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MATLAB Deep Learning Financial Modelling Development of Matlab Source Code for the Behaviour of Bar Element by Using Fourier Series *Dynamical Systems with Applications using MATLAB®* **Real-Time Image and Video Processing Using MATLAB Functions in Simulink Models GPU Programming in MATLAB** Understanding LTE with MATLAB Practical MATLAB Modeling with Simulink *Beginning MATLAB and Simulink* **Scientific Computing with MATLAB** *Cam Profile Analysis and Simulation using Synthetic Curves An Introduction to Audio Content Analysis* **MATLAB Programming Numerical Computing with MATLAB** Optimization Concepts and Applications in Engineering **Python for MATLAB Development Data-Driven Science and Engineering Guide for Dummies: from MATLAB to C++ through the MATLAB Coder** *Progress In Astronautics and Aeronautics Computational Partial Differential Equations Using MATLAB®* **MATLAB Machine Learning Fuzzy Neural Networks for Real Time Control Applications** Digital Image Interpolation in Matlab MATLAB Tensor Classes for Fast Algorithm Prototyping Still Image and Video Compression with MATLAB *Accelerating MATLAB Performance Kalman Filtering Practical MATLAB Deep Learning* **Diagnostic Radiology Physics with MATLAB®** **Linear Programming Using MATLAB®** *Applications Interface Programming Using Multiple Languages* An Introduction to Reservoir Simulation Using MATLAB/GNU Octave MATLAB Recipes Handbook of Position Location Digital Image Processing Using MATLAB **Computational Science and Its Applications -- ICCSA 2012** **Real-Time Digital Signal Processing from MATLAB to C with the TMS320C6x DSPs Embedded DSP Processor Design** **Nonnegative Matrix and Tensor Factorizations**

Beginning MATLAB and Simulink May 12 2022 Employ essential and hands-on tools and functions of the MATLAB and Simulink packages, which are explained and demonstrated via interactive examples and case studies. This book contains dozens of simulation models and solved problems via m-files/scripts and Simulink models which help you to learn programming and modeling essentials. You'll become efficient with many of the built-in tools and functions of MATLAB/Simulink while solving engineering and scientific computing problems. Beginning MATLAB and Simulink explains various practical issues of programming and modelling in parallel by comparing MATLAB and Simulink. After reading and using this book, you'll be proficient at using MATLAB and applying the source code from the book's examples as templates for your own projects in data science or engineering. What You Will Learn Get started using MATLAB and Simulink Carry out data visualization with MATLAB Gain the programming and modeling essentials of MATLAB Build a GUI with MATLAB Work with integration and numerical root finding methods Apply MATLAB to differential equations-based models and simulations Use MATLAB for data science projects Who This Book Is For Engineers,

programmers, data scientists, and students majoring in engineering and scientific computing.

Embedded DSP Processor Design Nov 13 2019 This book provides design methods for Digital Signal Processors and Application Specific Instruction set Processors, based on the author's extensive, industrial design experience. Top-down and bottom-up design methodologies are presented, providing valuable guidance for both students and practicing design engineers. Coverage includes design of internal-external data types, application specific instruction sets, micro architectures, including designs for datapath and control path, as well as memory sub systems. Integration and verification of a DSP-ASIP processor are discussed and reinforced with extensive examples. Instruction set design for application specific processors based on fast application profiling Micro architecture design methodology Micro architecture design details based on real examples Extendable architecture design protocols Design for efficient memory sub systems (minimizing on chip memory and cost) Real example designs based on extensive, industrial experiences

An Introduction to Audio Content Analysis Feb 09 2022 With the proliferation of digital audio distribution over digital media, audio content analysis is fast becoming a requirement for designers of intelligent signal-adaptive audio processing systems. Written by a well-known expert in the field, this book provides quick access to different analysis algorithms and allows comparison between different approaches to the same task, making it useful for newcomers to audio signal processing and industry experts alike. A review of relevant fundamentals in audio signal processing, psychoacoustics, and music theory, as well as downloadable MATLAB files are also included. Please visit the companion website: www.AudioContentAnalysis.org

Handbook of Position Location Mar 18 2020 A comprehensive review of position location technology — from fundamental theory to advanced practical applications Positioning systems and location technologies have become significant components of modern life, used in a multitude of areas such as law enforcement and security, road safety and navigation, personnel and object tracking, and many more. Position location systems have greatly reduced societal vulnerabilities and enhanced the quality of life for billions of people around the globe — yet limited resources are available to researchers and students in this important field. The Handbook of Position Location: Theory, Practice, and Advances fills this gap, providing a comprehensive overview of both fundamental and cutting-edge techniques and introducing practical methods of advanced localization and positioning. Now in its second edition, this handbook offers broad and in-depth coverage of essential topics including Time of Arrival (TOA) and Direction of Arrival (DOA) based positioning, Received Signal Strength (RSS) based positioning, network localization, and others. Topics such as GPS, autonomous vehicle applications, and visible light localization are examined, while major revisions to chapters such as body area network positioning and digital signal processing for GNSS receivers reflect current and emerging advances in the field. This new edition: Presents new and revised chapters on topics including localization error evaluation, Kalman filtering, positioning in inhomogeneous media, and Global Positioning (GPS) in harsh environments Offers MATLAB examples to demonstrate fundamental algorithms for positioning and provides online access to all MATLAB code Allows practicing engineers and graduate students to keep pace with contemporary research and new technologies

Contains numerous application-based examples including the application of localization to drone navigation, capsule endoscopy localization, and satellite navigation and localization. Reviews unique applications of position location systems, including GNSS and RFID-based localization systems. The Handbook of Position Location: Theory, Practice, and Advances is a valuable resource for practicing engineers and researchers seeking to keep pace with current developments in the field, graduate students in need of clear and accurate course material, and university instructors teaching the fundamentals of wireless localization.

Linear Programming Using MATLAB® Jul 22 2020 This book offers a theoretical and computational presentation of a variety of linear programming algorithms and methods with an emphasis on the revised simplex method and its components. A theoretical background and mathematical formulation is included for each algorithm as well as comprehensive numerical examples and corresponding MATLAB® code. The MATLAB® implementations presented in this book are sophisticated and allow users to find solutions to large-scale benchmark linear programs. Each algorithm is followed by a computational study on benchmark problems that analyze the computational behavior of the presented algorithms. As a solid companion to existing algorithmic-specific literature, this book will be useful to researchers, scientists, mathematical programmers, and students with a basic knowledge of linear algebra and calculus. The clear presentation enables the reader to understand and utilize all components of simplex-type methods, such as presolve techniques, scaling techniques, pivoting rules, basis update methods, and sensitivity analysis.

Development of Matlab Source Code for the Behaviour of Bar Element by Using Fourier Series Dec 19 2022

Computational Science and Its Applications -- ICCSA 2012 Jan 16 2020 The four-volume set LNCS 7333-7336 constitutes the refereed proceedings of the 12th International Conference on Computational Science and Its Applications, ICCSA 2012, held in Salvador de Bahia, Brazil, in June 2012. The four volumes contain papers presented in the following workshops: 7333 - advances in high performance algorithms and applications (AHPAA); bioinspired computing and applications (BIOCA); computational geometry and applications (CGA); chemistry and materials sciences and technologies (CMST); cities, technologies and planning (CTP); 7334 - econometrics and multidimensional evaluation in the urban environment (EMEUE); geographical analysis, urban modeling, spatial statistics (Geo-An-Mod); 7335 - optimization techniques and applications (OTA); mobile communications (MC); mobile-computing, sensing and actuation for cyber physical systems (MSA4CPS); remote sensing (RS); 7336 - software engineering processes and applications (SEPA); software quality (SQ); security and privacy in computational sciences (SPCS); soft computing and data engineering (SCDE). The topics of the fully refereed papers are structured according to the four major conference themes: 7333 - computational methods, algorithms and scientific application; 7334 - geometric modelling, graphics and visualization; 7335 - information systems and technologies; 7336 - high performance computing and networks.

Nonnegative Matrix and Tensor Factorizations Oct 13 2019 This book provides a broad survey of models and efficient algorithms for Nonnegative Matrix Factorization (NMF). This includes NMF's various extensions and modifications, especially Nonnegative Tensor Factorizations (NTF) and Nonnegative Tucker Decompositions

(NTD). NMF/NTF and their extensions are increasingly used as tools in signal and image processing, and data analysis, having garnered interest due to their capability to provide new insights and relevant information about the complex latent relationships in experimental data sets. It is suggested that NMF can provide meaningful components with physical interpretations; for example, in bioinformatics, NMF and its extensions have been successfully applied to gene expression, sequence analysis, the functional characterization of genes, clustering and text mining. As such, the authors focus on the algorithms that are most useful in practice, looking at the fastest, most robust, and suitable for large-scale models. Key features: Acts as a single source reference guide to NMF, collating information that is widely dispersed in current literature, including the authors' own recently developed techniques in the subject area. Uses generalized cost functions such as Bregman, Alpha and Beta divergences, to present practical implementations of several types of robust algorithms, in particular Multiplicative, Alternating Least Squares, Projected Gradient and Quasi Newton algorithms. Provides a comparative analysis of the different methods in order to identify approximation error and complexity. Includes pseudo codes and optimized MATLAB source codes for almost all algorithms presented in the book. The increasing interest in nonnegative matrix and tensor factorizations, as well as decompositions and sparse representation of data, will ensure that this book is essential reading for engineers, scientists, researchers, industry practitioners and graduate students across signal and image processing; neuroscience; data mining and data analysis; computer science; bioinformatics; speech processing; biomedical engineering; and multimedia.

Computational Partial Differential Equations Using MATLAB® Jun 01 2021 In this popular text for an Numerical Analysis course, the authors introduce several major methods of solving various partial differential equations (PDEs) including elliptic, parabolic, and hyperbolic equations. It covers traditional techniques including the classic finite difference method, finite element method, and state-of-the-art numerical methods. The text uniquely emphasizes both theoretical numerical analysis and practical implementation of the algorithms in MATLAB. This new edition includes a new chapter, Finite Value Method, the presentation has been tightened, new exercises and applications are included, and the text refers now to the latest release of MATLAB. Key Selling Points: A successful textbook for an undergraduate text on numerical analysis or methods taught in mathematics and computer engineering. This course is taught in every university throughout the world with an engineering department or school. Competitive advantage broader numerical methods (including finite difference, finite element, meshless method, and finite volume method), provides the MATLAB source code for most popular PDEs with detailed explanation about the implementation and theoretical analysis. No other existing textbook in the market offers a good combination of theoretical depth and practical source codes.

Kalman Filtering Oct 25 2020 The definitive textbook and professional reference on Kalman Filtering – fully updated, revised, and expanded This book contains the latest developments in the implementation and application of Kalman filtering. Authors Grewal and Andrews draw upon their decades of experience to offer an in-depth examination of the subtleties, common pitfalls, and limitations of estimation theory as it applies to real-world situations. They present many illustrative examples including adaptations for nonlinear filtering, global navigation satellite systems, the error modeling of gyros and

accelerometers, inertial navigation systems, and freeway traffic control. Kalman Filtering: Theory and Practice Using MATLAB, Fourth Edition is an ideal textbook in advanced undergraduate and beginning graduate courses in stochastic processes and Kalman filtering. It is also appropriate for self-instruction or review by practicing engineers and scientists who want to learn more about this important topic.

Financial Modelling Jan 20 2023 Financial modelling Theory, Implementation and Practice with MATLAB Source Jörg Kienitz and Daniel Wetterau Financial Modelling - Theory, Implementation and Practice with MATLAB Source is a unique combination of quantitative techniques, the application to financial problems and programming using Matlab. The book enables the reader to model, design and implement a wide range of financial models for derivatives pricing and asset allocation, providing practitioners with complete financial modelling workflow, from model choice, deriving prices and Greeks using (semi-) analytic and simulation techniques, and calibration even for exotic options. The book is split into three parts. The first part considers financial markets in general and looks at the complex models needed to handle observed structures, reviewing models based on diffusions including stochastic-local volatility models and (pure) jump processes. It shows the possible risk-neutral densities, implied volatility surfaces, option pricing and typical paths for a variety of models including SABR, Heston, Bates, Bates-Hull-White, Displaced-Heston, or stochastic volatility versions of Variance Gamma, respectively Normal Inverse Gaussian models and finally, multi-dimensional models. The stochastic-local-volatility Libor market model with time-dependent parameters is considered and as an application how to price and risk-manage CMS spread products is demonstrated. The second part of the book deals with numerical methods which enables the reader to use the models of the first part for pricing and risk management, covering methods based on direct integration and Fourier transforms, and detailing the implementation of the COS, CONV, Carr-Madan method or Fourier-Space-Time Stepping. This is applied to pricing of European, Bermudan and exotic options as well as the calculation of the Greeks. The Monte Carlo simulation technique is outlined and bridge sampling is discussed in a Gaussian setting and for Lévy processes. Computation of Greeks is covered using likelihood ratio methods and adjoint techniques. A chapter on state-of-the-art optimization algorithms rounds up the toolkit for applying advanced mathematical models to financial problems and the last chapter in this section of the book also serves as an introduction to model risk. The third part is devoted to the usage of Matlab, introducing the software package by describing the basic functions applied for financial engineering. The programming is approached from an object-oriented perspective with examples to propose a framework for calibration, hedging and the adjoint method for calculating Greeks in a Libor market model. Source code used for producing the results and analysing the models is provided on the author's dedicated website,

<http://www.mathworks.de/matlabcentral/fileexchange/authors/246981>.

MATLAB Machine Learning Apr 30 2021 This book is a comprehensive guide to machine learning with worked examples in MATLAB. It starts with an overview of the history of Artificial Intelligence and automatic control and how the field of machine learning grew from these. It provides descriptions of all major areas in machine learning. The book reviews commercially available packages for machine learning and shows how they fit into the field. The book then shows how MATLAB can be used to solve

machine learning problems and how MATLAB graphics can enhance the programmer's understanding of the results and help users of their software grasp the results. Machine Learning can be very mathematical. The mathematics for each area is introduced in a clear and concise form so that even casual readers can understand the math. Readers from all areas of engineering will see connections to what they know and will learn new technology. The book then provides complete solutions in MATLAB for several important problems in machine learning including face identification, autonomous driving, and data classification. Full source code is provided for all of the examples and applications in the book. What you'll learn: An overview of the field of machine learning Commercial and open source packages in MATLAB How to use MATLAB for programming and building machine learning applications MATLAB graphics for machine learning Practical real world examples in MATLAB for major applications of machine learning in big data Who is this book for: The primary audiences are engineers and engineering students wanting a comprehensive and practical introduction to machine learning.

MATLAB Recipes Apr 18 2020 Learn from state-of-the-art examples in robotics, motors, detection filters, chemical processes, aircraft, and spacecraft. This is a practical reference for industry engineers using MATLAB to solve everyday problems. With MATLAB Recipes: A Problem-Solution Approach you will review contemporary MATLAB coding including the latest language features and use MATLAB as a software development environment including code organization, GUI development, and algorithm design and testing. This book provides practical guidance for using MATLAB to build a body of code you can turn to time and again for solving technical problems in your line of work. Develop algorithms, test them, visualize the results, and pass the code along to others to create a functional code base for your firm.

Guide for Dummies: from MATLAB to C++ through the MATLAB Coder Aug 03 2021 Nowadays, many of the tools and applications used in the biomedical field are developed in MATLAB (The MathWorks, Inc., MA, USA). However, the C++ code is license-free so better suits the policy of code distributed in the form of Open Source. To facilitate the conversion from MATLAB to C++, MATLAB developers have recently created a toolbox called MATLAB Coder containing various functions and tools to facilitate a (semi-) automatic code conversion. In this book, using significant examples of increasing complexity, we show how to quickly and easily exploit the MATLAB Coder to create ".lib" static libraries, ".exe" executables and ".cpp" source code starting from MATLAB ".m" functions. SINOSSI Al giorno d'oggi, molti dei tools ed applicativi utilizzati in campo biomedicale sono sviluppati in linguaggio MATLAB (The MathWorks, Inc., MA, USA). Tuttavia, il codice C++ non essendo collegato a licenze di utilizzo meglio si adatta alla politica di codice distribuito in forma di Open Source. Per facilitare la conversione dal linguaggio MATLAB al linguaggio C++, gli sviluppatori MATLAB hanno recentemente realizzato un toolbox chiamato MATLAB Coder contenente varie funzioni e strumenti per facilitare la conversione (semi-)automatica del codice. In questo libro, utilizzando esempi significativi di complessità crescente, mostriamo come sfruttare in maniera facile e veloce il MATLAB Coder per realizzare librerie statiche ".lib", eseguibili ".exe" e codice sorgente ".cpp" partendo da funzioni MATLAB ".m".

MATLAB Tensor Classes for Fast Algorithm Prototyping Jan 28 2021 We present the source code for three MATLAB classes for manipulating tensors in order to allow fast

algorithm prototyping. A tensor is a multidimensional or Nway array. This is a supplementary report; details on using this code are provided separately in SAND-XXXX.

Fuzzy Neural Networks for Real Time Control Applications Mar 30 2021 AN INDISPENSABLE RESOURCE FOR ALL THOSE WHO DESIGN AND IMPLEMENT TYPE-1 AND TYPE-2 FUZZY NEURAL NETWORKS IN REAL TIME SYSTEMS Delve into the type-2 fuzzy logic systems and become engrossed in the parameter update algorithms for type-1 and type-2 fuzzy neural networks and their stability analysis with this book! Not only does this book stand apart from others in its focus but also in its application-based presentation style. Prepared in a way that can be easily understood by those who are experienced and inexperienced in this field. Readers can benefit from the computer source codes for both identification and control purposes which are given at the end of the book. A clear and an in-depth examination has been made of all the necessary mathematical foundations, type-1 and type-2 fuzzy neural network structures and their learning algorithms as well as their stability analysis. You will find that each chapter is devoted to a different learning algorithm for the tuning of type-1 and type-2 fuzzy neural networks; some of which are: • Gradient descent • Levenberg-Marquardt • Extended Kalman filter In addition to the aforementioned conventional learning methods above, number of novel sliding mode control theory-based learning algorithms, which are simpler and have closed forms, and their stability analysis have been proposed. Furthermore, hybrid methods consisting of particle swarm optimization and sliding mode control theory-based algorithms have also been introduced. The potential readers of this book are expected to be the undergraduate and graduate students, engineers, mathematicians and computer scientists. Not only can this book be used as a reference source for a scientist who is interested in fuzzy neural networks and their real-time implementations but also as a course book of fuzzy neural networks or artificial intelligence in master or doctorate university studies. We hope that this book will serve its main purpose successfully. Parameter update algorithms for type-1 and type-2 fuzzy neural networks and their stability analysis Contains algorithms that are applicable to real time systems Introduces fast and simple adaptation rules for type-1 and type-2 fuzzy neural networks Number of case studies both in identification and control Provides MATLAB® codes for some algorithms in the book

Numerical Computing with MATLAB Dec 07 2021 A revised textbook for introductory courses in numerical methods, MATLAB and technical computing, which emphasises the use of mathematical software.

Understanding LTE with MATLAB Jul 14 2022 An introduction to technical details related to the PhysicalLayer of the LTE standard with MATLAB® The LTE (Long Term Evolution) and LTE-Advanced are among the latest mobile communications standards, designed to realize the dream of a truly global, fast, all-IP-based, secure broadband mobile access technology. This book examines the Physical Layer (PHY) of the LTE standards by incorporating three conceptual elements: an overview of the theory behind key enabling technologies; a concise discussion regarding standard specifications; and the MATLAB® algorithms needed to simulate the standard. The use of MATLAB®, a widely used technical computing language, is one of the distinguishing features of this book. Through a series of MATLAB® programs, the author explores each of the enabling technologies, pedagogically synthesizes an LTE PHY system

model, and evaluates system performance at each stage. Following this step-by-step process, readers will achieve deeper understanding of LTE concepts and specifications through simulations. Key Features: • Accessible, intuitive, and progressive; one of the few books to focus primarily on the modeling, simulation, and implementation of the LTE PHY standard • Includes case studies and test benches in MATLAB®, which build knowledge gradually and incrementally until a functional specification for the LTE PHY is attained • Accompanying Web site includes all MATLAB® programs, together with PowerPoint slides and other illustrative examples

Dr Houman Zarrinkoub has served as a development manager and now as a senior product manager with MathWorks, based in Massachusetts, USA. Within his 12 years at MathWorks, he has been responsible for multiple signal processing and communications software tools. Prior to MathWorks, he was a research scientist in the Wireless Group at Nortel Networks, where he contributed to multiple standardization projects for 3G mobile technologies. He has been awarded multiple patents on topics related to computer simulations. He holds a BSc degree in Electrical Engineering from McGill University and MSc and PhD degrees in Telecommunications from the Institut Nationale de la Recherche Scientifique, in Canada.

<http://www.wiley.com/go/zarrinkoub>

Data-Driven Science and Engineering Sep 04 2021 A textbook covering data-science and machine learning methods for modelling and control in engineering and science, with Python and MATLAB®.

Digital Image Processing Using MATLAB Feb 15 2020 This book will help you learn all about digital image processing Importance, and necessity of image processing stems from application areas the first being the Improvement of data for individual interpretation and the second being that the Processing of a spectacle data for a machine perception. Digital image processing includes a assortment of applications such as remote sensing, image and information storage for transmission in acoustic imaging, medical imaging, business applications, Forensic sciences and industrial automation. Images are helpful in tracking of earth resources mapping, and forecast of urban populations, agricultural crops, climate forecasting, flooding and fire control. Space imaging applications include comprehension and analyzation of objects contained in images obtained from deep space-probe missions. There are also medical programs such as processing of X-Rays, Ultrasonic scanning, Electron micrographs, Magnetic Resonance Imaging, Nuclear Magnetic Resonance Imaging, etc.. In addition to the aforementioned applications, digital image processing is being used to solve a variety of issues. Even unrelated, these problems commonly require methods effective at improving information. The Image processing Procedures like restoration and Image enhancement are used to procedure images that were degraded or blurred. Powerful uses of image processing concepts are observed in defense astronomy, biology, medical and industrial applications. As per Medical Imaging is concerned almost all of the pictures could be utilized in the discovery of tumors or for viewing the patients. The current key field of use of digital image processing (DIP) methods is in solving the issue of machine vision so as to attain superior results.

CONTENTS OF THIS BOOK: Chapter 1: Basic Morphological Operation with MATLAB Source Code Chapter 2: Image Segmentation with MATLAB Source Code Chapter 3: Image intensity transformation with MATLAB Source Code Chapter 4: Histogram Equalization with MATLAB Source Code Chapter 5: Spatial Intensity Resolution with MATLAB Source Code Chapter 6:

Image Enhancement in Frequency Filtering with MATLAB Source Code Chapter 7:
Image Enhancement in Spatial Filtering with MATLAB Source Code Chapter 8: Color
Image Processing with MATLAB Source Code Chapter 9: DFT Analysis with MATLAB
Source Code Chapter 10: Basic Thresholding Function with MATLAB Source Code
Chapter 11: Image Sampling and Quantization with MATLAB Source Code Chapter 12:
Various Image Transformation with MATLAB Source Code

Python for MATLAB Development Oct 05 2021 MATLAB can run Python code!
Python for MATLAB Development shows you how to enhance MATLAB with Python
solutions to a vast array of computational problems in science, engineering,
optimization, statistics, finance, and simulation. It is three books in one: A thorough
Python tutorial that leverages your existing MATLAB knowledge with a comprehensive
collection of MATLAB/Python equivalent expressions A reference guide to setting up
and managing a Python environment that integrates cleanly with MATLAB A collection
of recipes that demonstrate Python solutions invoked directly from MATLAB This book
shows how to call Python functions to enhance MATLAB's capabilities. Specifically,
you'll see how Python helps MATLAB: Run faster with numba Distribute work to a
compute cluster with dask Find symbolic solutions to integrals, derivatives, and series
summations with SymPy Overlay data on maps with Cartopy Solve mixed-integer linear
programming problems with PuLP Interact with Redis via pyredis, PostgreSQL via
psycopg2, and MongoDB via pymongo Read and write file formats that are not natively
understood by MATLAB, such as SQLite, YAML, and ini Who This Book Is For MATLAB
developers who are new to Python and other developers with some prior experience
with MATLAB, R, IDL, or Mathematica.

Real-Time Image and Video Processing Oct 17 2022 This book presents an overview
of the guidelines and strategies for transitioning an image or video processing algorithm
from a research environment into a real-time constrained environment. Such guidelines
and strategies are scattered in the literature of various disciplines including image
processing, computer engineering, and software engineering, and thus have not
previously appeared in one place. By bringing these strategies into one place, the book
is intended to serve the greater community of researchers, practicing engineers,
industrial professionals, who are interested in taking an image or video processing
algorithm from a research environment to an actual real-time implementation on a
resource constrained hardware platform. These strategies consist of algorithm
simplifications, hardware architectures, and software methods. Throughout the book,
carefully selected representative examples from the literature are presented to illustrate
the discussed concepts. After reading the book, the readers are exposed to a wide
variety of techniques and tools, which they can then employ to design a real-time image
or video processing system.

Applications Interface Programming Using Multiple Languages Jun 20 2020 Annotation
This book provides a detailed description about the practical considerations in multiple
languages programming as well as the interfaces among different languages in the
Window environment. Authentic examples and detailed explanations are combined
together in this book to provide the readers a clear picture as how to handle the multiple
languages programming in Windows.

MATLAB Programming Jan 08 2022 This book presents fundamentals in MATLAB
programming, including data and statement structures, control structures, function

writing and bugging in MATLAB programming, followed by the presentations of algebraic computation, transcendental function evaluations and data processing. Advanced topics such as MATLAB interfacing, object-oriented programming and graphical user interface design are also addressed.

An Introduction to Reservoir Simulation Using MATLAB/GNU Octave May 20 2020

Presents numerical methods for reservoir simulation, with efficient implementation and examples using widely-used online open-source code, for researchers, professionals and advanced students. This title is also available as Open Access on Cambridge Core.

Using MATLAB Functions in Simulink Models Sep 16 2022 If you intend to generate code from the MATLAB algorithm in a MATLAB Function block, you must explicitly assign the class, size, and complexity of local variables before using them in operations or returning them as outputs. Generally, once you assign properties to a variable, you cannot redefine its class, size, or complexity elsewhere in the function body, but there are exceptions. The MATLAB Function block allows you to add MATLAB functions to Simulink models for deployment to desktop and embedded processors. This capability is useful for coding algorithms that are better stated in the textual language of MATLAB than in the graphical language of Simulink. From the MATLAB Function block, you can generate readable, efficient, and compact C/C++ code for deployment to desktop and embedded applications. MATLAB Function blocks can call any of the following types of functions: Local functions (Local functions are defined in the body of the MATLAB Function block), MATLAB toolbox functions that support code generation (From MATLAB Function blocks, you can call toolbox functions that support code generation. When you build your model with Simulink Coder, these functions generate C code that is optimized to meet the memory and performance requirements of desktop and embedded environments), MATLAB functions that do not support code generation (From MATLAB Function blocks, you can also call extrinsic functions that not generate code and they execute only in the MATLAB workspace during simulation of the model) and Functions from Simulink Function blocks and Stateflow blocks (From MATLAB Function blocks, you can also call functions defined in a Simulink Function block. You can call Stateflow functions with Export Chart Level Functions and Allow exported functions to be called by Simulink checked in the chart Properties dialog box). MATLAB Function blocks provide the following capabilities: Allow you to build MATLAB functions into embeddable applications (MATLAB Function blocks support a subset of MATLAB toolbox functions that generate efficient C/C++ code) and Inherit properties from Simulink input and output signals (By default, both the size and type of input and output signals to a MATLAB Function block are inherited from Simulink signals. You can also choose to specify the size and type of inputs and outputs explicitly in the Ports and Data Manager). By default, MATLAB Function blocks have direct feedthrough enabled. If you disable direct feedthrough, the Simulink semantics ensures that outputs rely only on current state. To use nondirect feedthrough, in the Ports and Data Manager, clear the Allow direct feedthrough check box. To open the Ports and Data Manager, in the MATLAB Function Block Editor, select Edit Data on the Editor tab. The Ports and Data Manager appears for the MATLAB Function block that is open and has focus. MATLAB Function blocks participate in signal resolution with Simulink signal objects. By default, output data from MATLAB Function blocks become associated with Simulink signal objects of the same name during a process called implicit signal resolution. In MATLAB

Function blocks, you can define structure data as inputs or outputs that interact with bus signals. MATLAB Function blocks also support arrays of buses. You can also define structures inside MATLAB functions that are not part of MATLAB Function blocks. Like other Simulink blocks, MATLAB Function blocks support bidirectional traceability, but extend navigation to lines of source code. That is, you can navigate between a line of generated code and its corresponding line of source code. In other Simulink blocks, you can navigate between a line of generated code and its corresponding object. If you have a Simulink Coder license, you can include MATLAB source code as comments in the code generated for a MATLAB Function block. You can call external C code from a Simulink model using a MATLAB Function block and the `coder.ceval` command.

Progress In Astronautics and Aeronautics Jul 02 2021

Accelerating MATLAB Performance Nov 25 2020 The MATLAB® programming environment is often perceived as a platform suitable for prototyping and modeling but not for "serious" applications. One of the main complaints is that MATLAB is just too slow. *Accelerating MATLAB Performance* aims to correct this perception by describing multiple ways to greatly improve MATLAB program speed. Packed with thousands of helpful tips, it leaves no stone unturned, discussing every aspect of MATLAB. Ideal for novices and professionals alike, the book describes MATLAB performance in a scale and depth never before published. It takes a comprehensive approach to MATLAB performance, illustrating numerous ways to attain the desired speedup. The book covers MATLAB, CPU, and memory profiling and discusses various tradeoffs in performance tuning. It describes both the application of standard industry techniques in MATLAB, as well as methods that are specific to MATLAB such as using different data types or built-in functions. The book covers MATLAB vectorization, parallelization (implicit and explicit), optimization, memory management, chunking, and caching. It explains MATLAB's memory model and details how it can be leveraged. It describes the use of GPU, MEX, FPGA, and other forms of compiled code, as well as techniques for speeding up deployed applications. It details specific tips for MATLAB GUI, graphics, and I/O. It also reviews a wide variety of utilities, libraries, and toolboxes that can help to improve performance. Sufficient information is provided to allow readers to immediately apply the suggestions to their own MATLAB programs. Extensive references are also included to allow those who wish to expand the treatment of a particular topic to do so easily. Supported by an active website, and numerous code examples, the book will help readers rapidly attain significant reductions in development costs and program run times.

Practical MATLAB Deep Learning Sep 23 2020 Harness the power of MATLAB for deep-learning challenges. This book provides an introduction to deep learning and using MATLAB's deep-learning toolboxes. You'll see how these toolboxes provide the complete set of functions needed to implement all aspects of deep learning. Along the way, you'll learn to model complex systems, including the stock market, natural language, and angles-only orbit determination. You'll cover dynamics and control, and integrate deep-learning algorithms and approaches using MATLAB. You'll also apply deep learning to aircraft navigation using images. Finally, you'll carry out classification of ballet pirouettes using an inertial measurement unit to experiment with MATLAB's hardware capabilities. What You Will Learn Explore deep learning using MATLAB and compare it to algorithms Write a deep learning function in MATLAB and train it with

examples Use MATLAB toolboxes related to deep learning Implement tokamak disruption prediction Who This Book Is For Engineers, data scientists, and students wanting a book rich in examples on deep learning using MATLAB.

Diagnostic Radiology Physics with MATLAB® Aug 23 2020 Imaging modalities in radiology produce ever-increasing amounts of data which need to be displayed, optimized, analyzed and archived: a "big data" as well as an "image processing" problem. Computer programming skills are rarely emphasized during the education and training of medical physicists, meaning that many individuals enter the workplace without the ability to efficiently solve many real-world clinical problems. This book provides a foundation for the teaching and learning of programming for medical physicists and other professions in the field of Radiology and offers valuable content for novices and more experienced readers alike. It focuses on providing readers with practical skills on how to implement MATLAB® as an everyday tool, rather than on solving academic and abstract physics problems. Further, it recognizes that MATLAB is only one tool in a medical physicist's toolkit and shows how it can be used as the "glue" to integrate other software and processes together. Yet, with great power comes great responsibility. The pitfalls to deploying your own software in a clinical environment are also clearly explained. This book is an ideal companion for all medical physicists and medical professionals looking to learn how to utilize MATLAB in their work. Features Encompasses a wide range of medical physics applications in diagnostic and interventional radiology Advances the skill of the reader by taking them through real-world practical examples and solutions with access to an online resource of example code The diverse examples of varying difficulty make the book suitable for readers from a variety of backgrounds and with different levels of programming experience.

Scientific Computing with MATLAB Apr 11 2022 Scientific Computing with MATLAB®, Second Edition improves students' ability to tackle mathematical problems. It helps students understand the mathematical background and find reliable and accurate solutions to mathematical problems with the use of MATLAB, avoiding the tedious and complex technical details of mathematics. This edition retains the structure of its predecessor while expanding and updating the content of each chapter. The book bridges the gap between problems and solutions through well-grouped topics and clear MATLAB example scripts and reproducible MATLAB-generated plots. Students can effortlessly experiment with the scripts for a deep, hands-on exploration. Each chapter also includes a set of problems to strengthen understanding of the material.

Cam Profile Analysis and Simulation using Synthetic Curves Mar 10 2022 Cam follower mechanisms are versatile mechanisms for obtaining complex motion outputs. Cams are also having vast range of applications due to their flexibility in operations, as they may easily be replaced, are adjustable and changeable for timing or for different motion requirements. The kinematic behavior of follower establishes the basic suitability of cam for the given application. The cam profile curves are mainly responsible, at the core, for proper operation of the cam follower mechanism, as they are the main input of the cam follower system. Synthetic curves, which are generated, parametrically, through a set of known data points with desired number of curve segments, may be proved to be a major improvement over the traditional trigonometric and polynomial cam profile curves. In present work Hermite and Bèzier curves are studied for their effect on the kinematic behavior of follower, when used as cam profile curves. Both the curves are generated

by varying their different curve parameters, viz. length and direction of tangent vector for Hermite curves, and number of control points with their different positions for Bèzier curves. The kinematic behavior of follower is simulated for cam profiles using these synthetic curves in MATLAB. The resulting follower displacements, velocities, accelerations and jerks are analyzed and comparative study is performed with the kinematic behavior of cycloidal cam profile. It is observed that the Hermite curve, when used as a cam profile, has caused 28.32% improved (i.e. reduced) maximum acceleration of follower than that obtained for cycloidal curve, while deviating from cycloidal cam profile by a maximum instantaneous difference in displacement of follower by 4.95 %. At the same time Bèzier curve has facilitated continuous jerk of follower, which is not, at all, possible by using a cycloidal curve. Thus, it is finally concluded that the synthetic curves, when used as cam profile, are providing better kinematic behaviour of cam follower mechanism, with lower maximum velocities, lower maximum accelerations, and lower maximum values of other undesirable higher order kinematic characteristic terms with the flexibility of shape control and better support for CAD/CAM applications. This Ebook is a master's dissertation on 'Cam Profile Analysis and Simulation using Synthetic Curves' submitted in September, 2013.

MATLAB Deep Learning Feb 21 2023 Get started with MATLAB for deep learning and AI with this in-depth primer. In this book, you start with machine learning fundamentals, then move on to neural networks, deep learning, and then convolutional neural networks. In a blend of fundamentals and applications, MATLAB Deep Learning employs MATLAB as the underlying programming language and tool for the examples and case studies in this book. With this book, you'll be able to tackle some of today's real world big data, smart bots, and other complex data problems. You'll see how deep learning is a complex and more intelligent aspect of machine learning for modern smart data analysis and usage. What You'll Learn Use MATLAB for deep learning Discover neural networks and multi-layer neural networks Work with convolution and pooling layers Build a MNIST example with these layers Who This Book Is For Those who want to learn deep learning using MATLAB. Some MATLAB experience may be useful.

Still Image and Video Compression with MATLAB Dec 27 2020 This book describes the principles of image and video compression techniques and introduces current and popular compression standards, such as the MPEG series. Derivations of relevant compression algorithms are developed in an easy-to-follow fashion. Numerous examples are provided in each chapter to illustrate the concepts.

Dynamical Systems with Applications using MATLAB® Nov 18 2022 This textbook, now in its second edition, provides a broad introduction to both continuous and discrete dynamical systems, the theory of which is motivated by examples from a wide range of disciplines. It emphasizes applications and simulation utilizing MATLAB®, Simulink®, the Image Processing Toolbox® and the Symbolic Math toolbox®, including MuPAD. Features new to the second edition include · sections on series solutions of ordinary differential equations, perturbation methods, normal forms, Gröbner bases, and chaos synchronization; · chapters on image processing and binary oscillator computing; · hundreds of new illustrations, examples, and exercises with solutions; and · over eighty up-to-date MATLAB program files and Simulink model files available online. These files were voted MATLAB Central Pick of the Week in July 2013. The hands-on approach of *Dynamical Systems with Applications using MATLAB, Second Edition*, has minimal

prerequisites, only requiring familiarity with ordinary differential equations. It will appeal to advanced undergraduate and graduate students, applied mathematicians, engineers, and researchers in a broad range of disciplines such as population dynamics, biology, chemistry, computing, economics, nonlinear optics, neural networks, and physics. Praise for the first edition Summing up, it can be said that this text allows the reader to have an easy and quick start to the huge field of dynamical systems theory.

MATLAB/SIMULINK facilitate this approach under the aspect of learning by doing. —OR News/Operations Research Spectrum The MATLAB programs are kept as simple as possible and the author's experience has shown that this method of teaching using MATLAB works well with computer laboratory classes of small sizes.... I recommend 'Dynamical Systems with Applications using MATLAB' as a good handbook for a diverse readership: graduates and professionals in mathematics, physics, science and engineering. —Mathematica

GPU Programming in MATLAB Aug 15 2022 GPU programming in MATLAB is intended for scientists, engineers, or students who develop or maintain applications in MATLAB and would like to accelerate their codes using GPU programming without losing the many benefits of MATLAB. The book starts with coverage of the Parallel Computing Toolbox and other MATLAB toolboxes for GPU computing, which allow applications to be ported straightforwardly onto GPUs without extensive knowledge of GPU programming. The next part covers built-in, GPU-enabled features of MATLAB, including options to leverage GPUs across multicore or different computer systems. Finally, advanced material includes CUDA code in MATLAB and optimizing existing GPU applications. Throughout the book, examples and source codes illustrate every concept so that readers can immediately apply them to their own development. Provides in-depth, comprehensive coverage of GPUs with MATLAB, including the parallel computing toolbox and built-in features for other MATLAB toolboxes Explains how to accelerate computationally heavy applications in MATLAB without the need to re-write them in another language Presents case studies illustrating key concepts across multiple fields Includes source code, sample datasets, and lecture slides

Real-Time Digital Signal Processing from MATLAB to C with the TMS320C6x DSPs Dec 15 2019 This updated edition gives readers hands-on experience in real-time DSP using a practical, step-by-step framework that also incorporates demonstrations, exercises, and problems, coupled with brief overviews of applicable theory and MATLAB applications. Organized in three sections that cover enduring fundamentals and present practical projects and invaluable appendices, this new edition provides support for the most recent and powerful of the inexpensive DSP development boards currently available from Texas Instruments: the OMAP-L138 LCDK. It includes two new real-time DSP projects, as well as three new appendices: an introduction to the Code Generation tools available with MATLAB, a guide on how to turn the LCDK into a portable battery-operated device, and a comparison of the three DSP boards directly supported by this edition.

Digital Image Interpolation in Matlab Feb 26 2021 This book provides a comprehensive study in digital image interpolation with theoretical, analytical and Matlab® implementation. It includes all historically and practically important interpolation algorithms, accompanied with Matlab® source code on a website, which will assist readers to learn and understand the implementation details of each presented

interpolation algorithm. Furthermore, sections in fundamental signal processing theories and image quality models are also included. The authors intend for the book to help readers develop a thorough consideration of the design of image interpolation algorithms and applications for their future research in the field of digital image processing. Introduces a wide range of traditional and advanced image interpolation methods concisely and provides thorough treatment of theoretical foundations Discusses in detail the assumptions and limitations of presented algorithms Investigates a variety of interpolation and implementation methods including transform domain, edge-directed, wavelet and scale-space, and fractal based methods Features simulation results for comparative analysis, summaries and computational and analytical exercises at the end of each chapter Digital Image Interpolation in Matlab® is an excellent guide for researchers and engineers working in digital imaging and digital video technologies. Graduate students studying digital image processing will also benefit from this practical reference text.

Optimization Concepts and Applications in Engineering Nov 06 2021 In this revised and enhanced second edition of Optimization Concepts and Applications in Engineering, the already robust pedagogy has been enhanced with more detailed explanations, an increased number of solved examples and end-of-chapter problems. The source codes are now available free on multiple platforms. It is vitally important to meet or exceed previous quality and reliability standards while at the same time reducing resource consumption. This textbook addresses this critical imperative integrating theory, modeling, the development of numerical methods, and problem solving, thus preparing the student to apply optimization to real-world problems. This text covers a broad variety of optimization problems using: unconstrained, constrained, gradient, and non-gradient techniques; duality concepts; multiobjective optimization; linear, integer, geometric, and dynamic programming with applications; and finite element-based optimization. It is ideal for advanced undergraduate or graduate courses and for practising engineers in all engineering disciplines, as well as in applied mathematics.

Practical MATLAB Modeling with Simulink Jun 13 2022 Employ the essential and hands-on tools and functions of MATLAB's ordinary differential equation (ODE) and partial differential equation (PDE) packages, which are explained and demonstrated via interactive examples and case studies. This book contains dozens of simulations and solved problems via m-files/scripts and Simulink models which help you to learn programming and modeling of more difficult, complex problems that involve the use of ODEs and PDEs. You'll become efficient with many of the built-in tools and functions of MATLAB/Simulink while solving more complex engineering and scientific computing problems that require and use differential equations. Practical MATLAB Modeling with Simulink explains various practical issues of programming and modelling. After reading and using this book, you'll be proficient at using MATLAB and applying the source code from the book's examples as templates for your own projects in data science or engineering. What You Will Learn Model complex problems using MATLAB and Simulink Gain the programming and modeling essentials of MATLAB using ODEs and PDEs Use numerical methods to solve 1st and 2nd order ODEs Solve stiff, higher order, coupled, and implicit ODEs Employ numerical methods to solve 1st and 2nd order linear PDEs Solve stiff, higher order, coupled, and implicit PDEs Who This Book Is For Engineers, programmers, data scientists, and students majoring in engineering,

applied/industrial math, data science, and scientific computing. This book continues where Apress' Beginning MATLAB and Simulink leaves off.

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