

Physics inspired multi-agent models: application to sensor data fusion and cyber-physical systems control.

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 [LT2, Computer Laboratory, William Gates Building.](#)

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This presentation will deal with the use of Physics inspired multi-agent systems into the context of the Cyber-Physical systems with two main examples: the sensors data fusion for the localization and the tracking issues, and the control of autonomous vehicles for an obstacle avoidance purpose. This presentation will focus to the use of such approaches for tackling with real problems related to autonomous vehicles. In this distributed approaches context, there are basically two main points of view which can be adopted, whether one want to build up a system of intelligent agents or to conceive an intelligent system of agents (supposed to be non intelligent or behaving in a reactive way). This latest approach for problem solving put emphasis on the simplicity of individuals in comparison to the properties observed at collective level. Generally, the reactive multi-agent systems are known to have interesting properties such as: flexibility and adaptability to the variations of the problem constraints and reliability in the obtained results. However, designing reactive systems brings out some issues such as: how to link the problem domain to the agents solving process?, How to design the interaction between elements and the behaviours of them?, How to make the interpretation of the global emergent properties relative to the system's goal? The examples used in this presentation will give some clues to answer to these questions.

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