Master Thesis Abstract

On the Complexity of Normalization Procedures in Intuitionistic Logic

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In my thesis I build up, first with trees, then using λ-calculus and de Bruijn codes, the propositional logic, afterword I state and prove some theorems regarding the structure of propositional logic. I do all this with the ultimate aim of articulating something "nice" about the complexity of one of most fundamental normalization procedures, namely the theorem that under certain conditions the normalization problem is fixed-parameter tractable.

I implemented some of the more elementary definitions, theorems, and examples in the language of the proof manager Coq. These programming codes are uploaded to a public GitHub repository. The exact codes are also linked at the relevant parts.

2022