Contribution Title

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Abstract. Tableux proof are used in automated "proofers" as (TODO), wereas sequent calculus proofs are used in proof assitants as (TODO). This work aims to present a systematic algorithm for translating tableaux proofs into sequent calculus proofs. It begins with an overview of the definitions underlying such translations in both intuitionistic and classical logic. It then shows a translation process in classical logic, along with its properties. Finally, potential extensions toward translations in intuitionistic logic are explored.

Keywords: Tableux proof · sequent calculus · intuitionistic logic.

1 Underlying concepts

The sintax and semantics from both classical and intuitionistic logic is based on [2]. In this work, sentences wont have function symbols.

1.1 Language

Definition 1.
A ***Language*** $\mathcal{L}$ *is a set of symbols, including:*

- *parentheses* (*and*)
- *logical connectives* $\neg, \wedge, \vee, \rightarrow$
- *variable symbols* $x, y, z, \ldots$
- *constant symbols* $c_1, c_2, \ldots$ *(*
- *quantifier symbols* $\forall, \exists$
- *predicate symbols* $P, Q, R, \ldots$

()Every predicate is a formula, and if
()Sentences
()Signed sentences

1.2 Truth in classical logic

1.3 Truth in intuitionistic logic

Kripke structures

Definition 2. *A kripke structure is a s*

Kripke Frames

Definition 3. *Kripe*

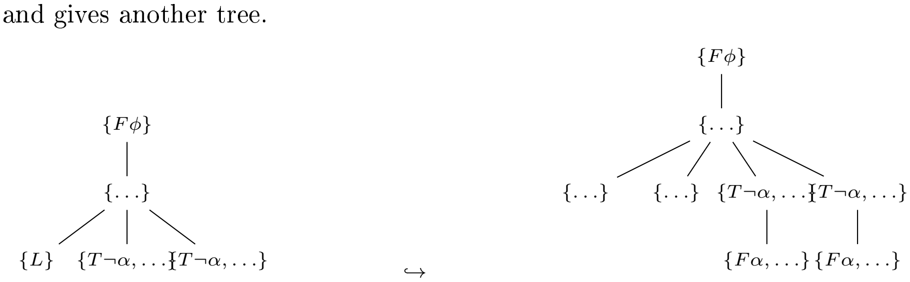
1.4 Translation in classical logic

We first define a slightly diferent version of a tableaux proof tree [1], were each node is represented by a set of signed sentences. Intuitively, a node in the usal definiton is replaced by set of all nodes in the path that goes from the root to him.

A tree with a single node $\{F\phi\}$ is a tableaux development of ϕ. Given a signed sentence σ in a leaf $\{T\Gamma_1, T\Gamma_2, \ldots, F\Delta_1, F\Delta_2, \ldots\}$ of a tableaux development τ of ϕ, we define : (σ, τ):

- $\hookrightarrow (T\neg\alpha, \tau) = \tau$ with $L \cup \{F\alpha\}$ added (adjoined?) to all leaves L that contain $T\neg\alpha$.
- $f(F\neg\alpha, \tau) = \tau$ with $L \cup \{T\alpha\}$ added (adjoined?) to all leaves L that contain $F\neg\alpha$.
- $f(T(\alpha \wedge \beta), \tau) = \tau$ with $L \cup \{T\alpha, T\beta\}$ added to all leaves L that contain $T(\alpha \wedge \beta)$.
- $f(F(\alpha \wedge \beta), \tau) = \tau$ with $L \cup \{F\alpha\}$ and $L \cup \{F\beta\}$ added to all leaves L that contain $F(\alpha \wedge \beta)$.
- $f(T(\alpha \vee \beta), \tau) = \tau$ with $L \cup \{T\alpha\}$ and $L \cup \{T\beta\}$ added to all leaves L that contain $T(\alpha \vee \beta)$.
- $f(F(\alpha \vee \beta), \tau) = \tau$ with $L \cup \{F\alpha, F\beta\}$ added to all leaves L that contain $F(\alpha \vee \beta)$.
- $f(T(\alpha \to \beta), \tau) = \tau$ with $L \cup \{F\alpha\}$ and $L \cup \{T\beta\}$ added to all leaves L that contain $T(\alpha \to \beta)$.
- $f(F(\alpha \to \beta), \tau) = \tau$ with $L \cup \{T\alpha, F\beta\}$ added to all leaves L that contain $F(\alpha \to \beta)$.

A tree with a single node $\{F\phi\}$ is a tableaux development of ϕ. Given a signed sentence σ in a leaf $\{T\Gamma_1, T\Gamma_2, \ldots, F\Delta_1, F\Delta_2, \ldots\}$ of a tableaux development τ of ϕ, we denote $\tau \hookrightarrow_\sigma \tau'$ as a function that takes a tableaux development of phi and gives another tree.



$$\begin{array}{c} \{T\neg\alpha,\ldots\} \\ | \\ \{F\alpha,\ldots\} \end{array}$$

Definition: f(τ,ϕ) is tableaux development of ϕ.

Table 1. Table captions should be placed above the tables.

Heading level	Example	Font size and style
Title (centered)	**Lecture Notes**	14 point, bold
1st-level heading	**1 Introduction**	12 point, bold
2nd-level heading	**2.1 Printing Area**	10 point, bold
3rd-level heading	**Run-in Heading in Bold.** Text follows	10 point, bold
4th-level heading	*Lowest Level Heading.* Text follows	10 point, italic

Displayed equations are centered and set on a separate line.

$$x + y = z \tag{1}$$

Please try to avoid rasterized images for line-art diagrams and schemas. Whenever possible, use vector graphics instead (see Fig. 1).

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Fig. 1. A figure caption is always placed below the illustration. Please note that short captions are centered, while long ones are justified by the macro package automatically.

Theorem 1. *This is a sample theorem. The run-in heading is set in bold, while the following text appears in italics. Definitions, lemmas, propositions, and corollaries are styled the same way.*

Proof. Proofs, examples, and remarks have the initial word in italics, while the following text appears in normal font.

For citations of references, we prefer the use of square brackets and consecutive numbers. Citations using labels or the author/year convention are also acceptable. The following bibliography provides a sample reference list with entries for journal articles [3], an LNCS chapter [4], a book [5], proceedings without editors [6], and a homepage [7]. Multiple citations are grouped [3–5], [3, 5–7].

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