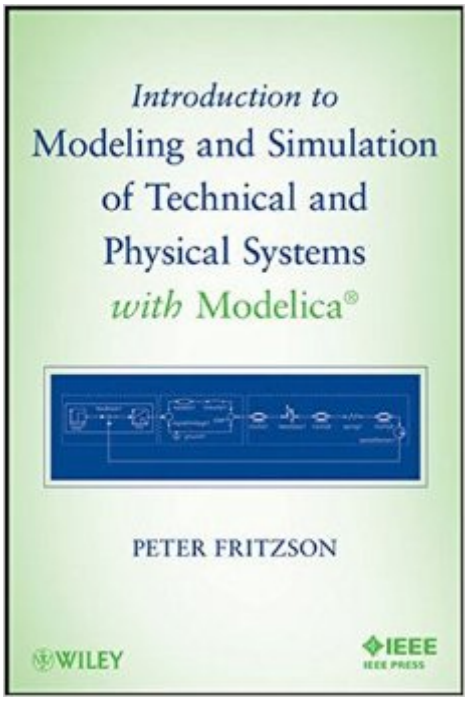
Introduction To Modeling And Simulation Of Technical And Physical Systems With Modelica



Synopsis

Master modeling and simulation using Modelica, the new powerful, highly versatile object-based modeling language Modelica, the new object-based software/hardware modeling language that is quickly gaining popularity around the world, offers an almost universal approach to high-level computational modeling and simulation. It handles a broad range of application domains, for example mechanics, electrical systems, control, and thermodynamics, and facilitates general notation as well as powerful abstractions and efficient implementations. Using the versatile Modelica language and its associated technology, this text presents an object-oriented, component-based approach that makes it possible for readers to quickly master the basics of computer-supported equation-based object-oriented (EOO) mathematical modeling and simulation. Throughout the text, Modelica is used to illustrate the various aspects of modeling and simulation. At the same time, a number of key concepts underlying the Modelica language are explained with the use of modeling and simulation examples. This book: Examines basic concepts such as systems, models, and simulations Guides readers through the Modelica language with the aid of several step-by-step examples Introduces the Modelica class concept and its use in graphical and textual modeling Explores modeling methodology for continuous, discrete, and hybrid systems Presents an overview of the Modelica Standard Library and key Modelica model libraries Readers will find plenty of examples of models that simulate distinct application domains as well as examples that combine several domains. All the examples and exercises in the text are available via DrModelica. This electronic self-teaching program, freely available on the text's companion website, guides readers from simple, introductory examples and exercises to more advanced ones. Written by the Director of the Open Source Modelica Consortium, Introduction to Modeling and Simulation of Technical and Physical Systems with Modelica is recommended for engineers and students interested in computer-aided design, modeling, simulation, and analysis of technical and natural systems. By building on basic concepts, the text is ideal for students who want to learn modeling, simulation, and object orientation.

Book Information

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Customer Reviews

I'm not really fond of this kind of book, unless I've a big fan of the environment, usually books that tie into software or in this case a modeling software language are fairly boring. The language itself reminds you of C++ for syntax and the way a class object is put together. There is a difference pointed out in that you are constructing models not class objects, which is the goal of the language. The book does some detail on the way models are represented, and once done so how they are simulated. There is a large library of models or components of model object available as a supplement to the open source language.Math is key here for most of the model construction. Equations are treated differently in that they are not the typical assignment as in C or another language, both sides can be full expressions and the model description allows that construct. The modeling and math constructs look pretty interesting and efficient to an engineer like myself. I would have to explore the language itself to make a deeper judgment. As an object language, it contains inheritance, and other object traits like overloading, how complete it be, I don't know. This is one book, especially since the language itself is open-source, that cries out to have a CD with the language, and some sample models to play with. Since it doesn't, and at this time I don't want to deal with chasing this language any further, I'll stop and rate this here.My three star rating means that is how I view this book, as something that teaches, or describes, a programming language. I should be pretty accurate, because I've read 100's of such books, mostly for the C or C++, or embedded C, or assembly language, and this doesn't rate with the best of them.

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