

Collaborate With Als

Introduction to Prompt Engineering for {Learning, Writing, Coding, and Designing} with Als





Language Model (LM)

Model that predicts next token

Token: Word/Subword => Number: Vector



Word/Subword -> Embedding/Token

Model = Function -> Computable: work with Number

Neural Network



Long Time Ago: RNN



Transformer: Encoder + Decoder



Transformer



Intuition: Query Key Value



Line 1: Other modalities





Aside: Image Generation



Aside: CGAN





ICE R

Stable Diffusion



Line 2: Scaling Law

More data to the model -> Model must be bigger

The blessings of scale

Al training runs, estimated computing resources used Floating-point operations, selected systems, by type, log scale



Sources: "Compute trends across three eras of machine learning", by J. Sevilla et al., arXiv, 2022; Our World in Data

Large Language Model (LLMs)

Emergent Abilities

In-context learning -> perform unseen tasks during inferencing
650 tasks

500M parameters+

PaLM 540B paramters

GPT-3.5 175B parameters

We Are In The Age of Als Boom

IEE R



Ref: A Survey of Large Language Models

Every LLM is different!



Ref: <u>A Survey of Large Language Models</u>

Model Card

Prompt Engineering Is A New Google Skills

Prompt Engineering: ways to **interact** with LLMs to get **desired** results

- Giving instruction (zero-shot prompting)
- Role prompting

Learn more: <u>https://learnprompting.org</u>



Giving Instructions: General Tips

- Write **clear** instructions
- Be **explicit** about the desired output (*in some cases*)
- Explicitly state what is **not desired**
- Give more **context**!
- Begin with **verb**
- Try a lot! Even a small change can have a big impact



Generate an email to a Professor to let him know that I am sick and cannot present in the next week.

Generate a polite email to a Professor to let him know that I am sick and cannot present in the next week.

Verb I Modifier? I Output I Context



Subject: Unable to present in next week's class

Dear Professor [Name],

I hope this email finds you well. I am writing to let you know that unfortunately, I am not feeling well and will not be able to present in next week's class as scheduled. I apologize for any inconvenience this may cause and I would like to assure you that I am taking all the necessary measures to recover as soon as possible.

I am disappointed that I will not be able to present my work as planned, but I am confident that my classmates will do an excellent job in my absence. If there are any assignments or materials that I can complete remotely, I would be happy to do so.

I will keep you informed of my recovery and availability to return to class. Thank you for your understanding and support during this time.

Sincerely,

[Your Name]

Give Context via Role

Instead of explicitly stating all the context, giving a **role** to a LLM can help a lot

You are a copywriter for Apple. Write 5 copies for the new iPhone.



You are a copywriter for Apple. Write 5 copies for the new iPhone.

Role | Output | Context



1. The new iPhone is here, and it's better than ever. With its sleek design, advanced camera, and lightning-fast processing speed, it's the perfect phone for anyone who demands the best.

2. Upgrade your life with the new iPhone. With features like Face ID, wireless charging, and a stunning OLED display, it's the ultimate smartphone experience.

3. The new iPhone is more than just a phone. It's a powerful tool for creativity, productivity, and staying connected with the people you care about. Get yours today and discover what's possible.

4. With the new iPhone, you'll never miss a moment. Its cutting-edge camera technology and advanced image processing make it easy to capture stunning photos and videos, no matter where you are.

5. Say hello to the future with the new iPhone. Featuring the latest technology and a stunning design, it's the ultimate smartphone for anyone who wants to stay ahead of the curve. Get yours today and experience the next generation of mobile computing.

Zero-shot Prompting

Few-shot Prompting

Give examples to LLMs



Geneated Knowledge Prompting

Chain-of-Thought Prompting

Zero-shot Chain-of-Thought Prompting

Self-consistency

Least to Most Prompting





Primming Prompt

First prompt will influence the rest of the conversation



Applications

Coding

- PoC
- Fixing bugs
- Explain
- Convert to another language

Writing

- Email
- Report
- Blog

Brainstorming

Explain

Quizz



How I Learn With Als

Typeset.io







35 image: Flaticon.cor

Typeset.io: A Companion for Reading Papers

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"	Published in Transactions on Machine Learning Research (11/2022)	The paper describes a general-purpose ager Gato, which is a single, large, transformer ser			
0	A Generalist Agent	model that can perform multiple tasks and work with different embodiments. The agent can output text, joint torques, button presses, or other tokens basecRead more			
	Scott Reed ^{*,j} , Konrad Żołna [*] , Emilio Parisotto [*] , Sergio Gómez Colmenarejo [†] , Alexander Novikov, Gabriel Barth-Maron, Mai Giménez, Yury Sulsky, Jackie Kay, Jost Tobias Springenberg, Tom Eccles, Jake Bruce, Ali Razavi, Ashley Edwards, Nicolas Heess, Yutian Chen, Raia Hadsell, Oriol Vinyals, Mahyar Bordbar and Nando de Freitas [*] ,	15 ⊊I E Save as note ← Follow up → ¥	2:28 pm		
	*Equal contributions, ¹ Equal senior contributions, All authors are affiliated with DeepMind reedscot@deepmind.com Reviewed on OpenReview: https://openreview.net/forun?id=likK0kHjvj	How the authors	2:28 pm		
	Abstract Inspired by progress in large-scale language modeling, we apply a similar approach towards	The authors trained the Gato model using a of supervised and unsupervised learning. The large dataset of diverse tasks and embodime the model, and also used self-supervised lea	hey used a ents to train		1
	building a single generalist agent beyond the realm of text outputs. The agent, which we refer to as Gato, works as a multi-modal, multi-task, multi-embodiment generalist policy. The same network with the same weights can play Atari, caption images, chat, stack blocks with a real robot arm and much more, deciding based on its context whether to output text,	pretrain the model on a large corpus of text of 16° Q°	daRead more		2
	joint torques, button presses, or other tokens. In this report we describe the model and the data, and document the current capabilities of Gato.	🗷 Save as note 🕈 Follow up 🔿 🎐			
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		Explain Abstract of this paper in 2 lines, W	+11 more ^		
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I acknowledge that ChatGPT API or ChatGPT with plugins and Bing may be able to complete this task as well.





How I Write With Als

ChatGPT









Common Prompts That I Used

Correct grammatical errors and improve it. {Text}

Paraphase the following {sentences, paragraphs}. {Text}

Suggest alternatives for each [BLANK]. {Text containg [BLANK]s}



How I Code With Als

GitHub Copilot I ChatGPT









GitHub Copilot: Free for Students!

TS sentiments.ts	-∞ write_sql.go	narse_expenses.py	🚰 addresses.rb	
1 #!/usr/bin	/env ts-node			
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	etch } from "f	etch-h2";		
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Common Prompts That I Used

Fix and explain bugs in the following code snippet.

{Code}

Convert the following {Language#1} code snippet into {Languge#2}.

{Code}





How I Design With Als

Stable Diffusion I Image Creator I DALL-E 2











Stable Diffusion: Hard to Give a Good Results

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😩 Hugging Face 🔍 Search models, datasets, users	🐨 Mode	dels 🗏 Datasets 📓 Spaces 📫 Docs 🚔 Solutions Pricing ~∃ 🛛 🦲
:: Spaces: 😑 stabilityai/stable-diffusion 🖻 🔍	Plike 6.87k • Running	App I≣ Files Community 14331
	Stable Diffusion 2.1 Dem Stable Diffusion 2.1 is the latest text-to-image model from StabilityAl. <u>Access Stable</u> For faster generation and API access you can try <u>DreamStudio I</u>	ble Diffusion 1 Space here
		Generate image
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	Ø	
	•	Share to community
	Advanced settings	4
	≣ Examples	
	A high tech solarpunk utopia in the Amazon rainforest A pikachu fine dining with	
Display a menu	A mecha robot in a favela in expressionist style an insect robot preparing a delir A small cabin on top of a snowy mountain in the style of Disney, artstation	

Image Creator (Bing AI)



DALL-E 2: SOTA!?

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				0
	Start with a detailed description Surprise me			
	An Impressionist oil painting of sunflowers in a purple vase			Generate
		Or, upload an image to edit		
Display a menu				

Example of Prompt and Images

A professional company logo in logotype style with three letters I, C, and E. The logo has a futuristic vibe and represents the objective of the lab about game and artificial intelligence.





Example of Prompt and Images

A professional company logo in logotype style with three letters I, C, and E. The logo has a futuristic vibe and represents the objective of the lab about game and artificial intelligence. A logo has a part of game controller and the electrical wires.





Example of Prompt and Images

A professional company logo in logotype style with three letters I, C, and E. ICE stands for Intelligence Computing Entertainment. The logo has a futuristic vibe and represents the objective of the lab about game and artificial intelligence. A logo has a part of game controller and the electrical wires. The logo is in blue on a white background.



My Real Workspace on Figma

