



## **TASK ALLOCATION AND COMMUNICATION METHODOLOGIES FOR MULTI-ROBOT SYSTEMS**

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**ABSTRACT**—Two of the most important aspects in the design of multi-robot systems are the allocation of tasks among the robots and the robots' communication in a productive and efficient manner. Task allocation methodologies must ensure that not only the global mission is achieved, but also that the tasks are well distributed among the robots. An effective task allocation approach considers the available resources, the entities to optimize (time, energy, quality), the capabilities of the deployable robots, and appropriately allocates the tasks accordingly. The communication capabilities allow the robots to implicitly or explicitly communicate their status and the needed information regarding each other, the environment, and the tasks. This paper provides a survey of task allocation and communication methodologies for multi-robot systems.

**Key Words:** Multi-robot systems, task allocation, communication, distributed robotics, multi-agent systems.