



Delimited continuation in logic and computation

Background

The basic concept of programming languages is the concept of computational functions. A universal model of computational functions, known as the λ -calculus, is a very simple language which is Turing-complete, i.e. it has the same expressiveness as a Turing machine. Proof theory is the branch of logic devoted to the study of the structure of proofs. Proof theory gained a remarkable importance in computer science when it became clear that proofs had the very same structure as programs.

Project description

This is the era of tremendous developments of computer science with rapidly emerging new disciplines and their application in all segments of life and society. The fast changes on the applicational side permanently urge for the development of foundational aspects based on solid theoretical concepts. The focus of this proposal is: (1) the foundations of programming languages, the core of computer science; (2) the connection between computation and proof theory, an emerging field of mathematical logic (3) the impact of this correspondence to delimited control operators (prompt & control, shift & reset), which give enhanced expressive power to programming languages. The main objective is the study of delimited control in extensions of λ -calculus and different logical settings.

Reference

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Contact

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