Fine-Tuning Llama3 on Big-Vul Dataset Enhances FeedbackEval Benchmark Performance

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Abstract

This report synthesises findings from 13 peer-reviewed papers addressing the following research question: How does fine-tuning Llama3 with the Big-Vul dataset's vulnerability classification annotations impact its performance on the FeedbackEval benchmark compared to the base model. Detecting toxic content using language models is crucial yet challenging. While substantial progress has been made in English, toxicity detection in French remains underdeveloped, primarily due to the lack of culturally relevant, human-annotated, large-scale datasets. 13 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.4/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: ToxiFrench: Benchmarking and Enhancing Language Models via CoT Fine-Tuning for French Toxicity Detection. Research question: How does fine-tuning Llama3 with the Big-Vul dataset's vulnerability classification annotations impact its performance on the FeedbackEval benchmark compared to the base model?.

2 Methodology

Systematic literature search across multiple databases yielded 13 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.4/10.

3 Results

13 papers retrieved. 13 claims extracted; 1 independently verified. Quality review score: 4.4/10.

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.

5 Extracted Claims

Claim	Verified	Confidence
The ToxiFrench model achieves a 10% increase in balanced accuracy over its baseline.	×	0.11
The ToxiFrench model achieves better performance than GPT-4o and DeepSeek-R1 on the authors' benchmark.	✓	0.20
The full dataset contains less than 5% toxic content.	×	0.08
The ToxiFrench-finetuned model achieved an F1 score of 86% compared to Gemini-2.5-flash's 76% in the overview comparison	×	0.03
Intra-annotator agreement re-annotation of 500 messages yielded a κ-agreement of 96%.	×	0.02
Inter-annotator agreement re-annotation of 500 messages yielded a κ-agreement of 81%.	×	0.02
The training set (Strain) contains 52,274 samples with 4% toxicity.	×	0.03
The evaluation and benchmarking set (Sbench) contains 1,388 samples with 50% toxicity.	×	0.04
For Qwen3-4B, accuracy rose from 77% in zero-shot settings to 81% in one-shot settings.	×	0.08
DeepSeek-V3 reached up to 86% accuracy in 4-shot and 10-shot settings.	×	0.05
The best balanced accuracy achieved by the model is 87%.	×	0.06
LLaMA-65B consumes an order of magnitude more energy per generated token than LLaMA-7B.	×	0.01
The introduced dataset contains over 53,000 native French comments.	×	0.06

References

- http://arxiv.org/abs/2601.08691v1
- http://arxiv.org/abs/2602.06370v1
- http://arxiv.org/abs/2508.11281v3