

Extending the Locally Nameless Representation with an Explicit Substitution Operator

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Abstract. The Locally Nameless Representation[1] is a formal framework developed in the Coq proof assistant [3] for formalizing languages with binders. In this framework, bound variables are represented by DeBruijn indexes, while free variables are represented by names. This way, terms have a unique representation modulo α -conversion, therefore equivalence between terms corresponds to syntactic equality. In this work, we show the current development of an extension of Charguéraud's framework with an explicit operator for the substitution operation. The expressions are built inductively by the grammar of pre-terms, a super set of terms. In particular, we provide three different, but equivalent, characterizations for terms and several auxiliary lemmas that will be useful in a formalization of an extension of the λ -calculus with explicit substitutions [2].

References

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