1. Record Nr. UNINA9910725099603321

Autore	Corke Peter I. <1959->
Titolo	Robotics, vision and control : fundamental algorithms in Python / / Peter Corke
Pubbl/distr/stampa	Cham : , : Springer, , [2023] ©2023
ISBN	9783031064692 9783031064685
Edizione	[3rd edition.]
Descrizione fisica	1 online resource (xxvi, 824 pages) : illustrations
Collana	Springer tracts in advanced robotics, , 1610-742X ; ; volume 146
Disciplina	929.605 629.892637
Soggetti	Automatic control Robotics Python (Computer program language) Computer algorithms Automation Artificial intelligence Computer vision Signal processing Cognitive psychology Control, Robotics, Automation Artificial Intelligence Control and Systems Theory Computer Vision Digital and Analog Signal Processing Cognitive Psychology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and indexes.
Nota di contenuto	Introduction.-Foundations: Representing Position and Orientation -- Time and Motion -- Mobile Robotics: Mobile Robot Vehicles -- Navigation -- Localization and Mapping -- Robot Manipulators: Robot Arm Kinematics -- Manipulator Velocity -- Dynamics and Control --

Computer Vision: Light and Color -- Images and Image Processing,- Image Feature Extraction,- Image Formation -- Using Multiple Images -- Vision-Based Control: Vision-Based Control -- Advanced Visual Servoing -- Installing the Toolboxes -- Linear Algebra -- Geometry -- Lie Groups and Algebras.

Sommario/riassunto

This textbook provides a comprehensive, but tutorial, introduction to robotics, computer vision, and control. It is written in a light but informative conversational style, weaving text, figures, mathematics, and lines of code into a narrative that covers robotics and computer vision—separately, and together as robotic vision. Over 1600 code examples show how complex problems can be decomposed and solved using just a few simple lines of code. This edition is based on Python and is accompanied by fully open-source Python-based Toolboxes for robotics and machine vision. The new Toolboxes enable the reader to easily bring the algorithmic concepts into practice and work with real, non-trivial, problems on a broad range of computing platforms. For the beginning student the book makes the algorithms accessible, the Toolbox code can be read to gain understanding, and the examples illustrate how it can be used. The code can also be the starting point for new work, for practitioners, students, or researchers, by writing programs based on Toolbox functions, or modifying the Toolbox code itself.