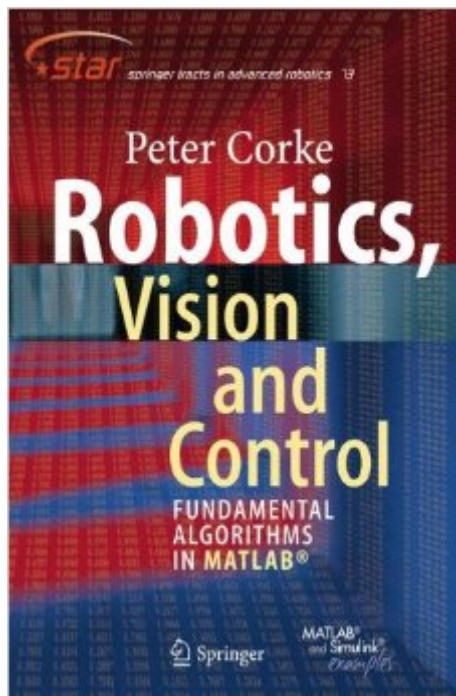


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# Robotics, Vision And Control: Fundamental Algorithms In MATLAB (Springer Tracts In Advanced Robotics)



## Synopsis

The practice of robotics and computer vision both involve the application of computational algorithms to data. Over the fairly recent history of the fields of robotics and computer vision a very large body of algorithms has been developed. However this body of knowledge is something of a barrier for anybody entering the field, or even looking to see if they want to enter the field • What is the right algorithm for a particular problem?, and importantly, How can I try it out without spending days coding and debugging it from the original research papers?The author has maintained two open-source MATLAB Toolboxes for more than 10 years: one for robotics and one for vision. The key strength of the Toolboxes provide a set of tools that allow the user to work with real problems, not trivial examples. For the 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 • instant gratification in just a couple of lines of MATLAB code. The code can also be the starting point for new work, for researchers or students, by writing programs based on Toolbox functions, or modifying the Toolbox code itself. The purpose of this book is to expand on the tutorial material provided with the toolboxes, add many more examples, and to weave this into a narrative that covers robotics and computer vision separately and together. The author shows how complex problems can be decomposed and solved using just a few simple lines of code, and hopefully to inspire up and coming researchers. The topics covered are guided by the real problems observed over many years as a practitioner of both robotics and computer vision. It is written in a light but informative style, it is easy to read and absorb, and includes a lot of Matlab examples and figures. The book is a real walk through the fundamentals of robot kinematics, dynamics and joint level control, then camera models, image processing, feature extraction and epipolar geometry, and bring it all together in a visual servo system. Additional material is provided at <http://www.petercorke.com/RVC>

## Book Information

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## Customer Reviews

Pretty much covers all the essentials for programming / control of robots in conjunction with vision systems. Not limited to conventional 6 dof, coordinate based systems. In conjunction with the Matlab tool boxes provided, is an outstanding asset for developing complex robotic / vision systems.

This is a great book for those who want to practice robotic concepts in MATLAB! The (free) robotics toolbox is a great tool to work with manipulators, and the book has several examples with real robots (like the famous PUMA). It also has some useful tools for mobile robots, but it only deals with the car-like and the quadrotor models. It misses the widely applied unicycle model, although it is easy to adapt the toolbox to work with the unicycle as well. I didn't have time to get to the machine vision part, but the final part of the book unites robotics and machine vision, dealing with visual control for robots. I think it is a very nice book for everybody that works with robotics!

A published robotics researcher myself, I find this is one of the most useful books I've come across. It excels in detailing both algorithm fundamentals and their actual implementations. The accompanying MATLAB toolbox is thorough, readable, and efficient.

understandable explanation with useful MATLAB examples to graduate students who will potentially use vision and control algorithms in domains of aerospace, robotics, and others.

I was new to robotics 5 years ago and mid-way through that period decided I needed to get a little more serious about the math of what I was working with. When MathWorks made Home editions of their software available for a very generous price I went for this book immediately. Peter Corke has a lot of respect in the field and I found the exercises to be extremely well organized and fun to go through. I haven't gone through the whole book yet (I'm not doing vision), but have benefited (as has my employer) from time well spent in this book. I've looked at a few Robotics best and while

there are other great books, the hands on nature of this one (in the MathWorks sense) was exactly what I needed.

It is a great book for those people interested in learning about Robotics (vision and control). With several graphics, drawings and pictures, it is a very helpful book. I loved it.

The book itself is a great reference for who looks for general information about robotics. It also helps you use Matlabs robotic toolbox. The book has a good quality and contains nice pictures. I also received the book sooner than I expected. I am totally happy with that

A bit dense in the beginning while you recall university material on matrices, Jacobians and Laplacians, but once you again get used to it, it reads much easier. The content is fantastic, systematically organized and very applicable to a wide variety of robot designs, with many references to additional material. Stimulating to read on and exciting to carry out the Matlab examples. Highly recommended!

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