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| 1. Record Nr. | UNINA9910790900303321 |
| Autore | Wallisch Pascal <1978-> |
| Titolo | MATLAB for neuroscientists : an introduction to scientific computing in MATLAB / / Pascal Wallisch [and five others] |
| Pubbl/distr/stampa | London : , : Academic Press, , 2014 |
| ISBN | 0-12-383837-1 |
| Edizione | [Second edition.] |
| Descrizione fisica | 1 online resource (xx, 550 pages) : illustrations (some color) |
| Collana | Gale eBooks |
| Altri autori (Persone) | WallischPascal |
| Disciplina | 571 |
| Soggetti | Neurosciences - Data processing |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Note generali | "Elsevier science and technology books." |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Front Cover; MATLAB® for Neuroscientists; Copyright Page; Contents; Preface to the First Edition; Preface to the Second Edition; About the Authors; How to Use this Book; Structural and Conceptual Considerations; Layout and Style; Companion Web Site; I: Fundamentals; 1 Introduction; 2 MATLAB Tutorial; 2.1 Goal of this Chapter; 2.2 Purpose and Philosophy of MATLAB; 2.2.1 Getting Started; 2.2.2 MATLAB as a Calculator; 2.2.3 Defining Matrices; 2.2.4 Basic Matrix Algebra; 2.2.5 Indexing; 2.3 Graphics and Visualization; 2.3.1 Basic Visualization; 2.4 Function and Scripts; 2.4.1 Scripts 2.4.2 Functions2.4.3 Control Structures; 2.4.4 Advanced Plotting; 2.4.5 Interactive Programs; 2.5 Data Analysis; 2.5.1 Importing and Storing Data; 2.6 A Word on Function Handles; 2.7 The Function Browser; 2.8 Summary; MATLAB Functions, Commands, and Operators Covered in This Chapter; 3 Mathematics and Statistics Tutorial; 3.1 Introduction; 3.2 Linear Algebra; 3.2.1 Matrices, Vectors, and Arrays; 3.2.2 Transposition; 3.2.3 Addition; 3.2.4 Scalar Multiplication; 3.2.5 Matrix Multiplication; 3.2.6 Geometrical Interpretation of Matrix Multiplication; 3.2.7 The Determinant 3.2.8 Eigenvalues and Eigenvectors3.2.9 Applications of Eigenvectors: Eigendecomposition; 3.2.10 Applications of Eigenvectors: PCA; 3.3 Probability and Statistics; 3.3.1 Introduction; 3.3.2 Random Variables; 3.3.2.1 Sample Estimates of Population Parameters; 3.3.2.2 Joint and Conditional Probabilities; 3.3.3 The Poisson Distribution; 3.3.4 Normal Distribution; 3.3.5 Confidence Values; 3.3.6 Significance Testing; |

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II: Data Collection with MATLAB

Sommario/riassunto

MATLAB for Neuroscientists serves as the only complete study manual and teaching resource for MATLAB, the globally accepted standard for scientific computing, in the neurosciences and psychology. This unique introduction can be used to learn the entire empirical and experimental process (including stimulus generation, experimental control, data collection, data analysis, modeling, and more), and the 2nd Edition continues to ensure that many computational problems can be addressed in a single programming environment. This updated edition features additional material on the crea