

~NII/LLMC Invited Talk~

# LLM Analysis, and Enhancement from a Probabilistic Standpoint.

**Abstract:** Large-scale language models have garnered attention due to their near-human level capabilities in understanding and generating language. We conduct an analysis of these models to explore the potential limits of their language processing abilities. Considering the inherent properties of language models, we explore several improvement strategies, such as multi-agent systems and retrieval-augmented generation, to enhance their performance in real-world applications. Nevertheless, challenges remain in processing long texts, avoiding hallucination effects, and reducing over-inference. These challenges reveal the limitations of data-driven probabilistic models and delineate the current boundaries of large-scale language model capabilities. By comparing the models with human linguistic abilities, we explore potential directions for improving model structures and further understand the nature of language as a complex system.



## Dr. WANG Xun

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Dr. WANG, Xun received his B.A. in Applied Linguistics, B.S. in Statistics, M.S. in Computer Science from Peking University and PhD in Informatics from Kyoto University in 2010, 2010, 2013, and 2017, respectively. He was affiliated with NTT Communication Science Lab, Umass Amherst/Lowell and Veterans Affairs. His research primarily focuses on discourse analysis, LLM analysis, and their practical applications.

**Date : 2024/07/2 (Tue.) 11:00 am - 12:00 pm      Room : 1208/1210**