Publication Overview

2004 – 2020

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https://github.com/jkerdels/pub_overview

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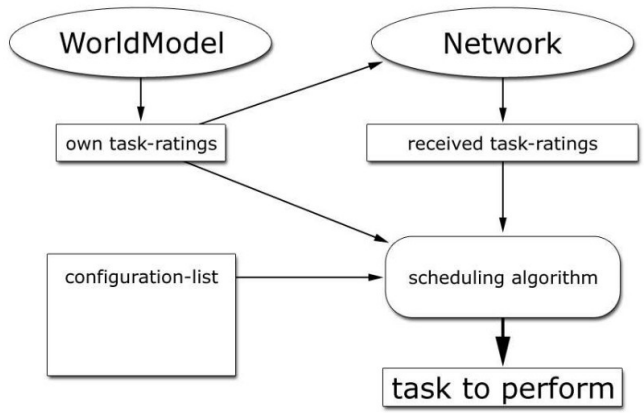
Decentral Control in Robot Teams

We developed a **decentral scheduling algorithm** that allows multiple robots to coordinate their behavior to achieve a common goal in a challenging, dynamic environment where communication might be intermittent and the number of robots might change without prior notice.

Characteristics of our approach:

- synchronization free
- low-bandwidth broadcast communication
- graceful degradation in case of
  - communication outages
  - loss of team members
- continuous replanning



Schematic of the proposed scheduler (from [1]).

The scheduling algorithm was successfully used during the RoboCup 2004 competition winning the Standard Platform League Open Challenge. video

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[1] J. Ziegler et al. *Virtual Robot - Adaptive Ressource Management in Robot Teams.* Technical Report 0204. presented at International RoboCup Worldchampion, Lissboa, July 2004. University of Dortmund, 2004 PDF bibtex

[2] I. Dahm et al. "Decentral control of a robot-swarm". In: *Autonomous Decentralized Systems, 2005. ISADS 2005. Proceedings.* Apr. 2005, pp. 347–351. DOI: 10.1109/ISADS.2005.1452083 PDF bibtex

RoboCup

Bar

Foo

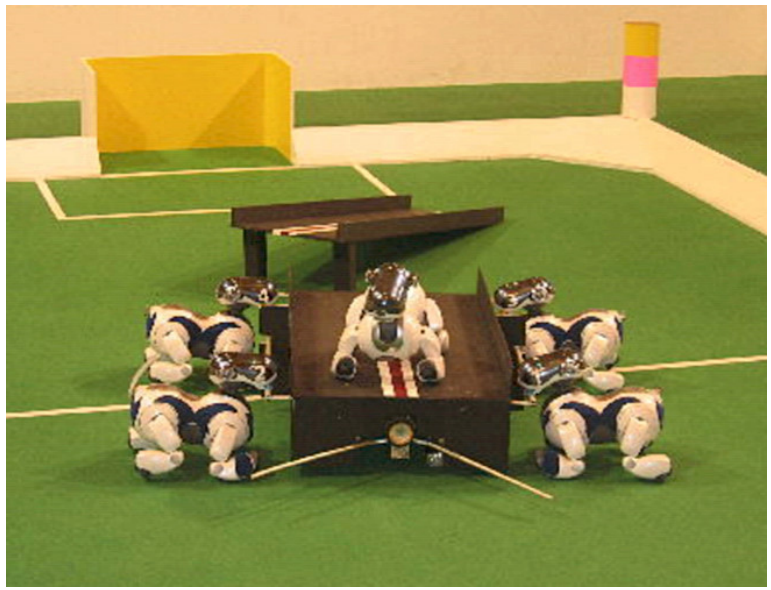

Figure from Dahm et al. [3].

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[3] Ingo Dahm et al. *Virtual Robot: Automatic Analysis of Situations and Management of Resources in a Team of Soccer Robots.* Tech. rep. PG 442 Final Report. University of Dortmund, 2004 **PDF** **bibtex**

References I

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