Fundamentals of Robotic Mechanical Systems: Theory, Methods and Algorithms (Hardback)

By Jorge Angeles

Springer-Verlag New York Inc., United States, 2002. Hardback. Book Condition: New. 2nd Revised edition. 255 x 152 mm. Language: English . Brand New Book. Modern robotics dates from the late 1960s, when progress in the development of microprocessors made possible the computer control of a multiaxial manipulator. Since then, robotics has evolved to connect with many branches of science and engineering, and to encompass such diverse fields as computer vision, artificial intelligence, and speech recognition. This book deals with robots - such as remote manipulators, multifingered hands, walking machines, flight simulators, and machine tools - that rely on mechanical systems to perform their tasks. It aims to establish the foundations on which the design, control and implementation of the underlying mechanical systems are based. The treatment assumes familiarity with some calculus, linear algebra, and elementary mechanics; however, the elements of rigid-body mechanics and of linear transformations are reviewed in the first chapters, making the presentation self-contained. An extensive set of exercises is included. Topics covered include: kinematics and dynamics of serial manipulators with decoupled architectures; trajectory planning; determination of the angular velocity and angular acceleration of a rigid body from point data; inverse and direct kinematics manipulators; dynamics of general...

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