
Project

In our previous works [1],[2] we show that a large class of distributed control problems in robotics can be cast into a general framework based on the adoption of the Lloyd methodology. The adoption of a unified framework enables efficient solutions for the specific problems guaranteeing at the same time important safety and functional properties and a large degree of flexibility in the execution of group tasks. This project focus on an extension of the proposed algorithm in a three-dimensional space. This extension would allow the application of the Lloyd-based algorithms also to unmanned aerial vehicle (UAV) and autonomous underwater vehicle (AUV), enabling the system to operate with heterogeneous agents, which is the key to efficiently solve some of the nowadays' challenges e.g., agriculture robotics, environmental monitoring, search and rescue.

[1] M. Boldrer, L. Palopoli, D. Fontanelli, A unified Lloyd-based framework for multi-agent collective behaviours, Robotics and Autonomous Systems.

[2] M. Boldrer, P. Bevilacqua, L. Palopoli and D. Fontanelli, "Graph Connectivity Control of a Mobile Robot Network With Mixed Dynamic Multi-Tasks," in IEEE Robotics and Automation Letters