FSK Modulation and Demodulation



Matlab Code For Fsk Modulation

K.C. Raveendranathan

Matlab Code For Fsk Modulation:

Principles of Communications Rodger E. Ziemer, William H. Tranter, 2014-03-17 Ziemer and Tranter provide a thorough treatment of the principles of communications at the physical layer suitable for college seniors beginning graduate students and practicing engineers This is accomplished by providing overviews of the necessary background in signal system probability and random process theory required for the analog and digital communications topics covered in the book In addition to stressing fundamental concepts the seventh edition features sections on important areas such as spread spectrum cellular communications and orthogonal frequency division multiplexing While the book is aimed at a two semester course more than enough material is provided for structuring courses according to students need and instructor preference

MATLAB/Simulink for Digital Communication Won Y. Yang, 2018-03-02 Chapter 1 Fourier Analysis 1 1 1 CONTINUOUS TIME FOURIER SERIES CTFS 2 1 2 PROPERTIES OF CTFS 6 1 2 1 Time Shifting Property 6 1 2 2 Frequency Shifting Property 6 1 2 3 Modulation Property 6 1 3 CONTINUOUS TIME FOURIER TRANSFORM CTFT 7 1 4 PROPERTIES OF CTFT 13 1 4 1 Linearity 13 1 4 2 Conjugate Symmetry 13 1 4 3 Real Translation Time Shifting and Complex Translation Frequency Shifting 14 1 4 4 Real Convolution and Correlation 14 1 4 5 Complex Convolution Modulation Windowing 14 1 4 6 Duality 17 1 4 7 Parseval Relation Power Theorem 18 1 5 DISCRETE TIME FOURIER TRANSFORM DTFT 18 1 6 DISCRETE TIME FOURIER SERIES DFS DFT 19 1 7 SAMPLING THEOREM 21 1 7 1 Relationship between CTFS and DFS 21 1 7 2 Relationship between CTFT and DTFT 27 1 7 3 Sampling Theorem 27 1 8 POWER ENERGY AND CORRELATION 29 1 9 LOWPASS EQUIVALENT OF BANDPASS SIGNALS 30 Chapter 2 PROBABILITY AND RANDOM PROCESSES 39 2 1 PROBABILITY 39 2 1 1 Definition of Probability 39 2 1 2 Joint Probability and Conditional Probability 40 2 1 3 Probability Distribution Density Function 41 2 1 4 Joint Probability Density Function 41 2 1 5 Condtional Probability Density Function 41 2 1 6 Independence 41 2 1 7 Function of a Random Variable 42 2 1 8 Expectation Covariance and Correlation 43 2 1 9 Conditional Expectation 47 2 1 10 Central Limit Theorem Normal Convergence Theorem 47 2 1 11 Random Processes 49 2 1 12 Stationary Processes and Ergodic Processes 51 2 1 13 Power Spectral Density PSD 53 2 1 14 White Noise and Colored Noise 53 2 2 LINEAR FILTERING OF A RANDOM PROCESS 57 2 3 PSD OF A RANDOM PROCESS 58 2 4 FADING EFFECT OF A MULTIPATH CHANNEL 58 Chapter 3 ANALOG MODULATION 71 3 1 AMPLITUDE MODULATION AM 71 3 1 1 DSB Double Sideband AM Amplitude Modulation 71 3 1 2 Conventional AM Amplitude Modulation 75 3 1 3 SSB Single Sideband AM Amplitude Modulation 78 3 2 ANGLE MODULATION AGM FREQUENCY PHASE MODULATIONS 82 Chapter 4 ANALOG TO DIGITAL CONVERSION 87 4 1 QUANTIZATION 87 4 1 1 Uniform Quantization 88 4 1 2 Non uniform Quantization 89 4 1 3 Non uniform Quantization Considering the Absolute Errors 91 4 2 Pulse Code Modulation PCM 95 4 3 Differential Pulse Code Modulation DPCM 97 4 4 Delta Modulation DM 100 Chapter 5 BASEBAND TRANSMISSION 107 5 1 RECEIVER RCVR and SNR 107 5 1 1 Receiver of RC Filter Type 109 5 1 2 Receiver of Matched Filter Type 110 5 1 3 Signal Correlator 112 5 2

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and finance and control systems and digital convergence 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 quide 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 Mechanical And Electronics Engineering - Proceedings Of The International Conference On Icmee stationary signals 2009 Venkatesh Mahadevan, Jianhong Zhou, 2009-07-16 The 2009 International Conference on Mechanical and Electronics Engineering ICMEE 2009 will be held in Chennai India from 24 26 July 2009 The aim of ICMEE 2009 is to provide a platform for researchers engineers academicians as well as industrial professionals from all over the world to present their research findings and development activities in mechanical and electronics engineering This conference provides opportunities for the delegates to exchange new ideas and application experiences face to face to forge new business or research relations and to find global partners for future collaboration **Innovations in Electronics and Communication Engineering** H. S. Saini, R. K. Singh, K. Satish Reddy, 2017-11-08 The book contains high quality papers presented in the Fifth International Conference on Innovations in Electronics and Communication Engineering ICIECE 2016 held at Guru Nanak Institutions Hyderabad India during 8 and 9 July 2016 The objective is to provide the latest developments in the field of electronics and communication engineering specially the areas like Image Processing Wireless Communications Radar Signal Processing Embedded Systems and VLSI Design The book aims to provide an opportunity for researchers scientists technocrats academicians and engineers to exchange their innovative ideas and research findings in the field of Electronics and Communication Engineering Contemporary Communication Systems Using MATLAB John G. Proakis, Masoud Salehi, 2000 This supplement to any standard communication systems text is one of the first books to successfully integrate the use of MATLAB in the study of communication systems concepts and problems It has been developed for instructors and students who wish to make use of MATLAB as an integral part of their study The former will find the means by which to use MATLAB as a powerful tool to motivate students and illustrate essential theory without having to customize the applications themselves the latter will find relevant problems quickly and easily The book includes numerous MATLAB based simulations and examples of communication systems while providing a good balance of theory and hands on computer experience This Updated Printing revises the book and MATLAB files available for downloading from the Brooks Cole Bookware Companion

Resource Center Web Site to MATLAB V5 Detecting and Classifying Low Probability of Intercept Radar Phillip E. Pace, 2009 This comprehensive book presents LPI radar design essentials including ambiguity analysis of LPI waveforms FMCW radar and phase shift and frequency shift keying techniques Moreover you find details on new OTHR modulation schemes noise radar and spatial multiple input multiple output MIMO systems The book explores autonomous non linear classification signal processing algorithms for identifying LPI modulations It also demonstrates four intercept receiver signal processing techniques for LPI radar detection that helps you determine which time frequency bi frequency technique best suits any LPI modulation of interest Publisher **Communication Systems Principles Using MATLAB** John W. Leis, 2018-07-31 Discover the basic telecommunications systems principles in an accessible learn by doing format Communication Systems Principles Using MATLAB covers a variety of systems principles in telecommunications in an accessible format without the need to master a large body of theory. The text puts the focus on topics such as radio and wireless modulation reception and transmission wired networks and fiber optic communications The book also explores packet networks and TCP IP as well as digital source and channel coding and the fundamentals of data encryption Since MATLAB is widely used by telecommunications engineers it was chosen as the vehicle to demonstrate many of the basic ideas with code examples presented in every chapter The text addresses digital communications with coverage of packet switched networks Many fundamental concepts such as routing via shortest path are introduced with simple and concrete examples The treatment of advanced telecommunications topics extends to OFDM for wireless modulation and public key exchange algorithms for data encryption Throughout the book the author puts the emphasis on understanding rather than memorization The text also Includes many useful take home skills that can be honed while studying each aspect of telecommunications Offers a coding and experimentation approach with many real world examples provided Gives information on the underlying theory in order to better understand conceptual developments Suggests a valuable learn by doing approach to the topic Written for students of telecommunications engineering Communication Systems Principles Using MATLAB is the hands on resource for mastering the basic concepts of telecommunications in a learn by doing format

Signal Processing Techniques for Communication K.C. Raveendranathan, 2024-10-30 The reference text discusses signal processing tools and techniques used for the design testing and deployment of communication systems It further explores software simulation and modeling tools like MATLAB GNU Octave Mathematica and Python for modeling simulation and detailed analysis leading to comprehensive insights into communication systems The book explains topics such as source coding pulse demodulation systems and the principle of sampling and aliasing This book Discusses modern techniques including analog and digital filter design and modulation principles including quadrature amplitude modulation and differential phase shift keying Covers filter design using MATLAB system simulation using Simulink signal processing toolbox linear time invariant systems and non linear time variant systems Explains important pulse keying techniques including

Gaussian minimum shift keying and quadrature phase shift keying Presents signal processing tools and techniques for communication systems design modeling simulation and deployment Illustrates topics such as software defined radio SDR systems spectrum sensing and automated modulation sensing The text is primarily written for senior undergraduates graduate students and academic researchers in the fields of electrical engineering electronics and communication engineering computer science and engineering

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