

MATLAB® /Simulink®

for

Digital Communication

Second Edition

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Myung-Ho, Ph.D., MS in Elec. Eng., Hyeon-L Lee, Hyung-M Park, Young-S Moon



정통과학출판사

Digital Communication Systems Using Matlab And Simulink

Kwonhue Choi, Huaping Liu



Digital Communication Systems Using Matlab And Simulink:

Modeling of Digital Communication Systems Using SIMULINK Arthur A. Giordano, Allen H. Levesque, 2015-03-31 A comprehensive and detailed treatment of the program SIMULINK that focuses on SIMULINK for simulations in Digital and Wireless Communications Modeling of Digital Communication Systems Using SIMULINK introduces the reader to SIMULINK an extension of the widely used MATLAB modeling tool and the use of SIMULINK in modeling and simulating digital communication systems including wireless communication systems Readers will learn to model a wide selection of digital communications techniques and evaluate their performance for many important channel conditions Modeling of Digital Communication Systems Using SIMULINK is organized in two parts The first addresses Simulink models of digital communications systems using various modulation coding channel conditions and receiver processing techniques The second part provides a collection of examples including speech coding interference cancellation spread spectrum adaptive signal processing Kalman filtering and modulation and coding techniques currently implemented in mobile wireless systems Covers case examples progressing from basic to complex Provides applications for mobile communications satellite communications and fixed wireless systems that reveal the power of SIMULINK modeling Includes access to useable SIMULINK simulations online All models in the text have been updated to R2018a only problem sets require updating to the latest release by the user Covering both the use of SIMULINK in digital communications and the complex aspects of wireless communication systems Modeling of Digital Communication Systems Using SIMULINK is a great resource for both practicing engineers and students with MATLAB experience

Digital Communication Systems Using MATLAB and Simulink Dennis Silage, 2009 Digital Communication using MATLAB and Simulink is intended for a broad audience For the student taking a traditional course the text provides simulations of the MATLAB and Simulink systems and the opportunity to go beyond the lecture or laboratory and develop investigations and projects For the professional the text facilitates an expansive review of and experience with the tenets of digital communication systems

Problem-Based Learning in Communication Systems Using MATLAB and Simulink Kwonhue Choi, Huaping Liu, 2016-01-13 Designed to help teach and understand communication systems using a classroom tested active learning approach Discusses communication concepts and algorithms which are explained using simulation projects accompanied by MATLAB and Simulink Provides step by step code exercises and instructions to implement execution sequences Includes a companion website that has MATLAB and Simulink model samples and templates password matlab

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Communication, 2009 **Contemporary Communication Systems Using MATLAB** John G. Proakis, Masoud Salehi, 1998 This text contains a large number of MATLAB based problems dealing with topics covered in a first course in communication systems Each chapter contains fundamental concepts briefly reviewed and presents illustration problems using MATLAB Each chapter contains a list of MATLAB files used *Modeling of Digital Communication Systems Using SIMULINK* Arthur A. Giordano, Allen H. Levesque, 2015-03-03 A comprehensive and detailed treatment of the program SIMULINK that focuses on SIMULINK for simulations in Digital and Wireless Communications Modeling of Digital Communication Systems Using SIMULINK introduces the reader to SIMULINK an extension of the widely used MATLAB modeling tool and the use of SIMULINK in modeling and simulating digital communication systems including wireless communication systems Readers will learn to model a wide selection of digital communications techniques and evaluate their performance for many important channel conditions Modeling of Digital Communication Systems Using SIMULINK is organized in two parts The first addresses Simulink models of digital communications systems using various modulation coding channel conditions and receiver processing techniques The second part provides a collection of examples including speech coding interference cancellation spread spectrum adaptive signal processing Kalman filtering and modulation and coding techniques currently implemented in mobile wireless systems Covers case examples progressing from basic to complex Provides applications for mobile communications satellite communications and fixed wireless systems that reveal the power of SIMULINK modeling Includes access to useable SIMULINK simulations online All models in the text have been updated to R2018a only problem sets require updating to the latest release by the user Covering both the use of SIMULINK in digital communications and the complex aspects of wireless communication systems Modeling of Digital Communication Systems Using SIMULINK is a great resource for both practicing engineers and students with MATLAB experience

Problem-Based Learning in Communication Systems Using MATLAB and Simulink Jesus Jean, 2017-05-16 This book

covers the basic concepts of signals and analog and digital communications to more complex simulations in communication systems Problem Based Learning in Communication Systems Using MATLAB and Simulink begins by introducing MATLAB and Simulink to prepare readers who are unfamiliar with these environments in order to tackle projects and exercises included in this book Discussions on simulation of signals filter design sampling and reconstruction and analog communications are covered next The book concludes by covering advanced topics such as Viterbi decoding OFDM and MIMO In addition this book contains examples of how to convert waveforms constructed in simulation into electric signals It also includes problems illustrating how to complete actual wireless communications in the band near ultrasonic frequencies

Problem-Based Learning in Communication Systems Using MATLAB and Simulink Elliott Edling,2017-05-03 This book covers the basic concepts of signals and analog and digital communications to more complex simulations in communication systems Problem Based Learning in Communication Systems Using MATLAB and Simulink begins by introducing MATLAB and Simulink to prepare readers who are unfamiliar with these environments in order to tackle projects and exercises included in this book Discussions on simulation of signals filter design sampling and reconstruction and analog communications are covered next The book concludes by covering advanced topics such as Viterbi decoding OFDM and MIMO In addition this book contains examples of how to convert waveforms constructed in simulation into electric signals It also includes problems illustrating how to complete actual wireless communications in the band near ultrasonic frequencies

Contemporary Communication Systems Using MATLAB and Simulink John G. Proakis,Masoud Salehi,Gerhard Bauch,2004 Featuring a variety of applications that motivate students this book serves as a companion or supplement to any of the comprehensive textbooks in communication systems The book provides a variety of exercises that may be solved on the computer using MATLAB The authors assume that the student is familiar with the fundamentals of MATLAB By design the treatment of the various topics is brief The authors provide the motivation and a short introduction to each topic establish the necessary notation and then illustrate the basic concepts by means of an example Problem-Based Learning in

Communication Systems Using MATLAB and Simulink Kwonhue Choi,Huaping Liu,2016-02-29 Designed to help teach and understand communication systems using a classroom tested active learning approach Discusses communication concepts and algorithms which are explained using simulation projects accompanied by MATLAB and Simulink Provides step by step code exercises and instructions to implement execution sequences Includes a companion website that has MATLAB and Simulink model samples and templates password matlab *MATLAB/Simulink for Digital Communication* Won Y.

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Digital Communication Systems Engineering with Software-defined Radio Di Pu, Alexander M. Wyglinski, 2013 For a senior level undergraduate course on digital

communications this unique resource provides you with a practical approach to quickly learning the software defined radio
 concepts you need to know for your work in the field Digital Signal Processing with Matlab Examples, Volume 1 Jose
 Maria Giron-Sierra, 2016-11-19 This is the first volume in a trilogy on modern Signal Processing The three books provide a
 concise exposition of signal processing topics and a guide to support individual practical exploration based on MATLAB
 programs This book includes MATLAB codes to illustrate each of the main steps of the theory offering a self contained guide
 suitable for independent study The code is embedded in the text helping readers to put into practice the ideas and methods
 discussed The book is divided into three parts the first of which introduces readers to periodic and non periodic signals The
 second part is devoted to filtering which is an important and commonly used application The third part addresses more
 advanced topics including the analysis of real world non stationary signals and data e g structural fatigue earthquakes
 electro encephalograms birdsong etc The book s last chapter focuses on modulation an example of the intentional use of non
 stationary signals Introduction to Digital Signal Processing Using MATLAB with Application to Digital Communications

K.S. Thyagarajan, 2018-05-28 This textbook provides engineering students with instruction on processing signals encountered
 in speech music and wireless communications using software or hardware by employing basic mathematical methods The
 book starts with an overview of signal processing introducing readers to the field It goes on to give instruction in converting
 continuous time signals into digital signals and discusses various methods to process the digital signals such as filtering The
 author uses MATLAB throughout as a user friendly software tool to perform various digital signal processing algorithms and
 to simulate real time systems Readers learn how to convert analog signals into digital signals how to process these signals

using software or hardware and how to write algorithms to perform useful operations on the acquired signals such as filtering detecting digitally modulated signals correcting channel distortions etc Students are also shown how to convert MATLAB codes into firmware codes Further students will be able to apply the basic digital signal processing techniques in their workplace The book is based on the author's popular online course at University of California San Diego

Digital Communication for Practicing Engineers Feng Ouyang, 2019-08-28 Offers concise practical knowledge on modern communication systems to help students transition smoothly into the workplace and beyond This book presents the most relevant concepts and technologies of today's communication systems and presents them in a concise and intuitive manner It covers advanced topics such as Orthogonal Frequency Division Multiplexing OFDM and Multiple Input Multiple Output MIMO Technology which are enabling technologies for modern communication systems such as WiFi including the latest enhancements and LTE Advanced Following a brief introduction to the field Digital Communication for Practicing Engineers immerses readers in the theories and technologies that engineers deal with It starts off with Shannon Theorem and Information Theory before moving on to basic modules of a communication system including modulation statistical detection channel coding synchronization and equalization The next part of the book discusses advanced topics such as OFDM and MIMO and introduces several emerging technologies in the context of 5G cellular system radio interface The book closes by outlining several current research areas in digital communications In addition this text Breaks down the subject into self contained lectures which can be read individually or as a whole Focuses on the pros and cons of widely used techniques while providing references for detailed mathematical analysis Follows the current technology trends including advanced topics such as OFDM and MIMO Touches on content this is not usually contained in textbooks such as cyclo stationary symbol timing recovery adaptive self interference canceler and Tomlinson Harashima precoder Includes many illustrations homework problems and examples Digital Communication for Practicing Engineers is an ideal guide for graduate students and professionals in digital communication looking to understand work with and adapt to the current and future technology

Starting Digital Signal Processing in Telecommunication Engineering Tomasz P. Zieliński, 2021-01-29 This hands on laboratory driven textbook helps readers understand principles of digital signal processing DSP and basics of software based digital communication particularly software defined networks SDN and software defined radio SDR In the book only the most important concepts are presented Each book chapter is an introduction to computer laboratory and is accompanied by complete laboratory exercises and ready to go Matlab programs with figures and comments available at the book webpage and running also in GNU Octave 5.2 with free software packages showing all or most details of relevant algorithms Students are tasked to understand programs modify them and apply presented concepts to recorded real RF signal or simulated received signals with modelled transmission condition and hardware imperfections Teaching is done by showing examples and their modifications to different real world telecommunication like applications The book consists of three parts

introduction to DSP spectral analysis and digital filtering introduction to DSP advanced topics multi rate adaptive model based and multimedia speech audio video signal analysis and processing and introduction to software defined modern telecommunication systems SDR technology analog and digital modulations single and multi carrier systems channel estimation and correction as well as synchronization issues Many real signals are processed in the book in the first part mainly speech and audio while in the second part mainly RF recordings taken from RTL SDR USB stick and ADALM PLUTO module for example captured IQ data of VOR avionics signal classical FM radio with RDS digital DAB DAB radio and 4G LTE digital telephony Additionally modelling and simulation of some transmission scenarios are tested in software in the book in particular TETRA ADSL and 5G signals Provides an introduction to digital signal processing and software based digital communication Presents a transition from digital signal processing to software defined telecommunication Features a suite of pedagogical materials including a laboratory test bed and computer exercises experiments **Network Modeling,**

Simulation and Analysis in MATLAB Dac-Nhuong Le, Abhishek Kumar Pandey, Sairam Tadepalli, Pramod Singh Rathore, Jyotir Moy Chatterjee, 2019-08-13 The purpose of this book is first to study MATLAB programming concepts then the basic concepts of modeling and simulation analysis particularly focus on digital communication simulation The book will cover the topics practically to describe network routing simulation using MATLAB tool It will cover the dimensions like Wireless network and WSN simulation using MATLAB then depict the modeling and simulation of vehicles power network in detail along with considering different case studies Key features of the book include Discusses different basics and advanced methodology with their fundamental concepts of exploration and exploitation in NETWORK SIMULATION Elaborates practice questions and simulations in MATLAB Student friendly and Concise Useful for UG and PG level research scholar Aimed at Practical approach for network simulation with more programs with step by step comments Based on the Latest technologies coverage of wireless simulation and WSN concepts and implementations *Optical Fiber Communication*

Systems with MATLAB® and Simulink® Models Le Nguyen Binh, 2014-12-01 Carefully structured to instill practical knowledge of fundamental issues Optical Fiber Communication Systems with MATLAB and Simulink Models describes the modeling of optically amplified fiber communications systems using MATLAB and Simulink This lecture based book focuses on concepts and interpretation mathematical procedures and engineering Communication Systems Modeling and Simulation using MATLAB and Simulink K. C. Raveendranathan, 2011-09-07 This is probably the first book that employs the technique of simulation experiments as a means of reinforcing the basic concepts of communication theory Undergraduate students are generally exposed to a mathematically rigorous treatment of communications theory but seldom have the benefit of a practical orientated approach employing modelling and simulation for a thorough assimilation of the subject This book can supplement any standard textbook to cover this significant lacuna in the existing learning methodology It uses MATLAB the language of the technical computing fraternity for the purpose The introductory chapters provide an overview

of computer simulation and MATLAB programming concepts Thereafter communications concepts are presented in the traditional manner but followed up with appropriate simulations in MATLAB Simulink Relevant MATLAB source code is given whenever it is used to illustrate a point All the source code given in the text has been tested on MATLAB kernel version 7 10 Release R2010a and is provided in the accompanying CD

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