

# Language-Models-as-a-Service: Overview of a New Paradigm and its Challenges

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## Abstract

Some of the most powerful language models currently are proprietary systems, accessible only via (typically restrictive) web or software programming interfaces. This is the LanguageModels-as-a-Service (LMaaS) paradigm. In contrast with scenarios where full model access is available, as in the case of open-source models, such closed-off language models present specific challenges for evaluating, benchmarking, and testing them. This paper has two goals: on the one hand, we delineate how the aforementioned challenges act as impediments to the accessibility, reproducibility, reliability, and trustworthiness of LMaaS. We systematically examine the issues that arise from a lack of information about language models for each of these four aspects. We conduct a detailed analysis of existing solutions, put forth a number of recommendations, and highlight directions for future advancements. On the other hand, it serves as a synthesized overview of the licences and capabilities of the most popular LMaaS.

## References

La Malfa, E.; Petrov, A.; Frieder, S.; Weinhuber, C.; Burnell, R.; Nazar, R.; Cohn, A.; Shadbolt, N.; and Wooldridge, M. 2024. Language-Models-as-a-Service: Overview of a new paradigm and its challenges. *Journal of Artificial Intelligence Research*, 80: 1497–1523.