



## Fundamentals of Robot Mechanics (Hardback)

By Gregory L Long

Quintus-Hyperion Press, 2015. Hardback. Condition: New. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The Fundamentals of Robot Mechanics contains a thorough treatment of essential concepts in robot mechanics. Beginning with elementary topics taught in college physics and first-semester calculus, this thoughtful textbook conveys an in-depth presentation of rotation transformations, homogeneous transformations, Denavit-Hartenberg parameters, forward kinematics, inverse kinematics, instantaneous kinematics/statics using screws, singularity analysis, and dynamics of serial-chain robot manipulators. This exposition of robot fundamentals provides the following: 1) Step-by-Step instructions for finding the classic DH Parameters. 2) A computationally efficient formulation of serial-chain forward and inverse kinematics. 3) An elegant and computationally efficient formulation for the manipulator Jacobian using screw theory. 4) A concise treatment of statics using virtual work and screw theory. 5) A broad treatment of singular configurations using screw theory. 6) Workspace analysis techniques for 2-revolute and 3-revolute pair serial-chain structures. 7) A complete and computationally efficient formulation of manipulator dynamics using Lagrange's equations and dynamic constants. 8) Design guidelines that simplify the equations-of-motion for serial-chain manipulators. The Fundamentals of Robot Mechanics contains over 470 color illustrations, over 100 detailed single and extended examples, and over 260 exercises to promote mastery of both...



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