

Fabric Defect Detection Using Matlab Code

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Applications of Computational Methods in Manufacturing and Product Design - B. B. V. L. Deepak 2022-05-04

This book presents the select proceedings of the conference of Innovative Product Design and Intelligent Manufacturing System (IPDIMS

2020), held at the National Institute of Technology, Rourkela, India. The book addresses latest methods and advanced tools from different areas of design and manufacturing technology. The main topics covered include computational methods for robotics, mechatronics and human-

computer interaction; computer-aided design, manufacturing and engineering; aesthetics, ergonomics and UX/UI design; smart manufacturing and expert systems. The contents of this book will be useful for researchers as well as professionals working in the areas of industrial design, mechatronics, robotics, and automation.

Bridge Engineering - Weiwei Lin 2017-05-11
Bridge Engineering: Classifications, Design Loading, and Analysis Methods begins with a clear and concise exposition of theory and practice of bridge engineering, design and planning, materials and construction, loads and load distribution, and deck systems. This is followed by chapters concerning applications for bridges, such as: Reinforced and Prestressed Concrete Bridges, Steel Bridges, Truss Bridges, Arch Bridges, Cable Stayed Bridges, Suspension Bridges, Bridge Piers, and Bridge Substructures. In addition, the book addresses issues commonly found in inspection, monitoring, repair,

strengthening, and replacement of bridge structures. Includes easy to understand explanations for bridge classifications, design loading, analysis methods, and construction Provides an overview of international codes and standards Covers structural features of different types of bridges, including beam bridges, arch bridges, truss bridges, suspension bridges, and cable-stayed bridges Features step-by-step explanations of commonly used structural calculations along with worked out examples
Genetic Algorithms in Search, Optimization, and Machine Learning - David Edward Goldberg 1989

A gentle introduction to genetic algorithms. Genetic algorithms revisited: mathematical foundations. Computer implementation of a genetic algorithm. Some applications of genetic algorithms. Advanced operators and techniques in genetic search. Introduction to genetics-based machine learning. Applications of genetics-based machine learning. A look back, a glance ahead. A

review of combinatorics and elementary probability. Pascal with random number generation for fortran, basic, and cobol programmers. A simple genetic algorithm (SGA) in pascal. A simple classifier system(SCS) in pascal. Partition coefficient transforms for problem-coding analysis.

Inventive Communication and Computational Technologies - G. Ranganathan 2020-01-29

This book gathers selected papers presented at the Inventive Communication and Computational Technologies conference (ICICCT 2019), held on 29-30 April 2019 at Gnanamani College of Technology, Tamil Nadu, India. The respective contributions highlight recent research efforts and advances in a new paradigm called ISMAC (IoT in Social, Mobile, Analytics and Cloud contexts). Topics covered include the Internet of Things, Social Networks, Mobile Communications, Big Data Analytics, Bio-inspired Computing and Cloud Computing. The book is chiefly intended for academics and

practitioners working to resolve practical issues in this area.

Examining Optoelectronics in Machine Vision and Applications in Industry 4.0 - Sergiyenko, Oleg 2021-02-12

The research and exploitation of optoelectronic properties in the industrial branch of electronics is becoming more popular each day due to the important role they play in the development of a large variety of sensors, devices, and systems for identifying, measuring, and constructing. While optoelectronics study the applications of electronic devices that source, detect, and transform light, machine vision generates and detects light in order to provide imaging-based automatic inspections and analysis for such applications as automatic object and environmental inspection, process control, and robot/mobile machine guidance in industry. Machine vision is less efficient without optoelectronics, and thus, it is important to investigate the theoretical approaches to

different optoelectronic devices available for machine vision as well as current scanning technologies. Examining Optoelectronics in Machine Vision and Applications in Industry 4.0 focuses on the examination of emerging technologies for the design, fabrication, and implementation of optoelectronic sensors, devices, and systems in a machine vision approach to support industrial, commercial, and scientific applications. The book covers topics such as the design, fabrication, and implementation of sensors and devices as well as the development viewpoint of optoelectronic systems and artificial vision techniques using optoelectronic devices. The interaction and informational communication between all these mentioned devices in the complex solution of the same task is the subject of modern challenges in Industry 4.0. Thus, this book supports engineers, technology developers, academicians, researchers, and students who seek machine vision techniques for detection, measurement,

and 3D reconstruction.

Wavelets - Robert X Gao 2010-12-07

Wavelets: Theory and Applications for Manufacturing presents a systematic description of the fundamentals of wavelet transform and its applications. Given the widespread utilization of rotating machines in modern manufacturing and the increasing need for condition-based, as opposed to fix-interval, intelligent maintenance to minimize machine down time and ensure reliable production, it is of critical importance to advance the science base of signal processing in manufacturing. This volume also deals with condition monitoring and health diagnosis of rotating machine components and systems, such as bearings, spindles, and gearboxes, while also:

- Providing a comprehensive survey on wavelets specifically related to problems encountered in manufacturing
- Discussing the integration of wavelet transforms with other soft computing techniques such as fuzzy logic, for machine defect and severity classification
- Showing how

to custom design wavelets for improved performance in signal analysis Focusing on wavelet transform as a tool specifically applied and designed for applications in manufacturing, Wavelets: Theory and Applications for Manufacturing presents material appropriate for both academic researchers and practicing engineers working in the field of manufacturing.

Artificial Intelligence on Fashion and Textiles - Wai Keung Wong 2018-10-13

The book includes the Proceedings of the Artificial Intelligence on Fashion and Textiles conference 2018 which provides state-of-the-art techniques and applications of AI in the fashion and textile industries. It is essential reading for scientists, researchers and R&D professionals working in the field of AI with applications in the fashion and textile industry; managers in the fashion and textile enterprises; and anyone with an interest in the applications of AI. Over the last two decades, with the great advancement of computer technology, academic research in

artificial intelligence (AI) and its applications in fashion and textile supply chain has been becoming a very hot topic and has received greater attention from both academics and industrialists. A number of AI-related techniques has been successfully employed and proven to handle the problems including fashion sales forecasting, supply chain optimization, planning and scheduling, textile material defect detection, fashion and textile image recognition, fashion image and style retrieval, human body modeling and fitting, etc.

Structural Health Monitoring - Daniel Balageas 2010-01-05

This book is organized around the various sensing techniques used to achieve structural health monitoring. Its main focus is on sensors, signal and data reduction methods and inverse techniques, which enable the identification of the physical parameters, affected by the presence of the damage, on which a diagnostic is established. Structural Health Monitoring is not

oriented by the type of applications or linked to special classes of problems, but rather presents broader families of techniques: vibration and modal analysis; optical fibre sensing; acousto-ultrasonics, using piezoelectric transducers; and electric and electromagnetic techniques. Each chapter has been written by specialists in the subject area who possess a broad range of practical experience. The book will be accessible to students and those new to the field, but the exhaustive overview of present research and development, as well as the numerous references provided, also make it required reading for experienced researchers and engineers.

Advanced Optimization by Nature-Inspired Algorithms - Omid Bozorg-Haddad 2017-06-30
This book, compiles, presents, and explains the most important meta-heuristic and evolutionary optimization algorithms whose successful performance has been proven in different fields of engineering, and it includes application of

these algorithms to important engineering optimization problems. In addition, this book guides readers to studies that have implemented these algorithms by providing a literature review on developments and applications of each algorithm. This book is intended for students, but can be used by researchers and professionals in the area of engineering optimization.

Textile Asia - 2005

Sparse Image and Signal Processing - Jean-Luc Starck 2010-05-10

This book presents the state of the art in sparse and multiscale image and signal processing, covering linear multiscale transforms, such as wavelet, ridgelet, or curvelet transforms, and non-linear multiscale transforms based on the median and mathematical morphology operators. Recent concepts of sparsity and morphological diversity are described and exploited for various problems such as

denoising, inverse problem regularization, sparse signal decomposition, blind source separation, and compressed sensing. This book weaves theory and practice in examining applications in areas such as astronomy, biology, physics, digital media, and forensics. A final chapter explores a paradigm shift in signal processing, showing that previous limits to information sampling and extraction can be overcome in very significant ways. Matlab and IDL code accompany these methods and applications to reproduce the experiments and illustrate the reasoning and methodology of the research are available for download at the associated web site.

Radiation Tolerant Electronics - Paul Leroux
2019-08-26

Research on radiation-tolerant electronics has increased rapidly over the past few years, resulting in many interesting approaches to modeling radiation effects and designing radiation-hardened integrated circuits and

embedded systems. This research is strongly driven by the growing need for radiation-hardened electronics for space applications, high-energy physics experiments such as those on the Large Hadron Collider at CERN, and many terrestrial nuclear applications including nuclear energy and nuclear safety. With the progressive scaling of integrated circuit technologies and the growing complexity of electronic systems, their susceptibility to ionizing radiation has raised many exciting challenges, which are expected to drive research in the coming decade. In this book we highlight recent breakthroughs in the study of radiation effects in advanced semiconductor devices, as well as in high-performance analog, mixed signal, RF, and digital integrated circuits. We also focus on advances in embedded radiation hardening in both FPGA and microcontroller systems and apply radiation-hardened embedded systems for cryptography and image processing, targeting space applications.

Emerging Topics in Computer Vision and Its Applications - C. H. Chen 2012

This book gives a comprehensive overview of the most advanced theories, methodologies and applications in computer vision. Particularly, it gives an extensive coverage of 3D and robotic vision problems. Example chapters featured are Fourier methods for 3D surface modeling and analysis, use of constraints for calibration-free 3D Euclidean reconstruction, novel photogeometric methods for capturing static and dynamic objects, performance evaluation of robot localization methods in outdoor terrains, integrating 3D vision with force/tactile sensors, tracking via in-floor sensing, self-calibration of camera networks, etc. Some unique applications of computer vision in marine fishery, biomedical issues, driver assistance, are also highlighted.

Design and Analysis of Reliable and Fault-Tolerant Computer Systems - Mostafa Abd-El-Barr 2006-12-15

Covering both the theoretical and practical

aspects of fault-tolerant mobile systems, and fault tolerance and analysis, this book tackles the current issues of reliability-based optimization of computer networks, fault-tolerant mobile systems, and fault tolerance and reliability of high speed and hierarchical networks. The book is divided into six parts to facilitate coverage of the material by course instructors and computer systems professionals. The sequence of chapters in each part ensures the gradual coverage of issues from the basics to the most recent developments. A useful set of references, including electronic sources, is listed at the end of each chapter.

Contents: Fundamental Concepts in Fault Tolerance and Reliability Analysis
Fault Modeling, Simulation and Diagnosis
Error Control and Self-Checking Circuits
Fault Tolerance in Multiprocessor Systems
Fault-Tolerant Routing in Multi-Computer Networks
Fault Tolerance and Reliability in Hierarchical Interconnection Networks
Fault

Tolerance and Reliability of Computer Networks
Fault Tolerance in High Speed Switching Networks
Fault Tolerance in Distributed and Mobile Computing Systems
Fault Tolerance in Mobile Networks
Reliability and Yield Enhancement of VLSI/WSI Circuits
Design of fault-tolerant Processor Arrays
Algorithm-Based Fault Tolerance
System Level Diagnosis I
System Level Diagnosis II
Fault Tolerance and Reliability of RAID Systems
High Availability in Computer Systems
Readership: Computer engineers, computer scientists, information scientists, graduate and senior undergraduate students in information science and computer engineering.
Keywords: Fault Tolerance; Reliability; Availability; Fault Modeling; Fault Diagnosis; Network Reliability
Key Features: Comprehensive coverage of issues in fault tolerance and reliability analysis
Simple treatment of difficult issues via examples with figures, tables and graphs
Anisotropic Diffusion in Image Processing -

Joachim Weickert 1998
"Many recent techniques for digital image enhancement and multiscale image representations are based on nonlinear partial differential equations. This book gives an introduction to the main ideas behind these methods, and it describes in a systematic way their theoretical foundations, numerical aspects, and applications. A large number of references enables the reader to acquire an up-to-date overview of the original literature. The central emphasis is on anisotropic nonlinear diffusion filters. Their flexibility allows to combine smoothing properties with image enhancement qualities. A general framework is explored covering well-posedness and scale-space results not only for the continuous, but also for the algorithmically important semidiscrete and fully discrete settings. The presented example range from applications in medical image analysis in computer aided quality control."--Back cover.
The Design Warrior's Guide to FPGAs - Clive

Maxfield 2004-06-16

Field Programmable Gate Arrays (FPGAs) are devices that provide a fast, low-cost way for embedded system designers to customize products and deliver new versions with upgraded features, because they can handle very complicated functions, and be reconfigured an infinite number of times. In addition to introducing the various architectural features available in the latest generation of FPGAs, The Design Warrior's Guide to FPGAs also covers different design tools and flows. This book covers information ranging from schematic-driven entry, through traditional HDL/RTL-based simulation and logic synthesis, all the way up to the current state-of-the-art in pure C/C++ design capture and synthesis technology. Also discussed are specialist areas such as mixed hardware/software and DSP-based design flows, along with innovative new devices such as field programmable node arrays (FPNAs). Clive "Max" Maxfield is a bestselling author and engineer

with a large following in the electronic design automation (EDA) and embedded systems industry. In this comprehensive book, he covers all the issues of interest to designers working with, or contemplating a move to, FPGAs in their product designs. While other books cover fragments of FPGA technology or applications this is the first to focus exclusively and comprehensively on FPGA use for embedded systems. First book to focus exclusively and comprehensively on FPGA use in embedded designs World-renowned best-selling author Will help engineers get familiar and succeed with this new technology by providing much-needed advice on choosing the right FPGA for any design project

[Introduction to Evolutionary Computing](#) - Agoston E. Eiben 2013-03-14

The first complete overview of evolutionary computing, the collective name for a range of problem-solving techniques based on principles of biological evolution, such as natural selection

and genetic inheritance. The text is aimed directly at lecturers and graduate and undergraduate students. It is also meant for those who wish to apply evolutionary computing to a particular problem or within a given application area. The book contains quick-reference information on the current state-of-the-art in a wide range of related topics, so it is of interest not just to evolutionary computing specialists but to researchers working in other fields.

Wool - W S Simpson 2002-05-09

In this book leading experts within the industry come together to give the first comprehensive treatments of the science and technology of wool to be published in over 20 years. The wool industry has been through a period of substantial change, with a major overhaul of trading methods, exciting innovations in wool-scouring and wool processing methods, and the development of modern technology reflecting a strong emphasis on environmental concerns and

energy conservation. Research into wool science has continued to grow, and the technologist now has a better understanding of both the chemical and the physical properties of wool. Modern instruments can determine the structural differences between several types of wool proteins and how they interact, and this knowledge is leading to a deeper understanding of what can be done to create better products and more effective processes. Wool: Science and technology is an essential reference resource for anyone involved in the worldwide wool industry whether as processor, manufacturer, or user for the garment and carpets trades. First new comprehensive treatment of wool for over 20 years Covers all aspects of processing, treatment and manufacture Contributions from distinguished experts worldwide

Proceedings of 2017 SAR in Big Data Era: Models, Methods and Applications (BIGSARDATA) -

Selected Papers on Industrial Machine Vision Systems - Bruce G. Batchelor 1994

SPIE Milestones are collections of seminal papers from the world literature covering important discoveries and developments in optics and photonics.

Proceedings of the Future Technologies Conference (FTC) 2019 - Kohei Arai
2019-10-09

This book presents state-of-the-art intelligent methods and techniques for solving real-world problems and offers a vision of future research. Featuring 143 papers from the 4th Future Technologies Conference, held in San Francisco, USA, in 2019, it covers a wide range of important topics, including, but not limited to, computing, electronics, artificial intelligence, robotics, security and communications and their applications to the real world. As such, it is an interesting, exciting and inspiring read.

Automation in Garment Manufacturing - Rajkishore Nayak 2017-11-10

Automation in Garment Manufacturing provides systematic and comprehensive insights into this multifaceted process. Chapters cover the role of automation in design and product development, including color matching, fabric inspection, 3D body scanning, computer-aided design and prototyping. Part Two covers automation in garment production, from handling, spreading and cutting, through to finishing and pressing techniques. Final chapters discuss advanced tools for assessing productivity in manufacturing, logistics and supply-chain management. This book is a key resource for all those engaged in textile and apparel development and production, and is also ideal for academics engaged in research on textile science and technology. Delivers theoretical and practical guidance on automated processes that benefit anyone developing or manufacturing textile products Offers a range of perspectives on manufacturing from an international team of authors Provides systematic and comprehensive

coverage of the topic, from fabric construction, through product development, to current and potential applications

Computer Vision Metrics - Scott Krig 2014-06-14

Computer Vision Metrics provides an extensive survey and analysis of over 100 current and historical feature description and machine vision methods, with a detailed taxonomy for local, regional and global features. This book provides necessary background to develop intuition about why interest point detectors and feature descriptors actually work, how they are designed, with observations about tuning the methods for achieving robustness and invariance targets for specific applications. The survey is broader than it is deep, with over 540 references provided to dig deeper. The taxonomy includes search methods, spectra components, descriptor representation, shape, distance functions, accuracy, efficiency, robustness and invariance attributes, and more. Rather than providing 'how-to' source code examples and shortcuts,

this book provides a counterpoint discussion to the many fine opencv community source code resources available for hands-on practitioners.

Design and Modeling of Mechanical Systems - Mohamed Haddar 2013-03-12

The 5th International Congress on Design and Modeling of Mechanical Systems (CMSM) was held in Djerba, Tunisia on March 25-27, 2013 and followed four previous successful editions, which brought together international experts in the fields of design and modeling of mechanical systems, thus contributing to the exchange of information and skills and leading to a considerable progress in research among the participating teams. The fifth edition of the congress (CMSM'2013), organized by the Unit of Mechanics, Modeling and Manufacturing (U2MP) of the National School of Engineers of Sfax, Tunisia, the Mechanical Engineering Laboratory (MBL) of the National School of Engineers of Monastir, Tunisia and the Mechanics Laboratory of Sousse (LMS) of the

National School of Engineers of Sousse, Tunisia, saw a significant increase of the international participation. This edition brought together nearly 300 attendees who exposed their work on the following topics: mechatronics and robotics, dynamics of mechanical systems, fluid structure interaction and vibroacoustics, modeling and analysis of materials and structures, design and manufacturing of mechanical systems. This book is the proceedings of CMSM'2013 and contains a careful selection of high quality contributions, which were exposed during various sessions of the congress. The original articles presented here provide an overview of recent research advancements accomplished in the field mechanical engineering.

EEG Signal Processing and Feature Extraction - Li Hu 2019-10-12

This book presents the conceptual and mathematical basis and the implementation of both electroencephalogram (EEG) and EEG signal processing in a comprehensive, simple,

and easy-to-understand manner. EEG records the electrical activity generated by the firing of neurons within human brain at the scalp. They are widely used in clinical neuroscience, psychology, and neural engineering, and a series of EEG signal-processing techniques have been developed. Intended for cognitive neuroscientists, psychologists and other interested readers, the book discusses a range of current mainstream EEG signal-processing and feature-extraction techniques in depth, and includes chapters on the principles and implementation strategies.

New Industry 4.0 Advances in Industrial IoT and Visual Computing for Manufacturing Processes -

Luis Norberto López de Lacalle 2020-03-18
Modern factories are experiencing rapid digital transformation supported by emerging technologies, such as the Industrial Internet of things (IIOT), industrial big data and cloud technologies, deep learning and deep analytics, AI, intelligent robotics, cyber-physical systems

and digital twins, complemented by visual computing (including new forms of artificial vision with machine learning, novel HMI, simulation, and visualization). This is evident in the global trend of Industry 4.0. The impact of these technologies is clear in the context of high-performance manufacturing. Important improvements can be achieved in productivity, systems reliability, quality verification, etc. Manufacturing processes, based on advanced mechanical principles, are enhanced by big data analytics on industrial sensor data. In current machine tools and systems, complex sensors gather useful data, which is captured, stored, and processed with edge, fog, or cloud computing. These processes improve with digital monitoring, visual data analytics, AI, and computer vision to achieve a more productive and reliable smart factory. New value chains are also emerging from these technological changes. This book addresses these topics, including contributions deployed in production, as well as

general aspects of Industry 4.0.
Advances in Power Electronics and Instrumentation Engineering - Vinu V Das
2011-04-13

This book constitutes the refereed proceedings of the Second International Conference on Advances in Power Electronics and Instrumentation Engineering, PEIE 2011, held at Nagpur, India, in April 2011. The 9 revised full papers presented together with 4 short papers and 7 poster papers were carefully reviewed and selected from numerous submissions. The papers address current issues in the field of power electronics, communication engineering, instrumentation engineering, digital electronics, electrical power engineering, electrical machines, information technology, control systems, and the like.

Pattern Recognition - Sergios Theodoridis
2003-05-15

Pattern recognition is a scientific discipline that is becoming increasingly important in the age of

automation and information handling and retrieval. Patter Recognition, 2e covers the entire spectrum of pattern recognition applications, from image analysis to speech recognition and communications. This book presents cutting-edge material on neural networks, - a set of linked microprocessors that can form associations and uses pattern recognition to "learn" -and enhances student motivation by approaching pattern recognition from the designer's point of view. A direct result of more than 10 years of teaching experience, the text was developed by the authors through use in their own classrooms. *Approaches pattern recognition from the designer's point of view *New edition highlights latest developments in this growing field, including independent components and support vector machines, not available elsewhere *Supplemented by computer examples selected from applications of interest
Analysis and Performance of Fiber Composites -

Bhagwan D. Agarwal 1990-10-08
Having fully established themselves as workable engineering materials, composite materials are now increasingly commonplace around the world. Serves as both a text and reference guide to the behavior of composite materials in different engineering applications. Revised for this Second Edition, the text includes a general discussion of composites as material, practical aspects of design and performance, and further analysis that will be helpful to those engaged in research on composites. Each chapter closes with references for further reading and a set of problems that will be useful in developing a better understanding of the subject.
Handbook of Research on Modeling, Analysis, and Application of Nature-Inspired Metaheuristic Algorithms - Dash, Sujata
2017-08-10
The digital age is ripe with emerging advances and applications in technological innovations. Mimicking the structure of complex systems in

nature can provide new ideas on how to organize mechanical and personal systems. The Handbook of Research on Modeling, Analysis, and Application of Nature-Inspired Metaheuristic Algorithms is an essential scholarly resource on current algorithms that have been inspired by the natural world. Featuring coverage on diverse topics such as cellular automata, simulated annealing, genetic programming, and differential evolution, this reference publication is ideal for scientists, biological engineers, academics, students, and researchers that are interested in discovering what models from nature influence the current technology-centric world.

Automated Visual Inspection - Bruce G. Batchelor 1985

Modeling and Simulation of Systems Using MATLAB and Simulink - Devendra K.

Chaturvedi 2017-12-19

Not only do modeling and simulation help

provide a better understanding of how real-world systems function, they also enable us to predict system behavior before a system is actually built and analyze systems accurately under varying operating conditions. Modeling and Simulation of Systems Using MATLAB® and Simulink® provides comprehensive, state-of-the-art coverage of all the important aspects of modeling and simulating both physical and conceptual systems. Various real-life examples show how simulation plays a key role in understanding real-world systems. The author also explains how to effectively use MATLAB and Simulink software to successfully apply the modeling and simulation techniques presented. After introducing the underlying philosophy of systems, the book offers step-by-step procedures for modeling different types of systems using modeling techniques, such as the graph-theoretic approach, interpretive structural modeling, and system dynamics modeling. It then explores how simulation evolved from pre-

computer days into the current science of today. The text also presents modern soft computing techniques, including artificial neural networks, fuzzy systems, and genetic algorithms, for modeling and simulating complex and nonlinear systems. The final chapter addresses discrete systems modeling. Preparing both undergraduate and graduate students for advanced modeling and simulation courses, this text helps them carry out effective simulation studies. In addition, graduate students should be able to comprehend and conduct simulation research after completing this book.

Feature Extraction and Image Processing for Computer Vision - Mark Nixon 2012-12-18

Feature Extraction and Image Processing for Computer Vision is an essential guide to the implementation of image processing and computer vision techniques, with tutorial introductions and sample code in Matlab. Algorithms are presented and fully explained to enable complete understanding of the methods

and techniques demonstrated. As one reviewer noted, "The main strength of the proposed book is the exemplar code of the algorithms." Fully updated with the latest developments in feature extraction, including expanded tutorials and new techniques, this new edition contains extensive new material on Haar wavelets, Viola-Jones, bilateral filtering, SURF, PCA-SIFT, moving object detection and tracking, development of symmetry operators, LBP texture analysis, Adaboost, and a new appendix on color models. Coverage of distance measures, feature detectors, wavelets, level sets and texture tutorials has been extended. Named a 2012 Notable Computer Book for Computing Methodologies by Computing Reviews Essential reading for engineers and students working in this cutting-edge field Ideal module text and background reference for courses in image processing and computer vision The only currently available text to concentrate on feature extraction with working implementation

and worked through derivation

Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms - Lakhmi C. Jain

2020-01-29

Artificial neural networks can mimic the biological information-processing mechanism in - a very limited sense. Fuzzy logic provides a basis for representing uncertain and imprecise knowledge and forms a basis for human reasoning. Neural networks display genuine promise in solving problems, but a definitive theoretical basis does not yet exist for their design. Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms integrates neural net, fuzzy system, and evolutionary computing in system design that enables its readers to handle complexity - offsetting the demerits of one paradigm by the merits of another. This book presents specific projects where fusion techniques have been applied. The chapters start with the design of a new fuzzy-neural controller. Remaining chapters discuss

the application of expert systems, neural networks, fuzzy control, and evolutionary computing techniques in modern engineering systems. These specific applications include: direct frequency converters electro-hydraulic systems motor control toaster control speech recognition vehicle routing fault diagnosis Asynchronous Transfer Mode (ATM) communications networks telephones for hard-of-hearing people control of gas turbine aero-engines telecommunications systems design Fusion of Neural Networks, Fuzzy Systems and Genetic Algorithms covers the spectrum of applications - comprehensively demonstrating the advantages of fusion techniques in industrial applications.

Intelligent Computing and Optimization - Pandian Vasant 2021-02-07

Third edition of International Conference on Intelligent Computing and Optimization and as a premium fruit, this book, pursue to gather research leaders, experts and scientists on

Intelligent Computing and Optimization to share knowledge, experience and current research achievements. Conference and book provide a unique opportunity for the global community to interact and share novel research results, explorations and innovations among colleagues and friends. This book is published by SPRINGER, Advances in Intelligent Systems and Computing. Ca. 100 authors submitted full papers to ICO'2020. That global representation demonstrates the growing interest of the research community here. The book covers innovative and creative research on sustainability, smart cities, meta-heuristics optimization, cyber-security, block chain, big data analytics, IoTs, renewable energy, artificial intelligence, Industry 4.0, modeling and simulation. We editors thank all authors and reviewers for their important service. Best high-quality papers have been selected by the International PC for our premium series with SPRINGER.

Design for Embedded Image Processing on FPGAs - Donald G. Bailey 2011-06-13

Dr Donald Bailey starts with introductory material considering the problem of embedded image processing, and how some of the issues may be solved using parallel hardware solutions. Field programmable gate arrays (FPGAs) are introduced as a technology that provides flexible, fine-grained hardware that can readily exploit parallelism within many image processing algorithms. A brief review of FPGA programming languages provides the link between a software mindset normally associated with image processing algorithms, and the hardware mindset required for efficient utilization of a parallel hardware design. The design process for implementing an image processing algorithm on an FPGA is compared with that for a conventional software implementation, with the key differences highlighted. Particular attention is given to the techniques for mapping an algorithm onto an

FPGA implementation, considering timing, memory bandwidth and resource constraints, and efficient hardware computational techniques. Extensive coverage is given of a range of low and intermediate level image processing operations, discussing efficient implementations and how these may vary according to the application. The techniques are illustrated with several example applications or case studies from projects or applications he has been involved with. Issues such as interfacing between the FPGA and peripheral devices are covered briefly, as is designing the system in such a way that it can be more readily debugged and tuned. Provides a bridge between algorithms and hardware Demonstrates how to avoid many of the potential pitfalls Offers practical recommendations and solutions Illustrates several real-world applications and case studies Allows those with software backgrounds to understand efficient hardware implementation Design for Embedded Image

Processing on FPGAs is ideal for researchers and engineers in the vision or image processing industry, who are looking at smart sensors, machine vision, and robotic vision, as well as FPGA developers and application engineers. The book can also be used by graduate students studying imaging systems, computer engineering, digital design, circuit design, or computer science. It can also be used as supplementary text for courses in advanced digital design, algorithm and hardware implementation, and digital signal processing and applications. Companion website for the book: www.wiley.com/go/bailey/fpga
Intelligent Computing & Optimization - Pandian Vasant 2021-12-30

This book includes the scientific results of the fourth edition of the International Conference on Intelligent Computing and Optimization which took place at December 30–31, 2021, via ZOOM. The conference objective was to celebrate “Compassion and Wisdom” with researchers,

scholars, experts and investigators in Intelligent Computing and Optimization worldwide, to share knowledge, experience, innovation—marvelous opportunity for discourse and mutuality by novel research, invention and creativity. This proceedings encloses the original and innovative scientific fields of optimization and optimal control, renewable energy and sustainability, artificial intelligence and operational research, economics and management, smart cities and rural planning, meta-heuristics and big data analytics, cyber security and blockchains, IoTs and Industry 4.0, mathematical modelling and simulation, health care and medicine.

Advances in Artificial Intelligence and Applied Cognitive Computing - Hamid R. Arabnia
2021-10-14

The book presents the proceedings of two conferences: The 22nd International Conference on Artificial Intelligence (ICAI'20) and The 4th International Conference on Applied Cognitive

Computing (ACC'20). The conferences took place in Las Vegas, NV, USA, July 27-30, 2020, and are part of the larger 2020 World Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE'20), which features 20 major tracks. Topics include: deep learning; neural networks; brain models; cognitive science; natural language processing; fuzzy logic and soft computing (ICAI) and novel computationally intelligent algorithms; bio inspired cognitive algorithms; modeling human brain processing systems (ACC); and more. Authors include academics, researchers, and professionals. Presents the proceedings of two conferences as part of the 2020 World Congress in Computer Science, Computer Engineering, & Applied Computing (CSCE'20); Includes the tracks: artificial intelligence and applied cognitive computing; Features papers from the 22nd International Conference on AI (ICAI'20) and the 4th International Conference on Applied Cognitive Computing (ACC'20).

Digital Image Processing Algorithms and Applications - Ioannis Pitas 2000-02-22

A unique collection of algorithms and lab experiments for practitioners and researchers of digital image processing technology. With the field of digital image processing rapidly expanding, there is a growing need for a book that would go beyond theory and techniques to address the underlying algorithms. Digital Image Processing Algorithms and Applications fills the gap in the field, providing scientists and engineers with a complete library of algorithms for digital image processing, coding, and analysis. Digital image transform algorithms, edge detection algorithms, and image segmentation algorithms are carefully gleaned from the literature for compatibility and a track record of acceptance in the scientific

community. The author guides readers through all facets of the technology, supplementing the discussion with detailed lab exercises in EIKONA, his own digital image processing software, as well as useful PDF transparencies. He covers in depth filtering and enhancement, transforms, compression, edge detection, region segmentation, and shape analysis, explaining at every step the relevant theory, algorithm structure, and its use for problem solving in various applications. The availability of the lab exercises and the source code (all algorithms are presented in C-code) over the Internet makes the book an invaluable self-study guide. It also lets interested readers develop digital image processing applications on ordinary desktop computers as well as on Unix machines.

Image Processing, Analysis and Machine Vision - Milan Sonka 2014-01-15