

# Abstract: Reliable Reconstruction of Fine-Grained Proofs in a Proof Assistant

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## Abstract

We present a fast and reliable reconstruction of proofs generated by the SMT solver veriT in Isabelle. The fine-grained proof format makes the reconstruction simple and efficient. For typical proof steps, such as arithmetic reasoning and skolemization, our reconstruction can avoid expensive search. By skipping proof steps that are irrelevant for Isabelle, the performance of proof checking is improved. Our method increases the success rate of Sledgehammer by halving the failure rate and reduces the checking time by 13%. We provide a detailed evaluation of the reconstruction time for each rule. The runtime is influenced by both simple rules that appear very often and common complex rules. This work was originally presented at CADE 28.

## Keywords


automatic theorem provers, proof assistants, proof verification


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