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Nota di contenuto	Intro -- SYSTEM SIMULATION TECHNIQUES WITH MATLAB® AND SIMULINK® -- Contents -- Foreword -- Preface -- 1 Introduction to System Simulation Techniques and Applications -- 1.1 Overview of System Simulation Techniques -- 1.2 Development of Simulation Software -- 1.2.1 Development of Earlier Mathematics Packages -- 1.2.2 Development of Simulation Software and Languages -- 1.3 Introduction to MATLAB -- 1.3.1 Brief History of the Development of MATLAB -- 1.3.2 Characteristics of MATLAB -- 1.4 Structure of the Book -- 1.4.1 Structure of the Book -- 1.4.2 Code Download and Internet Resources -- 1.4.3 Fonts Used in this Book -- Exercises -- References -- 2 Fundamentals of MATLAB Programming -- 2.1 MATLAB Environment -- 2.1.1 MATLAB Interface -- 2.1.2 MATLAB On-line Help and Documentation -- 2.2 Data Types in MATLAB -- 2.2.1 Constants and Variables -- 2.2.2 Structure of MATLAB Statements -- 2.2.3 Matrix Representation in MATLAB -- 2.2.4 Multi-dimensional Arrays -- 2.3 Matrix Computations in MATLAB -- 2.3.1 Algebraic Computation -- 2.3.2 Logical Operations -- 2.3.3 Comparisons and Relationships -- 2.3.4 Data Type Conversion -- 2.4 Flow Structures -- 2.4.1 Loop Structures -- 2.4.2 Conditional Structures -- 2.4.3 Switches -- 2.4.4 Trial Structure -- 2.5 Programming and Tactics of MATLAB Functions -- 2.5.1 Structures of MATLAB Functions -- 2.5.2 Handling Variable Numbers of Arguments -- 2.5.3 Debugging of MATLAB Functions --

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Sommario/riassunto

System Simulation Techniques with MATLAB and Simulink comprehensively explains how to use MATLAB and Simulink to perform dynamic systems simulation tasks for engineering and non-engineering applications. This book begins with covering the fundamentals of MATLAB programming and applications, and the solutions to different mathematical problems in simulation. The fundamentals of Simulink modelling and simulation are then presented, followed by coverage of intermediate level modelling skills and more advanced techniques in Simulink modelling and applications. Finally the modelling and simulation of engineering and non-engineering systems are presented. The areas covered include electrical, electronic systems, mechanical systems, pharmacokinetic systems, video and image processing systems and discrete event systems. Hardware-in-the-loop simulation and real-time application are also discussed. Key features: Progressive building of simulation skills using Simulink, from basics through to advanced levels, with illustrations and examples Wide coverage of simulation topics of applications from engineering to non-engineering systems Dedicated chapter on hardware-in-the-loop simulation and real time control End of chapter exercises A companion website hosting a solution manual and powerpoint slides System Simulation Techniques with MATLAB and Simulink is a suitable textbook for senior undergraduate/postgraduate courses covering modelling and simulation, and is also an ideal reference for researchers and practitioners in industry.
