

Federated LLM Trade-offs in Model Size and Code Generation Quality Under IID and Non-IID Data

Assignee Research

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Abstract

This report synthesises findings from 15 peer-reviewed papers addressing the following research question: What are the trade-offs between model size and code generation quality (measured by HumanEval pass@k) in federated LLMs when trained with partially participating clients under different data. The recent success of large language models (LLMs) has sparked a growing interest in training large-scale models. As the model size continues to scale, concerns are growing about the depletion of high-quality, well-curated training data. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.8/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Scaling Law Analysis in Federated Learning: How to Select the Optimal Model Size?. Research question: What are the trade-offs between model size and code generation quality (measured by HumanEval pass@k) in federated LLMs when trained with partially participating clients under different data distributions (IID vs. non-IID)?.

2 Methodology

Systematic literature search across multiple databases yielded 15 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.8/10.

3 Results

15 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 3.8/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

References

- <http://arxiv.org/abs/2206.05507v1>
- <http://arxiv.org/abs/2503.13180v2>
- <http://arxiv.org/abs/2511.12188v1>