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Thème

A Bio-Inspired Swarm Clustering Controller for a Multi-Robots System

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Abstract

In this thesis, we study different methods to make a swarm of robots form an aggregation based on a cue like proximity, sound or light sensing.

To achieve that we propose different cue-based aggregation controllers that consist of changing the size of the swarm, the number of cues, the way the cue is implemented, whether it's fixed or mobile.

All controllers are evaluated using a simulated swarm robotics platform called ARGos, which is an open source multi-physics robot simulator capable of effectively simulating large-scale swarms of robots of any type. To this end, the type of robots used in all of our controllers is a 2-wheels differential drive mobile robot called foot-bot. Achieving the objectives of the present thesis has certainly led us to delve more deeply into the technologies and phenomena of swarm systems.

General Terms

Swarm robotics, swarm intelligence.

Key Words

Cue-based aggregation, Swarm Robotics, BEECLUST, Self-organization, Decentralized control, argos.