Editorial

Editorial for Special Issue:

Distributed Robotic Systems

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Distributed Robotic Systems are focused on as a new strategy to realize flexible, robust and fault-tolerant robotic systems. In conferences and symposia held recently, the number of papers related to the Distributed Robotic Systems has increased rapidly,^{1,2,3} which shows this area has become one of the most interesting subjects in robotics. The Distributed Robotic Systems require a broad area of interdisciplinary technologies related not only to robotics and computer engineering (especially distributed artificial intelligence and artificial life), but also to biology and psychology.

Distributed Robotic Systems can be defined as robot systems which are composed of various types and levels of units, such as cells, modules, agents and robots. One category of papers included in this volume is a robot with a distributed architecture, where modular structure is adopted and/or the robot system is controlled by many CPUs in a distributed manner. Cellular robotic systems are included in this category.⁴

Another category of the papers is cooperative motion control of multiple robots. Coordinated control of multiple manipulators and cooperative motion control by multiple mobile robots using communication are discussed in these papers. The new elemental technologies are also presented, which are required for realization of advanced cooperative motion control of multiple autonomous mobile robots in this volume.

The last category of the papers is self-organization of distributed robotic systems. Though the Journal of Robotics and Mechatronics has already published the special issues on the self-organization system,^{5,6)} the latest progress is also presented in this volume. The papers belonging to this category are directed to swarm/collective intelligence in multi-robot cooperation issues.

I believe this special issue will inspire the reader's interests in the Distributed Robotic Systems and accelerate the growth of this new arising interdisciplinary research area.

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