

ABSTRACT

Theme: “The system of navigation, obstacles recognition and path finding in the maze for mobile robot. Routing module”.

Thesis explanatory note: 108 p., 49 fig., 8 tab., 2 appendices, 14 sources.

The object of research – methods and navigation systems for IRS.

The subject of research – methods for constructing maps of the environment and methods for routing.

Purpose of work – research and development of intelligent system of routing for IRS, which allows to work in conditions of uncertainty and incompleteness of the data on the environment.

This paper reviewed and analyzed existing navigation system for IRS analyzed the methods and algorithms of constructing environment maps, planning routes and finding the optimal route.

The system of IRS routing based on modified method of decomposition, modifications visibility graph and using of A* algorithm with the proposed heuristics, was developed.

The routing system is implemented using the C++ programming language and work with OS Windows and Linux as a dynamic link library.

Results accuracy of system is shown by experiments of map constructing and path finding of IRS that was conducted in this paper.

The results of this study should be used for developing complex intellectual control system for IRS that will use artificial intelligence and/or methods of decision-making as an integral part of navigation and localization system of IRS in the environment.

INTELLECTUAL ROBOTIC SYSTEMS, MAP, VISIBILITY GRAPH, PATH FINDING, HEURISTICS, METHOD OF DECOMPOSITION, CLASSIFICATION