

ABSTRACT

Master's thesis: 96 pp., 26 pp., 13 tables, 1 supplement, 52 sources.

Actuality. The main direction of research is related to the search for the path of artificial intelligence. Such search is commonly used in game tasks, logistics, or robotics.

The development of information technology, which we have witnessed in recent years, puts the researchers new challenges in finding a way for which classical approaches can not be applied due to circumstances such as a dynamically changing environment, the great complexity of the environment, the inadequate speed of the calculation, the inability to work in parallel mode Such environments, to carry out calculations in several streams. In this regard, the actual scientific task is to create new approaches to constructing models that will reflect the environment in a more convenient form, to improve the path search algorithms, improve the response rate for changes in the environment, and have the possibility of asynchronous calculations in them.

Relationship of work with scientific programs, plans, themes. The master's thesis is executed in accordance with the plan of the department of numerical methods and computer simulation of the VM Institute of Cybernetics. Glushkov of the National Academy of Sciences of Ukraine within the framework of the research theme "To develop new methods of parallel and distributed processing of superlarge data volumes for the analysis of complex multicomponent media" (citation VP.150.13, state registration number 0117U000471, 2017-2021).

The aim of the study. Speeding up the path search in the navigation model, reducing its dimension, the ability to dynamically change the model, the possibility of parallel computing.

To achieve the goal, you must perform the following tasks: To achieve the goal must perform the following tasks:

perform a survey of well-known navigation models for artificial intelligence;

- to perform the formalization of the navigation model;
- develop a model navigation;
- review the methods that allow you to optimize the model;
- perform inspection algorithms finding a way acceptable to the constructed model;
- carry out an overview of alternative methods of using the model;
- the ability to explore the parallel construction model;
- develop algorithms for software implementation models and in form that may korystovuvatysya you in finding the way;
- perform the analysis of the results.

Object of study - navigation process in a virtual environment.

Purpose of the study - construction and usage patterns of orientation in space.

Research methods - graph theory, analysis of algorithms.

The scientific novelty of the results is to create a model based navigation dilution oktodreva voxel, which, in different from most other models kept the location of obstacles, not space.

Publications. The material work is published in the scientific journal "Young Scientist" [51] and in the theses of the scientific conference of students, undergraduates and postgraduates [52].

ARTIFICIAL INTELLIGENCE, SEARCH ALGORITHM, SPARSE VOXEL OCTREE, GRAPH THEORY, VOXELS, PARALLEL PROGRAMMING.