

In-Context Learning for Natural Language Generation

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- BSc, MSc, Open: MSc
- General Topic Area: Large Language Model, In-Context Learning, Natural Language Generation
- Prerequisites: enthusiasm, Good programming background (preferably python), basic knowledge of Natural Language Processing, Deep Learning, and Pytorch
- Details: Large Language Models (LLM), represented by LLaMA [1], LLaMA 2 [2], and ChatGPT,¹ have exhibited good in-context learning results.

Recent studies have investigated the pattern of in-context learning in terms of sample selection [3, 4, 5], sample ordering [6], and input-label mapping [7, 8, 9].

However, these studies mainly focus on classification instead of generation.

In this thesis, the task is to address one or more of the following research questions.

- Focusing on a generation task, including but not limited to Summarization, Dialog, Simplification/Compression, Question Answering, Creative Writing, Data-to-Text, and Question Generation.
- Focusing on an investigation perspective, including but not limited to sample selection, sample ordering, and input-label mapping.

References

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- [2] Hugo Touvron, Louis Martin, Kevin Stone, Peter Albert, Amjad Almahairi, Yasmine Babaei, Nikolay Bashlykov, Soumya Batra, Prajjwal Bhargava, Shruti Bhosale, Dan Bikel, Lukas Blecher, Cristian Canton-Ferrer, Moya Chen, Guillem Cucurull, David Esiobu, Jude Fernandes, Jeremy Fu, Wenyin Fu, Brian Fuller, Cynthia Gao, Vedanuj Goswami, Naman Goyal, Anthony Hartshorn, Saghar Hosseini, Rui Hou, Hakan Inan, Marcin Kardas, Viktor Kerkez, Madian Khabsa, Isabel Kloumann, Artem Korenev,

¹<https://openai.com/blog/chatgpt>

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- [4] Jiachang Liu, Dinghan Shen, Yizhe Zhang, Bill Dolan, Lawrence Carin, and Weizhu Chen. What makes good in-context examples for gpt-3? In Eneko Agirre, Marianna Apidianaki, and Ivan Vulic, editors, *Proceedings of Deep Learning Inside Out: The 3rd Workshop on Knowledge Extraction and Integration for Deep Learning Architectures, DeeLIO@ACL 2022, Dublin, Ireland and Online, May 27, 2022*, pages 100–114. Association for Computational Linguistics, 2022.
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