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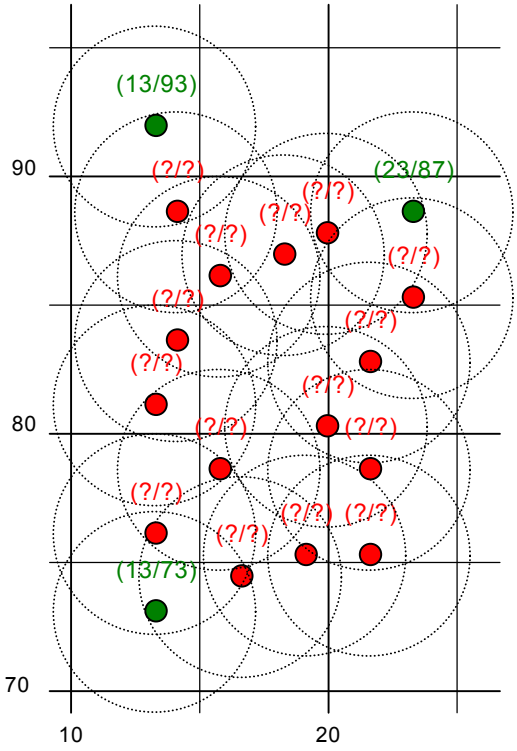
Semester/Diploma/Master's Thesis "Positioning Algorithms"

Mobile ad-hoc networks are networks of wireless devices without a common server infrastructure: The network nodes can only communicate directly with each other. But communication between two nodes is only possible if the two nodes are within a certain distance – the transmission radius of the wireless device. Nodes do not necessarily know where they are located. But their position might be interesting for a number of reasons.
Assume we have a set of nodes of which a subset knows its position. The main question we are concerned with is: How exact can nodes, which do not know their position, determine it by any Information they get from other nodes?



In this thesis we will first model the problem in one dimension and try to find theoretical boundaries of how exact the position of a node can be determined. We already have done some work in this area. Then we go on the two dimensional case where first a suitable model with reasonable properties needs to be developed. We have developed some very basic ideas here as well.

The goal of this thesis is to find theoretical limits of how well positioning can be done under certain conditions as well as the development and specification of simple algorithms for positioning of nodes. This may also include the implementation of a test bed for different algorithms and strategies.

Skills

- Basic knowledge of Theoretical Computer Science (e.g. "Kernfach Theoretische Informatik")

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