



# Fundamentals of Robotic Mechanical Systems: Theory, Methods, and Algorithms (Mechanical Engineering Series)

*By Jorge Angeles*

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## Fundamentals of Robotic Mechanical Systems: Theory, Methods, and Algorithms (Mechanical Engineering Series) By Jorge Angeles

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 and this new edition incorporates numerous advances.

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### **Editorial Review**

#### **Review**

From the reviews of the third edition:

"The principal aim of this book is to serve as a textbook for a robotics course and as a reference for practicing engineers. It may be used also by an audience that ranges from junior undergraduates to doctoral students. ... the book has the nice feature that the different chapters are quite independent and may serve as a guide to various important problems in robotics. Each chapter offers a lot of examples and exercises, which is the most significant ... of the book." (Clementina D. Mladenova, Mathematical Reviews, Issue 2009 c)

#### **From the Back Cover**

Fundamentals of Robotic Mechanical Systems, Third Edition addresses robots at large - such as multi-fingered hands, walking machines, flight simulators, and machine tools - that rely on mechanical systems to perform their tasks. The author establishes the foundations on which the design, control, and implementation of the underlying mechanical subsystems are based. The treatment assumes familiarity with some calculus, linear algebra, and elementary mechanics; however, the elements of rigid-body mechanics and linear transformations are reviewed in the first chapters, making the presentation self-contained.

Features of this book are:

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 of general serial and of parallel manipulators

dynamics of general parallel manipulators of the platform type

kinematics and dynamics of rolling robots

This edition has been reorganized and includes new exercises as well as new photographs and all material have been updated where appropriate.

### **Users Review**

#### **From reader reviews:**

##### **Alfred Cox:**

Now a day those who Living in the era everywhere everything reachable by interact with the internet and the resources in it can be true or not involve people to be aware of each info they get. How a lot more to be smart in obtaining any information nowadays? Of course the correct answer is reading a book. Reading through a book can help folks out of this uncertainty Information particularly this Fundamentals of Robotic Mechanical Systems: Theory, Methods, and Algorithms (Mechanical Engineering Series) book because this book offers you rich facts and knowledge. Of course the information in this book hundred percent guarantees there is no doubt in it you know.

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**April Hanson:**

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**Jeannie Brenner:**

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