

EINLADUNG

Zeit: Dienstag, 23. Oktober 2007, 15.00 Uhr

Ort: Seminarraum 4017, Ahornstr. 55

Referent: Dipl.-Inform. Daniel Mölle

Thema: **Exact Algorithms Based on Specific
Complexity Measures for Hard Problems**

Abstract Parameterized complexity theory constitutes an increasingly popular means of investigating the frontiers of tractability beyond the rather general notion of NP-hardness. Its essential idea lies in measuring the complexity of instances with respect to two quantities: the input size n as used in classical complexity theory, but also a parameter k that, if chosen wisely, reflects the inherent complexity of the instance. For many NP-complete problems under natural parameterizations, it turns out that they can be solved in time $O(f(k) \cdot \text{poly}(n))$ —a bound that implies tractability for small values of the parameter.

In this talk, we extend the idea of parameterization towards a design paradigm for exact algorithms which can be outlined as a two-phased approach: first determine a problem-specific complexity measure whose smallness aids us in tackling the respective problem, then prove that this complexity measure assumes small values in any case—either automatically or enforced by a limited amount of preprocessing. An application of this procedure allows us to derive improved runtime bounds for several well-known graph problems.

Es laden ein: Die Dozenten der Informatik