Proof Checking in Applicative Matching Logic

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Abstract

This paper discusses proof checking in applicative matching logic.

1 Proof checking

At a high level, *proof objects* are strings that encode a Hilbert-proof, including its underlying theory Γ, the proof target φ, and all intermediate proof steps, which are accompanied with detailed proof annotations that specify which proof rules are applied and how they are instantiated in every step. We let A to denote the underlying alphabet of proof objects.

- A proof object π is called *well-formed*, if it is a correct encoding of a proof;

- A proof object π is called *valid*, if it is *well-formed* and it encodes a correct proof;

- A proof object π is called *checked*, if it passes the proof checker.

Key property of proof checking. All checked proof objects are valid.