

THE APPEARANCE OF A MATHEMATICAL MODEL AND SOFTWARE DEVELOPMENT SYSTEM AS A CONTROL OBJECT OF A ROBOT

A. K. Abdullaev

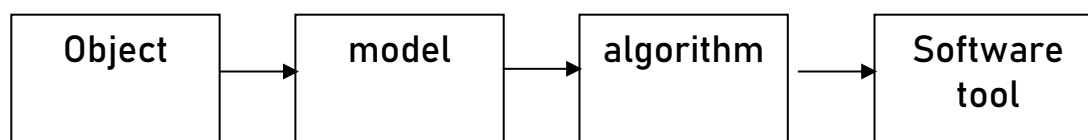
Kokand State Pedagogical Institute

ANATATION

The basis of this article is the mathematical model of mobile industrial robots as a control object, and the appearance of a software development system has been implemented.

Keywords: algorithm, software tool, object, trajectory, automatic model, kinematic model, chain, robot, modeling, Determinir

In general, the following chain is in place in technical systems in motion modeling, control and obtaining the last necessary solution:



Let's look at the application to robots while maintaining this chain sequence.

1. When a robot is considered as an object, it is divided into clear and non-standard in terms of the accuracy of the motion system. The first generation of automatic control system is solid application-dependent robots movement system is clear, and the second and third generation adaptive and intelligent robots movement system is uncertain. As mentioned in the previous paragraph, the basis of moving robots is precisely its movement, as moving robots are the objective of R & D as an object.

2. Since the movement of the robot is modeled, its result requires working with a class of models of a suitable class. Modeling is divided into three-determinized, stochastic and non-stochastic (neither determinized nor stochastic) views.

Determinized modeling can be used in the accuracy of information about research objects and in the clarity of the functional dependence of its parameters. It will be possible to use stochastic modeling in the event that the information about the parameters of the research object and the reflection of the variety or repetition of their relationship is of a statistical nature. Noravshan modeling on the basis of sets can be used when the data between the complexity of the object and its parameters are not complete and are of a nostalgic nature. This information is expressed by experts in the form of words and sentences.

Since the object under study is a class of robots in which the motion system is accurate, determinized modeling is used, and the class of the selectable model will also be determinized. The choice of model is carried out as Figure 1.

As you know, the control model is built on the basis of the motion model. Since mathematical models of the robot as a control object are compiled, there are their manifestations in the following cases (fig.

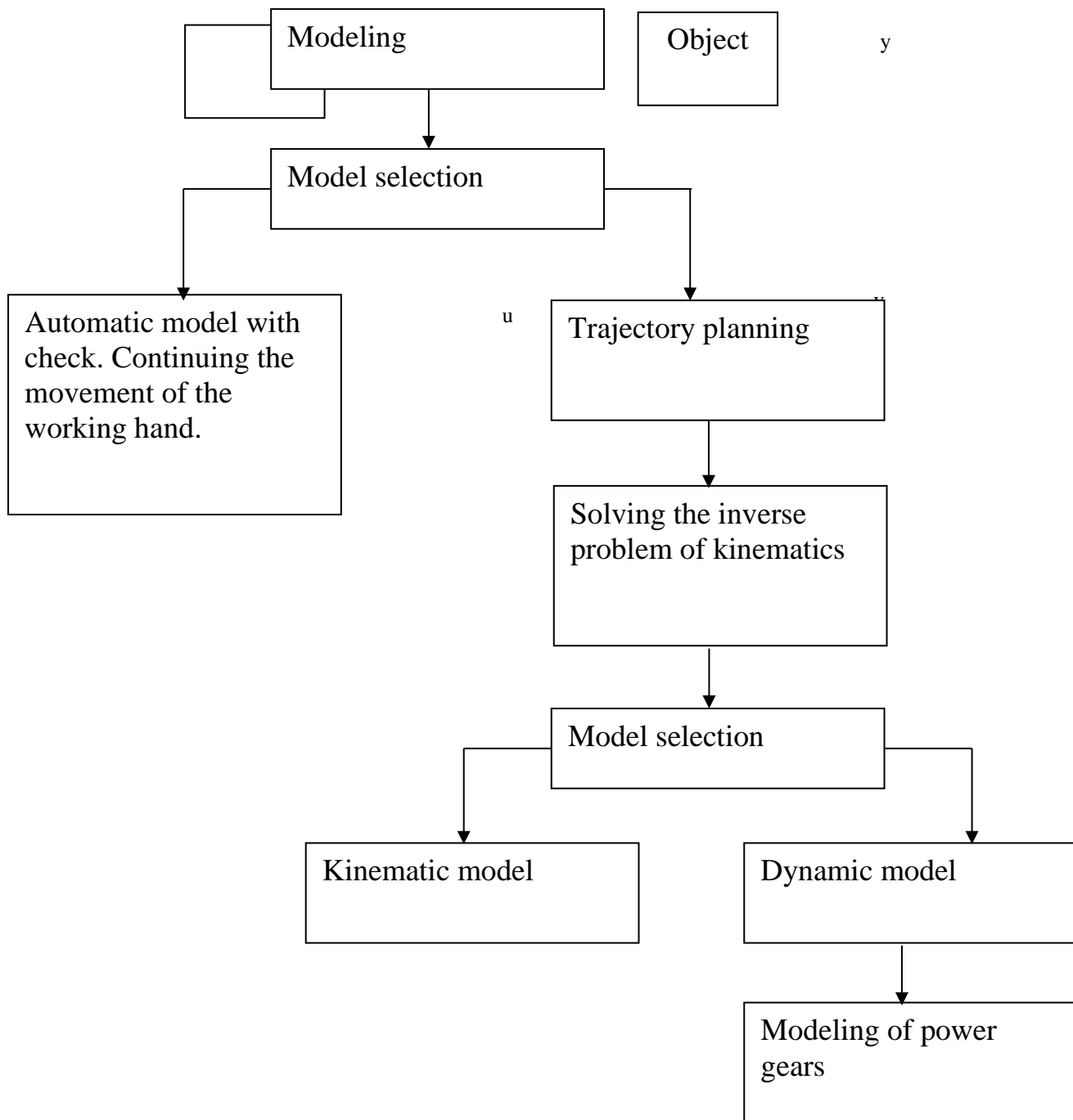


Figure 1. Robot motion modeling system.

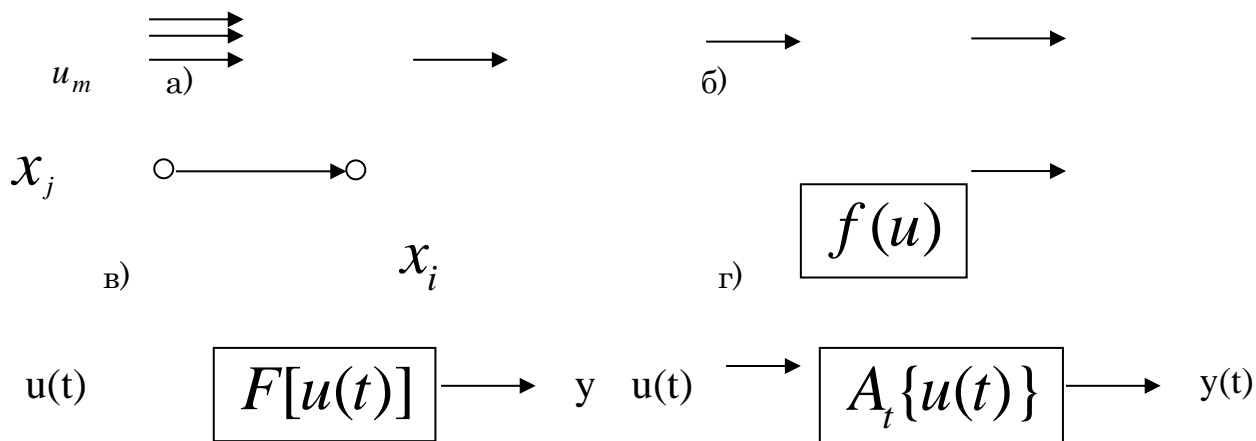
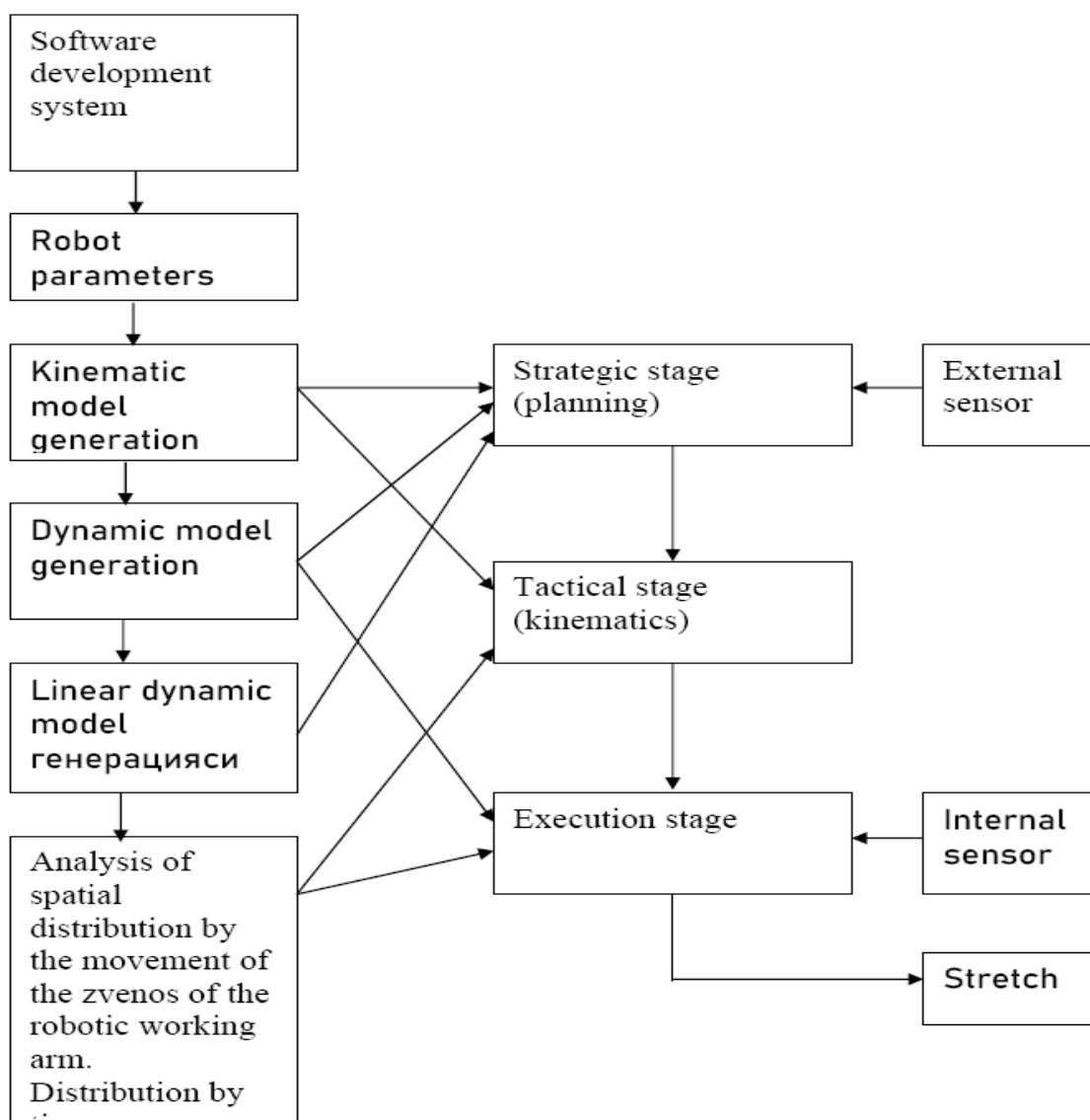


Figure 2. Manifestations of mathematical models of the robot as a control object.
e)

3. Three stages are considered in the development of algorithms and software development of robots motion and control models. These are the strategic stage, the tactical stage and the execution(execution) stage. Stages and models corresponding to them are given in Figure 3.



REFERENKES

1. Онорбоев Б.О., Хонбобоев Х.И., Абдуллаев А.К., Сиддиков Р.У. Узгарувчан тузилмали саноат роботларини бошқариш модели//Узбекский журнал «Проблемы информатики и энергетики». - Ташкент, 2007. - №2. - С.8-12.
2. Онорбоев Б.О., Хонбобоев Х.И., Абдуллаев А.К. Асоси ҳаракатланувчан саноат роботларининг бошқарув масалаларига доир//Узбекский журнал «Проблемы информатики и энергетики». -Ташкент, 2008. - №1. – С.19-23.
3. Абдуллаев А.К. Самолётсозликда кулланилувчи роботнинг бошқарув объекти сифатида математик модели ва дастурий таъминотини қуринишлари// Авиакосмос техникасини яратиш ва ишлатиш муаммолари: Тез. докл. Респ. научно-техн. конф. – Ташкент, 2008. – С.41-42.
4. Онорбоев Б.О., Хонбобоев Х.И., Абдуллаев А.К. Самолётсозликнинг технологик жараёнларида кулланилувчи асоси ҳаракатланувчан саноат роботининг динамик тенгламаси хақида// Авиакосмос техникасини яратиш ва ишлатиш муаммолари: Тез. докл. Респ. научно-техн. конф. – Ташкент, 2008. – С.43-45.
5. Онорбоев Б.О., Абдуллаев А.К., Сиддиков Р.У. Робототехника тизимларини бошқаришда позицион аниқлик ва сезгирликни ошириш масалалари// Современное состояние и пути развития информационных технологий: Тез. докл. Респ. научно-техн. конф. –Ташкент, 2008. – С.209-212.
6. Абдуллаев А.К. Асоси ҳаракатланувчан саноат роботи ҳаракатининг математик модели//Научн-технический журнал ФерПИ. - Фергана, 2008. - №4 – С. 27-32.
7. Динамика управления роботами. М:Наука. 1984. 336 с.
8. Пулатов Ш.Й., Мадрахимов З.Т. Модели и методы функционально-параметрического взаимодействия промышленного робота с обрабатывающим оборудованием в составе ГПМ. - Препринт. Р-9-48.-Ташкент: Уз НПО "Кибернетика" АН УзCSANOAT ROBOTLARI. 1990. - 50 с.
9. O'ZBEKISTON RESPUBLIKASI, OLIY VA O. "RTA MAXSUS TA'LIM VAZIRLIGI Yusupov Ibragim Mirsaydalievich UMUMIY MIKROBIOLOGIYA 5110400-Biologiya o'qitish metodikasi DARSLIK Toshkent-2020 138-139 betlar." *Мувофиқлаштирувчи кенгашининг ўқув-услубий бирлашма ва комиссиялари томонидан ижобий хулоса берилган. Ўз Р. Олий ва ўрта махсус таълим вазирлигининг* (2021).
10. Yusupov, Ibragim. "METHODS OF DETERMINING THE MINERALIZATION OF THE SOIL: <https://doi.org/10.47100/conferences.v1i1.1393>." *RESEARCH SUPPORT CENTER CONFERENCES*. No. 18.06. 2021.
11. Yusupov, Ibragim. "METHODS OF DETERMINING THE MINERALIZATION OF THE SOIL." *Конференции*. 2021.
12. Mirsaydalievich, Yusupov Ibragim. "SCIENTIFIC AND METHODOLOGICAL BASES OF ECOLOGICAL EDUCATION OF SCHOOLCHILDREN." *INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 7.429* 11.06 (2022): 102-106.
13. Mirsaydaliyevich, Yusupov Ibragim. "HISTORY OF BIOINFORMATICS." *INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 7.429* 11.07 (2022): 72-76.

14. Тошматова, Шоирахон Рузиевна. "Показатели достоверности и нарушения подразделений экологических ниш тлей." *Молодой ученый* 20 (2016): 50-53.
15. Toshmatova, Shoirahon Ruzievna, and Saminjon Olimovich Usmonov. "Biological aspects of human adaptation to environmental conditions." *ACADEMICIA: An International Multidisciplinary Research Journal* 11.3 (2021): 2185-2188.
16. Kalonova, M., R. V. Tashmatova, and N. K. Mukhamadiev. "Preparation of melanin from silkworm wastes and studying its physical and chemical characteristics." *CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES* 1.2 (2020): 8-12.
17. Muminova, R. N., and R. Sh Tashmatova. "Bioecological features and significance of higher aquatic plants of the syr darya basin." *ASIAN JOURNAL OF MULTIDIMENSIONAL RESEARCH* 10.4 (2021): 939-943.
18. Toshmatova, Sh R., and I. Ernazarov. "THE IMPORTANCE OF THE PROBLEM OF BIOREMEDIATION AS AN IMPORTANT SCIENTIFIC AND PRACTICAL PROBLEM IN THE FIELD OF HUMAN ACTIVITY." *Экономика и социум* 1-1 (2021): 274-276.
19. ТОШМАТОВА, ШОИРАХОН РУЗИЕВНА, ЗАФАРЖОН МАМУРОВИЧ ЭРНАЗАРОВ, and ДИЛФУЗАХОН АДХАМОВНА ИБРАГИМОВА. "ILMIY XABARNOMA. NAUCHNYY VESTNIK." *ILMIY XABARNOMA. NAUCHNYY VESTNIK Учредители: Андижанский государственный университет им. ЗМ Бабура* 4: 48-55.
20. Toshmatova, Sh R., Z. M. Ernazarov, and D. A. Ibragimova. "RESULTS OF ANALYSIS OF AN APPLE OF RED BLOOD APHID (ERIOSOMA LANIGERIUM) IN THE RESEARCH AREA." *ILMIY XABARNOMA*: 54
21. Sharipova, O. A. "The Role of National Values in the Family in Child Education." *International Journal on Orange Technologies* 3.4 (2021): 238-240.
22. Махкамов, Г. М., and Р. Я. Рuzматов. "Педагогические и психологические проблемы обучения детей с нарушениями зрения." *Наука и мир* 2.4 (2020): 84-86.
23. Облабердиева, К. Д., et al. "Воспитание информационной и нравственной культуры у современной молодежи в интернете." *Сборники конференций НИЦ Социосфера*. No. 12. Vedecko vydavatelske centrum Sociosfera-CZ sro, 2016.
24. Mahkamov, Gulomjon Mamurovich, and Rozali Yakubovich Ruzmatov. "About the practice of using excursions in natural lessons." *ACADEMICIA: An International Multidisciplinary Research Journal* 11.3 (2021): 2066-2070.
25. Mo'minova, R. N., and S. Sobirjonov. "DEVELOPMENT OF ECOLOGY IN UZBEKISTAN." *INTERNATIONAL JOURNAL OF RESEARCH IN COMMERCE, IT, ENGINEERING AND SOCIAL SCIENCES ISSN: 2349-7793 Impact Factor: 6.876* 16.06 (2022): 82-85.
26. Mahmudovna, Akhmedova Mastura, and M. M. Isaboeva. "Forms of organizing the cognitive activity of students in the process of solving problems and exercises in biology." *Web of Scientist: International Scientific Research Journal* 3.7 (2022): 68-76.
27. Юсупова, Махпуза Нумановна, and Мастура Махмудовна Ахмедова. "МЕВАЛИ ДАРАХТЛАРНИ ЗАРАРКУНАНДАЛАРИГА УЙФУНЛАШГАН КУРАШ ЧОРАЛАРИ." *ЖУРНАЛ АГРО ПРОЦЕССИНГ* 2.8 (2020).
28. Ахмедова, Мастура Махмудовна. "ЗАРАРКУНАНДАЛАРГА ҚАРШИ ФОЙДАЛАНАДИГАН ЙИРТҚИЧ ЭНТОМОФАГЛАР." *Интернаука* 23-2 (2018): 43-44.

29. ТУРДИЕВА, О. М., ТОЖИБОЕВА, С. Х., & ТУРСУНОВА, Ш. А. (2015). О ПРЕДОТВРАЩЕНИИ УСТАЛОСТИ У ШКОЛЬНИКОВ. In *БУДУЩЕЕ НАУКИ-2015* (pp. 422-426).
30. Рузиматов, Р. Я., Махкамов, Г. М., Отажонова, С. Р., & Турсунова, Ш. А. (2017). Промышленное развитие в Коканде, причины экологических проблем (1956-1975гг.). *Высшая школа*, (6), 77-78.
31. Tursunova, S. A., & Mamasoliev, S. T. ALGOFLORES OF TYPICAL GRAY SOILS FOR CONTINUOUS TILLAGE. *Chief Editor*.