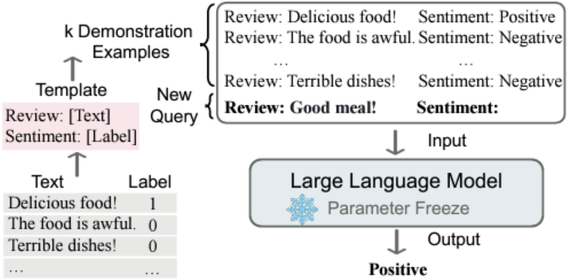
Plan of the Tutorial

An brief overview on In-Context Learning (ICL)



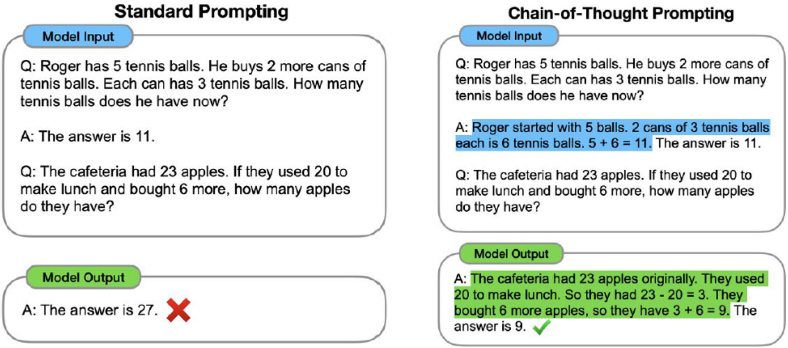
ICL does not update parameters and instead directly makes predictions using the pretrained language model.

In-Context Learning Approaches

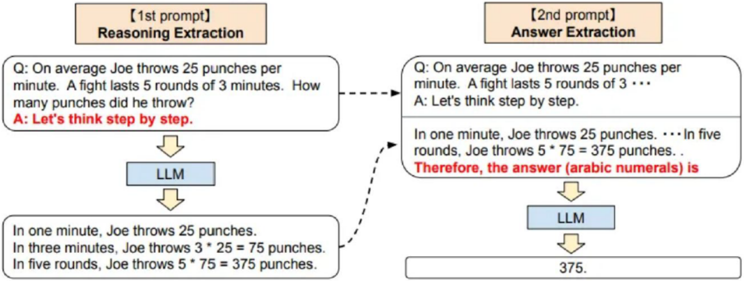
Now let us explore some popular ICL methods.

- Chain of thought (COT)
- Self-consistency COT

Chain-of-thought prompting



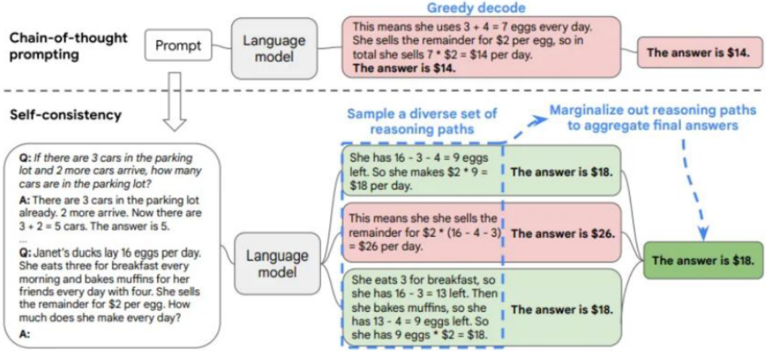
Dive deep into chain of thought (COT)



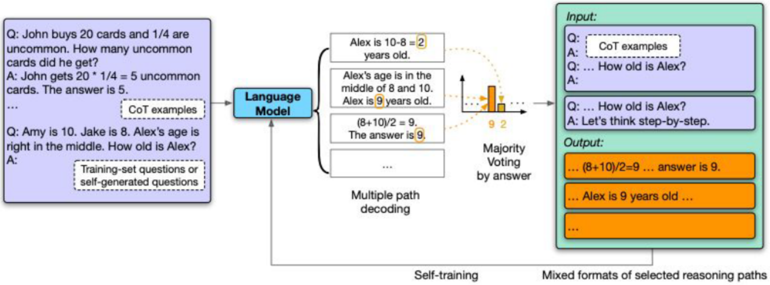
The process involves two steps: first "reasoning prompt extraction" to extract a full reasoning path from a language model, and then use the second "answer prompt extraction" to extract the answer in the correct format from the reasoning text.

Self-consistency COT

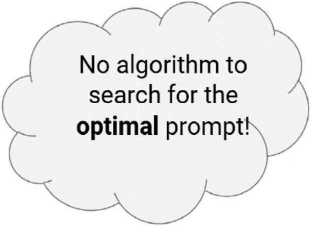
Greedy decoding in COT is replaced by another decoding strategy used in COT prompting named self-consistency COT.



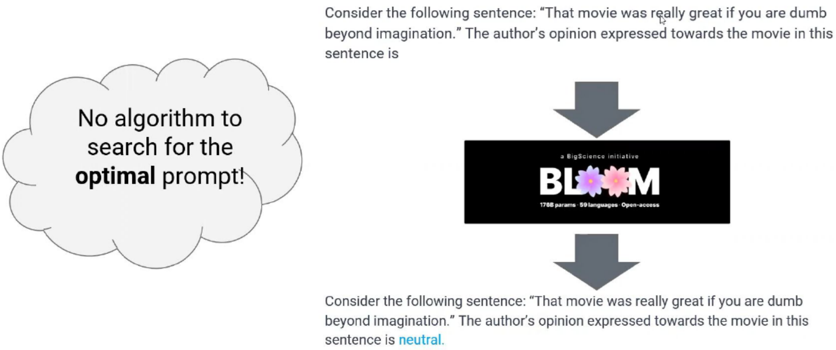
Self-consistency COT



Optimal Prompts : Open Problem



Optimal Prompts : Open Problem



Optimal Prompts : Open Problem

No algorithm to search for the **optimal** prompt!

Consider the following sentence: "That movie was really great if you are dumb beyond imagination." In the author's opinion, the movie is

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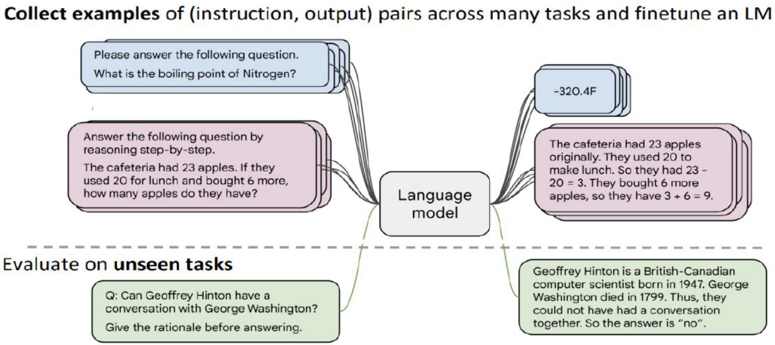
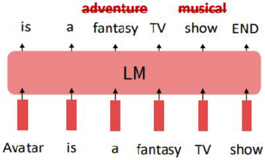
Consider the following sentence: "That movie was really great if you are dumb beyond imagination." In the author's opinion, the movie is not good.

Instruction Fine Tuning



Limitations of instruction finetuning

- One limitation of instruction fine tuning is obvious: it's expensive to collect ground truth data for tasks.
- Problem 1: tasks like open-ended creative generation have no right answer.
- Problem 2: language modeling penalizes all token-level mistakes equally, but some errors are worse than others.
- Can we explicitly attempt to satisfy human preferences?



Plan of the Tutorial

Conclusion

- The tutorial has provided a comprehensive understanding of the key concepts and principles that form the foundation of large language models.
- From the basics of natural language processing to the inner workings of advanced language models, the audience has gained a solid grounding in the field.
- Hands-on exercises and examples have equipped the audience with practical skills, allowing them to implement and integrate these models into real-world projects.

Reference I

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Hands on & Demo:`https://github.com/payelsantra/FIRE2023tutorial`