

This paper deals with design and implementation of an evolutionary system for control of an autonomous mobile robot. This system should make possible an adaptation to a group of tasks, that can be similarly defined for a living being. We use results of real experiments with laboratory rats and tasks, which these rats are able to learn. The robot control system is a combination of several methods of mobile robotics and artificial intelligence. The adaptable part of the control system is based on genetic algorithms and neural networks. This work covers a wide range of problems related with this subject — various elements of the control system, the robot control and implementation, and also components of the test environment, which can be used to execute evolutionary experiments with real robots. The final part of this work includes results of our practical experiments with the robot and their comparison with real testing of rats on similar tasks.