Language Models Meet NLP: A Survey

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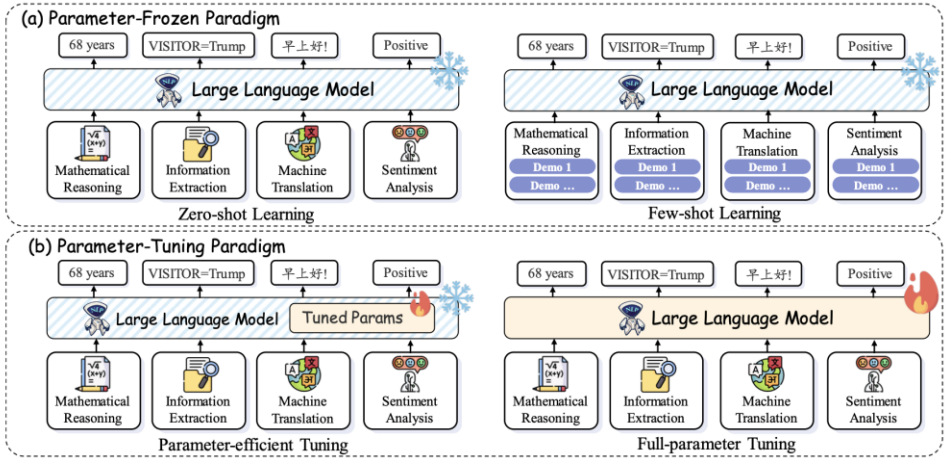
Motivation & Ideas

- Motivation:
  - Lack of systematic investigation into how LLMs are utilized in NLP tasks; unclear whether traditional NLP tasks have been fully addressed by LLMs; uncertainty regarding the future role of LLMs in NLP.
  - No unified framework exists to categorize LLM application paradigms; limited insight into the challenges and potential of LLMs across different NLP tasks.
- Ideas: Propose a unified taxonomy (parameter-frozen vs. parameter-tuning) to clarify LLM progress, summarize applications, highlight future challenges, and guide effective LLM development in NLP.



The taxonomy of LLMs for NLP includes the parameter-frozen paradigm (a) and the parameter-tuning paradigm (b), where the **blue module with ice** denotes that the parameters are kept unchanged, and the **orange module with fire** represents the fine-tuning of full or selected parameters.

Main Contributions

- Contributions:
  - First survey: We present the first comprehensive survey of Large Language Models (LLMs) for Natural Language Processing (NLP) tasks.
  - New taxonomy: We introduce a new taxonomy including (1) parameter-frozen paradigm and (2) parameter-tuning paradigm, which provides a unified view to understand LLMs for NLP tasks.
  - New frontiers: We discuss emerging areas of research in LLMs for NLP and highlight the challenges associated with them, aiming to inspire future breakthroughs.
  - Abundant resources: We create the first curated collection of LLM resources for NLP, including open-source implementations, relevant corpora, and a list of research papers. These resources are available at: https://github.com/LightChen233/Awesome-LLM-for-NLP.