DAS - Distributed Algorithms for Swarm Robots

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Job description: In a previous summer project, we developed and implemented some fundamental distributed algorithms on the Harvard Kilobot platform (cf. http://users.ics.aalto.fi/ahalme/kilobots/). Kilobots are simple and inexpensive devices that provide a useful entry-level environment for research into decentralised cooperating robotics (or "swarm robotics"). However they are quite memory-constrained, slow, and have no environmental sensors of any specificity. In this project we will continue our work on implementing fundamental distributed algorithms on swarm robots, with the goal of developing reliable and algorithmically well-justified decentralised methods for achieving desired large-scale behaviours. However, to have more facility for complex tasks we are going to move beyond the Kilobot platform, tentatively to the "e-puck" robots from EPFL.

Additional information: Successful work in the summer project can later be extended to a B.Sc. or M.Sc. thesis.