

## ABSTRACT

The thesis is presented in 40 pages. It contains bibliography of 12 references. Fifteen figures and 3 tables are given in the thesis.

The goal of the thesis is to build a mathematical model of the robot manipulator by means of direct and inverse kinetic problem on the basis of which the possible future creation of interface to facilitate configuration of the manipulator and its application in different industries and for further planning of production processes.

Considered, discusses solution methods of direct and inverse kinematic task and pathfinding. Was done a comparative analysis of existing methods of solving these problems. Based on the formulated criteria for the solution of the task, the modified algorithm Lee is selected for solving the direct kinematic task and pathfinding. The modified algorithm of BFGS is selected for the inverse kinematic task. The main selection criteria are the speed of convergence of algorithm, memory usage, ease of implementation and support, configuration capability for different task types and models of robots.

During the execution of the thesis was developed software that implements the selected methods. The developed system was tested.

Was done the analysis of these methods work to create the interface of the robot on the basis of tests of the software.

Keywords: robot manipulator, robototechnics, pathfinding, inverse kinematics task, direct kinematics task, modified algorithm Lee, modified algorithm BFGS