Università degli Studi di Palermo

Dipartimento di Matematica e Informatica

Words and Automata Research Group

SEMINAR ANNOUNCEMENT

Title: Advances on prefix normal words

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Thursday 24th October 2013, 3 p.m.
Room 7
Via Archirafi 34, 90123 Palermo

Abstract:

A binary word of length n is *prefix normal* if for all 1 <= k <= n, no factor of length k has more a's than the prefix of length k. For example, abbabab is not prefix normal because aba has more a's than abb. These words were introduced in [Fici & Lipták, On prefix normal words, DLT 2011], where it was shown that all binary words w have a canonical *prefix normal form* of the same length: a word w' which is prefix normal, and to which w is equivalent in a certain sense. The study of prefix normal words (and prefix normal forms) is motivated by the string problem known as binary *jumbled pattern matching*. In that problem, we are given a text T of length n over a binary alphabet, and two numbers x and y, and we want to know whether T has a factor with exactly x a's and y b's. While the online version can be solved with a simple sliding window algorithm in O(n) time, for the offline version, where many queries are expected, an index of size O(n) is constructed which then allows answering queries in constant time. We demonstrated in [DLT 2011] that prefix normal forms can be used to construct this index.

This is ongoing work with Péter Burcsi, Gabriele Fici, Frank Ruskey, and Joe Sawada.

All interested people, in particular students, are invited to participate.

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