



Robot Modeling and Control

Mark W. Spong, Seth Hutchinson, M. Vidyasagar

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"The coverage is unparalleled in both depth and breadth. No other text that I have seen offers a better complete overview of modern robotic manipulation and robot control."

-- Bradley Bishop, United States Naval Academy

Based on the highly successful classic, *Robot Dynamics and Control*, by Spong and Vidyasagar (Wiley, 1989), *Robot Modeling and Control* offers a thoroughly up-to-date, self-contained introduction to the field. The text presents basic and advanced material in a style that is at once readable and mathematically rigorous.

Key Features

- * A step-by-step computational approach helps you derive and compute the forward kinematics, inverse kinematics, and Jacobians for the most common robot designs.
- * Detailed coverage of vision and visual servo control enables you to program robots to manipulate objects sensed by cameras.
- * An entire chapter on dynamics prepares you to compute the dynamics of the most common manipulator designs.
- * The most common motion planning and trajectory generation algorithms are presented in an elementary style.
- * The comprehensive treatment of motion and force control includes both basic and advanced methods.
- * The text's treatment of geometric nonlinear control is more readable than in more advanced texts.
- * Many worked examples and an extensive list of problems illustrate all aspects of the theory.

About the authors

Mark W. Spong is Donald Biggar Willett Professor of Engineering at the University of Illinois at Urbana-Champaign. Dr. Spong is the 2005 President of the IEEE Control Systems Society and past Editor-in-Chief of the IEEE Transactions on Control Systems Technology.

Seth Hutchinson is currently a Professor at the University of Illinois in Urbana-Champaign, and a senior editor of the IEEE Transactions on Robotics and Automation. He has published extensively on the topics of robotics and computer vision.

Mathukumalli Vidyasagar is currently Executive Vice President in charge of Advanced Technology at Tata Consultancy Services (TCS), India's largest IT firm. Dr. Vidyasagar was formerly the director of the Centre for Artificial Intelligence and Robotics (CAIR), under Government of India's Ministry of Defense.

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