Exercise 8, TEK5010 Multiagent systems 2018

Class reading

In this exercise you should prepare by reading a collection of papers [1, 2, 3] and, in relation to these papers, reflect on some important swarm concepts that we will discuss together in class.

Question 1

How is the performance of the swarm characterized and evaluated in these papers?

Question 2

Try to explain the various properties that give raise to super-linear performance increase.

References

[1] C. Anderson, J.J. Boomsma and J.J. Bartholdi, ”Task partitioning in insect societies: bucket brigades”, Insectes soc., vol. 49, pp. 171–180, 2002, https://link.springer.com/content/pdf/10.1007%2Fs00040-002-8298-7.pdf

[2] Auke Jan Ijspeert, Alcherio Martinoli, Aude Billard and Luca Maria Gambardella, “Collaboration through the exploitation of local interactions in autonomous collective robotics: the stick pulling experiment”,Auonomous robots, vol. 11, pp. 149-171, 2001, http://people.idsia.ch/~luca/AR2001.pdf

[3] C.A.C. Parker, Hong Zhang and C.R. Kube, “Blind bulldozing: multiple robot nest construction”, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2003), 27-31 Oct., 2003, http://webdocs.cs.ualberta.ca/~kube/papers/Blind_Bulldozing_IROS2003.pdf