ChatGPT Prompt Engineering for Developers

DLAI - Learning Platform Beta

https://learn.deeplearning.ai/chatgpt-prompt-eng/lesson/2/guidelines

1. Guidelines

- Principle 1: Write Clear and specific instructions
  - **Tactic 1: Use delimiters to clearly indicate distinct parts of the input**
    - Delimiters can be anything like: ```, """, < >, `<tag> </tag>`

```
prompt = f"""
Summarize the text delimited by triple backticks \
into a single sentence.
```{text}```
"""
```

  - **Tactic 2: Ask for a structured output**
    - JSON, HTML, XML

```
prompt = f"""
Generate a list of three made-up book titles along \
with their authors and genres.
Provide them in JSON format with the following keys:
book_id, title, author, genre.
"""
```

  - **Tactic 3: Ask the model to check whether conditions are satisfied**

```
prompt = f"""
You will be provided with text delimited by triple quotes.
If it contains a sequence of instructions, \
re-write those instructions in the following format:
```
```

```
Step 1 - ...
Step 2 - …
…
Step N - …

If the text does not contain a sequence of instructions, \
then simply write \"No steps provided.\"

\"\"\"{text_1}\"\"\"
"""
```

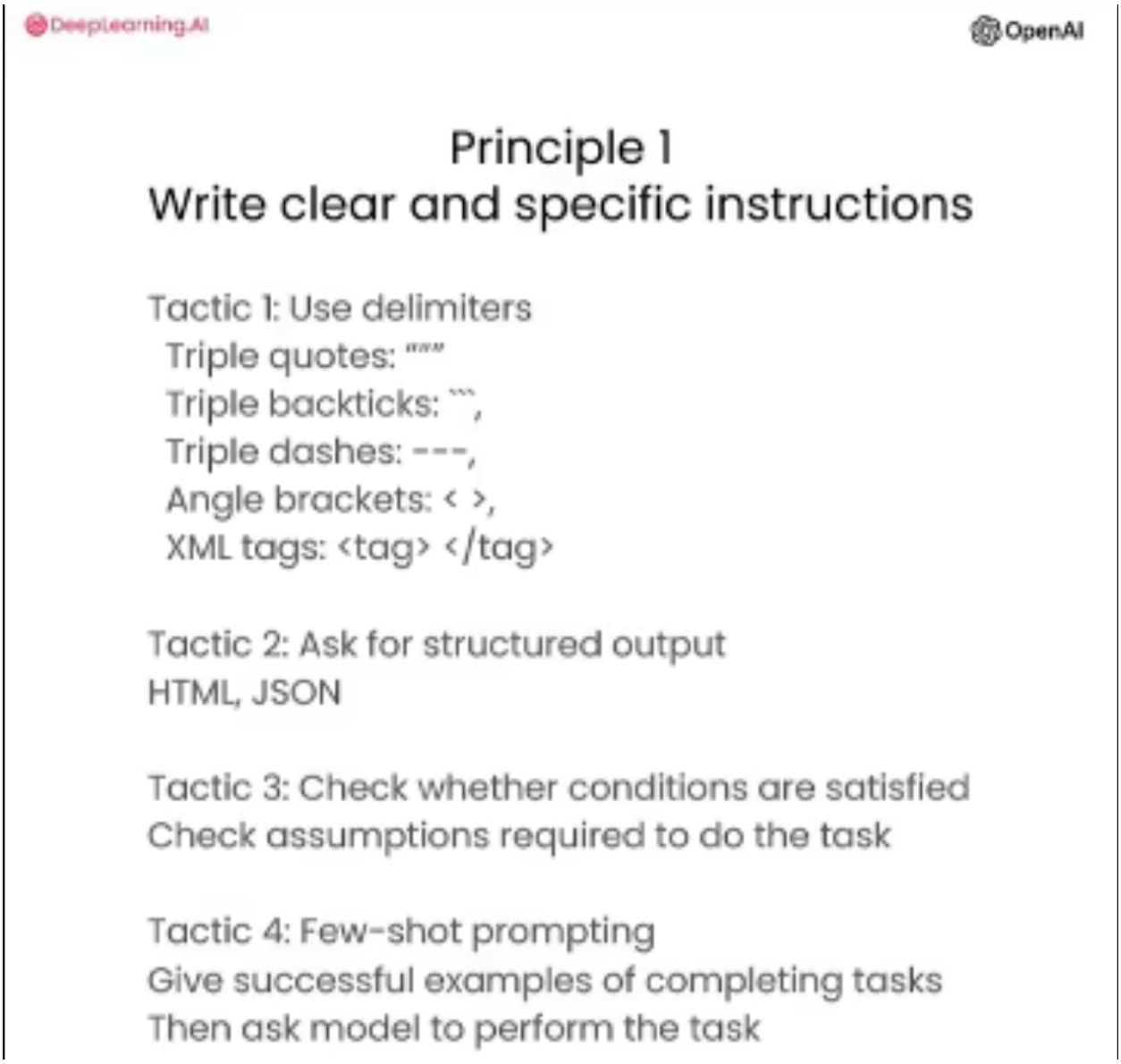
- **Tactic 4: "Few-shot" prompting** 💭 给出正确的示范，但你想要gpt按照某种语气某种文风说话的时候，很有用，比用一堆形容词管用

```
prompt = f"""
Your task is to answer in a consistent style.

<child>: Teach me about patience.

<grandparent>: The river that carves the deepest \
valley flows from a modest spring; the \
grandest symphony originates from a single note; \
the most intricate tapestry begins with a solitary thread.

<child>: Teach me about resilience.
"""
```



- **Principle 2: Give the model time to “think”**
  - **Tactic 1: Specify the steps required to complete a task, Ask for output in a specified format**

```
prompt_2 = f"""
Your task is to perform the following actions:
1 - Summarize the following text delimited by
  <> with 1 sentence.
2 - Translate the summary into French.
3 - List each name in the French summary.
4 - Output a json object that contains the
```

```
  following keys: french_summary, num_names.

Use the following format:
Text: <text to summarize>
Summary: <summary>
Translation: <summary translation>
Names: <list of names in Italian summary>
Output JSON: <json with summary and num_names>

Text: <{text}>
"""
```

- **Tactic 2: Instruct the model to work out its own solution before rushing to a conclusion**

````
prompt = f"""
Your task is to determine if the student's solution \
is correct or not.
To solve the problem do the following:
- First, work out your own solution to the problem.
- Then compare your solution to the student's solution \
and evaluate if the student's solution is correct or not.
Don't decide if the student's solution is correct until
you have done the problem yourself.

Use the following format:
Question:
```
question here
```
Student's solution:
```
student's solution here
```
Actual solution:
```
steps to work out the solution and your solution here
```
Is the student's solution the same as actual solution \
just calculated:
```
yes or no
```
Student grade:
```
correct or incorrect
```

Question:
```
````
````

```
I'm building a solar power installation and I need help \
working out the financials.
- Land costs $100 / square foot
- I can buy solar panels for $250 / square foot
- I negotiated a contract for maintenance that will cost \
me a flat $100k per year, and an additional $10 / square \
foot
What is the total cost for the first year of operations \
as a function of the number of square feet.
```
Student's solution:
```
Let x be the size of the installation in square feet.
Costs:
1. Land cost: 100x
2. Solar panel cost: 250x
3. Maintenance cost: 100,000 + 100x
Total cost: 100x + 250x + 100,000 + 100x = 450x + 100,000
```
Actual solution:
"""
```

---

**Model Limitations: Hallucinations**

避免编造，要求从给定文档中寻找，给出应用，明确不要编造，just idont know

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# 2. Iterative

Iterative Prompt Development

使用characters来控制长度，tokenizer

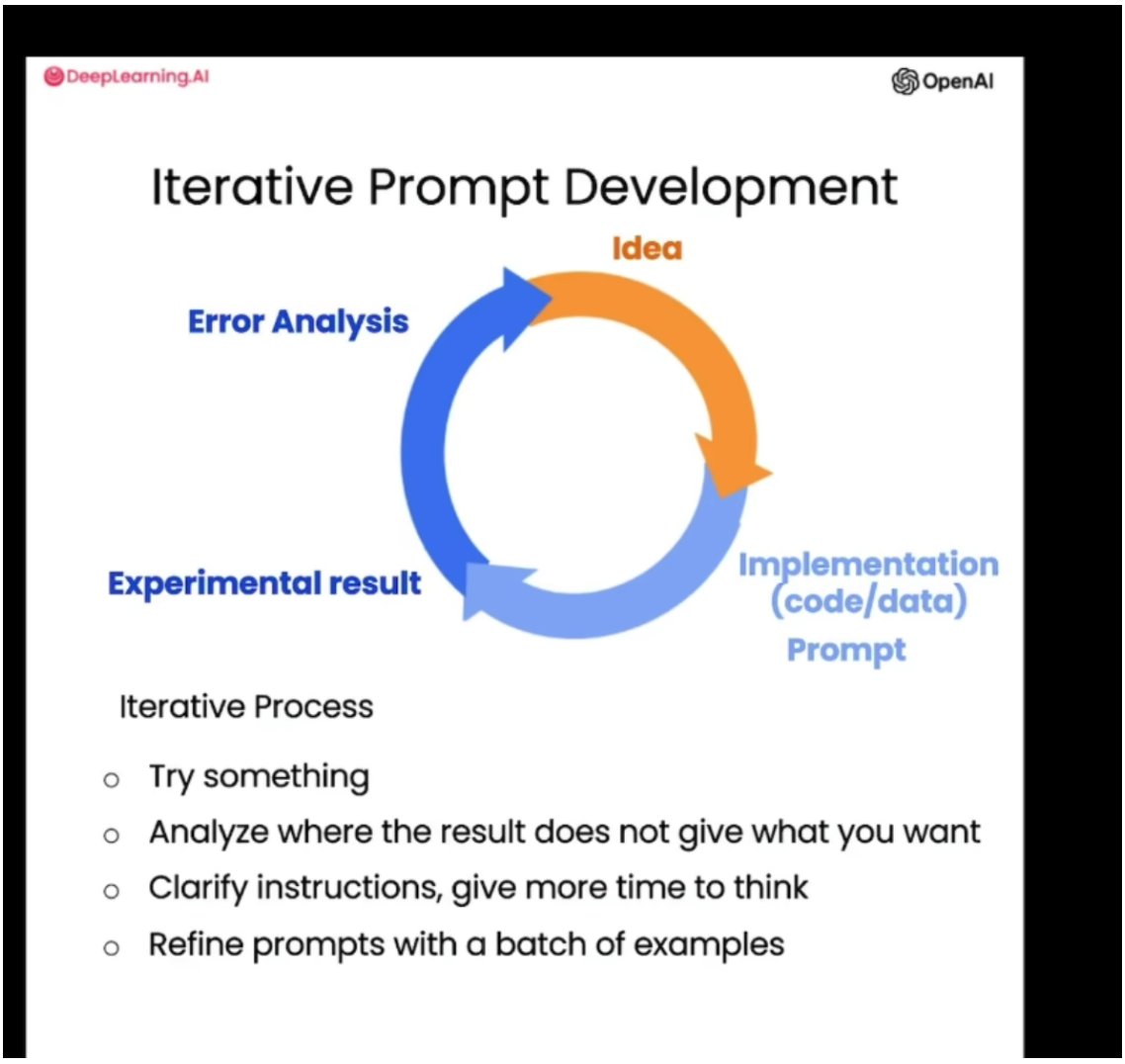
通过**Generate a marketing product description from a product fact sheet，一步步优化：**

限制长度（too long） ⇒ 要求是focus on参数（**Text focuses on the wrong details，**Ask it to focus on the aspects that are relevant to the intended audience.）

优质的prompt也是这样iterative出来的
```

因此，没必要需要知道太多现成的prompt，适合自己应用的才是最好的，需要反复迭代

项目大的时候，可以通过通过大量数据来评估不同prompt的效果



Summarizing

没啥

Text to summarize

```
prompt = f"""
Your task is to generate a short summary of a product \
review from an ecommerce site.

Summarize the review below, delimited by triple
backticks, in at most 30 words.

Review: ```{prod_review}```
"""
```

Summarize with a focus on shipping and delivery

```
prompt = f"""
Your task is to generate a short summary of a product \
review from an ecommerce site to give feedback to the \
pricing deparmtment, responsible for determining the \
price of the product.

Summarize the review below, delimited by triple
backticks, in at most 30 words, and focusing on any aspects \
that are relevant to the price and perceived value.

Review: ```{prod_review}```
"""
```

Summaries include topics that are not related to the topic of focus.

Try "extract" instead of "summarize"

```
prompt = f"""
Your task is to extract relevant information from \
a product review from an ecommerce site to give \
feedback to the Shipping department.

From the review below, delimited by triple quotes \
extract the information relevant to shipping and \
delivery. Limit to 30 words.

Review: ```{prod_review}```
"""
```

Inferring

首要的就是情感分析，然后提取特定信息：从评论中提取产品名称和品牌

```
prompt = f"""
Identify the following items from the review text:
- Sentiment (positive or negative)
- Is the reviewer expressing anger? (true or false)
- Item purchased by reviewer
- Company that made the item

The review is delimited with triple backticks. \
Format your response as a JSON object with \
"Sentiment", "Anger", "Item" and "Brand" as the keys.
If the information isn't present, use "unknown" \
as the value.
Make your response as short as possible.
Format the Anger value as a boolean.

Review text: '''{lamp_review}'''
"""
```

提取主题

```
prompt = f"""
Determine five topics that are being discussed in the \
following text, which is delimited by triple backticks.

Make each item one or two words long.

Format your response as a list of items separated by commas.

Text sample: '''{story}'''
"""
```

index主题，zero-shot

```
prompt = f"""
Determine whether each item in the following list of \
topics is a topic in the text below, which
is delimited with triple backticks.

Give your answer as list with 0 or 1 for each topic.\
```

```
List of topics: {", ".join(topic_list)}

Text sample: '''{story}'''
"""
```

gpt让人兴奋的是，像上面提到的这些能力，在以前一个机器学习工程师可能要几天才能完成，而现在普通开发者通过api+prompt就可以实现。

Transforming

In this notebook, we will explore how to use Large Language Models for text transformation tasks such as language translation, spelling and grammar checking, tone adjustment, and format conversion.

Translation

Tone Transformation

```
prompt = f"""
Translate the following from slang to a business letter:
'Dude, This is Joe, check out this spec on this standing lamp.'
"""
```

Format Conversion，这个应该蛮常用的

```
prompt = f"""
Translate the following python dictionary from JSON to an HTML \
table with column headers and title: {data_json}
"""
```

Spellcheck/Grammar check.

```
prompt = f"""Proofread and correct the following text
and rewrite the corrected version. If you don't find
and errors, just say "No errors found". Don't use
any punctuation around the text:
```{t}```"""
```
```

Expanding

In this lesson, you will generate customer service emails that are tailored to each customer's review.

拓展，应用很多

```
prompt = f"""
You are a customer service AI assistant.
Your task is to send an email reply to a valued customer.
Given the customer email delimited by ```, \
Generate a reply to thank the customer for their review.
If the sentiment is positive or neutral, thank them for \
their review.
If the sentiment is negative, apologize and suggest that \
they can reach out to customer service.
Make sure to use specific details from the review.
Write in a concise and professional tone.
Sign the email as `AI customer agent`.
Customer review: ```{review}```
Review sentiment: {sentiment}
"""
```

temperature

越大，越不可预测，可能更有创意

对于可预测应用，使用0，总是会选择可能最高，可以认为，相同输入，会有基本相同的输出

同一个app，根据不同功能设置temperature，聊天可以高一点，总结类低

The Chat Format

In this notebook, you will explore how you can utilize the chat format to have extended conversations with chatbots personalized or specialized for specific tasks or behaviors.

其实上下文，背景信息，就是通过assitant和system里提供

```
context = [ {'role':'system', 'content':"""
You are OrderBot, an automated service to collect orders for a pizza restaurant. \
You first greet the customer, then collects the order, \
and then asks if it's a pickup or delivery. \
You wait to collect the entire order, then summarize it and check for a final \
time if the customer wants to add anything else. \
```

```
If it's a delivery, you ask for an address. \
Finally you collect the payment.\
Make sure to clarify all options, extras and sizes to uniquely \
identify the item from the menu.\
You respond in a short, very conversational friendly style. \
The menu includes \
pepperoni pizza  12.95, 10.00, 7.00 \
cheese pizza   10.95, 9.25, 6.50 \
eggplant pizza   11.95, 9.75, 6.75 \
fries 4.50, 3.50 \
greek salad 7.25 \
Toppings: \
extra cheese 2.00, \
mushrooms 1.50 \
sausage 3.00 \
canadian bacon 3.50 \
AI sauce 1.50 \
peppers 1.00 \
Drinks: \
coke 3.00, 2.00, 1.00 \
sprite 3.00, 2.00, 1.00 \
bottled water 5.00 \
"""} ]  # accumulate messages
```

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conclusion

构建对人类有价值的应用。