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Getting Started With Simulink

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Getting Started with Simulink

Get up and running with Simulink with this hands-on, easy-to-read guide

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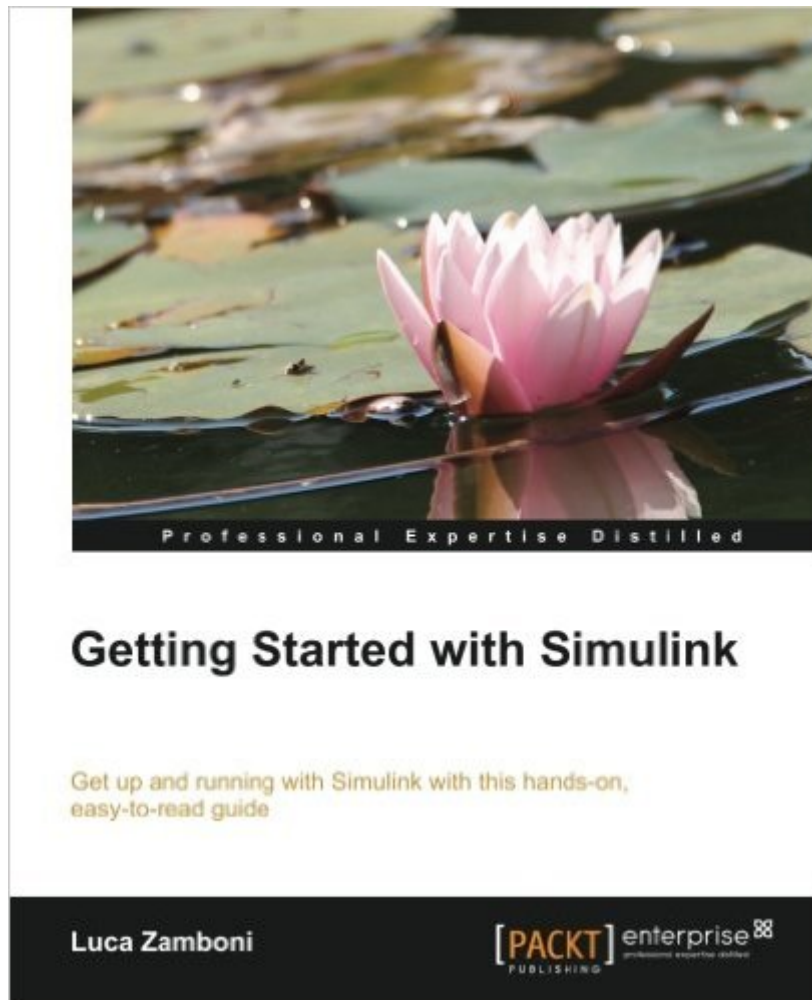
Synopsis

Written by an experienced engineer, this book will help you utilize the great user-friendly features of Simulink to advance your modeling, testing, and interfacing skills. Packed with illustrations and step-by-step walkthroughs. Overview Dig deep into Simulink No unnecessary theory - start modelling right away Complex concepts made easy through examples Packed with illustrations and detailed step-by-step walkthroughs In Detail Simulink is an engineer's Swiss army knife: instead of spending the day typing out complex formulas, Simulink enables you to both draw and execute them. Block after block, you can develop your ideas without struggling with obscure programming languages and you don't have to wait to debug your algorithm - just launch a simulation! Getting Started with Simulink will give you comprehensive knowledge of Simulink's capabilities. From the humble constant block to the S-function block, you will have a clear understanding of what modelling really means, without feeling that something has been left out. By the time you close the book, you'll be able to further extend your modelling skills without any help. We''ll start with a brief introduction, and immediately start placing the first blocks. Little by little, you'll build a car cruise controller model, followed by the mathematical model of a sports car in order to calibrate it. Then you'll learn how to interface your Simulink model with the external world. This book will give you an easy understanding of the tools Simulink offers you, guiding you through a complex exercise split into the three main phases of Simulink development: modelling, testing, and interfacing. What you will learn from this book Understand the pros and cons of Simulink Describe your ideas using block diagrams Tune your simulation parameters Draw clean, uncluttered models by reusing the logic and subdividing it into inner blocks Run simulations with the appropriate source blocks Analyse the simulation results with the scope block Implement S-functions to reuse legacy code Interface Simulink with applications outside the MATLAB environment Approach This practical and easy-to-understand learning tutorial is one big exciting exercise for students and engineers that are always short on their schedules and want to regain some lost time with the help of Simulink. Who this book is written for This book is aimed at students and engineers who need a quick start with Simulink. Though it's not required in order to understand how Simulink works, knowledge of physics will help the reader to understand the exercises described.

Book Information

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Customer Reviews

The author begins with a simple cruise control model that leverages a PI controller (more on that later). Like many systems that interact with the physical world, it maps well to dataflow. The author does an excellent job of stepping you through construction and testing of the model. He even mentions some good shortcuts (like how to reset the zoom, a shortcut that I learned while reading this book).Like any good tutorial, the Getting Started with Simulink builds on previous examples. Once you complete the first example, you build a model for a car. This exposes the user to simulation, one of the key advantages of Simulink. The book builds quickly and at first it seems like Zamboni is throwing everything but the kitchen sink at you. He really does challenge you, but Zamboni is there to step you through each step of building the model. From creating subsystems for for motors to simulating drag. The model is a very complete representation of a sports car and by the end you feel very accomplished. Best of all, you have actually mastered most of the skills required for Simulink. I would say this book covered 90% or more of the blocks that I commonly use. Another key aspect of the book is that it uses an up-to-date version of MATLAB and Simulink (2013a). While the basic concepts donâ ™t change with time, features are sometimes tweaked or new file types supported. Zamboni does a great job of pointing out many of these minor differences. He really is an expert in the software.Now about math and that PI controller. Well to be honest, the PI controller was just the first math-heavy aspect of the book. The model for the car does get kind of math heavy, but that is very much the nature if many models.

First, full disclosure: I received a free copy of this book as an ebook (.pdf) from the publisher in exchange for an unbiased review.â œGetting Started with Simulinkâ • basically does what it promisesâ ”it gets the reader started in Simulink. It doesnâ ™t even assume a basic working

knowledge of the MATLAB IDE but instead presents the reader with just enough to support the work in Simulink. I knew a little about MATLAB but nothing about Simulink when I started. Having successfully implemented the models that the author walks the reader through, I now have a preliminary understanding of Simulinkâ ™s capabilities and functionality, and a sense of where to go next in my study of Simulink and model-based design.The reader is led through building up a single model, in stages, with enough subsystems to give some experience with structuring a non-trivial application. The book is well structured: Chapter 2 explains the workflow in creating a model, Chapter 3 explains how the simulation is done, and Chapter 4 introduces user-defined functions.The detail of the instructions is excellent; if one carefully follows step-by-step, it is possible to work through the heart of the book quite successfully. It only takes missing one step, however, to result in a model that doesnâ ™t execute as expected, and then the reader is left wondering what to do nextâ ”I know, I was there. Here some brief hints on how to effectively debug a Simulink model would have been very helpful. (This is the primary reason for my giving the book 4 stars instead of 5.) In frustration I contacted the author for help, and he gave me some useful (and once it was said, perhaps obvious) advice on debugging. With his permission, here is what he said: â œDebugging is an easy task once you learn to use the Scope block.

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