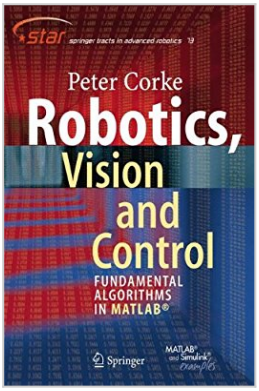

Robotics, Vision and Control: Fundamental Algorithms in MATLAB (Springer Tracts in Advanced Robotics)

By Peter Corke

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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

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Editorial Review

Review

From the reviews:

“I like the book and the provided code. I think that this book is good to give you an overview of a bunch of key robotics topics … . If you are looking at testing an algorithm, getting a high level understanding, or getting a guide … to use the tool boxes then this book is for you. Also if you are a student looking to learn by implementation … then this book will be good for you.” (robotsforroticists.com, March, 2014)

“Good reading for starters in the field, but also for experienced researchers or practitioners. It is a pleasure to go through this book. It is written like an encyclopedia about robotics and computer vision … also, throughout the entire manuscript one can find the Matlab code for testing the presented theory. The author is also the creator of the two Matlab toolboxes robotics and machine vision, so there is probably no better way to understand and follow the topics than from the current book.” (Catalin Stoean, Zentralblatt MATH, Vol. 1233, 2012)

From the Back Cover

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?

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About the Author

Peter Corke has been appointed new Editor of the IEEE Robotics and Automation Magazine.

The author is the organizer of the venerable Robotics Toolbox for Matlab http://www.petercorke.com/robot with 100.000 + downloads per year (as well as the Vision Toolbox for Matlab)

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