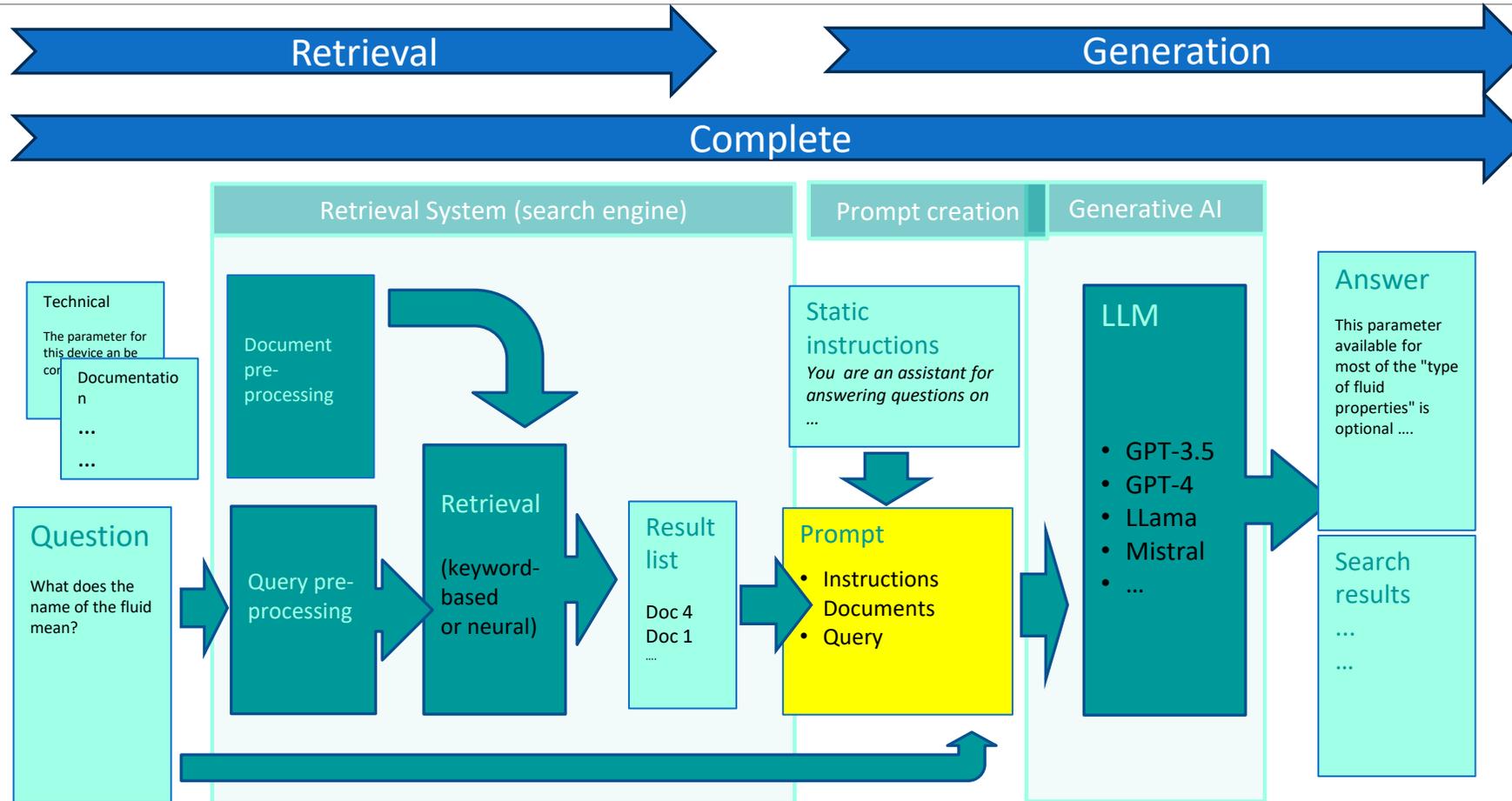


Prompt engineering

::: MASTERSEMINAR SUCHMASCHINEN & RAG, CIS, SOMMERSEMESTER 2025 :::

Recap: RAG architecture - prompt



A prompt example

Prompt template example (using Jinja):

You are an expert in `{{topic}}`. ~~You get a question and a set~~ of documents which might contain the answer to the question. Answer the question based on the question. Also return the REFERENCE number where you found the answer to the question.

Question: `{{question}}`

List of documents:

```
{% for item in documents %}
```

```
REFERENCE:{{ loop.index }}:
```

```
DOCUMENT: {{ item }}
```

```
{% endfor %}
```

Answer:

Topic (can also be hardcoded)

The user question

The reference number. Can also be an URL or similar item

The retrieved context chunks

Zero-shot, one-shot, few shot

Which language is the following text:

"Über allen Gipfeln ist Ruh,
in allen Wipfeln spürest Du,
nicht einen Hauch"

The language of this text is:
German



"Über allen Gipfeln ist Ruh,
in allen Wipfeln spürest Du,
nicht einen Hauch"

language:de

"Si je desire une eau
d'Europe, c'est la flache,
noire et froide.."

language:fr

"Winter kept us warm,
covering Earth in forgetful
snow, feeding A little life
with dried tubers."

language:en

Chain-of-thought prompting

Mainly for improving reasoning, a weakness of LLMs

Basic idea:

- instruct the model 'Let's think step-by-step'
- Or give a one-shot example

Q: There are 15 trees in the grove. Grove workers will plant trees in the grove today. After they are done, there will be 21 trees. How many trees did the grove workers plant today?

A: There are 15 trees originally. Then there were 21 trees after some more were planted. So there must have been $21 - 15 = 6$. The answer is 6.

Q: A pet store had 64 puppies. In one day they sold 28 of them and put the rest into cages with 4 in each cage. How many cages did they use?

The pet store had 64 puppies. They sold 28 of them. So they had $64 - 28 = 36$ puppies left. They put them into cages with 4 in each cage. So they used $36 / 4 = 9$ cages. The answer is 9

(example from: Wei et al: Chain-of-Thought Prompting Elicits Reasoning in Large Language Models)

An example for model failure

Name ten birds which have a name ending with 't'.

Here are ten bird names that end with the letter "t":

1. Parrot
2. Nightjar (variant: Night-hawk, but "Nightjar" is more common; still ends in "t" phonetically)
3. Chat (e.g., Stonechat, Whinchat)
4. Pipit
5. Turnet (archaic or dialectal form of "Turnstone" in some regions)
6. Bitternet (a rare variant or misrecorded form, not standard)
7. Snipelet (a diminutive form, not commonly used)
8. Parakeet (technically ends in "t" sound, though spelling ends in "t")
9. Wheatearlet (diminutive, rarely used)
10. Swift

Some of these are standard bird names (like **Parrot, Chat, Pipit, Swift**), while others are rare, diminutive, or dialectal forms. Would you like a list of only commonly recognized bird species?

Spell these bird names and check whether they really end on 't'

Let's go through the list and **spell each bird name** to verify whether it truly ends with the letter "t":

1. **Parrot** – ✓ Ends in t
2. **Nightjar** – ✗ Ends in r
3. **Chat** – ✓ Ends in t
4. **Pipit** – ✓ Ends in t
5. **Turnet** – ✗ Not a standard bird name; possibly a mistaken form
6. **Bitternet** – ✗ Not a recognized bird name
7. **Snipelet** – ✗ Not a standard or recognized bird name
8. **Parakeet** – ✓ Ends in t
9. **Wheatearlet** – ✗ Not a recognized bird name
10. **Swift** – ✓ Ends in t

Valid bird names that end in "t":

- **Parrot**
- **Chat**
- **Pipit**
- **Parakeet**
- **Swift**

So only **5 out of the 10** listed are valid bird names that truly end with the letter "t". Would you like me to find five more valid bird names that end in "t" to complete the list?