

Oberseminar Theoretische Informatik
Sommersemester 2006

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Efficient Detection of Network Motifs

Mo, 24.04.2006 um 14 Uhr (c.t.) im SR 226 (Carl-Zeiß-Str. 3, 2. Stock).

Motifs in a network are small connected subnetworks that occur in significantly higher frequencies than in random networks. They have recently gathered much attention as a useful concept to uncover structural design principles of complex networks. Kashtan et al. [Bioinformatics, 2004] proposed a sampling algorithm for efficiently performing the computationally challenging task of detecting network motifs. However, among other drawbacks, this algorithm suffers from sampling bias and is only efficient when the motifs are small (3 or 4 nodes). Based on a detailed analysis of the previous algorithm, we present a new algorithm for network motif detection which overcomes these drawbacks. Experiments on a testbed of biological networks show our algorithm to be orders of magnitude faster than previous approaches. This allows for the detection of larger motifs in bigger networks than was previously possible, facilitating deeper insight into the field.

Internetseite der Veranstaltung:

<http://theinf1.informatik.uni-jena.de/teaching/ss06/oberseminar-ss06>