

# Critical Batch Size Scaling and Adversarial Robustness in Auto-Regressive Language Models

Assignee Research

June 9, 2026

## Abstract

This report synthesises findings from 10 peer-reviewed papers addressing the following research question: How does increasing the critical batch size during pre-training affect the downstream robustness of auto-regressive language models to adversarial token perturbations on standard NLP benchmarks. 0 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 3.3/10. This report is a machine-generated literature synthesis and does not constitute original research.

## 1 Introduction

This paper examines: How Does Critical Batch Size Scale in Pre-training?. Research question: How does increasing the critical batch size during pre-training affect the downstream robustness of auto-regressive language models to adversarial token perturbations on standard NLP benchmarks?.

## 2 Methodology

Systematic literature search across multiple databases yielded 10 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 3.3/10.

## 3 Results

10 papers retrieved. 0 claims extracted; 0 independently verified. Quality review score: 3.3/10.

## 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/2410.21676v4>
- <http://arxiv.org/abs/2405.18770v6>
- <http://arxiv.org/abs/2402.04177v3>