

Peer Review

Review of: "Finding Missed Code Size Optimizations in Compilers using LLMs"

Matteo Ciniselli¹

1. Università della Svizzera Italiana, Lugano, Switzerland

I want to thank the authors for the interesting paper. The authors show the potential of LLMs to identify missed optimization opportunities in compilers. The approach is well-explained and easy to extend to other languages, as shown by the authors in the paper.

I really like the idea of integrating some mutation from a predefined list and then using the 4 different testing techniques you explained in section 2.2 to identify potential missed optimization opportunities. It's interesting to see how the heuristics you employed work for limiting the false positives.

I was pleasantly surprised by the high percentage of compilable code generated by Llama and by the effectiveness of the approach, which was able to find 24 bugs in C/C++.

The main strengths of this paper are:

1. the ability of the model to identify real bugs from the code base
2. the ease with which it can be extended to other programming languages

For these reasons, I propose 5 out of 5 stars for this paper. I'm sure that the future work agenda can even improve the achieved performance.

Declarations

Potential competing interests: No potential competing interests to declare.