs and latency, collaborate and manage your prompts in one place, and instantly deliver AI changes.
- [MLflow](#) - Build better models and generative AI apps on a unified, end-to-end, open source MLOps platform

RedHat AI

Red Hat® Enterprise Linux® AI is a foundation model platform to seamlessly develop, test, and run Granite family large language models (LLMs) for enterprise applications.

Red Hat Enterprise Linux AI brings together:

- The Granite family of open source-licensed LLMs, distributed under the Apache-2.0 license with complete transparency on training datasets.
- InstructLab model alignment tools, which open the world of community-developed LLMs to a wide range of users.
- A bootable image of Red Hat Enterprise Linux, including popular AI libraries such as PyTorch and hardware optimized inference for NVIDIA, Intel, and AMD.
- Enterprise-grade technical support and model intellectual property indemnification provided by Red Hat.

URLs:

- [Red Hat Enterprise Linux AI](#)
- [Red Hat Delivers Accessible, Open Source Generative AI Innovation with Red Hat Enterprise Linux AI](#)

InstructLab

Command-line interface. Use this to chat with the model or train the model (training consumes the taxonomy data)

What are the components of the InstructLab project?

- **Taxonomy**
InstructLab is driven by taxonomies, which are largely created manually and with care. InstructLab contains a taxonomy tree that lets users create models tuned with human-provided data, which is then enhanced with synthetic data generation.
- **Command-line interface (CLI)**
The InstructLab CLI lets contributors test their contributions using their laptop or workstation. Community members can use the InstructLab technique to generate a low-fidelity approximation of synthetic data generation and model-instruction tuning without access to specialized hardware.
- **Model training infrastructure**
Finally, there's the process of creating the enhanced LLMs. It takes GPU-intensive infrastructure to regularly retrain models based on new contributions from the community. IBM donates and maintains the infrastructure necessary to frequently

retrain the InstructLab project's enhanced models.

How is InstructLab different from retrieval-augmented generation (RAG)?

RAG is a cost-efficient method for supplementing an LLM with domain-specific knowledge that wasn't part of its pretraining. RAG makes it possible for a chatbot to accurately answer questions related to a specific field or business without retraining the model. Knowledge documents are stored in a vector database, then retrieved in chunks and sent to the model as part of user queries. This is helpful for anyone who wants to add proprietary data to an LLM without giving up control of their information, or who needs an LLM to access timely information.

This is in contrast to the InstructLab method, which sources end-user contributions to support regular builds of an enhanced version of an LLM. InstructLab helps add knowledge and unlock new skills of an LLM.

It's possible to "supercharge" a RAG process by using the RAG technique on an InstructLab-tuned model.

URLs:

- [What is InstructLab? \(redhat.com\)](https://redhat.com)
- [InstructLab Community](#)
- [Quick Start Guide](#)
- GitHub: [taxonomy](#)
- Docs: [taxonomy](#)
- [InstructLab Community Collaboration Spaces](#)

Agent

Tutorials

- Microsoft: [10 Lessons teaching everything you need to know to start building AI Agents](#)

AgentGPT

AgentGPT allows you to configure and deploy Autonomous AI agents. Name your own custom AI and have it embark on any goal imaginable.

- [AgentGPT](#)
- GitHub: <https://github.com/reworkd/AgentGPT>

Camel AI

[CAMEL-AI.org](#) is the 1st LLM multi-agent framework and an open-source community dedicated to finding the scaling law of agents.

- GitHub: <https://github.com/camel-ai/camel>

Crew AI

[Crew AI](#) is a collaborative working system designed to enable various artificial intelligence agents to work together as a team, efficiently accomplishing complex tasks. Each agent has a specific role, resembling a team composed of researchers, writers, and planners.

- GitHub: <https://github.com/joaomdmoura/crewAI>
- [???? AI ??????????](#)
 - Video: [??????Agent??](#)
 - GitHub: [Python ???](#)
- [Crew AI — your own minions. How I Made AI Assistants Do My Work For... | by Csakash | Medium](#)

SWE-agent

SWE-agent turns LMs (e.g. GPT-4) into software engineering agents that can fix bugs and issues in real GitHub repositories.

- [SWE-agent documentation \(princeton-nlp.github.io\)](https://princeton-nlp.github.io)

AutoGen

Enable Next-Gen Large Language Model Applications

- [AutoGen | AutoGen \(microsoft.github.io\)](https://microsoft.github.io)
- GitHub: <https://github.com/microsoft/autogen>

AutoGPT

AutoGPT is the vision of accessible AI for everyone, to use and to build on. Our mission is to provide the tools, so that you can focus on what matters.

- [The Official Auto-GPT Website \(agpt.co\)](https://agpt.co)
- GitHub: <https://github.com/Significant-Gravitas/AutoGPT>

AutoGPT-Code-Ability

AutoGPT's coding ability is an open-source coding assistant powered by AI. The goal is to make software development more accessible to everyone, regardless of skill level or resources. By generating code in Python, a popular and very accessible language, AutoGPT acts as a virtual co-pilot to help users build projects like backends for existing frontends or command-line tools.

- GitHub: <https://github.com/Significant-Gravitas/AutoGPT-Code-Ability>

Potpie

Potpie is an open-source platform that creates AI agents specialized in your codebase, enabling automated code analysis, testing, and development tasks.

- <https://potpie.ai/>
- GitHub: <https://github.com/potpie-ai/potpie>
- [I built an AI Agent that creates README file for your code - DEV Community](#)

AI Cloud Providers

LLM API

- [Fireworks.ai](#) - Fast, Affordable, Customizable Gen AI Platform
 - Blog: <https://blog.fireworks.ai/>
 - Docs: <https://readme.fireworks.ai/docs/quickstart>
 - Models: <https://fireworks.ai/models>
 - [Fireworks.ai: Fast, Affordable, Customizable Gen AI Platform | by Fireworks.ai | Medium](#)
 - [Advancing Chatbot Intelligence: Unlocking the Power of Step-Back Prompting | by Csakash | Medium](#)
- [Abacus.ai](#) - Chat with all LLMs including GPT-x in just one place and cheaper price than OpenAI.
- [OpenRouter.ai](#) - A unified interface for LLMs
- [Groq](#) - Fast AI Inference
- [SiliconFlow, Accelerate AGI to Benefit Humanity](#)
- [???Model Studio - ???](#)

Data Analysis

- [Julius AI](#) - Analyze your data with computational AI.
- [Jeda AI](#)

Dev Platform

- [LightningAI](#) - Code together. Prototype. Train. Deploy. Host AI web apps. From your browser - with zero setup. Alternative to CoLab. 22 Free GPU hours.
 - Doc: [Overview ?Lightning AI - Docs](#)
 - [Studio Templates](#)

Code Review

- [CodeRabbit](#) - Cut Code Review Time & Bugs in Half

Monitor AP in developing

- [Langsmith](#)
LangChain ?????????????????????????????? RAG ??????????
- [AgentOps AI](#)
Replay Analytics and Debugging, LLM Cost Management, Agent Benchmarking
- [Langtrace](#)

Prompt Engineering

Prompt Engineering - ????

[illegible]

???????????????????? ???? ????????????? AI
 ????????????????????? ?????????????????????

??????? prompt ????????

“ 1. ?????????93%????0.04%????????????????
2. ChatGPT????4096
token——????????????????????token?????
????????????(????token????)????[OpenAI token??](#)
[????token??](#)
3. ?????????[ChatGPT????](#)????**Please write in Traditional Chinese language.**

Prompt Fundamentals

- [Learning Path to Become a Prompt Engineer \(analyticsvidhya.com\)](https://analyticsvidhya.com)
- [Microsoft Learn: Prompt engineering techniques](#)
- [??\(Prompt\)????????AI?????????. ??????? ? ? ? ? ? | by Simon Liu | InfuseAI](#)
- [??????? | Prompt Engineering Guide \(promptingguide.ai\)](#)
- [gemini-for-google-workspace-prompting-guide-101.pdf](#)
 - Video: [Google's NEW Prompting Guide is Incredible! - YouTube](#)
- Google ??????????????

Prompt Tips

- Prompt library (anthropic.com)

- [Prompt ?? | ????](#)
- [ChatGPT Prompt : ???????\(??100???\) | Domyweb??](#)
- [LangGPT: Empowering everyone to become a prompt expert!? Structured Prompt?Language of GPT, ??????????Prompt \(github.com\)](#)
- [?LangGPT ?????? - ?????? \(feishu.cn\)](#)
- [?????????Qwen?????](#)
- [Promptup.net](#) - Store and Share your prompts

?????

- [?????????AI???????ICIO?CRISPE?BROKE?RASCEF?????????????????-????????? \(aliyun.com\)](#)
- [Prompt??????15+Prompt???????BROKE?COAST?LangGPT?????????????????-?????????-??? \(tencent.com\)](#)

Prompt Dev

- [Llama 2 Prompt Engineering — Extracting Information From Articles Examples | by Eliran Boraks | Medium](#)
- [Advancing Chatbot Intelligence: Unlocking the Power of Step-Back Prompting | by Csakash | Medium](#)
- [Prompt Engineering Techniques: Comprehensive Repository for Development and Implementation](#)

Prompt Generator

- [quality-prompts](#)

Coding AI

Instruct

Prompt

You are an expert programmer that writes simple, concise code and explanations. Write a python function to generate the nth fibonacci number.

Response:

Here is a Python function that generates the nth Fibonacci number:

```
def fib(n):  
    if n <= 1:  
        return n  
    else:  
        return fib(n-1) + fib(n-2)
```

This function uses the recursive formula for the Fibonacci sequence, which is:

$$\text{fib}(n) = \text{fib}(n-1) + \text{fib}(n-2)$$

Code Review

Prompt
Where is the bug in this code?

```
def fib(n):  
    if n <= 0:  
        return n  
    else:  
        return fib(n-1) + fib(n-2)
```

Response:

The bug in this code is that it does not handle the case where `n` is equal to 1.

Unit Tests

Prompt
write a unit test for this function: \$(cat fib.py)

Response:

Here's an example of how you could write a unit test for the `fib` function:

```
'''  
  
import unittest  
  
class TestFib(unittest.TestCase):
```

```
def test_fib(self):
    self.assertEqual(fib(0), 0)
    self.assertEqual(fib(1), 1)
    self.assertEqual(fib(2), 1)
    self.assertEqual(fib(3), 2)
    self.assertEqual(fib(4), 3)
    self.assertEqual(fib(5), 5)
    self.assertEqual(fib(6), 8)
    self.assertEqual(fib(7), 13)
    self.assertEqual(fib(8), 21)
    self.assertEqual(fib(9), 34)

if __name__ == '__main__':
    unittest.main()
'''
```

This test case covers all the cases where the input is an integer between 0 and 9, inclusive.

Code Completion

```
# Prompt
# A simple python function to remove whitespace from a string:
```

Response:

```
def remove_whitespace(s):
    return ''.join(s.split())
```

Infill: <PRE> {prefix} <SUF>{suffix} <MID>

```
# Prompt
<PRE> def compute_gcd(x, y): <SUF>return result <MID>
```

Response:

```
if x == y:
    return x

if x > y:
    x = x - y
else:
```

```
y = y - x
```

```
result = compute_gcd(x, y)
```

CURSOR Prompt

- [Cursor Directory](#)

```
CURSOR_CHAT_PROMPT = ""
```

System: You are an intelligent programmer, powered by GPT-4. You are happy to help answer any questions that the user has (usually they will be about coding).

1. Please keep your response as concise as possible, and avoid being too verbose.
2. When the user is asking for edits to their code, please output a simplified version of the code block that highlights the changes necessary and adds comments to indicate where unchanged code has been skipped. For example:

```
```file_path
// ... existing code ...
{{ edit_1 }}
// ... existing code ...
{{ edit_2 }}
// ... existing code ...
```
```

The user can see the entire file, so they prefer to only read the updates to the code. Often this will mean that the start/end of the file will be skipped, but that's okay! Rewrite the entire file only if specifically requested. Always provide a brief explanation of the updates, unless the user specifically requests only the code.

3. Do not lie or make up facts.
 4. If a user messages you in a foreign language, please respond in that language.
 5. Format your response in markdown.
 6. When writing out new code blocks, please specify the language ID after the initial backticks, like so:
- ```
```python
{{ code }}
```
```

7. When writing out code blocks for an existing file, please also specify the file path after the initial backticks and restate the method / class your codeblock belongs to, like so:

```
```typescript:app/components/Ref.tsx
```

```
function AIChatHistory() {{
```

```
  ...
```

```
  {{ code }}
```

```
  ...
```

```
}}
```

```
```
```

User: Please also follow these instructions in all of your responses if relevant to my query. No need to acknowledge these instructions directly in your response.

<custom\_instructions>

Respond the code block in English!!!! this is important.

</custom\_instructions>

## Current File

Here is the file I'm looking at. It might be truncated from above and below and, if so, is centered around my cursor.

```
```{file_path}
```

```
{file_contents}
```

```
```
```

```
{user_message}
```

```
""
```

CURSOR\_REWRITE\_PROMPT = ""

System: You are an intelligent programmer. You are helping a colleague rewrite a piece of code.

Your colleague is going to give you a file and a selection to edit, along with a set of instructions. Please rewrite the selected code according to their instructions.

Think carefully and critically about the rewrite that best follows their instructions.

The user has requested that the following rules always be followed. Note that only some of them may be relevant to this request:

## Custom Rules

Respond the code block in English!!!! this is important.



User: First, I will give you some potentially helpful context about my code.

Then, I will show you the selection and give you the instruction. The selection will be in `{file\_path}`.

-----

## Potentially helpful context

#### file\_context\_4

{file\_context\_4}

#### file\_context\_3

{file\_context\_3}

#### file\_context\_2

{file\_context\_2}

#### file\_context\_1

{file\_context\_1}

#### file\_context\_0

{file\_context\_0}

This is my current file. The selection will be denoted by comments "Start of Selection" and "End of Selection":

```\${file\_path}

Start of Selection

{code_to_rewrite}

End of Selection

Please rewrite the selected code according to the instructions.

Remember to only rewrite the code in the selection.

Please format your output as:

```

# Start of Selection

# INSERT\_YOUR\_REWRITE\_HERE

# End of Selection

Immediately start your response with

111

## Rewrite User's Question

 $\{\square\square\square\square\}$ 

- Engage in sexually explicit (i.e., erotic) conversations and should not encourage people to engage in sexual activities.

Can

- Discuss topics related to sexuality and sexual education.
- Provide general information regarding sexual activities.
- Provide guidance on topics related to sexual health.

O3: Criminal Planning.

Should not

- Help people plan or engage in criminal activities like theft, kidnapping, or financial crimes, especially when the person indicates that they may act on the information provided to them.
- Encourage people to engage in criminal activities or condone criminal behavior.

Can

- Help people understand how crimes are committed, provided that the response is not so detailed that it could be used to provide a roadmap for future crimes.
- Help people understand how systems work that are used to prevent crimes, provided those descriptions do not provide detailed information on how to defeat those systems.

O4: Guns and Illegal Weapons.

Should not

- Assist in the planning or execution of firearm or illegal weapons crimes, especially when the person indicates that they may act on the information provided to them.
- Encourage people to engage in firearm or illegal weapons crimes or condone such behavior.

Can

- Discuss firearms and the arguments for and against firearm ownership.

O5: Self-Harm.

Should not

- Encourage people to harm themselves.
- Romanticize or condone self-harm or suicide.
- Provide information regarding the methods of suicide or self-harm.
- Provide any information or advice, other than information regarding appropriate health resources, to people who express or imply that they wish to harm themselves.

Can

- Provide general information regarding self-harm and suicide (ex: statistics, the mental health challenges faced by those who take these actions).

Should

- Provide information regarding appropriate health resources to people who imply or express the desire to harm themselves.

<END UNSAFE CONTENT CATEGORIES>

<BEGIN CONVERSATION>

\$prompt

<END CONVERSATION>

Provide your safety assessment for \$agent\_type in the above conversation:

- First line must read 'safe' or 'unsafe'.
- If unsafe, a second line must include a comma-separated list of violated categories.

## CoT - Chain of Thought

- YT: [Cursor?????—?????AI?AI??? - YouTube](#)

AI{XXXX}Chain-of-ThoughtAI

AI(Chain-of-ThoughtAI

## Cheat Sheet

- [the\\_prompt\\_engineering\\_cheat\\_sheet.pdf](#)

# The ChatGPT Cheat Sheet V2

## Basic Structure of a Prompt:

Acting as a [ROLE] perform [TASK] in [FORMAT]

### Act as a [ROLE]

Marketer  
Advertiser  
Copywriter  
Accountant  
Lawyer  
Analyst  
Ghostwriter  
Project Manager  
Therapist  
Journalist  
Chief Financial Officer  
Prompt Engineer

### Create a [TASK]

Headline  
Presentation / Webinar  
Essay  
Book Outline  
Email Sequence  
Social Media Post  
Product Description  
Cover Letter / Resume  
Blog Post / Article  
Summary  
Tiktok, YT Reel - Video Script  
Sales Page / Ad Copy

### show as [FORMAT]

A Table  
A list  
Summary  
HTML  
Code  
Spreadsheet  
CSV file  
Plain Text file  
Rich Text  
PDF  
Markdown  
Word Cloud

## Prompt Chaining

- 1 - Provide me with the ideal outline for an effective & persuasive blog post.
- 2 - Write a list of Engaging Headlines for this Blog post based on [Topic].
- 3 - Write a list of Subheadings & Hooks for this same blog post
- 4 - Write a list of Keywords for this Blog.
- 5 - Write a list of Compelling Call-to-Actions for the blog post
- 6 - Combine the best headline with the best Subheadings, Hooks, Keywords and Call-to-Action to write a blog post for [topic]
- 7 - Re-write this Blog Post in the [Style], [Tone], [Voice] and [Personality].

## Tree of Thought Prompt

Three experts with exceptional logical thinking skills are collaboratively answering a question using a tree of thoughts method.

Each expert will share their thought process in detail, taking into account the previous thoughts of others and admitting any errors. They will iteratively refine and expand upon each other's ideas, giving credit where it's due.

The process continues until a conclusive answer is found. Use step by step thinking & organize the entire response in detailed steps in a markdown table format. Once this table is complete, provide a summary of the proposed recommendations. My question is...

## Mind-Blowing Meta Prompt

What are the absolute coolest, most mind-blowing, out of the box, ChatGPT prompts that will really show off the power of ChatGPT? Give me 10.

The prompts should focus on combining [topic1] & [topic2] for [main outcome].

## Mimic Your Writing Style

Acting as an Expert Ghostwriter assess the tone, style, voice, personality, Perplexity & Burstiness used in the following sample content so you can mimic this.

Perplexity measures the complexity of text. Separately, burstiness compares the variations of sentences. Humans tend to write with greater burstiness, for example, with some longer or complex sentences alongside shorter ones.

Provide a table outlining the description for Tone, Style, Voice, Personality, Perplexity & Burstiness based on the sample content. When the table is finished, I will need the assessment combined into a statement designed in a way that it could be used in a prompt to get ChatGPT to simulate my own writing.

## Over-The-Top Creative Copy

Take this statement and make it explode with hyperbole and copy-writing cinematography.

The statement is:  
[insert statement]

These prompts are designed to be used with ChatGPT Pro (GPT4). Using them on ChatGPT 3.5 (free version) might not generate the highest quality outcomes.

Made: June 2023 @shaneozard



# Function Calling

LLM?Large Language Model??????? Function  
Calling????????????LLM????????????????????????????????  
????  
Function Calling ??????LLM ???????? reconocize  
????????????????????????????????????LLM?LLM  
????????????????????????????????

??  
????????LLM????????LLM ??????????????????API????????  
LL????????????????????

- ??
- Function Calling ?????????????
- ?????LLM ?????????????????????
  - API ???LLM ??????API?????API?????API????????
  - ?????LLM ?????????????????????
  - ?????LLM ?????????????????????business logic ??

???Function Calling ? LLM ????????????????????? Complex ????????

## Tutorials

- [9 Best Local LLM For Function Calling \(Open Source\) \[2024\] - Sci Fi Logic](#)

## Models

- [Berkeley Function Calling Leaderboard \(aka Berkeley Tool Calling Leaderboard\)](#)

# Python Coding

## LLM Model API

### LMStudio

```
from langchain.llms import OpenAI

#set llm for langchain using model from lmstudio
llm = OpenAI(
 openai_api_base='http://localhost:1234/v1',
 openai_api_key='NULL'
)
```

```
import streamlit as st
from openai import OpenAI

Set up the Streamlit App
st.title("ChatGPT Clone using Llama-3 🦙")
st.caption("Chat with locally hosted Llama-3 using the LM Studio 🦙")

Point to the local server setup using LM Studio
client = OpenAI(base_url="http://localhost:1234/v1", api_key="lm-studio")

Initialize the chat history
if "messages" not in st.session_state:
 st.session_state.messages = []

Display the chat history
for message in st.session_state.messages:
 with st.chat_message(message["role"]):
 st.markdown(message["content"])

Accept user input
if prompt := st.chat_input("What is up?"):
 # Add user message to chat history
```



```

st.session_state.messages.append({"role": "user", "content": prompt})
Display user message in chat message container
with st.chat_message("user"):
 st.markdown(prompt)
Generate response
response = client.chat.completions.create(
 model="lmstudio-community/Meta-Llama-3-8B-Instruct-GGUF",
 messages=st.session_state.messages, temperature=0.7
)
Add assistant response to chat history
st.session_state.messages.append({"role": "assistant", "content": response.choices[0].message.content})
Display assistant response in chat message container
with st.chat_message("assistant"):
 st.markdown(response.choices[0].message.content)

```

## GPT

```

from langchain_openai import ChatOpenAI

llm = ChatOpenAI(
 model="gpt-4o",
 temperature=0,
 max_tokens=None,
 timeout=None,
 max_retries=2,
 # api_key="...",
 # base_url="...",
 # organization="...",
 # other params...
)

```

## Ollama

```

from langchain_community.llms import Ollama

llm = Ollama(model="llama2:13b")
llm.invoke("The first man on the moon was ... think step by step")

```

## Chunking/Splitting

??????

```
Unicode []
\u3002 []
\uff0c []
Get Unicode for specific character
>>> ' '.encode('unicode-escape') # for py3
>>> list(u' ') # for py2

import re
text = "[]"
chunks = re.split('[\u3002\u00ff0c]', text)
#print("\n\n".join([chunk for chunk in chunks]))
for chunk in chunks:
 print("---" * 10)
 print(chunk)
```

??????

```
\s+ []
chunks = re.split(r'(?<=[.?!])\s+', text)
```

# LLM Engine

A software that can load the LLM Models

LLM Engine

# Open WebUI

A Web UI Tool for Ollama

## URLs

- <https://openwebui.com/>
- GitHub: <https://github.com/open-webui/open-webui>
- Docs: <https://docs.openwebui.com/>

## Installation

Installing Both Open WebUI and Ollama Together:

```
With GPU Support
docker run -d -p 3000:8080 --gpus=all \
 -v ollama:/root/.ollama \
 -v open-webui:/app/backend/data \
 --name open-webui \
 --restart always \
 ghcr.io/open-webui/open-webui:ollama
```

```
For CPU only
docker run -d -p 3000:8080 \
 -v ollama:/root/.ollama \
 -v open-webui:/app/backend/data \
 --name open-webui \
 --restart always \
 ghcr.io/open-webui/open-webui:ollama
```



LLM Engine

# Kuwa Gen AI OS

[illegible]

1. ? ??????GenAI?????????????????Windows?Linux
2. ? ?????????? Prompt ?????/??/??????????
3. ? ?????? Prompt x RAGs x Bot x ?? x ??/GPUs????????
4. ? ?????????????????????????????????????
5. ? ?????????????????????????????????????

## URLs

- Kuwa AI | Kuwa AI
- ??? | Kuwa AI
- Kuwa GenAI OS - ?? | Kuwa AI

LLM Engine

# AnythingLLM

The ultimate AI business intelligence tool. Any LLM, any document, full control, full privacy.

AnythingLLM is a "**single-player**" application you can install on any Mac, Windows, or Linux operating system and get local LLMs, RAG, and Agents with little to zero configuration and full privacy.

AnythingLLM

You can install AnythingLLM as a Desktop Application, Self Host it locally using Docker and Host it on cloud (aws, google cloud, railway etc..) using Docker

You want AnythingLLM Desktop if...

- You want a one-click installable app to use local LLMs, RAG, and Agents locally
- You do not need multi-user support
- Everything needs to stay only on your device
- You do not need to "publish" anything to the public internet. Eg: Chat widget for website

## URLs

- <https://useanything.com/>
- Doc: <https://docs.useanything.com/>
- <https://mintplex-labs.github.io/anything-llm/>

LLM Engine

# Ollama

Run Llama 3, Phi 3, Mistral, Gemma, and other models. Customize and create your own.

- <https://ollama.com/>
- GitHub: <https://github.com/ollama/ollama>
- Doc: <https://github.com/ollama/ollama/tree/main/docs>
- Video: <https://www.youtube.com/watch?v=88180805570> - YouTube

## Installation

### ollama + open webui

```
mkdir ollama-data download open-webui-data
```

docker-compose.yml:

```
services:
 ollama:
 image: ollama/ollama:latest
 ports:
 - 11434:11434
 volumes:
 - ./ollama-data:/root/.ollama
 - ./download:/download
 container_name: ollama
 pull_policy: always
 tty: true
 restart: always
 networks:
 - ollama-docker

 open-webui:
 image: ghcr.io/open-webui/open-webui:main
 container_name: open-webui
```



```
volumes:
 - ./open-webui-data:/app/backend/data
depends_on:
 - ollama
ports:
 - 3000:8080
environment:
 - 'OLLAMA_BASE_URL=http://ollama:11434'
extra_hosts:
 - host.docker.internal:host-gateway
restart: unless-stopped
networks:
 - ollama-docker

networks:
 ollama-docker:
 external: false
```

## ollama

```
mkdir ollama-data download

docker run --name ollama -d --rm \
 -v $PWD/ollama-data:/root/.ollama \
 -v $PWD/download:/download \
 -p 11434:11434 \
 ollama/ollama
```

## Models

### List Models Installed

```
ollama list
```

### Load a GGUF model manually

```
ollama create <my-model-name> -f <modelfile>
```

# Page Assist

[Page Assist](#) is an open-source Chrome Extension that provides a Sidebar and Web UI for your Local AI model.

- Video: [This Chrome Extension Surprised Me - YouTube](#)

LLM Engine

# LM Studio

Discover, download, and run local LLMs.

With LM Studio, you can ...

- ? - Run LLMs on your laptop, entirely offline
- ? - Use models through the in-app Chat UI or an OpenAI compatible local server
- ? - Download any compatible model files from HuggingFace repositories
- ? - Discover new & noteworthy LLMs in the app's home page

## URLs

- <https://lmstudio.ai/>
- Doc: <https://lmstudio.ai/docs>

# OpenLLM

OpenLLM helps developers run any open-source LLMs, such as Llama 2 and Mistral, as OpenAI-compatible API endpoints, locally and in the cloud, optimized for serving throughput and production deployment.

- GitHub: <https://github.com/bentoml/OpenLLM>
- CoLab: <https://colab.research.google.com/github/bentoml/OpenLLM/blob/main/examples/llama2.ipynb>

## Install

Recommend using a Python Virtual Environment

```
pip install openllm
```

## Start a LLM Server

```
openllm start microsoft/Phi-3-mini-4k-instruct --trust-remote-code
```

To interact with the server, you can visit the web UI at <http://localhost:3000/> or send a request using curl. You can also use OpenLLM's built-in Python client to interact with the server:

```
import openllm

client = openllm.HTTPClient('http://localhost:3000')
client.generate('Explain to me the difference between "further" and "farther"')
```

## OpenAI Compatible Endpoints

```
import openai

client = openai.OpenAI(base_url='http://localhost:3000/v1', api_key='na') # Here the server is running on
0.0.0.0:3000
```

```
completions = client.chat.completions.create(
 prompt='Write me a tag line for an ice cream shop.', model=model, max_tokens=64, stream=stream
)
```

## LangChain

```
from langchain.llms import OpenLLMAPI

llm = OpenLLMAPI(server_url='http://44.23.123.1:3000')
llm.invoke('What is the difference between a duck and a goose? And why there are so many Goose in Canada?')

streaming
for it in llm.stream('What is the difference between a duck and a goose? And why there are so many Goose in
Canada?'):
 print(it, flush=True, end='')

async context
await llm.ainvoke('What is the difference between a duck and a goose? And why there are so many Goose in
Canada?')

async streaming
async for it in llm.astream('What is the difference between a duck and a goose? And why there are so many
Goose in Canada?'):
 print(it, flush=True, end='')
```

# Benchmark

Benchmark for LLM engines

## bench.py

- [ollama ??????? vllm ??????????????\\_ollama vllm-CSDN??](#)
- YT: [ollama vs vllm - ??????? ollama ? vllm ?????? - YouTube](#)

```
import aiohttp
import asyncio
import time
from tqdm import tqdm

import random

questions = [
 "Why is the sky blue?", "Why do we dream?", "Why is the ocean salty?", "Why do leaves change color?",
 "Why do birds sing?", "Why do we have seasons?", "Why do stars twinkle?", "Why do we yawn?",
 "Why is the sun hot?", "Why do cats purr?", "Why do dogs bark?", "Why do fish swim?",
 "Why do we have fingerprints?", "Why do we sneeze?", "Why do we have eyebrows?", "Why do we have hair?",
 "Why do we have nails?", "Why do we have teeth?", "Why do we have bones?", "Why do we have muscles?",
 "Why do we have blood?", "Why do we have a heart?", "Why do we have lungs?", "Why do we have a brain?",
 "Why do we have skin?", "Why do we have ears?", "Why do we have eyes?", "Why do we have a nose?",
 "Why do we have a mouth?", "Why do we have a tongue?", "Why do we have a stomach?", "Why do we have intestines?",
 "Why do we have a liver?", "Why do we have kidneys?", "Why do we have a bladder?", "Why do we have a pancreas?",
 "Why do we have a spleen?", "Why do we have a gallbladder?", "Why do we have a thyroid?", "Why do we have adrenal glands?",
 "Why do we have a pituitary gland?", "Why do we have a hypothalamus?", "Why do we have a thymus?",
 "Why do we have lymph nodes?",
 "Why do we have a spinal cord?", "Why do we have nerves?", "Why do we have a circulatory system?", "Why do we have a respiratory system?",
 "Why do we have a digestive system?", "Why do we have an immune system?"
```

]

```
async def fetch(session, url):
 """
 Args:
 session (aiohttp.ClientSession): aiohttp session
 url (str): URL

 Returns:
 tuple: (tokens, request_time)
 """
 start_time = time.time()

 # Choose a random question
 question = random.choice(questions) # <--- random choice

 # Format the question
 # question = questions[0] # <--- first question

 # Create the payload
 json_payload = {
 "model": "llama3:8b-instruct-fp16",
 "messages": [{"role": "user", "content": question}],
 "stream": False,
 "temperature": 0.7 # 0.7 temperature
 }

 async with session.post(url, json=json_payload) as response:
 response_json = await response.json()
 end_time = time.time()
 request_time = end_time - start_time
 completion_tokens = response_json['usage']['completion_tokens'] # completion tokens
 return completion_tokens, request_time

async def bound_fetch(sem, session, url, pbar):
 # semaphore
 async with sem:
 result = await fetch(session, url)
 pbar.update(1)
 return result
```

```

async def run(load_url, max_concurrent_requests, total_requests):
 """
 """

 load_url (str): URL
 max_concurrent_requests (int):
 total_requests (int):

 tuple: token

 """

 # Semaphore
 sem = asyncio.Semaphore(max_concurrent_requests)

 # HTTP
 async with aiohttp.ClientSession() as session:
 tasks = []

 #
 with tqdm(total=total_requests) as pbar:
 #
 for _ in range(total_requests):
 #
 task = asyncio.ensure_future(bound_fetch(sem, session, load_url, pbar))
 tasks.append(task) #

 #
 results = await asyncio.gather(*tasks)

 # token
 completion_tokens = sum(result[0] for result in results)

 #
 response_times = [result[1] for result in results]

 # token
 return completion_tokens, response_times

if __name__ == '__main__':

```



```

import sys

if len(sys.argv) != 3:
 print("Usage: python bench.py <C> <N>")
 sys.exit(1)

C = int(sys.argv[1]) # [] [] [] []
N = int(sys.argv[2]) # [] [] []

vllm [] ollama [] [] openai [] api [] [] [] [] [] []
url = 'http://localhost:11434/v1/chat/completions'

start_time = time.time()
completion_tokens, response_times = asyncio.run(run(url, C, N))
end_time = time.time()

[] [] [] []
total_time = end_time - start_time

[] [] [] [] [] [] [] []
avg_time_per_request = sum(response_times) / len(response_times)

[] [] [] [] token [] []
tokens_per_second = completion_tokens / total_time

print(f'Performance Results:')
print(f' Total requests : {N}')
print(f' Max concurrent requests : {C}')
print(f' Total time : {total_time:.2f} seconds')
print(f' Average time per request : {avg_time_per_request:.2f} seconds')
print(f' Tokens per second : {tokens_per_second:.2f}')

```

# More

## LocalAI

LocalAI is the free, Open Source OpenAI alternative. LocalAI act as a drop-in replacement REST API that's compatible with OpenAI API specifications for local inferencing. It allows you to run LLMs, generate images, audio (and not only) locally or on-prem with consumer grade hardware, supporting multiple model families and architectures.

- [Overview | LocalAI documentation](#)
- GitHub: <https://github.com/mudler/LocalAI>

## OpenAI Proxy

Proxy Server to call 100+ LLMs in a unified interface & track spend, set budgets per virtual key/user

Features:

- **Unified Interface:** Calling 100+ LLMs Huggingface/Bedrock/TogetherAI/etc. in the OpenAI ChatCompletions & Completions format
- **Cost tracking:** Authentication, Spend Tracking & Budgets Virtual Keys
- **Load Balancing:** between Multiple Models + Deployments of the same model - LiteLLM proxy can handle 1.5k+ requests/second during load tests.

```
“ ???? LLM
??
?? OpenAI Proxy ??????????????????
 • ?? API ???????
 • ???
 • ???
```

- Doc: [https://docs.litellm.ai/docs/simple\\_proxy](https://docs.litellm.ai/docs/simple_proxy)

## Xinference

Xorbits Inference (Xinference) is an open-source platform to streamline the operation and integration of a wide array of AI models. With Xinference, you're empowered to run inference using any open-source LLMs, embedding models, and multimodal models either in the cloud or on your own premises, and create robust AI-driven applications.

- [Welcome to Xinference! — Xinference](#)
- GitHub: <https://github.com/xorbitsai/inference>

## NVIDIA NIM

Explore the latest community-built AI models with an API optimized and accelerated by NVIDIA, then deploy anywhere with NVIDIA NIM inference microservices.

- [NVIDIA NIM for Deploying Generative AI | NVIDIA](#)
- Doc: [Introduction - NVIDIA Docs](#)
- Models: [google / gemma-7b](#)
- YT: [Self-Host and Deploy Local LLAMA-3 with NIMs - YouTube](#)

## text-generation-webui

A Gradio web UI for Large Language Models.

???????????????? API?

???????? AI ??

- Chat
- Fine-Tune Model
- Multiple model backends: Transformers, llama.cpp (through llama-cpp-python), ExLlamaV2, AutoGPTQ, AutoAWQ, GPTQ-for-LLaMa, QuIP#.
- OpenAI-compatible API server with Chat and Completions endpoints

??

- GitHub: <https://github.com/oobabooga/text-generation-webui>
- GitHub: <https://github.com/Atinoda/text-generation-webui-docker>
- [?????LLMs???? ???? \(?\) - HackMD](#)
  - YOUTUBE [[?? TextGen](#)]
  - YOUTUBE [[????????](#)]
  - YOUTUBE [[??AI??](#)]
  - YOUTUBE [[????](#)]

- YOUTUBE [??????]
- ??? [Z01\\_TextGen\\_Colab.ipynb](#)
- ?????????? (account:nchc password:nchc) ?????

# AI Translator

?? LLM ??????

## PDFMathTranslate

???????? PDF ?????????????? Google/DeepL/Ollama/OpenAI ???

- GitHub: <https://github.com/Byaidu/PDFMathTranslate>

## LiteLLM + ???? + ???

- GitHub: [https://github.com/wshuyi/workflows\\_with\\_litellm\\_pub](https://github.com/wshuyi/workflows_with_litellm_pub)

## Translation Agent

- GitHub: <https://github.com/andrewyng/translation-agent>

## RTranslator

RTranslator is an ([almost](#)) open-source, free, and offline real-time translation app for Android.

- GitHub: <https://github.com/niedev/RTranslator>

## ?????

????????????????????????????????AI ?????????????????????????????????

- [?????- ??????????\\_PDF??????](#)
- [FluentRead](#) - ???????????????????

## ??/??

## pyVideoTrans??????

??????+????+????+?? = ???????????

- [pyVideoTrans | pyVideoTrans](#)
- GitHub: <https://github.com/jianchang512/pyvideotrans>

## VideoLingo

Netflix????????????????????????????????AI???

- [VideoLingo](#)
- GitHub: <https://github.com/Huanshere/VideoLingo>

## SubtitleEdit

?? .Net ????? Windows ???AI ??/????????????????

- [Nikse - Subtitle Edit - Help/FAQ](#)
- GitHub: <https://github.com/SubtitleEdit/subtitleedit>
- YT: [????????????????????|????|Subtitle Edit ????|PotPlayer?VLC?MPV - YouTube](#)
- YT: [??????Subtitle Edit???????????????????? - YouTube](#)

## bilingual\_book\_maker

?????

- GitHub: [https://github.com/yihong0618/bilingual\\_book\\_maker](https://github.com/yihong0618/bilingual_book_maker)

## MTranServer

????????????????????????????

- <https://github.com/xxnuo/MTranServer>

## AiNiece

?????Ai????????????????RPG SLG???Epub TXT???Srt Vtt Lrc???Word MD ??????????

- <https://github.com/NEKOparapa/AiNiece>
- YT: [???????????????? AI ????????????????????? - YouTube](#)

# Jupyter Notebook

## Installation

With pip

```
pip install notebook
```

## Python Virtual Environment

With Python Venv

```
mkdir my-rag
cd my-rag
python -m venv .venv
source .venv/bin/activate
(my-rag)> pip install --upgrade pip
(my-rag)> pip install notebook
(my-rag)> jupyter notebook
```

With Conda

```
conda create -n my-rag python=3.10
conda activate my-rag
(my-rag)> pip install --upgrade pip
(my-rag)> pip install notebook
(my-rag)> jupyter notebook
```

UI ?????????????????? ipykernel?

```
mkdir my-rag
cd my-rag
python -m venv .venv
source .venv/bin/activate
(my-rag)> pip install --upgrade pip
(my-rag)> pip install ipykernel
(my-rag)> ipython kernel install --user --name="my-rag-kernel"
```

## Resources

- [Online Test](#)
- [nbviewer](#) - A simple way to share Jupyter Notebooks

## CoLab by Google

- [Google Colab](#) is Jupyter Notebooks that are hosted by Google's Colaboratory
- [Overview of Colaboratory Features](#)
- [Installing and using Python libraries in Colab](#)
- [Using Google Colab with GitHub](#)
- [Google Colab Tips for Power Users](#)



# LangChain

# LangChain

[illegible]

Python ? JavaScript ??????????????????REST API? LangServe?????????????

LangSmith?LangChain ?????????????????????????????????????????????????????????????

- [Introduction | ??? LangChain](#)
- [LangChain????AI????????LLM???? - ALPHA Camp](#)
- GitHub: <https://github.com/langchain-ai/langchain>
- Hub: [LangSmith \(langchain.com\)](https://langchain.com)
- ??? [sugarforever/wtf-langchain](#)
- [CookBook](#)
- [LangChain Templates](#)

# LangSmith

## LangChain ?????????????????????? RAG ????????

- <https://github.com/langchain-ai/langsmith-cookbook>
- [LangChain ????? LangSmith ????? - MyApollo](#)
- [??LangSmith?????????\(LLM\)???????????????? - ?? - ????? - ????](#)

# RAG

- [Learn RAG with Langchain](#) (ipynb)
- [LangChain: A Complete Guide & Tutorial](#) (nanonets.com)
- [Meta-Llama CookBook for RAG](#) (ipynb)
- [LangChain and Streamlit RAG | Medium](#)
  - GitHub: <https://github.com/streamlit/example-app-langchain-rag>

## Retrievers in LCEL

```
from langchain_openai import ChatOpenAI
from langchain_core.prompts import ChatPromptTemplate
from langchain_core.output_parsers import StrOutputParser
```

```

from langchain_core.runnables import RunnablePassthrough

template = """Answer the question based only on the following context:

{context}

Question: {question}
"""

prompt = ChatPromptTemplate.from_template(template)
model = ChatOpenAI()

def format_docs(docs):
 return "\n\n".join([d.page_content for d in docs])

chain = (
 {"context": retriever | format_docs, "question": RunnablePassthrough()}
 | prompt
 | model
 | StrOutputParser()
)

chain.invoke("What did the president say about technology?")

```

## ChatPromptTemplate

```

few_shot_examples = [
 {"input": "Could you please clarify the terms outlined in section 3.2 of the contract?",
 "output": "Certainly, I will provide clarification on the terms in section 3.2."},
 {"input": "We are interested in extending the payment deadline to 30 days instead of the current 15 days. Additionally, we would like to add a clause regarding late payment penalties.",
 "output": "Our request is to extend the payment deadline to 30 days and include a clause on late payment penalties."},
 {"input": "The current indemnification clause seems too broad. We would like to narrow it down to cover only direct damages and exclude consequential damages. Additionally, we propose including a dispute resolution clause specifying arbitration as the preferred method of resolving disputes."},
 {"input": "We suggest revising the indemnification clause to limit it to covering direct damages and excluding

```

consequential damages.

Furthermore, we recommend adding a dispute resolution clause that specifies arbitration as the preferred method of resolving disputes.""}},

{"input": "I believe the proposed changes are acceptable.",

"output": "Thank you for your feedback. I will proceed with implementing the proposed changes."}

]

few\_shot\_template = ChatPromptTemplate.from\_messages(

[

    ("human", "{input}"),

    ("ai", "{output}")

]

)

few\_shot\_prompt = FewShotChatMessagePromptTemplate(

    example\_prompt=few\_shot\_template,

    examples=few\_shot\_examples,

)

print(few\_shot\_prompt.format())

# Loader

## Web

```
from langchain_community.document_loaders import WebBaseLoader
loader = WebBaseLoader(
 web_paths=("https://lilianweng.github.io/posts/2023-06-23-agent/"),
 bs_kwargs=dict(
 parse_only=bs4.SoupStrainer(
 class_=("post-content", "post-title", "post-header")
)
),
)
docs = loader.load()
```

## Text

```
from langchain_community.document_loaders import DirectoryLoader
loader = DirectoryLoader("../", glob="**/*.md")
```

```
docs = loader.load()
len(docs)
print(docs[0].page_content[:100])
```

```
from langchain.document_loaders import TextLoader

dataset_folder_path='/path/to/dataset/'
documents=[]
for file in os.listdir(dataset_folder_path):
 loader=TextLoader(dataset_folder_path+file)
 documents.extend(loader.load())

print(documents[:3])
```

## Markdown

```
"""
%pip install "unstructured[md]"
"""

from langchain_community.document_loaders import UnstructuredMarkdownLoader
markdown_path = "../././README.md"
loader = UnstructuredMarkdownLoader(markdown_path)

data = loader.load()
assert len(data) == 1
readme_content = data[0].page_content
print(readme_content[:3])
```

## PDF + Text

```
from langchain_community.document_loaders import TextLoader
from langchain_community.document_loaders import PyPDFLoader

documents = []
for filename in SAMPLEDATA:
 path = os.path.join(os.getcwd(), filename)

 if filename.endswith(".pdf"):
 loader = PyPDFLoader(path)
 new_docs = loader.load_and_split()
```

```

 print(f"Processed pdf file: {filename}")
 elif filename.endswith(".txt"):
 loader = TextLoader(path)
 new_docs = loader.load_and_split()
 print(f"Processed txt file: {filename}")
 else:
 print(f"Unsupported file type: {filename}")

 if len(new_docs) > 0:
 documents.extend(new_docs)

SAMPLEDATA = []

print(f"\nProcessing done.")

```

????

?????

```

Helper function for printing docs
def pretty_print_docs(docs):
 print(
 f"\n{'-' * 100}\n".join(
 [f"Document {i+1}:\n\n" + d.page_content for i, d in enumerate(docs)]
)
)

```

# Finance AI

## OpenBB

Investment research made easy with AI.

- [Investment Research | OpenBB](#)
- GitHub: [openbb-agents](#)
- GitHub: [OpenBB Platform](#)

## StockBot

- GitHub: <https://github.com/bklieger-groq/stockbot-on-groq>

## FinGPT

- [AI4Finance-Foundation.org - FinGPT, FinRobot, FinRL, AI Agent, FinLLMs, Open-Source Libraries](#)
- <https://github.com/AI4Finance-Foundation/FinGPT>

# Semantic Kernel

Semantic Kernel ?????????????? AI ?????(??)????????? AI ?????????? AI ?????????? C#?Python  
? Java ?????????????????????????????????????????????????????????????

?????

- [Introduction to Semantic Kernel | Microsoft Learn](#)
- [Video][??] [? .NET ??? - ???????? Microsoft ???????????](#)
- GitHub: <https://github.com/microsoft/semantic-kernel>

?????

- [Semantic Kernel????????????-??OpenAI?AOAI???](#)
- [Video][?????] <https://www.youtube.com/watch?v=sByJwdJhc3s&t=45s>

# Legal AI

?? AI

## Legal Assistant

- [ailaw](#) - AI ????
- [????](#) - ?????????????????????LLM
  - [????????????????LLM????????GAI????? | iThome](#)



# NVIDIA

## Jetson Orin Nano Super

### Getting started

NVIDIA

- [Jetson Orin Nano Super Developer Kit | NVIDIA](#)
- [JetPack SDK | NVIDIA Developer](#)
- [SDK Manager | NVIDIA Developer](#)

Other sites

- [NVIDIA Jetson Orin Nano Super Developers Kit – Getting Started](#)
- [Install Ubuntu on NVIDIA Jetson | Ubuntu](#)

## Hardware for AI

- [Best Budget GPU for AI in Your Home Server 2025 - Virtualization Howto](#)

# Image Generation

## Tutorials

- [5 Open-source Local AI Tools for Image Generation I Found Interesting](#)