## Theory I, Sheet 7

## Submission: hand in by 6th July 2011 before 16:00

- The solutions should be submitted in English.
- You must work on your own and write down your own solution. This does not exclude occasional discussions with your fellow students, but solutions copied from other students will not be accepted.

## Exercise 7.1 - Knuth-Morris-Pratt algorithm

Let P = rlrrlr, P' = rrllrrll be patterns and T = lrrrlrrllrrrlrrlrrlrrlrrlr be a text.

- 1. Compute the prefix function next for the pattern P.
- 2. Compute the prefix function next for the pattern P'.
- 3. Use the KMP algorithm for searching the pattern P in text T.

## Exercise 7.2 - Edit distance

[Points: 3+1+1]

[Points: 1+1+3]

Consider two strings A = ABRACADABRA and B = CHUPACABRAS.

- 1. Show the corresponding trace graph for transforming A into B. For each node draw only the feasible edges (i.e. edges that lead to the corresponding minimum value of the node).
- 2. Mark an optimal trace (i.e. an optimal path in the trace graph).
- 3. Specify the corresponding sequence of edit operations and D(A, B).