

REVIEW

For the dissertation of Wang Jianyuan

«Алгоритм управления ходьбой антропоморфных роботов и экзоскелетов по подвижной поверхности»,

submitted for the degree of candidate of technical sciences in the specialty 05.13.18- «Математическое моделирование, численные методы комплексные программ»

The relevance of the topic of the dissertation research is emphasized by the constant development of the need of human society for humanoid robots. The study of algorithms for controlling the walking of humanoid robots on a moving surface can significantly increase the adaptation of humanoid robots to a complex and varied external environment, so that the robots can quickly enter human society and serve humanity.

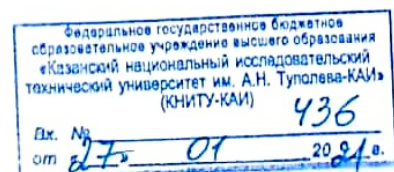
The dissertation includes six main chapters and a conclusion. The first chapter is devoted to an overview of the subject area of research, including a comparative analysis of existing methods, their advantages and disadvantages. In the second and third chapters, the author provides a method of planning and optimization the gait of bipedal robots. The fourth chapter describes a method for controlling the walk of humanoid robot based on feedback sensors. The fifth chapter contains a description of the developed visual and convenient simulation system. The sixth chapter summarizes the main results of research.

In the course of the dissertation work, Wang Jianyuan solved all the tasks. The author's algorithm for controlling the walking of humanoid robot on a moving surface and simulation software for humanoid robots are scientifically novel.

The main research results on the topic of the dissertation were published in 6 printed works, including 2 articles in scientific and technical periodicals recommended by the Higher Attestation Commission of the Russian Federation.

The practical significance of the results of the dissertation work is:

1. the ability to use the developed programs for solving various practical problems of humanoid robots;



2. the results of the study were applied to the humanoid robot ROMA, developed by the Kazan Federal University, and also introduced into the educational process of the Kazan Federal University.

The disadvantages of the abstract include:

1. the control method for the walking of humanoid robot based on ZMP is insufficiently described.
2. did not explain the advantages of artificial fish swarm algorithm over other algorithms.

Despite the listed shortcomings, I believe that Wang Jianyuan's dissertation work fully complies with the requirements of the "Regulations on the procedure for awarding academic degrees" of the Higher Attestation Commission of the Russian Federation, which are submitted for candidate dissertations, and the applicant is worthy of being awarded the degree of candidate of technical sciences in specialty 05.13.18- «Матемитическое моделирование, численные методы комплексы программ».

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