Interrupt Data Race Detection via Variable Access Pattern Search based on LLVM

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ABSTRACT

Interrupt data race detection is critical for interrupt-driven software, since dangerous bugs may be caused by interrupt data race. In this paper, we propose a pattern search method to detect interrupt data race based on LLVM. First, we construct the behavor of the program related to the shared variable via the 'load' and 'store' instructions of LLVM. Then, a patter search algorithm is designed to detecte the bugy shared variable access pattern. We evaluate the proposed method on racebench, which reveals that the presented approach can precisely detect race conditions.

Keywords: Interrupt-driven Program, Data Race, LLVM

1 INTRODUCTION AND MOVTIVATION

this is a introduction

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2 PROBLEM DEFINITION

3 OUR APPROACH

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