

# Treehehe: An interactive visualization of natural deduction proof trees

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**Abstract**—Natural deduction proofs are commonly illustrated as proof trees to make the structure of the argument salient. A proof tree can be tedious to record and as a static object it does not realize its full potential as a route to comprehension of the proof it represents. There is literature on how to use visualization to support mathematics education and implementations of visual tools to walk through real analysis proofs [1], but none of this related work addresses the use of interactive proof trees or visualization for the proof theory community. This work implements a tool for interacting with visual representations of proof trees so that they can be explored to provide insight into the structure of the proof and its founding logic, revealing supplementary information as the nodes are visited. The proof visualization tool allows either open exploration of a proof or a directed walk-through. This work provides a tool for gaining understanding of the structure of natural deduction proofs, insight into the processes used in constructing such proofs, and also serves as a starting point for visualizations of proof trees in more complicated logics.

**Index Terms**—information visualization, visual analytics, proof visualization, proof tree, natural deduction, mathematics education

I. INTRODUCTION

II. BODY (TODO)

III. DISCUSSION

IV. CONCLUSION

REFERENCES

- [1] Laura Alcock and Nicola Wilkinson. e-proofs: Design of a resource to support proof comprehension in mathematics. *Education Designer*, 1(3), 2011.
- [2] Colin Ware. *Information Visualization: Perception for Design*. Morgan Kaufman, third edition, 2013.