

Distributed Computing by Mobile Robots: Expanding the Horizon

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Abstract

Extensive research focus within distributed computing has been spent on the computational and complexity issues arising in systems of mobile computational entities (called robots) operating in the Euclidean space in **Look-Compute-Move** cycles. In the classical *OBLLOT* model, the robots are *homogeneous*, having no distinguishing features and running the same algorithm. Moreover, they are *silent*, having no explicit means of communication, and *oblivious*, meaning that, whenever activated, they forget everything they have seen and done in previous cycles.

The research focus has been in determining the impact that internal capabilities (e.g., memory, communication) and external conditions (e.g. synchrony, type of the activation scheduler) have on the computability power of these robots (e.g., see [8] and chapters therein). Over the years, various enhancement of the basic model have been studied in regards to memory and communication under the different activation schedules (e.g., [3, 4, 5, 9, 10, 11]). At the same time, the computational landscape has been broadened by examining aspects typically explored in other areas of distributed computing that have not yet been investigated in these systems. One such aspect is the concept of robots possessing identifiers (which need not be identical), diverging from the usual assumption of homogeneity (e.g., [1, 2, 6, 7, 12]).

In this talk, I will first discuss some of the recent results shaping the overall computational landscape. I will then describe some recent explorations on the impact of introducing non-homogeneity of the robots.

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Category Invited Talk

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