

Synchronization of Two Mobile Robots

Authors : R. M. López-Gutiérrez, J. A. Michel-Macarty, H. Cervantes-De Avila, J. I. Nieto-Hipólito, C. Cruz-Hernández, L. Cardoza-Avendaño, S. Cortiant-Velez

Abstract : It is well known that mankind benefits from the application of robot control by virtual handlers in industrial environments. In recent years, great interest has emerged in the control of multiple robots in order to carry out collective tasks. One main trend is to copy the natural organization that some organisms have, such as, ants, bees, school of fish, birds' migration, etc. Surely, this collaborative work, results in better outcomes than those obtained in an isolated or individual effort. This topic has a great drive because collaboration between several robots has the potential capability of carrying out more complicated tasks, doing so, with better efficiency, resiliency and fault tolerance, in cases such as: coordinate navigation towards a target, terrain exploration, and search-rescue operations. In this work, synchronization of multiple autonomous robots is shown over a variety of coupling topologies: star, ring, chain, and global. In all cases, collective synchronous behavior is achieved, in the complex networks formed with mobile robots. Nodes of these networks are modeled by a mass using Matlab to simulate them.

Keywords : robots, synchronization, bidirectional, coordinate navigation

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