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**Title of the doctoral thesis:** Behavior-based control system of the inspection mobile robots group

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**Department conducting the doctor's degree:**

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**Summary:**

The main goal of the PhD thesis was to elaborate a control system of an inspection mobile robots group. After a comprehensive study of the existing Solutions there were formulated the following theses:

- (i) for multi-task missions it would be better to auction robots instead of tasks;
- (ii) simultaneous evaluation (in contrary to one-sided evaluation) of the robot fitness to task and task attractiveness will be more beneficial for multi-robot system operation.

In order to prove the rightness of the stated theses there was proposed a methodology for building control systems of mobile robots groups. Basing on that methodology it is possible to elaborate a control system facilitating an allocation of tasks among robots constituting a group. Furthermore, there was proposed a method for multi-criteria robot-to-task fitness evaluation, which is composed of the robots concurrency position and the task's attractiveness assessments. There were also elaborated the multi-criteria tasks allocation methods and the behavior-based robot's movement controller.

The verification of the system and proposed task allocation method was carried out in a simulation environment. The analysis of the obtained results confirmed rightness of the formulated theses.