## Theory I, Sheet 7

- The solutions should be submitted in English.
- JUST FOR FUN exercises are not mandatory.
- Your solutions should be delivered to the lockbox in building 051 floor 00, or right before the start of the tutorial (June 18, 4:00 p.m.).
- You are allowed to discuss your solutions with each other. Nevertheless, you are required to write down the answers in your own words.

## 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

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  $\mathcal{D}(A,B)$ .