Type Theory with First-Order Data Types and Size-Change Termination

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Abstract

We prove normalization for dependently typed lambda-calculus extended with first-order data types and computation rules for first-order size-change terminating recursive computation rules. The proof follows Taits reducibility method. This language can be used as a formal system for inductive proofs. Size-change termination - introduced by Chin Soon Lee, Neil D. Jones and Amir M. Ben-Amram - can be seen as a generalized form of structural induction, which allows schemata for inductive computations and proofs to be defined in a straight-forward manner.