



A Journey from Robot to Digital Human: Mathematical Principles and Applications with MATLAB Programming (Modeling and Optimization in Science and Technologies)

By Edward Y L Gu

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This book provides readers with a solid set of diversified and essential tools for the theoretical modeling and control of complex robotic systems, as well as for digital human modeling and realistic motion generation. Following a comprehensive introduction to the fundamentals of robotic kinematics, dynamics and control systems design, the author extends robotic modeling procedures and motion algorithms to a much higher-dimensional, larger scale and more sophisticated research area, namely digital human modeling. Most of the methods are illustrated by MATLAB™ codes and sample graphical visualizations, offering a unique closed loop between conceptual understanding and visualization. Readers are guided through practicing and creating 3D graphics for robot arms as well as digital human models in MATLAB™, and through driving them for real-time animation. This work is intended to serve as a robotics textbook with an extension to digital human modeling for senior undergraduate and graduate engineering students. At the same time, it represents a comprehensive reference guide for all researchers, scientists and professionals eager to learn the fundamentals of robotic systems as well as the basic methods of digital human modeling and motion generation.

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Review

From the reviews:

“This enticingly titled book can be used as a textbook or as a reference book. ... There are also exercise problems at the end of each chapter, which can be used in college courses or by readers who want to practice what they have learned in the text. ... Having extensive MATLAB code is a unique feature of this book, because it encourages the reader to try the computations described in the book and to learn by experimenting.” (M. Gini, Computing Reviews, March, 2014)

From the Back Cover

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