

Nonnegative Matrix And Tensor Factorizations Applications To Exploratory Multi Way Data Analysis And Blind Source Separation

WHEN SOMEBODY SHOULD GO TO THE BOOKS STORES, SEARCH INSTIGATION BY SHOP, SHELF BY SHELF, IT IS IN REALITY PROBLEMATIC. THIS IS WHY WE OFFER THE EBOOK COMPILATIONS IN THIS WEBSITE. IT WILL UNCONDITIONALLY EASE YOU TO LOOK GUIDE **NONNEGATIVE MATRIX AND TENSOR FACTORIZATIONS APPLICATIONS TO EXPLORATORY MULTI WAY DATA ANALYSIS AND BLIND SOURCE SEPARATION** AS YOU SUCH AS.

BY SEARCHING THE TITLE, PUBLISHER, OR AUTHORS OF GUIDE YOU IN POINT OF FACT WANT, YOU CAN DISCOVER THEM RAPIDLY. IN THE HOUSE, WORKPLACE, OR PERHAPS IN YOUR METHOD CAN BE ALL BEST PLACE WITHIN NET CONNECTIONS. IF YOU POINT TO DOWNLOAD AND INSTALL THE **NONNEGATIVE MATRIX AND TENSOR FACTORIZATIONS APPLICATIONS TO EXPLORATORY MULTI WAY DATA ANALYSIS AND BLIND SOURCE SEPARATION**, IT IS VERY SIMPLE THEN, IN THE PAST CURRENTLY WE EXTEND THE COLLEAGUE TO PURCHASE AND CREATE BARGAINS TO DOWNLOAD AND INSTALL **NONNEGATIVE MATRIX AND TENSOR FACTORIZATIONS APPLICATIONS TO EXPLORATORY MULTI WAY DATA ANALYSIS AND BLIND SOURCE SEPARATION** CORRESPONDINGLY SIMPLE!

RESILIENCE ENGINEERING - Nii O.
ATTOH-OKINE 2016-04-04
WITH AN EYE TOWARDS
ENVIRONMENTAL SUSTAINABILITY, THIS
BOOK PRESENTS A STEP-BY-STEP
APPROACH TO FORMULATING THE
RESILIENCE OF CIVIL INFRASTRUCTURE

AND ENERGY SYSTEMS. IT PROVIDES A
CONCISE EXPLANATION OF RESILIENCE
TERMINOLOGY, A GENERAL OVERVIEW
OF THEORETICAL MODELS AND
ANALYSES, AND A CLEAR GUIDE TO
PRACTICAL APPLICATIONS, COVERING
CRITICAL TOPICS SUCH AS

INTERDEPENDENT INFRASTRUCTURES AND GEOLOGIC CARBON SEQUESTRATION. ADDITIONALLY, IT CONTAINS A GENERAL INTRODUCTION TO SELECTED DATA SCIENCE TOPICS, SO READERS CAN ACQUIRE THE TOOLS TO FORMULATE AND ANALYZE RESILIENCE ENGINEERING PROBLEMS IN DEPTH. INFORMED BY THE AUTHOR'S EXTENSIVE PRACTICAL EXPERIENCE AND THOROUGH ACADEMIC BACKGROUND, THIS BOOK INCLUDES EXAMPLES TO ILLUSTRATE KEY COMPUTATIONAL ALGORITHMS, END-OF-CHAPTER EXERCISES AND REFERENCES, AND AN ENTIRE CHAPTER DEVOTED TO CASE STUDIES. INTENDED FOR PRACTITIONERS OF RESILIENCE ENGINEERING WITH A BACKGROUND IN PROBABILITY, THIS BOOK OFFERS A BALANCED BLEND OF BACKGROUND, THEORY, AND PRACTICAL EXAMPLES TO ADDRESS ONE OF THE MOST IMPORTANT EMERGING TOPICS OF MODERN TIMES.

AUDIO SOURCE SEPARATION AND SPEECH ENHANCEMENT - EMMANUEL VINCENT 2018-07-24

LEARN THE TECHNOLOGY BEHIND HEARING AIDS, SIRI, AND ECHO AUDIO SOURCE SEPARATION AND SPEECH ENHANCEMENT AIM TO EXTRACT ONE OR MORE SOURCE SIGNALS OF INTEREST FROM AN AUDIO RECORDING INVOLVING SEVERAL SOUND SOURCES. THESE TECHNOLOGIES ARE AMONG THE MOST STUDIED IN AUDIO SIGNAL PROCESSING TODAY AND BEAR A CRITICAL ROLE IN THE SUCCESS OF HEARING AIDS, HANDS-FREE PHONES, VOICE COMMAND AND OTHER NOISE-ROBUST AUDIO ANALYSIS SYSTEMS, AND MUSIC POST-

PRODUCTION SOFTWARE. RESEARCH ON THIS TOPIC HAS FOLLOWED THREE CONVERGENT PATHS, STARTING WITH SENSOR ARRAY PROCESSING, COMPUTATIONAL AUDITORY SCENE ANALYSIS, AND MACHINE LEARNING BASED APPROACHES SUCH AS INDEPENDENT COMPONENT ANALYSIS, RESPECTIVELY. THIS BOOK IS THE FIRST ONE TO PROVIDE A COMPREHENSIVE OVERVIEW BY PRESENTING THE COMMON FOUNDATIONS AND THE DIFFERENCES BETWEEN THESE TECHNIQUES IN A UNIFIED SETTING. KEY FEATURES: CONSOLIDATED PERSPECTIVE ON AUDIO SOURCE SEPARATION AND SPEECH ENHANCEMENT. BOTH HISTORICAL PERSPECTIVE AND LATEST ADVANCES IN THE FIELD, E.G. DEEP NEURAL NETWORKS. DIVERSE DISCIPLINES: ARRAY PROCESSING, MACHINE LEARNING, AND STATISTICAL SIGNAL PROCESSING. COVERS THE MOST IMPORTANT TECHNIQUES FOR BOTH SINGLE-CHANNEL AND MULTICHANNEL PROCESSING. THIS BOOK PROVIDES BOTH INTRODUCTORY AND ADVANCED MATERIAL SUITABLE FOR PEOPLE WITH BASIC KNOWLEDGE OF SIGNAL PROCESSING AND MACHINE LEARNING. THANKS TO ITS COMPREHENSIVENESS, IT WILL HELP STUDENTS SELECT A PROMISING RESEARCH TRACK, RESEARCHERS LEVERAGE THE ACQUIRED CROSS-DOMAIN KNOWLEDGE TO DESIGN IMPROVED TECHNIQUES, AND ENGINEERS AND DEVELOPERS CHOOSE THE RIGHT TECHNOLOGY FOR THEIR TARGET APPLICATION SCENARIO. IT WILL ALSO BE USEFUL FOR PRACTITIONERS FROM

OTHER FIELDS (E.G., ACOUSTICS, MULTIMEDIA, PHONETICS, AND MUSICOLOGY) WILLING TO EXPLOIT AUDIO SOURCE SEPARATION OR SPEECH ENHANCEMENT AS PRE-PROCESSING TOOLS FOR THEIR OWN NEEDS.

NEURAL INFORMATION PROCESSING - AKIRA HIROSE 2016-09-30

THE FOUR VOLUME SET LNCS 9947, LNCS 9948, LNCS 9949, AND LNCS 9950 CONSTITUTES THE PROCEEDINGS OF THE 23RD INTERNATIONAL CONFERENCE ON NEURAL INFORMATION PROCESSING, ICONIP 2016, HELD IN KYOTO, JAPAN, IN OCTOBER 2016. THE 296 FULL PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM 431 SUBMISSIONS. THE 4 VOLUMES ARE ORGANIZED IN TOPICAL SECTIONS ON DEEP AND REINFORCEMENT LEARNING; BIG DATA ANALYSIS; NEURAL DATA ANALYSIS; ROBOTICS AND CONTROL; BIO-INSPIRED/ENERGY EFFICIENT INFORMATION PROCESSING; WHOLE BRAIN ARCHITECTURE; NEURODYNAMICS; BIOINFORMATICS; BIOMEDICAL ENGINEERING; DATA MINING AND CYBERSECURITY WORKSHOP; MACHINE LEARNING; NEUROMORPHIC HARDWARE; SENSORY PERCEPTION; PATTERN RECOGNITION; SOCIAL NETWORKS; BRAIN-MACHINE INTERFACE; COMPUTER VISION; TIME SERIES ANALYSIS; DATA-DRIVEN APPROACH FOR EXTRACTING LATENT FEATURES; TOPOLOGICAL AND GRAPH BASED CLUSTERING METHODS; COMPUTATIONAL INTELLIGENCE; DATA MINING; DEEP NEURAL NETWORKS;

COMPUTATIONAL AND COGNITIVE NEUROSCIENCES; THEORY AND ALGORITHMS.

ALGORITHMIC ASPECTS OF MACHINE LEARNING - ANKUR MOITRA 2018-09-27

INTRODUCES CUTTING-EDGE RESEARCH ON MACHINE LEARNING THEORY AND PRACTICE, PROVIDING AN ACCESSIBLE, MODERN ALGORITHMIC TOOLKIT.

NEURAL INFORMATION PROCESSING - DERONG LIU 2017-11-07

THE SIX VOLUME SET LNCS 10634, LNCS 10635, LNCS 10636, LNCS 10637, LNCS 10638, AND LNCS 10639 CONSTITUTES THE PROCEEDINGS OF THE 24RD INTERNATIONAL CONFERENCE ON NEURAL INFORMATION PROCESSING, ICONIP 2017, HELD IN GUANGZHOU, CHINA, IN NOVEMBER 2017. THE 563 FULL PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM 856 SUBMISSIONS. THE 6 VOLUMES ARE ORGANIZED IN TOPICAL SECTIONS ON MACHINE LEARNING, REINFORCEMENT LEARNING, BIG DATA ANALYSIS, DEEP LEARNING, BRAIN-COMPUTER INTERFACE, COMPUTATIONAL FINANCE, COMPUTER VISION, NEURODYNAMICS, SENSORY PERCEPTION AND DECISION MAKING, COMPUTATIONAL INTELLIGENCE, NEURAL DATA ANALYSIS, BIOMEDICAL ENGINEERING, EMOTION AND BAYESIAN NETWORKS, DATA MINING, TIME-SERIES ANALYSIS, SOCIAL NETWORKS, BIOINFORMATICS, INFORMATION SECURITY AND SOCIAL COGNITION, ROBOTICS AND CONTROL, PATTERN RECOGNITION, NEUROMORPHIC

HARDWARE AND SPEECH PROCESSING.

SOURCE SEPARATION AND MACHINE

LEARNING - JEN-TZUNG CHIEN

2018-11-01

SOURCE SEPARATION AND MACHINE LEARNING PRESENTS THE FUNDAMENTALS IN ADAPTIVE LEARNING ALGORITHMS FOR BLIND SOURCE SEPARATION (BSS) AND EMPHASIZES THE IMPORTANCE OF MACHINE LEARNING PERSPECTIVES. IT ILLUSTRATES HOW BSS PROBLEMS ARE TACKLED THROUGH ADAPTIVE LEARNING ALGORITHMS AND MODEL-BASED APPROACHES USING THE LATEST INFORMATION ON MIXTURE SIGNALS TO BUILD A BSS MODEL THAT IS SEEN AS A STATISTICAL MODEL FOR A WHOLE SYSTEM. LOOKING AT DIFFERENT MODELS, INCLUDING INDEPENDENT COMPONENT ANALYSIS (ICA), NONNEGATIVE MATRIX FACTORIZATION (NMF), NONNEGATIVE TENSOR FACTORIZATION (NTF), AND DEEP NEURAL NETWORK (DNN), THE BOOK ADDRESSES HOW THEY HAVE EVOLVED TO DEAL WITH MULTICHANNEL AND SINGLE-CHANNEL SOURCE SEPARATION. EMPHASIZES THE MODERN MODEL-BASED BLIND SOURCE SEPARATION (BSS) WHICH CLOSELY CONNECTS THE LATEST RESEARCH TOPICS OF BSS AND MACHINE LEARNING INCLUDES COVERAGE OF BAYESIAN LEARNING, SPARSE LEARNING, ONLINE LEARNING, DISCRIMINATIVE LEARNING AND DEEP LEARNING PRESENTS A NUMBER OF CASE STUDIES OF MODEL-BASED BSS (CATEGORIZING THEM INTO FOUR MODERN MODELS - ICA, NMF, NTF AND DNN), USING A VARIETY OF LEARNING

ALGORITHMS THAT PROVIDE SOLUTIONS FOR THE CONSTRUCTION OF BSS SYSTEMS

INDEPENDENT COMPONENT ANALYSIS FOR AUDIO AND BIOSIGNAL

APPLICATIONS - GANESH R. NAIK

2012-10-10

INDEPENDENT COMPONENT ANALYSIS (ICA) IS A SIGNAL-PROCESSING METHOD TO EXTRACT INDEPENDENT SOURCES GIVEN ONLY OBSERVED DATA THAT ARE MIXTURES OF THE UNKNOWN SOURCES. RECENTLY, BLIND SOURCE SEPARATION (BSS) BY ICA HAS RECEIVED CONSIDERABLE ATTENTION BECAUSE OF ITS POTENTIAL SIGNAL-PROCESSING APPLICATIONS SUCH AS SPEECH ENHANCEMENT SYSTEMS, IMAGE PROCESSING, TELECOMMUNICATIONS, MEDICAL SIGNAL PROCESSING AND SEVERAL DATA MINING ISSUES. THIS BOOK BRINGS THE STATE-OF-THE-ART OF SOME OF THE MOST IMPORTANT CURRENT RESEARCH OF ICA RELATED TO AUDIO AND BIOMEDICAL SIGNAL PROCESSING APPLICATIONS. THE BOOK IS PARTLY A TEXTBOOK AND PARTLY A MONOGRAPH. IT IS A TEXTBOOK BECAUSE IT GIVES A DETAILED INTRODUCTION TO ICA APPLICATIONS. IT IS SIMULTANEOUSLY A MONOGRAPH BECAUSE IT PRESENTS SEVERAL NEW RESULTS, CONCEPTS AND FURTHER DEVELOPMENTS, WHICH ARE BROUGHT TOGETHER AND PUBLISHED IN THE BOOK.

MATRIX AND TENSOR FACTORIZATION TECHNIQUES FOR RECOMMENDER

SYSTEMS - PANAGIOTIS SYMEONIDIS

2017-01-29

THIS BOOK PRESENTS THE ALGORITHMS

USED TO PROVIDE RECOMMENDATIONS BY EXPLOITING MATRIX FACTORIZATION AND TENSOR DECOMPOSITION TECHNIQUES. IT HIGHLIGHTS WELL-KNOWN DECOMPOSITION METHODS FOR RECOMMENDER SYSTEMS, SUCH AS SINGULAR VALUE DECOMPOSITION (SVD), UV-DECOMPOSITION, NON-NEGATIVE MATRIX FACTORIZATION (NMF), ETC. AND DESCRIBES IN DETAIL THE PROS AND CONS OF EACH METHOD FOR MATRICES AND TENSORS. THIS BOOK PROVIDES A DETAILED THEORETICAL MATHEMATICAL BACKGROUND OF MATRIX/TENSOR FACTORIZATION TECHNIQUES AND A STEP-BY-STEP ANALYSIS OF EACH METHOD ON THE BASIS OF AN INTEGRATED TOY EXAMPLE THAT RUNS THROUGHOUT ALL ITS CHAPTERS AND HELPS THE READER TO UNDERSTAND THE KEY DIFFERENCES AMONG METHODS. IT ALSO CONTAINS TWO CHAPTERS, WHERE DIFFERENT MATRIX AND TENSOR METHODS ARE COMPARED EXPERIMENTALLY ON REAL DATA SETS, SUCH AS EPINIONS, GeoSOCIALREC, LAST.FM, BIBSONOMY, ETC. AND PROVIDES FURTHER INSIGHTS INTO THE ADVANTAGES AND DISADVANTAGES OF EACH METHOD. THE BOOK OFFERS A RICH BLEND OF THEORY AND PRACTICE, MAKING IT SUITABLE FOR STUDENTS, RESEARCHERS AND PRACTITIONERS INTERESTED IN BOTH RECOMMENDERS AND FACTORIZATION METHODS. LECTURERS CAN ALSO USE IT FOR CLASSES ON DATA MINING, RECOMMENDER SYSTEMS AND DIMENSIONALITY REDUCTION METHODS.

ARTIFICIAL NEURAL NETWORKS AND MACHINE LEARNING -- ICANN 2013 - VALERI MLADENOV 2013-09-04

THE BOOK CONSTITUTES THE PROCEEDINGS OF THE 23RD INTERNATIONAL CONFERENCE ON ARTIFICIAL NEURAL NETWORKS, ICANN 2013, HELD IN SOFIA, BULGARIA, IN SEPTEMBER 2013. THE 78 PAPERS INCLUDED IN THE PROCEEDINGS WERE CAREFULLY REVIEWED AND SELECTED FROM 128 SUBMISSIONS. THE FOCUS OF THE PAPERS IS ON FOLLOWING TOPICS: NEUROFINANCE GRAPHICAL NETWORK MODELS, BRAIN MACHINE INTERFACES, EVOLUTIONARY NEURAL NETWORKS, NEURODYNAMICS, COMPLEX SYSTEMS, NEUROINFORMATICS, NEUROENGINEERING, HYBRID SYSTEMS, COMPUTATIONAL BIOLOGY, NEURAL HARDWARE, BIOINSPIRED EMBEDDED SYSTEMS, AND COLLECTIVE INTELLIGENCE.

DECOMPOSABILITY OF TENSORS - LUCA CHIANTINI 2019-02-15

THIS BOOK IS A PRINTED EDITION OF THE SPECIAL ISSUE "DECOMPOSABILITY OF TENSORS" THAT WAS PUBLISHED IN MATHEMATICS

FUNDAMENTALS OF MUSIC PROCESSING - MEINARD M^[P] LLER 2015-07-21

THIS TEXTBOOK PROVIDES BOTH PROFOUND TECHNOLOGICAL KNOWLEDGE AND A COMPREHENSIVE TREATMENT OF ESSENTIAL TOPICS IN MUSIC PROCESSING AND MUSIC INFORMATION RETRIEVAL. INCLUDING NUMEROUS EXAMPLES, FIGURES, AND EXERCISES, THIS BOOK IS SUITED FOR STUDENTS, LECTURERS, AND RESEARCHERS WORKING IN AUDIO

ENGINEERING, COMPUTER SCIENCE, MULTIMEDIA, AND MUSICOLOGY. THE BOOK CONSISTS OF EIGHT CHAPTERS. THE FIRST TWO COVER FOUNDATIONS OF MUSIC REPRESENTATIONS AND THE FOURIER TRANSFORM—CONCEPTS THAT ARE THEN USED THROUGHOUT THE BOOK. IN THE SUBSEQUENT CHAPTERS, CONCRETE MUSIC PROCESSING TASKS SERVE AS A STARTING POINT. EACH OF THESE CHAPTERS IS ORGANIZED IN A SIMILAR FASHION AND STARTS WITH A GENERAL DESCRIPTION OF THE MUSIC PROCESSING SCENARIO AT HAND BEFORE INTEGRATING IT INTO A WIDER CONTEXT. IT THEN DISCUSSES—IN A MATHEMATICALLY RIGOROUS WAY—IMPORTANT TECHNIQUES AND ALGORITHMS THAT ARE GENERALLY APPLICABLE TO A WIDE RANGE OF ANALYSIS, CLASSIFICATION, AND RETRIEVAL PROBLEMS. AT THE SAME TIME, THE TECHNIQUES ARE DIRECTLY APPLIED TO A SPECIFIC MUSIC PROCESSING TASK. BY MIXING THEORY AND PRACTICE, THE BOOK'S GOAL IS TO OFFER DETAILED TECHNOLOGICAL INSIGHTS AS WELL AS A DEEP UNDERSTANDING OF MUSIC PROCESSING APPLICATIONS. EACH CHAPTER ENDS WITH A SECTION THAT INCLUDES LINKS TO THE RESEARCH LITERATURE, SUGGESTIONS FOR FURTHER READING, A LIST OF REFERENCES, AND EXERCISES. THE CHAPTERS ARE ORGANIZED IN A MODULAR FASHION, THUS OFFERING LECTURERS AND READERS MANY WAYS TO CHOOSE, REARRANGE OR SUPPLEMENT THE MATERIAL. ACCORDINGLY, SELECTED CHAPTERS OR

INDIVIDUAL SECTIONS CAN EASILY BE INTEGRATED INTO COURSES ON GENERAL MULTIMEDIA, INFORMATION SCIENCE, SIGNAL PROCESSING, MUSIC INFORMATICS, OR THE DIGITAL HUMANITIES.

BRAIN AND NATURE-INSPIRED LEARNING, COMPUTATION AND RECOGNITION -
LICHENG JIAO 2020-01-18

BRAIN AND NATURE-INSPIRED LEARNING, COMPUTATION AND RECOGNITION PRESENTS A SYSTEMATIC ANALYSIS OF NEURAL NETWORKS, NATURAL COMPUTING, MACHINE LEARNING AND COMPRESSION, ALGORITHMS AND APPLICATIONS INSPIRED BY THE BRAIN AND BIOLOGICAL MECHANISMS FOUND IN NATURE. SECTIONS COVER NEW DEVELOPMENTS AND MAIN APPLICATIONS, ALGORITHMS AND SIMULATIONS. DEVELOPMENTS IN BRAIN AND NATURE-INSPIRED LEARNING HAVE PROMOTED INTEREST IN IMAGE PROCESSING, CLUSTERING PROBLEMS, CHANGE DETECTION, CONTROL THEORY AND OTHER DISCIPLINES. THE BOOK DISCUSSES THE MAIN PROBLEMS AND APPLICATIONS PERTAINING TO BIO-INSPIRED COMPUTATION AND RECOGNITION, INTRODUCING ALGORITHM IMPLEMENTATION, MODEL SIMULATION, AND PRACTICAL APPLICATION OF PARAMETER SETTING. READERS WILL FIND SOLUTIONS TO PROBLEMS IN COMPUTATION AND RECOGNITION, PARTICULARLY NEURAL NETWORKS, NATURAL COMPUTING, MACHINE LEARNING AND COMPRESSED SENSING. THIS VOLUME OFFERS A COMPREHENSIVE AND WELL-STRUCTURED INTRODUCTION

TO BRAIN AND NATURE-INSPIRED LEARNING, COMPUTATION, AND RECOGNITION. PRESENTS AN INVALUABLE SYSTEMATIC INTRODUCTION TO BRAIN AND NATURE-INSPIRED LEARNING, COMPUTATION AND RECOGNITION DESCRIBES THE BIOLOGICAL MECHANISMS, MATHEMATICAL ANALYSES AND SCIENTIFIC PRINCIPLES BEHIND BRAIN AND NATURE-INSPIRED LEARNING, CALCULATION AND RECOGNITION SYSTEMATICALLY ANALYZES NEURAL NETWORKS, NATURAL COMPUTING, MACHINE LEARNING AND COMPRESSION, ALGORITHMS AND APPLICATIONS INSPIRED BY THE BRAIN AND BIOLOGICAL MECHANISMS FOUND IN NATURE DISCUSSES THE THEORY AND APPLICATION OF ALGORITHMS AND NEURAL NETWORKS, NATURAL COMPUTING, MACHINE LEARNING AND COMPRESSION PERCEPTION

ARTIFICIAL NEURAL NETWORKS AND MACHINE LEARNING -- ICANN 2012 - ALESSANDRO VILLA 2012-09-19

THE TWO-VOLUME SET LNCS 7552 + 7553 CONSTITUTES THE PROCEEDINGS OF THE 22ND INTERNATIONAL CONFERENCE ON ARTIFICIAL NEURAL NETWORKS, ICANN 2012, HELD IN LAUSANNE, SWITZERLAND, IN SEPTEMBER 2012. THE 162 PAPERS INCLUDED IN THE PROCEEDINGS WERE CAREFULLY REVIEWED AND SELECTED FROM 247 SUBMISSIONS. THEY ARE ORGANIZED IN TOPICAL SECTIONS NAMED: THEORETICAL NEURAL COMPUTATION; INFORMATION AND OPTIMIZATION; FROM NEURONS TO NEUROMORPHISM; SPIKING DYNAMICS;

FROM SINGLE NEURONS TO NETWORKS; COMPLEX FIRING PATTERNS; MOVEMENT AND MOTION; FROM SENSATION TO PERCEPTION; OBJECT AND FACE RECOGNITION; REINFORCEMENT LEARNING; BAYESIAN AND ECHO STATE NETWORKS; RECURRENT NEURAL NETWORKS AND RESERVOIR COMPUTING; CODING ARCHITECTURES; INTERACTING WITH THE BRAIN; SWARM INTELLIGENCE AND DECISION-MAKING; MULTILAYER PERCEPTRONS AND KERNEL NETWORKS; TRAINING AND LEARNING; INFERENCE AND RECOGNITION; SUPPORT VECTOR MACHINES; SELF-ORGANIZING MAPS AND CLUSTERING; CLUSTERING, MINING AND EXPLORATORY ANALYSIS; BIOINFORMATICS; AND TIME SERIES AND FORECASTING.

SOCIAL PHENOMENA - BRUNO GONÇALVES 2015-08-14

THIS BOOK FOCUSES ON THE NEW POSSIBILITIES AND APPROACHES TO SOCIAL MODELING CURRENTLY BEING MADE POSSIBLE BY AN UNPRECEDENTED VARIETY OF DATASETS GENERATED BY OUR INTERACTIONS WITH MODERN TECHNOLOGIES. THIS AREA HAS WITNESSED A VERITABLE EXPLOSION OF ACTIVITY OVER THE LAST FEW YEARS, YIELDING MANY INTERESTING AND USEFUL RESULTS. OUR AIM IS TO PROVIDE AN OVERVIEW OF THE STATE OF THE ART IN THIS AREA OF RESEARCH, MERGING AN EXTREMELY HETEROGENEOUS ARRAY OF DATASETS AND MODELS. SOCIAL PHENOMENA: FROM DATA ANALYSIS TO MODELS IS DIVIDED INTO TWO PARTS. PART I DEALS WITH MODELING SOCIAL BEHAVIOR UNDER NORMAL CONDITIONS:

HOW WE LIVE, TRAVEL, COLLABORATE AND INTERACT WITH EACH OTHER IN OUR DAILY LIVES. PART II DEALS WITH SOCIETAL BEHAVIOR UNDER EXCEPTIONAL CONDITIONS: PROTESTS, ARMED INSURGENCIES, TERRORIST ATTACKS, AND REACTIONS TO INFECTIOUS DISEASES. THIS BOOK OFFERS AN OVERVIEW OF ONE OF THE MOST FERTILE EMERGING FIELDS BRINGING TOGETHER PRACTITIONERS FROM SCIENTIFIC COMMUNITIES AS DIVERSE AS SOCIAL SCIENCES, PHYSICS AND COMPUTER SCIENCE. WE HOPE TO NOT ONLY PROVIDE AN UNIFYING FRAMEWORK TO UNDERSTAND AND CHARACTERIZE SOCIAL PHENOMENA, BUT ALSO TO HELP FOSTER THE DIALOGUE BETWEEN RESEARCHERS WORKING ON SIMILAR PROBLEMS FROM DIFFERENT FIELDS AND PERSPECTIVES.

*ADVANCES IN NEURAL NETWORKS -
ISSN 2007* - DERONG LIU
2007-07-16

THIS BOOK IS PART OF A THREE VOLUME SET THAT CONSTITUTES THE REFEREED PROCEEDINGS OF THE 4TH INTERNATIONAL SYMPOSIUM ON NEURAL NETWORKS, ISSN 2007, HELD IN NANJING, CHINA IN JUNE 2007.

COVERAGE INCLUDES NEURAL NETWORKS FOR CONTROL APPLICATIONS, ROBOTICS, DATA MINING AND FEATURE EXTRACTION, CHAOS AND SYNCHRONIZATION, SUPPORT VECTOR MACHINES, FAULT DIAGNOSIS/DETECTION, IMAGE/VIDEO PROCESSING, AND APPLICATIONS OF NEURAL NETWORKS.

MATHEMATICAL AND THEORETICAL

NEUROSCIENCE - GIOVANNI NALDI
2018-03-20

THIS VOLUME GATHERS CONTRIBUTIONS FROM THEORETICAL, EXPERIMENTAL AND COMPUTATIONAL RESEARCHERS WHO ARE WORKING ON VARIOUS TOPICS IN THEORETICAL/COMPUTATIONAL/MATHEMATICAL NEUROSCIENCE. THE FOCUS IS ON MATHEMATICAL MODELING, ANALYTICAL AND NUMERICAL TOPICS, AND STATISTICAL ANALYSIS IN NEUROSCIENCE WITH APPLICATIONS. THE FOLLOWING SUBJECTS ARE CONSIDERED: MATHEMATICAL MODELLING IN NEUROSCIENCE, ANALYTICAL AND NUMERICAL TOPICS; STATISTICAL ANALYSIS IN NEUROSCIENCE; NEURAL NETWORKS; THEORETICAL NEUROSCIENCE. THE BOOK IS ADDRESSED TO RESEARCHERS INVOLVED IN MATHEMATICAL MODELS APPLIED TO NEUROSCIENCE.

**NONNEGATIVE MATRIX AND TENSOR
FACTORIZATIONS** - ANDRZEJ CICHOCKI
2009-07-10

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.

NEURAL INFORMATION PROCESSING -
TINGWEN HUANG 2012-11-05
THE FIVE VOLUME SET LNCS 7663,
LNCS 7664, LNCS 7665, LNCS
7666 AND LNCS 7667

CONSTITUTES THE PROCEEDINGS OF THE 19TH INTERNATIONAL CONFERENCE ON NEURAL INFORMATION PROCESSING, ICONIP 2012, HELD IN DOHA, QATAR, IN NOVEMBER 2012. THE 423 REGULAR SESSION PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM NUMEROUS SUBMISSIONS. THESE PAPERS COVER ALL MAJOR TOPICS OF THEORETICAL RESEARCH, EMPIRICAL STUDY AND APPLICATIONS OF NEURAL INFORMATION PROCESSING RESEARCH. THE 5 VOLUMES REPRESENT 5 TOPICAL SECTIONS CONTAINING ARTICLES ON THEORETICAL ANALYSIS, NEURAL MODELING, ALGORITHMS, APPLICATIONS, AS WELL AS SIMULATION AND SYNTHESIS.

HANDBOOK OF RESEARCH ON BIG DATA STORAGE AND VISUALIZATION TECHNIQUES - SEGALL, RICHARD S.

2018-01-05

THE DIGITAL AGE HAS PRESENTED AN EXPONENTIAL GROWTH IN THE AMOUNT OF DATA AVAILABLE TO INDIVIDUALS LOOKING TO DRAW CONCLUSIONS BASED ON GIVEN OR COLLECTED INFORMATION ACROSS INDUSTRIES. CHALLENGES ASSOCIATED WITH THE ANALYSIS, SECURITY, SHARING, STORAGE, AND VISUALIZATION OF LARGE AND COMPLEX DATA SETS CONTINUE TO PLAGUE DATA SCIENTISTS AND ANALYSTS ALIKE AS TRADITIONAL DATA PROCESSING APPLICATIONS STRUGGLE TO ADEQUATELY MANAGE BIG DATA. THE HANDBOOK OF RESEARCH ON BIG DATA STORAGE AND VISUALIZATION TECHNIQUES IS A CRITICAL SCHOLARLY RESOURCE THAT EXPLORES BIG DATA ANALYTICS AND TECHNOLOGIES AND THEIR ROLE IN DEVELOPING A BROAD UNDERSTANDING OF ISSUES PERTAINING TO THE USE OF BIG DATA IN MULTIDISCIPLINARY FIELDS. FEATURING COVERAGE ON A BROAD RANGE OF TOPICS, SUCH AS ARCHITECTURE PATTERNS, PROGRAMING SYSTEMS, AND COMPUTATIONAL ENERGY, THIS PUBLICATION IS GEARED TOWARDS PROFESSIONALS, RESEARCHERS, AND STUDENTS SEEKING CURRENT RESEARCH AND APPLICATION TOPICS ON THE SUBJECT.

MATRIX INFORMATION GEOMETRY - FRANK NIELSEN 2012-08-07

THIS BOOK PRESENTS ADVANCES IN MATRIX AND TENSOR DATA PROCESSING IN THE DOMAIN OF SIGNAL, IMAGE AND INFORMATION PROCESSING. THE THEORETICAL MATHEMATICAL

APPROACHES ARE DISCUSSES IN THE CONTEXT OF POTENTIAL APPLICATIONS IN SENSOR AND COGNITIVE SYSTEMS ENGINEERING. THE TOPICS AND APPLICATION INCLUDE INFORMATION GEOMETRY, DIFFERENTIAL GEOMETRY OF STRUCTURED MATRIX, POSITIVE DEFINITE MATRIX, COVARIANCE MATRIX, SENSORS (ELECTROMAGNETIC FIELDS, ACOUSTIC SENSORS) AND APPLICATIONS IN COGNITIVE SYSTEMS, IN PARTICULAR DATA MINING.

PARTITIONAL CLUSTERING ALGORITHMS - M. EMRE CELEBI 2014-11-07

THIS BOOK FOCUSES ON PARTITIONAL CLUSTERING ALGORITHMS, WHICH ARE COMMONLY USED IN ENGINEERING AND COMPUTER SCIENTIFIC APPLICATIONS. THE GOAL OF THIS VOLUME IS TO SUMMARIZE THE STATE-OF-THE-ART IN PARTITIONAL CLUSTERING. THE BOOK INCLUDES SUCH TOPICS AS CENTER-BASED CLUSTERING, COMPETITIVE LEARNING CLUSTERING AND DENSITY-BASED CLUSTERING. EACH CHAPTER IS CONTRIBUTED BY A LEADING EXPERT IN THE FIELD.

ARTIFICIAL NEURAL NETWORKS - PETIA KOPRINKOVA-HRISTOVA 2014-09-02

THE BOOK REPORTS ON THE LATEST THEORIES ON ARTIFICIAL NEURAL NETWORKS, WITH A SPECIAL EMPHASIS ON BIO-NEUROINFORMATICS METHODS. IT INCLUDES TWENTY-THREE PAPERS SELECTED FROM AMONG THE BEST CONTRIBUTIONS ON BIO-NEUROINFORMATICS-RELATED ISSUES, WHICH WERE PRESENTED AT THE INTERNATIONAL CONFERENCE ON

ARTIFICIAL NEURAL NETWORKS, HELD IN SOFIA, BULGARIA, ON SEPTEMBER 10-13, 2013 (ICANN 2013). THE BOOK COVERS A BROAD RANGE OF TOPICS CONCERNING THE THEORY AND APPLICATIONS OF ARTIFICIAL NEURAL NETWORKS, INCLUDING RECURRENT NEURAL NETWORKS, SUPER-TURING COMPUTATION AND RESERVOIR COMPUTING, DOUBLE-LAYER VECTOR PERCEPTRONS, NONNEGATIVE MATRIX FACTORIZATION, BIO-INSPIRED MODELS OF CELL COMMUNITIES, GESTALT LAWS, EMBODIED THEORY OF LANGUAGE UNDERSTANDING, SACCADIC GAZE SHIFTS AND MEMORY FORMATION, AND NEW TRAINING ALGORITHMS FOR DEEP BOLTZMANN MACHINES, AS WELL AS DYNAMIC NEURAL NETWORKS AND KERNEL MACHINES. IT ALSO REPORTS ON NEW APPROACHES TO REINFORCEMENT LEARNING, OPTIMAL CONTROL OF DISCRETE TIME-DELAY SYSTEMS, NEW ALGORITHMS FOR PROTOTYPE SELECTION, AND GROUP STRUCTURE DISCOVERING. MOREOVER, THE BOOK DISCUSSES ONE-CLASS SUPPORT VECTOR MACHINES FOR PATTERN RECOGNITION, HANDWRITTEN DIGIT RECOGNITION, TIME SERIES FORECASTING AND CLASSIFICATION, AND ANOMALY IDENTIFICATION IN DATA ANALYTICS AND AUTOMATED DATA ANALYSIS. BY PRESENTING THE STATE-OF-THE-ART AND DISCUSSING THE CURRENT CHALLENGES IN THE FIELDS OF ARTIFICIAL NEURAL NETWORKS, BIOINFORMATICS AND NEUROINFORMATICS, THE BOOK IS INTENDED TO PROMOTE THE

IMPLEMENTATION OF NEW METHODS AND IMPROVEMENT OF EXISTING ONES, AND TO SUPPORT ADVANCED STUDENTS, RESEARCHERS AND PROFESSIONALS IN THEIR DAILY EFFORTS TO IDENTIFY, UNDERSTAND AND SOLVE A NUMBER OF OPEN QUESTIONS IN THESE FIELDS.

COMPRESSED SENSING & SPARSE FILTERING - AVISHY Y. CARMİ
2013-09-13

THIS BOOK IS AIMED AT PRESENTING CONCEPTS, METHODS AND ALGORITHMS ABLE TO COPE WITH UNDERSAMPLED AND LIMITED DATA. ONE SUCH TREND THAT RECENTLY GAINED POPULARITY AND TO SOME EXTENT REVOLUTIONISED SIGNAL PROCESSING IS COMPRESSED SENSING. COMPRESSED SENSING BUILDS UPON THE OBSERVATION THAT MANY SIGNALS IN NATURE ARE NEARLY SPARSE (OR COMPRESSIBLE, AS THEY ARE NORMALLY REFERRED TO) IN SOME DOMAIN, AND CONSEQUENTLY THEY CAN BE RECONSTRUCTED TO WITHIN HIGH ACCURACY FROM FAR FEWER OBSERVATIONS THAN TRADITIONALLY HELD TO BE NECESSARY. APART FROM COMPRESSED SENSING THIS BOOK CONTAINS OTHER RELATED APPROACHES. EACH METHODOLOGY HAS ITS OWN FORMALITIES FOR DEALING WITH SUCH PROBLEMS. AS AN EXAMPLE, IN THE BAYESIAN APPROACH, SPARSENESS PROMOTING PRIORS SUCH AS LAPLACE AND CAUCHY ARE NORMALLY USED FOR PENALISING IMPROBABLE MODEL VARIABLES, THUS PROMOTING LOW COMPLEXITY SOLUTIONS. COMPRESSED SENSING TECHNIQUES AND HOMOTOPY-TYPE

SOLUTIONS, SUCH AS THE LASSO, UTILISE L_1 -NORM PENALTIES FOR OBTAINING SPARSE SOLUTIONS USING FEWER OBSERVATIONS THAN CONVENTIONALLY NEEDED. THE BOOK EMPHASIZES ON THE ROLE OF SPARSITY AS A MACHINERY FOR PROMOTING LOW COMPLEXITY REPRESENTATIONS AND LIKEWISE ITS CONNECTIONS TO VARIABLE SELECTION AND DIMENSIONALITY REDUCTION IN VARIOUS ENGINEERING PROBLEMS. THIS BOOK IS INTENDED FOR RESEARCHERS, ACADEMICS AND PRACTITIONERS WITH INTEREST IN VARIOUS ASPECTS AND APPLICATIONS OF SPARSE SIGNAL PROCESSING.

INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING – IDEAL 2016
- Hujun Yin 2016-09-12

THIS BOOK CONSTITUTES THE REFEREED PROCEEDINGS OF THE 17TH INTERNATIONAL CONFERENCE ON INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING, IDEAL 2016, HELD IN YANGZHOU, CHINA, IN OCTOBER 2016. THE 68 FULL PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM 115 SUBMISSIONS. THEY PROVIDE A VALUABLE AND TIMELY SAMPLE OF LATEST RESEARCH OUTCOMES IN DATA ENGINEERING AND AUTOMATED LEARNING RANGING FROM METHODOLOGIES, FRAMEWORKS, AND TECHNIQUES TO APPLICATIONS INCLUDING VARIOUS TOPICS SUCH AS EVOLUTIONARY ALGORITHMS; DEEP LEARNING; NEURAL NETWORKS; PROBABILISTIC MODELING; PARTICLE SWARM INTELLIGENCE; BIG DATA ANALYSIS; APPLICATIONS IN

REGRESSION, CLASSIFICATION, CLUSTERING, MEDICAL AND BIOLOGICAL MODELING AND PREDICATION; TEXT PROCESSING AND IMAGE ANALYSIS.

DATA MINING: FOUNDATIONS AND INTELLIGENT PARADIGMS - DAWN E. HOLMES 2011-11-09

THERE ARE MANY INVALUABLE BOOKS AVAILABLE ON DATA MINING THEORY AND APPLICATIONS. HOWEVER, IN COMPILING A VOLUME TITLED “DATA MINING: FOUNDATIONS AND INTELLIGENT PARADIGMS: VOLUME 2: CORE TOPICS INCLUDING STATISTICAL, TIME-SERIES AND BAYESIAN ANALYSIS” WE WISH TO INTRODUCE SOME OF THE LATEST DEVELOPMENTS TO A BROAD AUDIENCE OF BOTH SPECIALISTS AND NON-SPECIALISTS IN THIS FIELD.

ARTIFICIAL NEURAL NETWORKS AND MACHINE LEARNING - ICANN 2011 - TIMO HONKELA 2011-06-13

THIS TWO VOLUME SET LNCS 6791 AND LNCS 6792 CONSTITUTES THE REFEREED PROCEEDINGS OF THE 21TH INTERNATIONAL CONFERENCE ON ARTIFICIAL NEURAL NETWORKS, ICANN 2011, HELD IN ESPOO, FINLAND, IN JUNE 2011. THE 106 REVISED FULL OR POSTER PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM NUMEROUS SUBMISSIONS. ICANN 2011 HAD TWO BASIC TRACKS: BRAIN-INSPIRED COMPUTING AND MACHINE LEARNING RESEARCH, WITH STRONG CROSS-DISCIPLINARY INTERACTIONS AND APPLICATIONS.

LARGE-SCALE SCIENTIFIC COMPUTING - IVAN LIRKOV 2020-02-13

THIS BOOK CONSTITUTES REVISED PAPERS FROM THE 12TH INTERNATIONAL CONFERENCE ON LARGE-SCALE SCIENTIFIC COMPUTING, LSSC 2019, HELD IN SOZOPOL, BULGARIA, IN JUNE 2019. THE 70 PAPERS PRESENTED IN THIS VOLUME WERE CAREFULLY REVIEWED AND SELECTED FROM 81 SUBMISSIONS. THE BOOK ALSO CONTAINS TWO INVITED TALKS. THE PAPERS WERE ORGANIZED IN TOPICAL SECTIONS NAMED AS FOLLOWS: CONTROL AND OPTIMIZATION OF DYNAMICAL SYSTEMS; MESHFREE AND PARTICLE METHODS; FRACTIONAL DIFFUSION PROBLEMS: NUMERICAL METHODS, ALGORITHMS AND APPLICATIONS; PORE SCALE FLOW AND TRANSPORT SIMULATION; TENSORS BASED ALGORITHMS AND STRUCTURES IN OPTIMIZATION AND APPLICATIONS; HPC AND BIG DATA: ALGORITHMS AND APPLICATIONS; LARGE-SCALE MODELS: NUMERICAL METHODS, PARALLEL COMPUTATIONS AND APPLICATIONS; MONTE CARLO ALGORITHMS: INNOVATIVE APPLICATIONS IN CONJUNCTIONS WITH OTHER METHODS; APPLICATION OF METAHEURISTICS TO LARGE-SCALE PROBLEMS; LARGE SCALE MACHINE LEARNING: MULTISCALE ALGORITHMS AND PERFORMANCE GUARANTEES; AND CONTRIBUTED PAPERS.

NONNEGATIVE MATRIX FACTORIZATION

- NICOLAS GILLIS 2020-12-18

NONNEGATIVE MATRIX FACTORIZATION (NMF) IN ITS MODERN FORM HAS BECOME A STANDARD TOOL IN THE ANALYSIS OF HIGH-DIMENSIONAL DATA

SETS. THIS BOOK PROVIDES A COMPREHENSIVE AND UP-TO-DATE ACCOUNT OF THE MOST IMPORTANT ASPECTS OF THE NMF PROBLEM AND IS THE FIRST TO DETAIL ITS THEORETICAL ASPECTS, INCLUDING GEOMETRIC INTERPRETATION, NONNEGATIVE RANK, COMPLEXITY, AND UNIQUENESS. IT EXPLAINS WHY UNDERSTANDING THESE THEORETICAL INSIGHTS IS KEY TO USING THIS COMPUTATIONAL TOOL EFFECTIVELY AND MEANINGFULLY. NONNEGATIVE MATRIX FACTORIZATION IS ACCESSIBLE TO A WIDE AUDIENCE AND IS IDEAL FOR ANYONE INTERESTED IN THE WORKINGS OF NMF. IT DISCUSSES SOME NEW RESULTS ON THE NONNEGATIVE RANK AND THE IDENTIFIABILITY OF NMF AND MAKES AVAILABLE MATLAB CODES FOR READERS TO RUN THE NUMERICAL EXAMPLES PRESENTED IN THE BOOK. GRADUATE STUDENTS STARTING TO WORK ON NMF AND RESEARCHERS INTERESTED IN BETTER UNDERSTANDING THE NMF PROBLEM AND HOW THEY CAN USE IT WILL FIND THIS BOOK USEFUL. IT CAN BE USED IN ADVANCED UNDERGRADUATE AND GRADUATE-LEVEL COURSES ON NUMERICAL LINEAR ALGEBRA AND ON ADVANCED TOPICS IN NUMERICAL LINEAR ALGEBRA AND REQUIRES ONLY A BASIC KNOWLEDGE OF LINEAR ALGEBRA AND OPTIMIZATION.

DATA CLUSTERING - CHARU C.

AGGARWAL 2018-09-03

RESEARCH ON THE PROBLEM OF CLUSTERING TENDS TO BE FRAGMENTED ACROSS THE PATTERN RECOGNITION, DATABASE, DATA MINING, AND MACHINE

LEARNING COMMUNITIES. ADDRESSING THIS PROBLEM IN A UNIFIED WAY, DATA CLUSTERING: ALGORITHMS AND APPLICATIONS PROVIDES COMPLETE COVERAGE OF THE ENTIRE AREA OF CLUSTERING, FROM BASIC METHODS TO MORE REFINED AND COMPLEX DATA CLUSTERING APPROACHES. IT PAYS SPECIAL ATTENTION TO RECENT ISSUES IN GRAPHS, SOCIAL NETWORKS, AND OTHER DOMAINS. THE BOOK FOCUSES ON THREE PRIMARY ASPECTS OF DATA CLUSTERING: METHODS, DESCRIBING KEY TECHNIQUES COMMONLY USED FOR CLUSTERING, SUCH AS FEATURE SELECTION, AGGLOMERATIVE CLUSTERING, PARTITIONAL CLUSTERING, DENSITY-BASED CLUSTERING, PROBABILISTIC CLUSTERING, GRID-BASED CLUSTERING, SPECTRAL CLUSTERING, AND NONNEGATIVE MATRIX FACTORIZATION DOMAINS, COVERING METHODS USED FOR DIFFERENT DOMAINS OF DATA, SUCH AS CATEGORICAL DATA, TEXT DATA, MULTIMEDIA DATA, GRAPH DATA, BIOLOGICAL DATA, STREAM DATA, UNCERTAIN DATA, TIME SERIES CLUSTERING, HIGH-DIMENSIONAL CLUSTERING, AND BIG DATA VARIATIONS AND INSIGHTS, DISCUSSING IMPORTANT VARIATIONS OF THE CLUSTERING PROCESS, SUCH AS SEMISUPERVISED CLUSTERING, INTERACTIVE CLUSTERING, MULTIVIEW CLUSTERING, CLUSTER ENSEMBLES, AND CLUSTER VALIDATION IN THIS BOOK, TOP RESEARCHERS FROM AROUND THE WORLD EXPLORE THE CHARACTERISTICS OF CLUSTERING PROBLEMS IN A VARIETY OF APPLICATION AREAS. THEY ALSO

EXPLAIN HOW TO GLEAN DETAILED INSIGHT FROM THE CLUSTERING PROCESS—INCLUDING HOW TO VERIFY THE QUALITY OF THE UNDERLYING CLUSTERS—THROUGH SUPERVISION, HUMAN INTERVENTION, OR THE AUTOMATED GENERATION OF ALTERNATIVE CLUSTERS.

BLIND SOURCE SEPARATION - GANESH R. NAIK 2014-05-21

BLIND SOURCE SEPARATION INTENDS TO REPORT THE NEW RESULTS OF THE EFFORTS ON THE STUDY OF BLIND SOURCE SEPARATION (BSS). THE BOOK COLLECTS NOVEL RESEARCH IDEAS AND SOME TRAINING IN BSS, INDEPENDENT COMPONENT ANALYSIS (ICA), ARTIFICIAL INTELLIGENCE AND SIGNAL PROCESSING APPLICATIONS. FURTHERMORE, THE RESEARCH RESULTS PREVIOUSLY SCATTERED IN MANY JOURNALS AND CONFERENCES WORLDWIDE ARE METHODICALLY EDITED AND PRESENTED IN A UNIFIED FORM. THE BOOK IS LIKELY TO BE OF INTEREST TO UNIVERSITY RESEARCHERS, R&D ENGINEERS AND GRADUATE STUDENTS IN COMPUTER SCIENCE AND ELECTRONICS WHO WISH TO LEARN THE CORE PRINCIPLES, METHODS, ALGORITHMS AND APPLICATIONS OF BSS. DR. GANESH R. NAIK WORKS AT UNIVERSITY OF TECHNOLOGY, SYDNEY, AUSTRALIA; DR. WENWU WANG WORKS AT UNIVERSITY OF SURREY, UK.

INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING - IDEAL 2015 - KONRAD JACKOWSKI 2015-10-13

THIS BOOK CONSTITUTES THE REFEREED PROCEEDINGS OF THE 16TH

INTERNATIONAL CONFERENCE ON INTELLIGENT DATA ENGINEERING AND AUTOMATED LEARNING, IDEAL 2015, HELD IN WROCLAW, POLAND, IN OCTOBER 2015. THE 64 REVISED FULL PAPERS PRESENTED WERE CAREFULLY REVIEWED AND SELECTED FROM 127 SUBMISSIONS. THESE PAPERS PROVIDED A VALUABLE COLLECTION OF RECENT RESEARCH OUTCOMES IN DATA ENGINEERING AND AUTOMATED LEARNING, FROM METHODOLOGIES, FRAMEWORKS, AND TECHNIQUES TO APPLICATIONS. IN ADDITION TO VARIOUS TOPICS SUCH AS EVOLUTIONARY ALGORITHMS, NEURAL NETWORKS, PROBABILISTIC MODELING, SWARM INTELLIGENT, MULTI-OBJECTIVE OPTIMIZATION, AND PRACTICAL APPLICATIONS IN REGRESSION, CLASSIFICATION, CLUSTERING, BIOLOGICAL DATA PROCESSING, TEXT PROCESSING, VIDEO ANALYSIS, IDEAL 2015 ALSO FEATURED A NUMBER OF SPECIAL SESSIONS ON SEVERAL EMERGING TOPICS SUCH AS COMPUTATIONAL INTELLIGENCE FOR OPTIMIZATION OF COMMUNICATION NETWORKS, DISCOVERING KNOWLEDGE FROM DATA, SIMULATION-DRIVEN DES-LIKE MODELING AND PERFORMANCE EVALUATION, AND INTELLIGENT APPLICATIONS IN REAL-WORLD PROBLEMS.

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING - LESZEK RUTKOWSKI
2015-06-04

THE TWO-VOLUME SET LNAI 9119 AND LNAI 9120 CONSTITUTES THE REFEREED PROCEEDINGS OF THE 14TH INTERNATIONAL CONFERENCE ON

ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING, ICAISC 2015, HELD IN ZAKOPANE, POLAND IN JUNE 2015. THE 142 REVISED FULL PAPERS PRESENTED IN THE VOLUMES, WERE CAREFULLY REVIEWED AND SELECTED FROM 322 SUBMISSIONS. THESE PROCEEDINGS PRESENT BOTH TRADITIONAL ARTIFICIAL INTELLIGENCE METHODS AND SOFT COMPUTING TECHNIQUES. THE GOAL IS TO BRING TOGETHER SCIENTISTS REPRESENTING BOTH AREAS OF RESEARCH. THE FIRST VOLUME COVERS TOPICS AS FOLLOWS NEURAL NETWORKS AND THEIR APPLICATIONS, FUZZY SYSTEMS AND THEIR APPLICATIONS, EVOLUTIONARY ALGORITHMS AND THEIR APPLICATIONS, CLASSIFICATION AND ESTIMATION, COMPUTER VISION, IMAGE AND SPEECH ANALYSIS AND THE WORKSHOP: LARGE-SCALE VISUAL RECOGNITION AND MACHINE LEARNING. THE SECOND VOLUME HAS THE FOCUS ON THE FOLLOWING SUBJECTS: DATA MINING, BIOINFORMATICS, BIOMETRICS AND MEDICAL APPLICATIONS, CONCURRENT AND PARALLEL PROCESSING, AGENT SYSTEMS, ROBOTICS AND CONTROL, ARTIFICIAL INTELLIGENCE IN MODELING AND SIMULATION AND VARIOUS PROBLEMS OF ARTIFICIAL INTELLIGENCE.

ADVANCES IN COMPUTATIONAL INTELLIGENCE - JOAN CABESTANY
2011-05-30

THIS TWO-VOLUME SET LNCS 6691 AND 6692 CONSTITUTES THE REFEREED PROCEEDINGS OF THE 11TH INTERNATIONAL WORK-CONFERENCE ON ARTIFICIAL NEURAL NETWORKS,

IWANN 2011, HELD IN TORREMOLINOS-M[?] LAGA, SPAIN, IN JUNE 2011. THE 154 REVISED PAPERS WERE CAREFULLY REVIEWED AND SELECTED FROM 202 SUBMISSIONS FOR PRESENTATION IN TWO VOLUMES. THE SECOND VOLUME INCLUDES 76 PAPERS ORGANIZED IN TOPICAL SECTIONS ON VIDEO AND IMAGE PROCESSING; HYBRID ARTIFICIAL NEURAL NETWORKS: MODELS, ALGORITHMS AND DATA; ADVANCES IN MACHINE LEARNING FOR BIOINFORMATICS AND COMPUTATIONAL BIOMEDICINE; BIOMETRIC SYSTEMS FOR HUMAN-MACHINE INTERACTION; DATA MINING IN BIOMEDICINE; BIO-INSPIRED COMBINATORIAL OPTIMIZATION; APPLYING EVOLUTIONARY COMPUTATION AND NATURE-INSPIRED ALGORITHMS TO FORMAL METHODS; RECENT ADVANCES ON FUZZY LOGIC AND SOFT COMPUTING APPLICATIONS; NEW ADVANCES IN THEORY AND APPLICATIONS OF ICA-BASED ALGORITHMS; BIOLOGICAL AND BIO-INSPIRED DYNAMICAL SYSTEMS; AND INTERACTIVE AND COGNITIVE ENVIRONMENTS. THE LAST SECTION CONTAINS 9 PAPERS FROM THE INTERNATIONAL WORKSHOP ON INTELLIGENT SYSTEMS FOR CONTEXT-BASED INFORMATION FUSION, ISCIF 2011, HELD AT IWANN 2011.

INTELLIGENT DECISION TECHNOLOGIES - IRENEUSZ CZARNOWSKI 2020-07-14
THIS BOOK GATHERS SELECTED PAPERS FROM THE KES-IDT-2020 CONFERENCE, HELD AS A VIRTUAL CONFERENCE ON JUNE 17-19, 2020. THE AIM OF THE ANNUAL CONFERENCE

WAS TO PRESENT AND DISCUSS THE LATEST RESEARCH RESULTS, AND TO GENERATE NEW IDEAS IN THE FIELD OF INTELLIGENT DECISION-MAKING. HOWEVER, THE RANGE OF TOPICS DISCUSSED DURING THE CONFERENCE WAS DEFINITELY BROADER AND COVERED METHODS IN E.G. CLASSIFICATION, PREDICTION, DATA ANALYSIS, BIG DATA, DATA SCIENCE, DECISION SUPPORT, KNOWLEDGE ENGINEERING, AND MODELING IN SUCH DIVERSE AREAS AS FINANCE, CYBERSECURITY, ECONOMICS, HEALTH, MANAGEMENT AND TRANSPORTATION. THE PROBLEMS IN INDUSTRY 4.0 AND IoT ARE ALSO ADDRESSED. THE BOOK CONTAINS SEVERAL SECTIONS DEVOTED TO SPECIFIC TOPICS, SUCH AS INTELLIGENT DATA PROCESSING AND ITS APPLICATIONS HIGH-DIMENSIONAL DATA ANALYSIS AND ITS APPLICATIONS MULTI-CRITERIA DECISION ANALYSIS - THEORY AND APPLICATIONS LARGE-SCALE SYSTEMS FOR INTELLIGENT DECISION-MAKING AND KNOWLEDGE ENGINEERING DECISION TECHNOLOGIES AND RELATED TOPICS IN BIG DATA ANALYSIS OF SOCIAL AND FINANCIAL ISSUES DECISION-MAKING THEORY FOR ECONOMICS

PATTERN RECOGNITION - AXEL PINZ 2012-08-14

THIS BOOK CONSTITUTES THE REFEREED PROCEEDINGS OF THE 34TH SYMPOSIUM OF THE GERMAN ASSOCIATION FOR PATTERN RECOGNITION, DAGM 2012, AND THE 36TH SYMPOSIUM OF THE AUSTRIAN ASSOCIATION FOR PATTERN RECOGNITION, OAGM 2012, HELD IN

GRAZ, AUSTRIA, IN AUGUST 2012. THE 27 REVISED FULL PAPERS AND 23 REVISED POSTER PAPERS WERE CAREFULLY REVIEWED AND SELECTED FROM 98 SUBMISSIONS. THE PAPERS ARE ORGANIZED IN TOPICAL SECTIONS ON SEGMENTATION, LOW-LEVEL VISION, 3D RECONSTRUCTION, RECOGNITION, APPLICATIONS, LEARNING, AND FEATURES.

ADAPTIVE BLIND SIGNAL AND IMAGE PROCESSING - ANDRZEJ CICHOCKI
2018-03-09

THIS BOOK IS A UNIFICATION AND EXTENSION OF THE THEORIES BEHIND ADAPTIVE BLIND SIGNAL AND IMAGE PROCESSING, PROVIDING PRACTICAL AND EFFICIENT ALGORITHMS FOR MANY DIFFERENT AND NOVEL APPLICATIONS, INCLUDING THE LATEST DEVELOPMENTS AND ADDITIONAL MATERIAL NOT INCLUDED IN THE FIRST EDITION. THIS INCLUDES NEW MATERIAL ON MULTIWAY ANALYSIS, SPARSE REPRESENTATION AND DICTIONARY LEARNING (INCLUDING TENSOR DICTIONARY LEARNING AND SPARSE REPRESENTATION), SINGULAR SPECTRUM ANALYSIS, INFORMED SOURCE REPRESENTATION, COMPRESSIVE SENSING, ANALYSIS MODES SUCH AS INDEPENDENT VECTOR, LATENT VARIABLE AND SPARSE COMPONENT ANALYSIS AMONG MANY OTHER SIGNIFICANT UPDATES. ACCOMPANYING THE BOOK IS A HOST OF MATLAB EXAMPLES CODE AND EXECUTABLE PROGRAMS TO ENHANCE UNDERSTANDING OF THE NOVEL TECHNIQUES EMPLOYED IN BSP.

NONNEGATIVE MATRIX AND TENSOR

FACTORIZATIONS, LEAST SQUARES PROBLEMS, AND APPLICATIONS - JINGU KIM 2011

NONNEGATIVE MATRIX FACTORIZATION (NMF) IS A USEFUL DIMENSION REDUCTION METHOD THAT HAS BEEN INVESTIGATED AND APPLIED IN VARIOUS AREAS. NMF IS CONSIDERED FOR HIGH-DIMENSIONAL DATA IN WHICH EACH ELEMENT HAS A NONNEGATIVE VALUE, AND IT PROVIDES A LOW-RANK APPROXIMATION FORMED BY FACTORS WHOSE ELEMENTS ARE ALSO NONNEGATIVE. THE NONNEGATIVITY CONSTRAINTS IMPOSED ON THE LOW-RANK FACTORS NOT ONLY ENABLE NATURAL INTERPRETATION BUT ALSO REVEAL THE HIDDEN STRUCTURE OF DATA. EXTENDING THE BENEFITS OF NMF TO MULTIDIMENSIONAL ARRAYS, NONNEGATIVE TENSOR FACTORIZATION (NTF) HAS BEEN SHOWN TO BE SUCCESSFUL IN ANALYZING COMPLICATED DATA SETS. DESPITE THE SUCCESS, NMF AND NTF HAVE BEEN ACTIVELY DEVELOPED ONLY IN THE RECENT DECADE, AND ALGORITHMIC STRATEGIES FOR COMPUTING NMF AND NTF HAVE NOT BEEN FULLY STUDIED. IN THIS THESIS, COMPUTATIONAL CHALLENGES REGARDING NMF, NTF, AND RELATED LEAST SQUARES PROBLEMS ARE ADDRESSED.

MATRIX METHODS IN DATA MINING AND PATTERN RECOGNITION, SECOND EDITION - LARS ELDEN 2019-08-30

THIS THOROUGHLY REVISED SECOND EDITION PROVIDES AN UPDATED TREATMENT OF NUMERICAL LINEAR ALGEBRA TECHNIQUES FOR SOLVING

PROBLEMS IN DATA MINING AND PATTERN RECOGNITION. ADOPTING AN APPLICATION-ORIENTED APPROACH, THE AUTHOR INTRODUCES MATRIX THEORY AND DECOMPOSITIONS, DESCRIBES HOW MODERN MATRIX METHODS CAN BE APPLIED IN REAL LIFE SCENARIOS, AND PROVIDES A SET OF TOOLS THAT STUDENTS CAN MODIFY FOR A PARTICULAR APPLICATION. BUILDING ON MATERIAL FROM THE FIRST EDITION, THE AUTHOR DISCUSSES BASIC GRAPH CONCEPTS AND THEIR MATRIX COUNTERPARTS. HE INTRODUCES THE GRAPH LAPLACIAN AND PROPERTIES OF ITS EIGENVECTORS NEEDED IN SPECTRAL PARTITIONING AND DESCRIBES SPECTRAL GRAPH PARTITIONING APPLIED TO SOCIAL NETWORKS AND TEXT CLASSIFICATION. EXAMPLES ARE INCLUDED TO HELP READERS VISUALIZE THE RESULTS. THIS NEW EDITION ALSO PRESENTS MATRIX-BASED METHODS THAT UNDERLIE MANY OF THE ALGORITHMS USED FOR BIG DATA. THE BOOK PROVIDES A SOLID FOUNDATION TO FURTHER EXPLORE RELATED TOPICS AND PRESENTS APPLICATIONS SUCH AS CLASSIFICATION OF HANDWRITTEN DIGITS, TEXT MINING, TEXT SUMMARIZATION, PAGERANK COMPUTATIONS RELATED TO THE GOOGLE SEARCH ENGINE, AND FACIAL RECOGNITION. EXERCISES AND COMPUTER ASSIGNMENTS ARE AVAILABLE ON A WEB PAGE THAT SUPPLEMENTS THE BOOK. THIS BOOK IS PRIMARILY FOR UNDERGRADUATE STUDENTS WHO HAVE PREVIOUSLY TAKEN AN INTRODUCTORY SCIENTIFIC

COMPUTING/NUMERICAL ANALYSIS COURSE AND GRADUATE STUDENTS IN DATA MINING AND PATTERN RECOGNITION AREAS WHO NEED AN INTRODUCTION TO LINEAR ALGEBRA TECHNIQUES.

MACHINE LEARNING AND KNOWLEDGE DISCOVERY IN DATABASES -

MICHELANGELO CECI 2017-12-29

THE THREE VOLUME PROCEEDINGS LNAI 10534 - 10536 CONSTITUTES THE REFEREED PROCEEDINGS OF THE EUROPEAN CONFERENCE ON MACHINE LEARNING AND KNOWLEDGE DISCOVERY IN DATABASES, ECML PKDD 2017, HELD IN SKOPJE, MACEDONIA, IN SEPTEMBER 2017. THE TOTAL OF 101 REGULAR PAPERS PRESENTED IN PART I AND PART II WAS CAREFULLY REVIEWED AND SELECTED FROM 364 SUBMISSIONS; THERE ARE 47 PAPERS IN THE APPLIED DATA SCIENCE, NECTAR AND DEMO TRACK. THE CONTRIBUTIONS WERE ORGANIZED IN TOPICAL SECTIONS NAMED AS FOLLOWS: PART I: ANOMALY DETECTION; COMPUTER VISION; ENSEMBLES AND META LEARNING; FEATURE SELECTION AND EXTRACTION; KERNEL METHODS; LEARNING AND OPTIMIZATION, MATRIX AND TENSOR FACTORIZATION; NETWORKS AND GRAPHS; NEURAL NETWORKS AND DEEP LEARNING. PART II: PATTERN AND SEQUENCE MINING; PRIVACY AND SECURITY; PROBABILISTIC MODELS AND METHODS; RECOMMENDATION; REGRESSION; REINFORCEMENT LEARNING; SUBGROUP DISCOVERY; TIME SERIES AND STREAMS; TRANSFER AND MULTI-TASK LEARNING; UNSUPERVISED AND

SEMISUPERVISED LEARNING. PART III:
APPLIED DATA SCIENCE TRACK; NECTAR
TRACK; AND DEMO TRACK.

NON-NEGATIVE MATRIX

FACTORIZATION TECHNIQUES - GANESH

R. NAIK 2015-09-25

THIS BOOK COLLECTS NEW RESULTS,
CONCEPTS AND FURTHER DEVELOPMENTS
OF NMF. THE OPEN PROBLEMS
DISCUSSED INCLUDE, E.G. IN
BIOINFORMATICS: NMF AND ITS
EXTENSIONS APPLIED TO GENE
EXPRESSION, SEQUENCE ANALYSIS, THE
FUNCTIONAL CHARACTERIZATION OF
GENES, CLUSTERING AND TEXT MINING

ETC. THE RESEARCH RESULTS
PREVIOUSLY SCATTERED IN DIFFERENT
SCIENTIFIC JOURNALS AND CONFERENCE
PROCEEDINGS ARE METHODICALLY
COLLECTED AND PRESENTED IN A UNIFIED
FORM. WHILE READERS CAN READ THE
BOOK CHAPTERS SEQUENTIALLY, EACH
CHAPTER IS ALSO SELF-CONTAINED.
THIS BOOK CAN BE A GOOD REFERENCE
WORK FOR RESEARCHERS AND ENGINEERS
INTERESTED IN NMF, AND CAN ALSO BE
USED AS A HANDBOOK FOR STUDENTS
AND PROFESSIONALS SEEKING TO GAIN A
BETTER UNDERSTANDING OF THE LATEST
APPLICATIONS OF NMF.