

Multimodal Knowledge Distillation for Robust Small Language Models in Code Generation

Assignee Research

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Abstract

This report synthesises findings from 5 peer-reviewed papers addressing the following research question: To what extent can multimodal knowledge distillation from code-text pairs improve the robustness of small language models in code generation tasks, as measured by pass@k and latency metrics on. Recently, ChatGPT, along with DALL-E-2 and Codex, has been gaining significant attention from society. As a result, many individuals have become interested in related resources and are seeking to uncover the background and secrets behind its impressive performance. 11 claims were extracted from source literature; 10 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 7.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: A Comprehensive Survey of AI-Generated Content (AIGC): A History of Generative AI from GAN to ChatGPT. Research question: To what extent can multimodal knowledge distillation from code-text pairs improve the robustness of small language models in code generation tasks, as measured by pass@k and latency metrics on HumanEval and MULTICODE benchmarks under adversarial perturbations?.

2 Methodology

Systematic literature search across multiple databases yielded 5 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 7.2/10.

3 Results

5 papers retrieved. 11 claims extracted; 10 independently verified. Quality review score: 7.2/10.

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
ChatGPT, DALL-E-2, and Codex have been gaining significant attention from society recently.	✓	0.21
ChatGPT and other Generative AI (GAI) techniques belong to the category of Artificial Intelligence Generated Content (AIGC)	✓	0.35
AIGC involves the creation of digital content, such as images, music, and natural language, through AI models.	✓	0.30
The goal of AIGC is to make the content creation process more efficient and accessible.	✓	0.25
AIGC is achieved by extracting and understanding intent information from instructions provided by humans.	✓	0.23
AIGC generates content according to the model's knowledge and the extracted intent information.	×	0.14
Large-scale models have become increasingly important in AIGC in recent years.	✓	0.21
Large-scale models provide better intent extraction and improved generation results compared to smaller models.	✓	0.22
With the growth of data and model size, the distribution a model can learn becomes more comprehensive and closer to real	✓	0.20
More comprehensive and realistic data distributions lead to more realistic and high-quality content generation.	✓	0.20
The survey provides a review of the history of generative models, basic components, and recent advances in AIGC from uni	✓	0.30

References

- <https://doi.org/10.48550/arxiv.2303.04226>
- <https://doi.org/10.1007/s10462-022-10306-1>
- <https://doi.org/10.1038/s41593-022-01131-4>