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THE BASIS IS GENERALIZED AND VERIFICATION ALGORITHMS FOR OPTIMAL CONTROL OF MOBILE INDUSTRIAL ROBOTS

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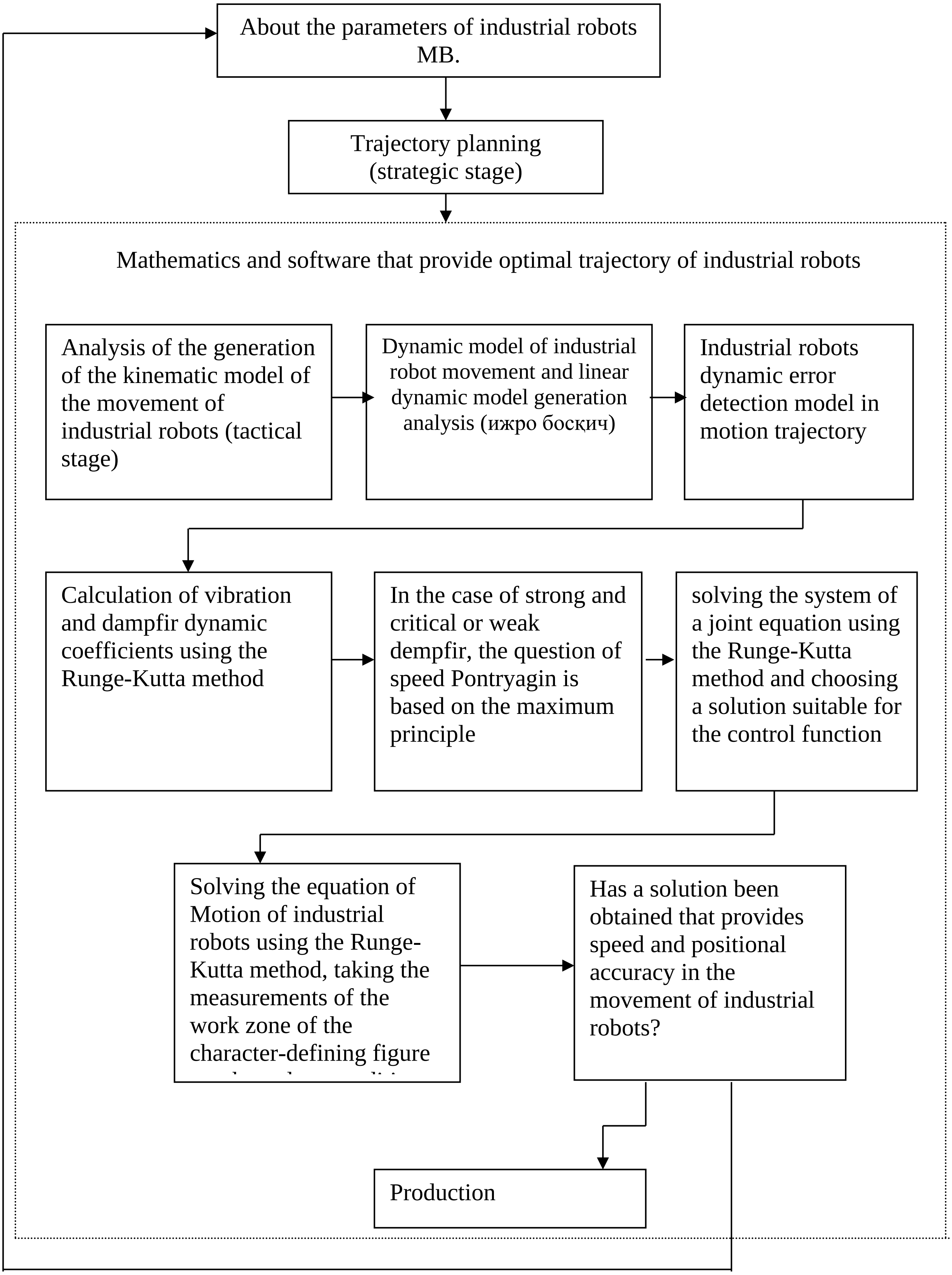
ANATATSION

This article introduces the generalized and verification algorithms for optimal control of mobile industrial robots as well as a generation of models characterizing the spatial migration of the robotic executor mechanism, and provides scientific information on the analysis

Keywords; industrial robots, coefficient, generation, software, strategic, tactical, kinematic, joint equation, system.

The basis of motion industrial robots the appearance of mathematical and software of optimal control is shown in Figure 1. The sequence of operations given in Figure industrial robots relies on three stages of control, strategic, tactical and execution stages. In mathematics and software, actions related to the tactical and execution stage are considered. At these stages, the sequence of actions is performed as follows: at the tactical stage, the kinematics of industrial robots are looked at, a generation of models is introduced and analyzed that characterize the spatial migration of the robot executor mechanism without taking into account forces and moments.
For the Robot, the execution stage is the main one, and the dynamic model of the movement, the linear dynamic model and their generation are presented and analyzed. A suitable model is obtained, and using the Runge-Kutta method, the dynamic coefficients of the model are determined and the equation is solved. As a result, a dynamic error is detected. The motion model of industrial robots is given the question of speed. Based on the maximum principle of pontryagin, the dynamic coefficients of the model are given the question of speed on three different conditions. The Hamilton function and the system of joint equations are structured and solved using the Runge-Kutta method. Based on the values \ u200b \ u200bof the control function at the limit points, a system of equations is compiled, and it is solved by the Runge-Kutta method. To increase the positional accuracy, the dimensions of the geometric figure characterizing the robotic work zone were taken as a boundary condition and solved using the Runge-Kutta method. "Does the selected optimal trajectory provide speed and positional accuracy?"checked. If the condition is met, then SR directly participates in the implementation of technological operation or process. Otherwise, the parameters of the robot from the database chose from another, and the sequence of the above actions is repeated.



1-расм. СРнинг оптимал траекториясини таъминловчи математик ва дастурий таъминотнинг чизмаси.

Now let's look at the algorithm for checking the controllability of industrial robots, the basis of which is moving. For this, the basis is considered an algorithm for checking controllability, taking into account the fact that mobile industrial robots perform complex spatial operation. The algorithmic sequence block scheme is shown in Figure 2.

1-the beginning

2-as preliminary data on the verification of controllability of industrial robots, the following are included: the number of zvenos of industrial robots being looked at (N), the time interval spent during the movement of the acting mechanism from the first point to the second point ¼и (t_0, T), Kinematics and technical characteristics of industrial robots

$(D = \{d_{ij}(x, y), i, j = \overline{1, N}\};$ $h_i(x, y),$ $H_i(x, y),$

$S_i(x, y),$ $G_i(x, y),$ $c_i(x, y), i = \overline{1, N})$ of all zvenolar $t = t_0$ location coordinate and speed of movement, $t \in [t_0, T]$ moment at industrial robots for zvenos $(u_i(t), i = \overline{1, N})$ control values of parameters.

3-the movement of the acting mechanism of the basis of the movement of industrial robots.

$$\tau = Hu - S\dot{q} + Gq_m + Gq$$

The right side of Equation 4 is equal, the left side is equal

$$\tau = D\ddot{q} + h\dot{q} + c$$

$$Hu - S\dot{q} + Gq_m + Gq = D\ddot{q} + h\dot{q} + c$$

Solving the last equation in block 5-4 using the Runge-Kutta method.

The 6th quadratic form is checked for positive detection.

7-if yes, then it will go to block 7, that is, if the system is manageable, "no", then other industrial robots will be selected from the database;

8-that's it

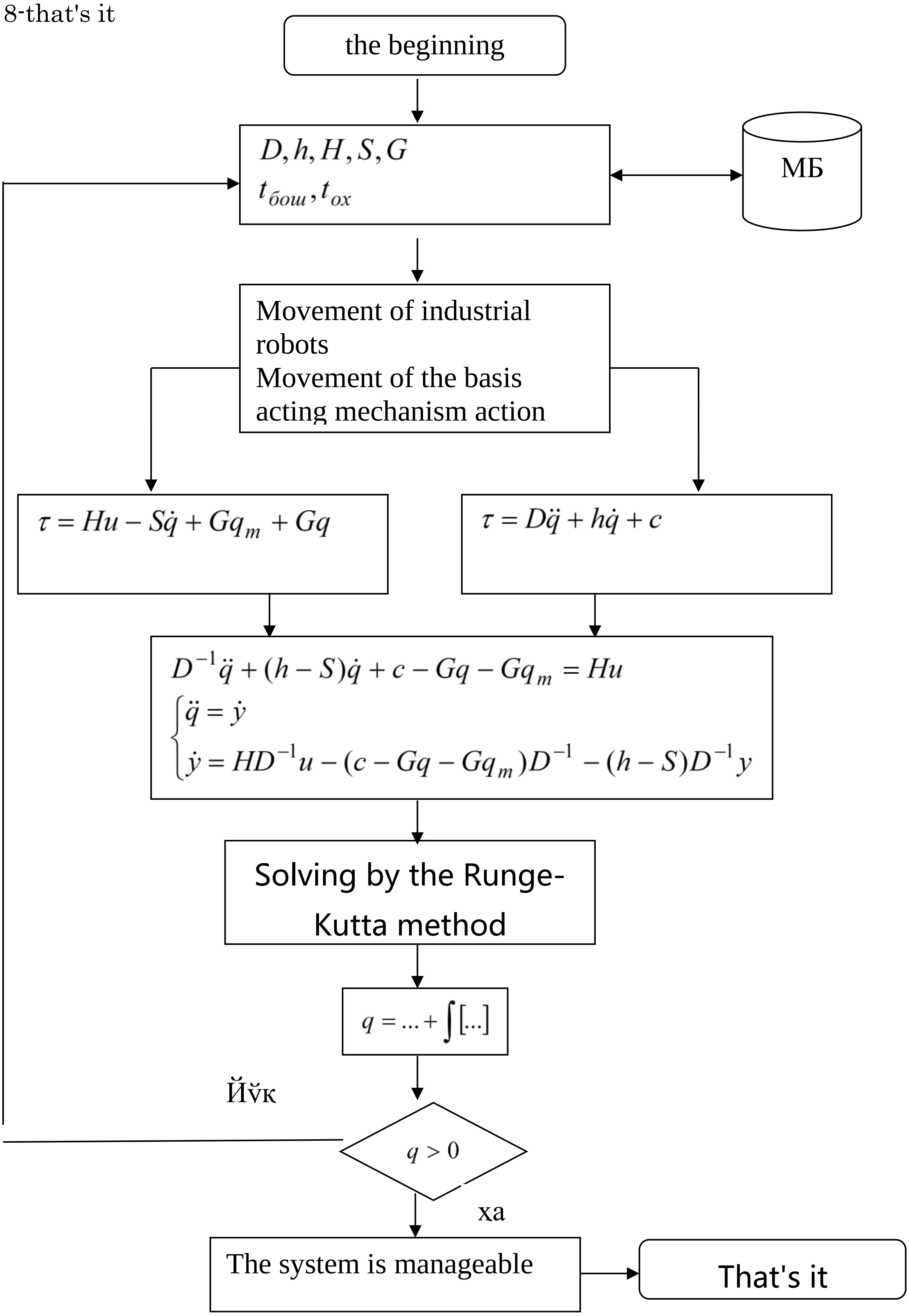


Figure 2. The basis is the block-scheme of the algorithm for checking the motion of a moving sr to controllability.

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