

# Interval Based Sensor Network Localization

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Most wireless sensor network applications require information about the geographical location of each sensor node. An approximated geographical location is needed for acquiring and managing data, geographic routing, geographic hash tables, energy conservation algorithms. Sensing data without knowing the sensor location is meaningless in environmental sensing applications such as animal habitat monitoring, bush fire surveillance, water quality monitoring and precision agriculture. This makes localization capabilities highly desirable in sensor networks.

A large number of research and commercial location systems have been developed over the past two decades. A general survey is found in [2]. Recently, some localization techniques have been proposed to allow estimating node location using information transmitted by a set of nodes with known positions. In this talk we consider distance-based techniques, which use inter-sensor distance or angle measurements in location calculation. There are many approaches for the implementation of the centralized distance-based algorithms. The most important are the following: multidimensional scaling [5], semidefinite programming [1], simulated annealing [3, 4] and genetic algorithm [6].

The localization problem can be formulated as a nonlinear global optimization problem, so we tried to solve it with interval based global optimization methods.

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## References

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