Abstract

I prove the equivalence of tableau calculus and sequent calculus.

0.1 Introduction

0.2 Proof Theory

The system of sequent calculus has been encoded into Coq based on the rules given by Floris van Doorn. First the notion of a sequent being a tuple of lists is defined, the left side and right side of a sequent. Given this, we encode the notion of sequent being derivable as a direct translation of the sequent rules.

Furthermore, the system of tableau calculus was encoded in a similar manner. A tableau is represented as a list. Then the notion of a closed tableau is established through a direct translation of the tableau rules.

To show that the system of tableau calculus is equivalent to the system of sequent calculus we aim to prove the following,

$$\text{closed } X \iff X = \Gamma \cup \neg\Delta \wedge \text{derivable } \Gamma ==> \Delta \tag{1}$$