

Verification Witnesses: from LLVM to C

Bachelor Thesis

DARTAGNAN [2] is a software verification tool. It takes a C program, it compiles it to LLVM and then it performs the verification on the LLVM code. In 2020, DARTAGNAN participated for the first time in SV-COMP, the International Competition on Software Verification [1]. One of the requirements of SV-COMP, is to provide verification witnesses: a proof of correctness or a counterexample. DARTAGNAN can already generate a counterexample witness as a graph. However, this graph refers to the LLVM code while SV-COMP requires to generate a counterexample witness w.r.t to input C program. The information mapping the C instructions with the corresponding LLVM code is provided by the transformation from C to LLVM used by DARTAGNAN. However it is not currently used. The goal of this thesis is to use this information and convert the counterexamples generated by DARTAGNAN to witnesses w.r.t the C code, thus fulfilling SV-COMP requirements.

Requirements: Good programming skills (preferably Java).

References

- [1] International Competition on Software Verification (SV-COMP). <https://sv-comp.sosy-lab.org/>.
- [2] The DAT3M tool suite. <https://github.com/hernanponcedeleon/Dat3M>.