Distributed Algorithms for Autonomous Mobile Robots

(Invited Talk)

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Abstract

The distributed coordination and control of a team of autonomous mobile robots is a problem widely studied in a variety of fields, such as engineering, artificial intelligence, artificial life, robotics. Generally, in these areas, the problem is studied mostly from an empirical point of view. Recently, a significant research effort has been and continues to be spent on understanding the fundamental algorithmic limitations on what a set of autonomous mobile robots can achieve. In particular, the focus is to identify the minimal robot capabilities (sensorial, motorial, computational) that allow a problem to be solvable and a task to be performed. In this talk we describe the current investigations on the interplay between robots capabilities, computability, and algorithmic solutions of coordination problems by autonomous mobile robots.