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Altri autori (Persone)	DombreE (Etienne) KhalilW (Wisama)
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parameters of the robot; 1.4.2.2. Parameters of the robot's location; 1.4.2.3. Geometric parameters of the end-effector; 1.4.3. Generalized differential model of a robot
1.4.4. Principle of geometric calibration1.4.4.1. General form of the calibration model; 1.4.4.2. Identifying the geometric parameters; 1.4.4.3. Solving the identification equations; 1.4.5. Calibration methods of geometric parameters; 1.4.5.1. Calibration model by measuring the end-effector location; 1.4.5.2. Autonomous calibration models; 1.4.6. Correction of geometric parameters; 1.5. Dynamic modeling; 1.5.1. Lagrange formalism; 1.5.1.1. General form of dynamic equations; 1.5.1.2. Calculation of energy; 1.5.1.3. Properties of the dynamic mode; 1.5.1.4. Taking into consideration the friction
1.5.1.5. Taking into account the inertia of the actuator's rotor1.5.1.6. Taking into consideration the forces and moments exerted by the end-effector on its environment; 1.5.2. Newton-Euler formalism; 1.5.2.1. Newton-Euler equations linear in the inertial parameters; 1.5.2.2. Practical form of Newton-Euler equations; 1.5.3. Determining the base inertial parameters; 1.6. Identification of dynamic parameters; 1.6.1. Introduction; 1.6.2. Identification principle of dynamic parameters; 1.6.2.1. Solving method; 1.6.2.2. Identifiable parameters; 1.6.2.3. Choice of identification trajectories
1.6.2.4. Evaluation of joint coordinates1.6.2.5. Evaluation of joint torques; 1.6.3. Identification model using the dynamic model; 1.6.4. Sequential formulation of the dynamic model; 1.6.5. Practical considerations; 1.7. Conclusion; 1.8. Bibliography; Chapter 2. Modeling of Parallel Robots; 2.1. Introduction; 2.1.1. Characteristics of classic robots; 2.1.2. Other types of robot structure; 2.1.3. General advantages and disadvantages; 2.1.4. Present day uses; 2.1.4.1. Simulators and space applications; 2.1.4.2. Industrial applications; 2.1.4.3. Medical applications; 2.1.4.4. Precise positioning
2.2. Machine types

Sommario/riassunto

This book presents the most recent research results on modeling and control of robot manipulators.Chapter 1 gives unified tools to derive direct and inverse geometric, kinematic and dynamic models of serial robots and addresses the issue of identification of the geometric and dynamic parameters of these models.Chapter 2 describes the main features of serial robots, the different architectures and the methods used to obtain direct and inverse geometric, kinematic and dynamic models, paying special attention to singularity analysis.Chapter 3 introduces global