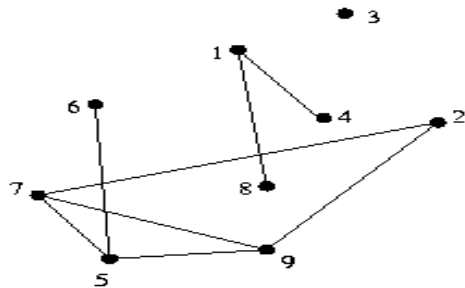


## Semester/Diploma/Master's Thesis "Distributed Approximation Algorithms"

Recently, the topic of distributed approximability has evoked much interest. Many interesting problems cannot efficiently be solved in a distributed fashion – but there is hope that even with few communication rounds, a reasonably good approximation can be found. While some of these problems seem to be of theoretical interest only, many others will find application in practice. Some notable fields where fast, low-communication approximation algorithms are of great importance are wireless ad hoc and sensor networks, and – of course – the internet.

In wireless ad hoc and sensor networks, for example, it is often unnecessary (and impossible) to spend many rounds of communication in order to compute an optimal solution. Instead, practitioners are interested in very fast algorithms, even at the cost of suboptimal solutions. In unstable environments with high mobility, the time in which a solution can be computed becomes the predominant issue.



The goal of this thesis is to work on algorithms for finding good approximations for various problems. There is some existing work in the area, but many interesting and important questions remain open. In particular, there are several computational models which may be of interest and several of them can be analyzed. Various interesting directions into which the thesis could develop. In addition to the theoretical work on algorithms, it is possible to show the algorithm's efficiency by simulation.

### Skills

- Interest in designing, analyzing, and possibly simulating algorithms.

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