computer
languages

Einladung

zum Informatik-Kolloquium des
AB Programmiersprachen und Übersetzer am
Donnerstag, den 5. Feber 2009, um 10:00 Uhr c.t.
in der Bibliothek E185.1, Argentinierstr. 8, 4. Stock (Mitte)

Es spricht

Dr. Nikolaj Popov

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über

Specification, Verification and Synthesis of Tail Recursive Programs in *Theorema*

Abstract: We describe an innovative method for proving total correctness of tail recursive programs having a specific structure, namely programs in which an auxiliary tail recursive function is driven by a main nonrecursive function, and only the specification of the main function is provided.

The specification of the auxiliary function is obtained almost fully automatically by solving coupled linear recursive sequences with constant coefficients.

The process is carried out by means of CA (Computer Algebra) and AC (Algorithmic Combinatorics). We demonstrate this method on an example involving polynomial expressions.

Furthermore, we develop a method for synthesis of recursive programs for computing polynomial expressions of a fixed degree by means of "cheap" operations e.g., additions, subtractions and multiplications. For a given polynomial expression, we define its recursive program in a schemewise manner.

The correctness of the synthesized programs follows from the general correctness of the synthesis method, which is proven once for all, using the verification method developed in our PhD thesis.

This is joint work with Tudor Jebelean.

Biography: Nikolaj Popov is a postdoctoral researcher in the Theorema group of Prof. Bruno Buchberger and Prof. Tudor Jebelean, at the Research Institute for Symbolic Computation, University of Linz, Austria. His research deals with the development of a relevant theory for proving correctness of recursive programs in an automatic manner. His particular focus is on the automatic generation of a necessary and sufficient set of verification conditions in order for the program to be correct. He holds an MSc from Sofia University, Bulgaria, and a PhD degree from the Research Institute for Symbolic Computation of the Johannes Kepler University, Linz, Austria. (`http://www.risc.uni-linz.ac.at/home/npopov`)

Zu diesem Vortrag lädt der *Arbeitsbereich für Programmiersprachen und Übersetzer am Institut für Computersprachen* herzlich ein.
Tee: 10:00 Uhr in der Bibliothek E185.1, Argentinierstr. 8, 4. Stock (Mitte).