

Matlab Guide

Human behavior is fascinating so it's no surprise that psychologists and neuroscientists spend their lives designing rigorous experiments to understand it. MATLAB is one of the most widely used pieces of software for designing and running behavioral experiments, and it opens up a world of quick and flexible experiment programming. This book offers a step-by-step guide to using MATLAB with Psychtoolbox to create customisable experiments. Its pocket size and simple language allow you to get straight to the point and help you to learn fast in order to complete your work in great time. In nine simple steps, it guides you all the way from setting parameters for your experiment to analysing the output. Gone are the daunting days of working through hundreds of irrelevant and complicated documents, as in this handy book, Erman Misirlisoy coaxes you in the right direction with his friendly and encouraging tricks and tips. If you want to learn how to develop your own experiments to collect and analyse behavioral data, then this book is a must-read. Whether you are a student in experimental psychology, a researcher in cognitive neuroscience, or simply someone who wants to run behavioral tasks on your friends for fun, this book will offer you the skills to succeed.

A complete reference to all MATLAB functions and graphics, covering all features of Version 5. Over 100 MATLAB M-files demonstrate the use of MATLAB in performing real-world tasks.

This book provides a self-contained introduction to the simulation of flow and transport in porous media, written by a developer of numerical methods. The reader will learn how to implement reservoir simulation models and computational algorithms in a robust and efficient manner. The book contains a large number of numerical examples, all fully equipped with online code and data, allowing the reader to reproduce results, and use them as a starting point for their own work. All of the examples in the book are based on the MATLAB Reservoir Simulation Toolbox (MRST), an open-source toolbox popular in both academic institutions and the petroleum industry. The book can also be seen as a user guide to the MRST software. It will prove invaluable for researchers, professionals and advanced students using reservoir simulation methods. This title is also available as Open Access on Cambridge Core.

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.

9 Simple Steps for Students and Researchers

MATLAB

MATLAB Programming for Engineers

The Elements of MATLAB Style

A Comprehensive Tutorial and Reference

Plot graphs, solve equations, and write code in a flash! If you work in a STEM field, chances are you'll be using MATLAB on a daily basis. MATLAB is a popular and powerful computational tool and this book provides everything you need to start manipulating and plotting your data. MATLAB has rapidly become the premier data tool, and MATLAB For Dummies is a comprehensive guide to the fundamentals. MATLAB For Dummies guides you through this complex computational language from installation to visualization to automation. Learn MATLAB's language fundamentals including syntax, operators, and data types Understand how to use the most important window in MATLAB – the Command Window Get the basics of linear algebra to get up and running with vectors, matrices, and hyperspace Automate your work with programming scripts and functions Plot graphs in 2D and 3D to visualize your data Includes a handy guide for MATLAB's functions and plotting routines MATLAB is an essential part of the analysis arsenal and MATLAB For Dummies provides clear, thorough guidance to get the most out of your data.

The Elements of MATLAB Style is a guide for both new and experienced MATLAB programmers. It provides a comprehensive collection of standards and guidelines for creating solid MATLAB code that will be easy to understand, enhance, and maintain. It is written for both individuals and those working in teams in which consistency is critical. This is the only book devoted to MATLAB style and best programming practices, focusing on how MATLAB code can be written in order to maximize its effectiveness. Just as Strunk and White's The Elements of Style provides rules for writing in the English language, this book provides conventions for formatting, naming, documentation, programming and testing. It includes many concise examples of correct and incorrect usage, as well as coverage of the latest language features. The author also provides recommendations on use of the integrated development environment features that help produce better, more consistent software.

The book serves to be both a textbook and a reference for the theory and laboratory courses offered to undergraduate and graduate engineering students, and for practicing engineers.

A Guide to MATLAB Object-Oriented Programming is the first book to deliver broad coverage of the documented and undocumented object-oriented features of MATLAB. Unlike the typical approach of other resources, this guide explains why each feature is important, demonstrates how each feature is used, and promotes an understanding of

Visual Media Processing Using Matlab Beginner's Guide

1001 tips to speed up MATLAB programs

For Beginners and Experienced Users

Mastering MATLAB 5

MATLAB for Psychologists

Programming Behavioral Experiments with MATLAB and Psychtoolbox

The success of business today is dependent on the knowledge and expertise of its employees. The need for mathematics arises naturally in business such as in the work of the actuary in an insurance company, the financial mathematics required in the day-to-day work of the banker and the need to analyse data to extract useful information to enable the business to make the right decisions to be successful. A Guide to Business Mathematics provides a valuable self-study guide to business practitioners, business students and the general reader to enable them to gain an appropriate insight into the mathematics used in business. This book offers an accessible introduction to essential mathematics for the business field. A wide selection of topics is discussed with the mathematical material presented in a reader-friendly way. The business context motivates the presentation. The author uses modelling and applications to motivate the material, demonstrating how mathematics is used in the financial sector. In addition to the role of the actuary and the banker, the book covers operations research including game theory, trade discounts and the fundamentals of statistics and probability. The book is also a guide to using metrics to manage and measure performance, and business economics. Foundations on algebra, number theory, sequences and series, matrix theory and calculus are included as is a complete chapter on using software. Features

- Discusses simple interest and its application to promissory notes/treasury bills.
- Discusses compound interest with applications to present and future values.
- Introduces the banking field including loans, annuities and the spot/forward FX market.
- Discusses trade discounts and markups/markdowns.
- Introduces the insurance field and the role of the actuary.
- Introduces the fields of data analytics and operations research.
- Discusses business metrics and problem solving.
- Introduces matrices and their applications.
- Discusses calculus and its applications.
- Discusses basic financial statements such as balance sheet, profit and loss and cash account.
- Reviews a selection of software to support business mathematics.

This broad-ranging text gives the reader a flavour of the applications of mathematics to the business field and stimulates further study in the subject. As such, it will be of great benefit to business students, while also capturing the interest of the more casual reader. About the Author Dr. Gerard O'Regan is an Assistant Professor in Mathematics at the University of Central Asia in Kyrgyzstan. His research interests include software quality and software process improvement, mathematical approaches to software quality, and the history of computing. He is the author of several books in the Mathematics and Computing fields.

An introduction to a popular programming language for neuroscience research, taking the reader from beginning to intermediate and advanced levels of MATLAB programming. MATLAB is one of the most popular programming languages for neuroscience and psychology research. Its balance of usability, visualization, and widespread use makes it one of the most powerful tools in a scientist's toolbox. In this book, Mike Cohen teaches brain scientists how to program in MATLAB, with a focus on applications most commonly used in neuroscience and psychology. Although most MATLAB tutorials will abandon users at the beginner's level, leaving them to sink or swim, MATLAB for Brain and Cognitive Scientists takes readers from beginning to intermediate and advanced levels of MATLAB programming, helping them gain real expertise in applications that they will use in their work. The book offers a mix of instructive text and rigorous explanations of MATLAB code along with programming tips and tricks. The goal is to teach the reader how to program data analyses in neuroscience and psychology. Readers will learn not only how to but also how not to program, with examples of bad code that they are invited to correct or improve. Chapters end with exercises that test and develop the skills taught in each chapter. Interviews with neuroscientists and cognitive scientists who have made significant contributions their field using MATLAB appear throughout the book. MATLAB for Brain and Cognitive Scientists is an essential resource for both students and instructors, in the classroom or for independent study.

The fourth edition of Numerical Methods Using MATLAB® provides a clear and rigorous introduction to a wide range of numerical methods that have practical applications. The authors' approach is to integrate MATLAB® with numerical analysis in a way which adds clarity to the numerical analysis and develops familiarity with MATLAB®. MATLAB® graphics and numerical output are used extensively to clarify complex problems and give a deeper understanding of their nature. The text provides an extensive reference providing numerous useful and important numerical algorithms that are implemented in MATLAB® to help researchers analyze a particular outcome. By using MATLAB® it is possible for the readers to tackle some large and difficult problems and deepen and consolidate their understanding of problem solving using numerical methods. Many worked examples are given together with exercises and solutions to illustrate how numerical methods can be used to study problems that have applications in the biosciences, chaos, optimization and many other fields. The text will be a valuable aid to people working in a wide range of fields, such as engineering, science and economics. Features many numerical algorithms, their fundamental principles, and applications Includes new sections introducing Simulink, Kalman Filter, Discrete Transforms and Wavelet Analysis Contains some new problems and examples Is user-friendly and is written in a conversational and approachable style Contains over 60 algorithms implemented as MATLAB® functions, and over 100 MATLAB® scripts applying numerical algorithms to specific examples

MATLAB® provides an interactive programming interface for numerical computation and data visualization making it the default framework used for analysis, design and research in many domains of science and industry. Programming in MATLAB® : A problem-solving approach is intended as an aid to engineers and scientists with no prior programming expertise. The book focuses on the systematic development of practical programming skills through MATLAB language constructs, backed by several well-designed examples and exercises. Designed to be as much a MATLAB reference tool for researchers in varied fields as it is a guide for undergraduate readers, the book builds on the concepts sequentially as it progresses through the chapters. Each chapter is complete, independent of the book's remaining contents. Thus, for teaching purposes, one can suitably the relevant portions.

MATLAB Guide

With Applications from Mechanical, Aerospace, Electrical, Civil, and Biological Systems Engineering

Programming in MATLAB

Advanced GUI Development

Undocumented Secrets of MATLAB-Java Programming

Numerical Methods

Author Craig Lent's 1st edition of Learning to Program with MATLAB: Building GUI Tools teaches the core concepts of computer programming, such as arrays, loops, function, basic data structures, etc., using MATLAB. The text has a focus on the fundamentals of programming and builds up to an emphasis on GUI tools, covering text-based programs first, then programs that produce graphics. This creates a visual expression of the underlying mathematics of a problem or design.

Matlab is used within nearly all investment banks and is a requirement in most quant job ads. There is no other book written for finance practitioners that covers this Enables readers to implement financial and econometric models in Matlab All central concepts and theories are illustrated by Matlab implementations which are accompanied by detailed descriptions of the programming steps needed All concepts and techniques are introduced from a basic level Chapter 1 introduces Matlab and matrix algebra, it serves to make the reader familiar with the use and basic capabilities of Matlab. The chapter concludes with a walkthrough of a linear regression model, showing how Matlab can be used to solve an example problem analytically and by the use of optimization and simulation techniques Chapter 2 introduces expected return and risk as central concepts in finance theory using fixed income instruments as examples, the chapter illustrates how risk measures such as standard deviation, Modified duration, VaR, and expected shortfall can be calculated empirically and in closed form Chapter 3 introduces the concept of diversification and illustrates how the efficient investment frontier can be derived - a Matlab is developed that can be used to calculate a given number of portfolios that lie on an efficient frontier, the chapter also introduces the CAPM Chapter 4 introduces econometric tools: principle component analysis is presented and used as a prelude to yield-curve factor models. The Nelson-Siegel model is used to introduce the Kalman-Filter as a way to add time-series dynamics to the evolution of yield curves over time, time series models such as Vector Autoregression and regime-switching are also presented Supported by a website with online resources - www.kennyholm.com where all Matlab programs referred to in the text can be downloaded. The site also contains lecture slides and answers to end of chapter exercises

MATLAB Guide Society for Industrial & Applied

A practical guide to neural data analysis techniques that presents sample datasets and hands-on methods for analyzing the data. As neural data becomes increasingly complex, neuroscientists now require skills in computer programming, statistics, and data analysis. This book teaches practical neural data analysis techniques by presenting example datasets and developing techniques and tools for analyzing them. Each chapter begins with a specific example of neural data, which motivates mathematical and statistical analysis methods that are then applied to the data. This practical, hands-on approach is unique among data analysis textbooks and guides, and equips the reader with the tools necessary for real-world neural data analysis. The book begins with an introduction to MATLAB, the most common programming platform in neuroscience, which is used in the book. (Readers familiar with MATLAB can skip this chapter and might decide to focus on data type or method type.) The book goes on to cover neural field data and spike train data, spectral analysis, generalized linear models, coherence, and cross-frequency coupling. Each chapter offers a stand-alone case study that can be used separately as part of a targeted investigation. The book includes some mathematical discussion but does not focus on mathematical or statistical theory, emphasizing the practical instead. References are included for readers who want to explore the theoretical more deeply. The data and accompanying MATLAB code are freely available on the authors' website. The book can be used for upper-level undergraduate or graduate courses or as a professional reference.

User Guide for the MATLAB Reservoir Simulation Toolbox (MRST)

A Practical Guide to Error-Control Coding Using MATLAB

With Algorithms in MATLAB®

MATLAB Programming for Biomedical Engineers and Scientists

Version 5, User's Guide

Using MATLAB

This is a short, focused introduction to MATLAB, a comprehensive software system for mathematical and technical computing. It contains concise explanations of essential MATLAB commands, as well as easily understood instructions for using MATLAB's programming features, graphical capabilities, simulation models, and rich desktop interface. Written for MATLAB 7, it can also be used with earlier (and later) versions of MATLAB. This book teaches how to graph functions, solve equations, manipulate images, and much more. It contains explicit instructions for using MATLAB's companion software, Simulink, which allows graphical models to be built for dynamical systems. MATLAB's new "publish" feature is discussed, which allows mathematical computations to be combined with text and graphics, to produce polished, integrated, interactive documents. For the beginner it explains everything needed to start using MATLAB, while experienced users making the switch to MATLAB 7 from an earlier version will also find much useful information here. Practical Guide for Biomedical Signals Analysis Using Machine Learning Techniques: A MATLAB Based Approach presents how machine learning and biomedical signal processing methods can be used in biomedical signal analysis. Different machine learning applications in biomedical signal analysis, including those for electrocardiogram, electroencephalogram and electromyogram are described in a practical and comprehensive way, helping readers with limited knowledge. Sections cover biomedical signals and machine learning techniques, biomedical signals, such as electroencephalogram (EEG), electromyogram (EMG) and electrocardiogram (ECG), different signal-processing techniques, signal de-noising, feature extraction and dimension reduction techniques, such as PCA, ICA, KPCA, MSPCA, entropy measures, and other statistical measures, and more. This book is a valuable source for bioinformaticians, medical doctors and other members of the biomedical field who need a cogent resource on the most recent and promising machine learning techniques for biomedical signals analysis. Provides comprehensive knowledge in the application of machine learning tools in

biomedical signal analysis for medical diagnostics, brain computer interface and man/machine interaction Explains how to apply machine learning techniques to EEG, ECG and EMG signals Gives basic knowledge on predictive modeling in biomedical time series and advanced knowledge in machine learning for biomedical time series

An Engineer's Guide to MATLAB, 3/e, is an authoritative guide to generating readable, compact, and verifiably correct MATLAB programs. It is ideal for undergraduate engineering courses in Mechanical, Aeronautical, Civil, and Electrical engineering that require/use MATLAB. This highly respected guide helps students develop a strong working knowledge of MATLAB that can be used to solve a wide range of engineering problems. Since solving these problems usually involves writing relatively short, one-time-use programs, the authors demonstrate how to effectively develop programs that are compact yet readable, easy to debug, and quick to execute. Emphasis is on using MATLAB to obtain solutions to several classes of engineering problems, so technical material is presented in summary form only. The new edition has been thoroughly revised and tested for software release 2009.

This is a simple book on Statistics using MATLAB . There is a review of MATLAB in the first few chapters followed by four chapters on Statistics. This topic is very important for students and researchers in fields such as biological sciences, behavioral sciences, psychological sciences, marine science, etc. Two "statistics" chapters cover the basics of measures of central tendency, measures of dispersion, and graphical means of statistical output. There is no coverage of probability theory - only basic statistical concepts. The last two chapters cover the important topic of regression analysis in some detail. I chose this topic because regression analysis is the main statistical tool used in building models. Some readers even wanted me to include topics like hypothesis testing and ANOVA, but I feel that these topics should not be covered in a beginner's book. These topics can be found fully illustrated in specialized MATLAB books on statistics - check the updated list of references for titles of three to four books in this regard. All four chapters on statistics employ the various "statistics" commands found in the main MATLAB package, without resort to the specialized Statistics Toolbox . It should also be noted that the Statistics Toolbox is purchased separately from the MATLAB package and consists of a set of advanced MATLAB commands for specialized and advanced statistical tools, and these are beyond the scope of this book. Numerous other statistics toolboxes are also available on the market.

Numerical Methods of Exploration Seismology

Learning to Program with MATLAB: Building GUI Tools

Practical Guide to MIMO Radio Channel

An Interactive Approach

A Guide to MATLAB Object-Oriented Programming

Practical Guide for Biomedical Signals Analysis Using Machine Learning Techniques

The matrix laboratory interactive computing environment—MATLAB—has brought creativity to research in diverse disciplines, particularly in designing and programming experiments. More commonly used in mathematics and the sciences, it also lends itself to a variety of applications across the field of psychology. For the novice looking to use it in experimental psychology research, though, becoming familiar with MATLAB can be a daunting task. MATLAB for Psychologists expertly guides readers through the component steps, skills, and operations of the software, with plentiful graphics and examples to match the reader's comfort level. Using an extended illustration, this concise volume explains the program's usefulness at any point in an experiment, without the limits imposed by other types of software. And the authors demonstrate the responsiveness of MATLAB to the individual's research needs, whether the task is programming experiments, creating sensory stimuli, running simulations, or calculating statistics for data analysis. Key features of the coverage: Thinking in a matrix way. Handling and plotting data. Guidelines for improved programming, sound, and imaging. Statistical analysis and signal detection theory indexes. The Graphical User Interface. The Psychophysics Toolbox. MATLAB for Psychologists serves a wide audience of advanced undergraduate and graduate level psychology students, professors, and researchers as well as lab technicians involved in programming psychology experiments.

MATLAB is an interactive system for numerical computation that is widely used for teaching and research in industry and academia. It provides a modern programming language and problem solving environment, with powerful data structures, customizable graphics, and easy-to-use editing and debugging tools. This third edition of MATLAB Guide completely revises and updates the best-selling second edition and is more than 30 percent longer. The book remains a lively, concise introduction to the most popular and important features of MATLAB and the Symbolic Math Toolbox. Key features are a tutorial in Chapter 1 that gives a hands-on overview of MATLAB; a thorough treatment of MATLAB mathematics, including the linear algebra and numerical analysis functions and the differential equation solvers; and a web page at <http://www.siam.org/books/ot150> that provides example program files, updates, and links to MATLAB resources. The new edition contains color figures throughout; includes pithy discussions of related topics in new "Asides" boxes that augment the text; has new chapters on the Parallel Computing Toolbox, object-oriented programming, graphs, and large data sets; covers important new MATLAB data types such as categorical arrays, string arrays, tall arrays, tables, and timetables; contains more on MATLAB workflow, including the Live Editor and unit tests; and fully reflects major updates to the MATLAB graphics system. This book is suitable for both beginners and more experienced users, including students, researchers, and practitioners.

After more than 20 years of development, MATLAB has evolved from a powerful matrix calculation application into a universal programming tool used extensively within

scientific and engineering communities both commercial and academic. MATLAB versions 6.x and 7.x include functionality for developing advanced graphical user interfaces, GUIs, and real-time animation and graphics. GUI applications offer many advantages for users who wish to solve complex problems by providing interactivity and visual feedback. Some common examples of application areas where GUI development is desirable: .Image and Video Processing .Signal Processing .Communications .Simulation of Complex Systems

.Instrumentation and Data Acquisition Interfaces .Control Systems .Financial Analysis .Animation of 2D or 3D Graphical Data This text introduces you to the capabilities of MATLAB for GUI development and covers the following areas in detail: .Handle Graphics(r) programming and low-level GUIs .High-level GUI development using GUIDE .The structure of GUIs including event processing, callbacks, timers, and real-time animation of plots / data .Advanced GUI architectures including multiple figure GUIs and image mapped interface controls Instructional examples and exercises are provided throughout each chapter that offers a hands-on approach to learning MATLAB GUI development. The M-file code for each example and exercise solution is available for download on the web to help you quickly learn how to develop your own GUIs! About The Author Scott T. Smith received his MSEE degree from SUNY at Buffalo in the fields of image sensor applications and image processing. He currently works for Micron Technology Inc. in California as an Imaging Engineer and has 10 years of experience working with MATLAB and developing GUI applications. Previous work experience includes 3 years at the David Sarnoff Research Center (Former RCA Research Labs) in Princeton, NJ as an Associate Member of the Technical Staff in the Advanced Imaging Group as well 3 years as an R&D engineer for an X-ray/scientific imaging company. He is a member of SPIE and IEEE and is an author or co-author of several papers and patents in the field of imaging.

This book explores numerical implementation of Finite Element Analysis using MATLAB. Stressing interactive use of MATLAB, it provides examples and exercises from mechanical, civil and aerospace engineering as well as materials science. The text includes a short MATLAB tutorial. An extensive solutions manual offers detailed solutions to all problems in the book for classroom use. The second edition includes a new brick (solid) element with eight nodes and a one-dimensional fluid flow element. Also added is a review of applications of finite elements in fluid flow, heat transfer, structural dynamics and electro-magnetics. The accompanying CD-ROM presents more than fifty MATLAB functions.

A MATLAB Based Approach

MATLAB Guide, Third Edition

A Guide for the Practicing Neuroscientist

MATLAB and Simulink Crash Course for Engineers

MATLAB: Application program interface guide

Digital Signal Processing with Examples in MATLAB

A Guide to MATLAB Object-Oriented Programming is the first book to deliver broad coverage of the documented and undocumented object-oriented features of MATLAB>. Unlike the typical approach of other resources, this guide explains why each feature is important, demonstrates how each feature is used, and promotes an understanding of the interactions between features. Assuming an intermediate level of MATLAB programming knowledge, the book not only concentrates on MATLAB coding techniques but also discusses topics critical to general software development. It introduces fundamentals first before integrating these concepts into example applications. In the first section, the book discusses eight basic functions: constructor, subsref, subsasgn, display, struct, fieldnames, get, and set. Building on the previous section, it explores inheritance topics and presents the Class Wizard, a powerful MATLAB class generation tool. The final section delves into advanced strategies, including containers, static variables, and function fronts. With more than 20 years of experience designing and implementing object-oriented software, the expert author has developed an accessible and comprehensive book that aids readers in creating effective object-oriented software using MATLAB.

later versions. In addition, the CD-ROM contains a complete solutions manual that includes detailed solutions to all the problems in the book. If the reader does not wish to consult these solutions, then a brief list of answers is provided in printed form at the end of the book. I would like to thank my family members for their help and continued support without which this book would not have been possible. I would also like to acknowledge the help of the editor at Springer-Verlag (Dr. Thomas Ditzinger) for his assistance in bringing this book out in its present form. Finally, I would like to thank my brother, Nicola, for preparing most of the line drawings in both editions. In this edition, I am providing two email addresses for my readers to contact me (pkattan@tedata.net and pkattan@lsu.edu). The old email address that appeared in the first edition was cancelled

in 2004. December 2006 Peter I. Kattan PrefacetothefirstEdition 3 This is a book for people who love finite elements and MATLAB. We will use the popular computer package MATLAB as a matrix calculator for doing finite element analysis. Problems will be solved mainly using MATLAB to carry out the tedious and lengthy matrix calculations in addition to some manual manipulations especially when applying the boundary conditions. In particular the steps of the finite element method are emphasized in this book. The reader will not find ready-made MATLAB programs for use as blackboxes. Instead step-by-step solutions of finite element problems are examined in detail using MATLAB.

Emphasizing problem-solving skills throughout, this fifth edition of Chapman's highly successful book teaches MATLAB as a technical programming language, showing students how to write clean, efficient, and well-documented programs, while introducing them to many of the practical functions of MATLAB. The first eight chapters are designed to serve as the text for an Introduction to Programming / Problem Solving course for first-year engineering students. The remaining chapters, which cover advanced topics such as I/O, object-oriented programming, and Graphical User Interfaces, may be covered in a longer course or used as a reference by engineering students or practicing engineers who use MATLAB. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Based on fundamental principles from mathematics, linear systems, and signal analysis, digital signal processing (DSP) algorithms are useful for extracting information from signals collected all around us. Combined with today's powerful computing capabilities, they can be used in a wide range of application areas, including engineering, communication

MATLAB For Dummies

A Guide to Business Mathematics

MATLAB and Its Applications in Engineering

A Guide to MATLAB

Case Studies in Neural Data Analysis

The Student Edition of MATLAB

Mathematics of Computing -- Mathematical Software.

This book provides an excellent reference to the MIMO radio channel. In this book, the authors introduce the concept of the Multiple Input Multiple Output (MIMO) radio channel, which is an intelligent communication method based upon using multiple antennas. Moreover, the authors provide a summary of the current channel modeling approaches used by industry, academia, and standardisation bodies. Furthermore, the book is structured to allow the reader to easily progress through the chapters in order to gain an understanding of the fundamental and mathematical principles behind MIMO. It also provides examples (i.e. Kronecker model, Weichselberger model, geometric and deterministic models, and ray tracing), system scenarios, trade-offs, and visual explanations. The authors explain and demonstrate the use and application of these models at system level. Key Features: Provides a summary of the current channel modeling approaches used by industry, academia and standardisation bodies. Contains experimental and measurement based results. Provides a comprehensive down to earth approach with concise and visual explanations of MIMO Radio Channel. Covers a variety of system scenarios and explains the trade-offs involved in each.

Accompanying website containing MATLAB code and solutions to related problems (<http://www.tim.brown76.name/MIMObook>) Practical Guide to the MIMO Radio Channel with MATLAB examples is an invaluable reference for R&D engineers and professionals in industry requiring familiarisation with the concept, and engineers entering the field or working in related fields seeking an introduction to the topic.

Postgraduate and graduate students will also find this book of interest.

"MATLAB is a high-level language and interactive environment for numerical computation, visualization, and programming. Using MATLAB, you can analyze data, develop algorithms, and create models and applications. The language, tools, and built-in math functions enable you to explore multiple approaches and reach a solution faster than with spreadsheets or traditional programming languages"--

This practical resource provides you with a comprehensive understanding of error control coding, an essential and widely applied area in modern digital communications. The goal of error control coding is to encode information in such a way that even if the channel (or storage medium) introduces errors, the receiver can correct the errors and recover the original transmitted information. This book includes the most useful modern and classic codes, including block, Reed Solomon, convolutional, turbo, and LDPC codes. You find clear guidance on code construction, decoding algorithms, and error correcting performances. Moreover, this unique book introduces computer simulations integrally to help you master key concepts. Including a companion DVD with MATLAB programs and supported with over 540 equations, this hands-on reference provides you with an in-depth treatment of a wide range of practical implementation issues.

An Engineer's Guide to MATLAB

MATLAB Guide to Finite Elements

MATLAB for Brain and Cognitive Scientists

A Matlab Based User's Guide

Strategic Asset Allocation in Fixed Income Markets

MATLAB Guide to Statistics

Written in a friendly, Beginner's Guide format, showing the user how to use the digital media aspects of Matlab (image, video, sound) in a practical, tutorial-based style. This is great for novice programmers in any language who would like to use Matlab as a tool for their image and video processing needs, and also comes in handy for photographers or video editors with even less programming experience wanting to find an all-in-one tool for their tasks.

This book provides a comprehensive tutorial for MATLAB plus documentation for three special toolboxes bundled with The Student Edition of MATLAB: Signal Processing, Control Systems, and Symbolic Math. It can also be used as student documentation for academic site licenses and computer lab installations of the professional version of MATLAB.

MATLAB Programming for Biomedical Engineers and Scientists provides an easy-to-learn introduction to the fundamentals of computer programming in MATLAB. This book explains the principles of good programming practice, while demonstrating how to write efficient and robust code that analyzes and visualizes biomedical data. Aimed at the biomedical engineer, biomedical scientist, and medical researcher with little or no computer programming experience, it is an excellent resource for learning the principles and practice of computer programming using MATLAB. This book enables the reader to: Analyze problems and apply structured design methods to produce elegant, efficient and well-structured program designs Implement a structured program design in MATLAB, making good use of incremental development approaches Write code that makes good use of MATLAB programming features, including control structures, functions and advanced data types Write MATLAB code to read in medical data from files and write data to files Write MATLAB code that is efficient and robust to errors in input data Write MATLAB code to analyze and visualize medical data, including imaging data For a firsthand interview with the authors, please visit <http://scitechconnect.elsevier.com/matlab-programming-biomedical-engineers-scientists/> To access student materials, please visit <https://www.elsevier.com/books-and-journals/book-companion/9780128122037> To register and access instructor materials, please visit <http://textbooks.elsevier.com/web/Manuals.aspx?isbn=9780128122037> Many real world biomedical problems and data show the practical application of programming concepts Two whole chapters dedicated to the practicalities of designing and implementing more complex programs An accompanying website containing freely available data and source code for the practical code examples, activities, and exercises in the book For instructors, there are extra teaching materials including a complete set of slides, notes for a course based on the book, and course work suggestions

Go from total MATLAB newbie to plotting graphs and solving equations in a flash! MATLAB is one of the most powerful and commonly used tools in the STEM field. But did you know it doesn't take an advanced degree or a ton of computer experience to learn it? MATLAB For Dummies is the roadmap you've been looking for to simplify and explain this feature-filled tool. This handy reference walks you through every step of the way as you learn the MATLAB language and environment inside-and-out. Starting with straightforward basics before moving on to more advanced material like Live Functions and Live Scripts, this easy-to-read guide shows you how to make your way around MATLAB with screenshots and newly updated procedures. It includes: A comprehensive introduction to installing MATLAB, using its interface, and creating and saving your first file Fully updated to include the 2020 and 2021 updates to MATLAB, with all-new screenshots and up-to-date procedures Enhanced debugging procedures and use of the Symbolic Math Toolbox Brand new instruction on working with Live Scripts and Live Functions, designing classes, creating apps, and building projects Intuitive walkthroughs for MATLAB's advanced features, including importing and exporting data and publishing your work Perfect for STEM students and new professionals ready to master one of the most powerful tools in the fields of engineering, mathematics, and computing, MATLAB For Dummies is the simplest way to go from complete newbie to power user faster than you would have thought possible.

A Beginner's Approach

with MATLAB Examples

Building GUI Tools

Accelerating MATLAB Performance

An Introduction to Reservoir Simulation Using MATLAB/GNU Octave

Technical guide to the theory and practice of seismic data processing with MATLAB algorithms for advanced students, researchers and professionals.

For a variety of reasons, the MATLAB®-Java interface was never fully documented. This is really quite unfortunate: Java is one of the most widely used programming languages, having many times the number of programmers and programming resources as MATLAB. Also unfortunate is the popular claim that while MATLAB is a fine programming platform for prototyping, it is not suitable for real-world, modern-looking applications. Undocumented Secrets of MATLAB®-Java Programming aims to correct this misconception. This book shows how using Java can significantly improve MATLAB program appearance and functionality, and that this can be done easily and even without any prior Java knowledge. Readers are led step-by-step from simple to complex customizations. Code snippets, screenshots, and numerous online references are provided to enable the utilization of this book as both a sequential tutorial and as a random-access reference suited for immediate use. Java-savvy readers will find it easy to tailor code samples for their particular needs; for Java newcomers, an introduction to Java and numerous online references are provided. This book demonstrates how The MATLAB programming environment relies on Java for numerous tasks, including networking, data-processing algorithms and graphical user-interface (GUI) We can use MATLAB for easy access to external Java functionality, either third-party or user-created Using Java, we can extensively customize the MATLAB environment and application GUI, enabling the creation of visually appealing and usable applications