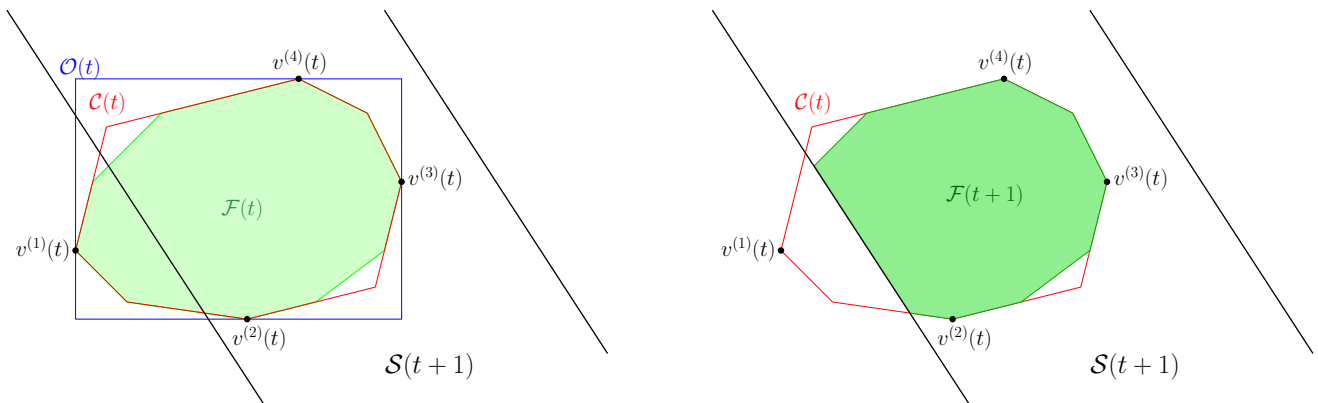


Thesis opportunities within the Systems and Control group

In the following, some topics for a Master thesis to be carried out with the Systems and Control group at DIISM are reported.

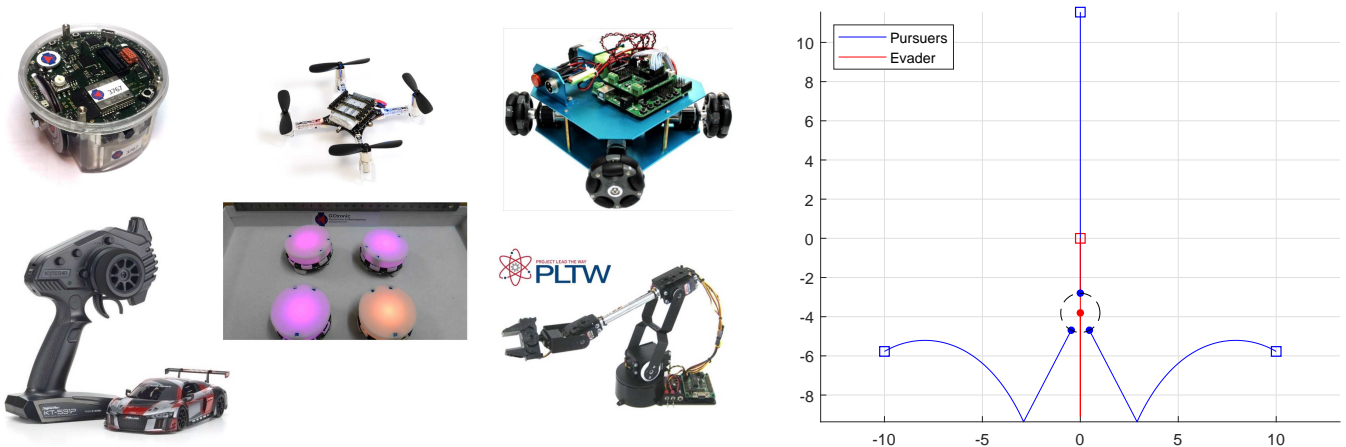
Set-membership identification techniques

The thesis concerns the study and implementation of system identification techniques in which uncertainty is described via a set-membership paradigm, i.e., it is assumed to be unknown but bounded. So, this approach is alternative to the traditional methods based on probabilistic concepts. Identification of both linear and nonlinear dynamic systems can be investigated.



Multi-agent systems

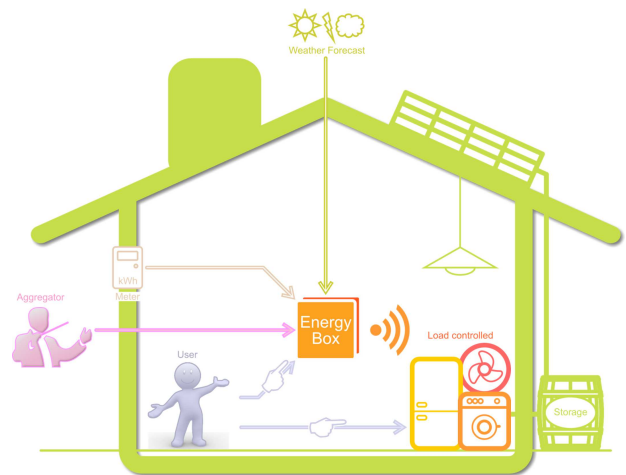
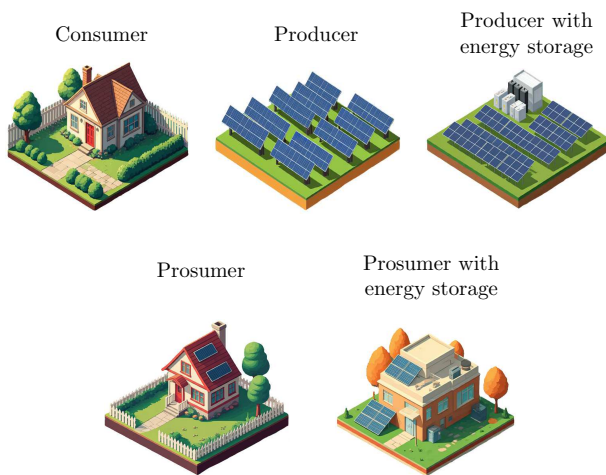
The thesis concerns the study of methods and techniques for a variety of problems involving multi-agent systems. Specifically, both cooperative and competitive games can be analyzed. In cooperative games, agents collaborate to achieve a common task (e.g., the optimal coverage of an area, formation control), while in competitive ones, they aim at contrasting objectives, as in pursuit-evasion games. Both simulations and real testbeds can be used to evaluate the research results.



Smart grids

Due to the high penetration of renewable generation facilities (photovoltaic panels and wind turbine) and electric vehicles, current electrical grids need to be redesigned. To this purpose, they will embed computation and communication capabilities to manage the arising challenges. In this context, thesis can be developed in several fields, as the following:

- Energy communities
- Plug-in electric vehicles
- Smart buildings
- Energy storage systems
- Demand response aggregation



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