Bachelor's Thesis - Proposal
Implementation and testing of Monniaux's map elimination algorithm

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Abstract

Ultimate [1] is a program analysis framework, which among other things simplifies programs to prove satisfiabilty.To this end many over- and sometimes under-aproximations are being made one of which being the elimination of maps. In this thesis we aim to implement an alternate way of eliminating such maps according to a paper by David Monniaux [2] and test it against the existing one.

1 Introduction

1.1 Over-Approximation

tbd

1.2 iCFG's

tbd

1.3 Mapping

tbd

1.4 Algorithm

tbd

2 Goals

The goal of this Bachelor's Thesis is to implement and test the algorithm that was adapted from David Monniaux's paper [2] by Lisa Kleinlein and Luca Bruder as seen in 1.4. Furthermore constraints for the variables which replace the eliminated maps should be made. Lastly the new algorithm will be compared to the one that is already implemented in ultimate.

3 Approach

3.1 Pre-Analysis

tbd

3.2 Implementation of the new algorithm

tbd

3.3 Addition of a way to put constraints on the ranges of variables

tbd

3.4 Testing of the new algorithm

tbd

3.5 Comparison

tbd

3.6 Conclusions

tbd

3.7 Written thesis

tbd

3.8 Final presentation

tbd

4 Schedule

tbd

References

[1] Ultimate. URL: https://monteverdi.informatik.uni-freiburg.de/tomcat/Website/

[2] "A Simple Abstraction of Arrays and Maps by Program Translation". URL: https://hal.archives-ouvertes.fr/hal-01162795/document