

Improving Surface Defect Detection For Quality Assessment

Machine Vision Inspection Systems (MVIS) is a multidisciplinary research field that emphasizes image processing, machine vision and, pattern recognition for industrial applications. Inspection techniques are generally used in destructive and non-destructive evaluation industry. Now a day's the current research on machine inspection gained more popularity among various researchers, because the manual assessment of the inspection may fail and turn into false assessment due to a large number of examining while inspection process. This volume 2 covers machine learning-based approaches in MVIS applications and it can be employed to a wide diversity of problems particularly in Non-Destructive testing (NDT), presence/absence detection, defect/fault detection (weld, textile, tiles, wood, etc.), automated vision test & measurement, pattern matching, optical character recognition & verification (OCR/OCV), natural language processing, medical diagnosis, etc. This edited book is designed to address various aspects of recent methodologies, concepts, and research plan out to the readers for giving more depth insights for perusing research on machine vision using machine learning-based approaches.

This book constitutes the thoroughly refereed post-workshop proceedings of the Third International Workshop on Reproducible Research in Pattern Recognition, RRPR 2021, held as a virtual event, in January 2021. The 8 revised full papers, presented together with 6 short papers, were carefully reviewed and selected from 18 submissions. The papers were organized into three main categories. The first contributions focused on reproducible research frameworks. The second category focused on reproducible research results and the last category included ICPR companion papers describing implementation and details that are an absolute requirement for reproducibility.

This book constitutes the refereed proceedings of the 10th International Conference on Advances in Brain Inspired Cognitive Systems, BICS 2019, held in Guangzhou, China, in July 2019. The 57 papers presented in this volume were carefully reviewed and selected from 129 submissions. The papers are organized in topical sections named: neural computation; biologically inspired systems; image recognition: detection, tracking and classification; and data analysis and natural language processing.

3D Imaging Technologies—Multidimensional Signal Processing and Deep Learning Methods, Algorithms and Applications, Volume 2 Springer Nature

This volume includes the proceedings of the 2015 International Conference on Information Technology and Intelligent Transportation Systems (ITITS 2015) which was held in Xi'an on December 12-13, 2015. The conference provided a platform for all professionals and researchers from industry and academia to present and discuss recent advances in the field of Information Technology and Intelligent Transportation Systems. The presented information technologies are connected to intelligent transportation systems including wireless communication, computational technologies, floating car data/floating cellular data, sensing technologies, and video vehicle detection. The articles focusing on intelligent transport systems vary in the technologies applied, from basic management systems to more application systems including topics such as emergency vehicle notification systems, automatic road enforcement, collision avoidance systems and some cooperative systems. The conference hosted 12 invited

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speakers and over 200 participants. Each paper was under double peer reviewed by at least 3 reviewers. This proceedings are sponsored by Shaanxi Computer Society and co-sponsored by Chang'an University, Xi'an University of Technology, Northwestern Poly-technical University, CAS, Shaanxi Sirui Industries Co., LTD.

The three-volume set of LNCS 12532, 12533, and 12534 constitutes the proceedings of the 27th International Conference on Neural Information Processing, ICONIP 2020, held in Bangkok, Thailand, in November 2020. Due to COVID-19 pandemic the conference was held virtually. The 187 full papers presented were carefully reviewed and selected from 618 submissions. The papers address the emerging topics of theoretical research, empirical studies, and applications of neural information processing techniques across different domains. The first volume, LNCS 12532, is organized in topical sections on human-computer interaction; image processing and computer vision; natural language processing.

This collection of selected papers from the 2011 International Conference on Mechatronics and Applied Mechanics, ICMAM2011, held in Hong Kong discloses the latest developments in the field of Manufacturing Technology and Processing, Mechatronics and Automation, Mechatronics and Embedded System Applications and other related fields. Volume is indexed by Thomson Reuters CPCI-S (WoS). It covers, in particular, the topics of Mechatronics and Automation, Mechanical Manufacturing Systems, Signal Processing, Manufacturing Technology and Processing plus Materials Science and Technology.

This two-volume set of LNCS 11871 and 11872 constitutes the thoroughly refereed conference proceedings of the 20th International Conference on Intelligent Data Engineering and Automated Learning, IDEAL 2019, held in Manchester, UK, in November 2019. The 94 full papers presented were carefully reviewed and selected from 149 submissions. These papers provided a timely sample of the latest advances in data engineering and machine learning, from methodologies, frameworks, and algorithms to applications. The core themes of IDEAL 2019 include big data challenges, machine learning, data mining, information retrieval and management, bio-/neuro-informatics, bio-inspired models (including neural networks, evolutionary computation and swarm intelligence), agents and hybrid intelligent systems, real-world applications of intelligent techniques and AI.

This book is a printed edition of the Special Issue "Structural Health Monitoring (SHM) of Civil Structures" that was published in Applied Sciences

This six volume set LNCS 11063 – 11068 constitutes the thoroughly refereed conference proceedings of the 4th International Conference on Cloud Computing and Security, ICCCS 2018, held in Haikou, China, in June 2018. The 386 full papers of these six volumes were carefully reviewed and selected from 1743 submissions. The papers cover ideas and achievements in the theory and practice of all areas of inventive systems which includes control, artificial intelligence, automation systems, computing systems, electrical and informative systems. The six volumes are arranged according to the subject areas as follows: cloud computing, cloud security, encryption, information hiding, IoT security,

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multimedia forensics

This 8-volumes set constitutes the refereed of the 25th International Conference on Pattern Recognition Workshops, ICPR 2020, held virtually in Milan, Italy and rescheduled to January 10 - 11, 2021 due to Covid-19 pandemic. The 416 full papers presented in these 8 volumes were carefully reviewed and selected from about 700 submissions. The 46 workshops cover a wide range of areas including machine learning, pattern analysis, healthcare, human behavior, environment, surveillance, forensics and biometrics, robotics and egovision, cultural heritage and document analysis, retrieval, and women at ICPR2020.

The main objective of ICCSAI2013 is to provide a platform for the presentation of top and latest research results in global scientific areas. The conference aims to provide a high level international forum for researcher, engineers and practitioners to present and discuss recent advances and new techniques in computer science and artificial intelligence. It also serves to foster communications among researcher, engineers and practitioners working in a common interest in improving computer science, artificial intelligence and the related fields. We have received 325 numbers of papers through "Call for Paper", out of which 94 numbers of papers were accepted for publication in the conference proceedings through double blind review process. The conference is designed to stimulate the young minds including Research Scholars, Academicians, and Practitioners to contribute their ideas, thoughts and nobility in these two disciplines.

This two-volume set LNCS 12239-12240 constitutes the refereed proceedings of the 6th International Conference on Artificial Intelligence and Security, ICAIS 2020, which was held in Hohhot, China, in July 2020. The conference was formerly called "International Conference on Cloud Computing and Security" with the acronym ICCCS. The total of 142 full papers presented in this two-volume proceedings was carefully reviewed and selected from 1064 submissions. The papers were organized in topical sections as follows: Part I: Artificial intelligence and internet of things. Part II: Internet of things, information security, big data and cloud computing, and information processing.

The Light Metals symposia at the TMS Annual Meeting & Exhibition present the most recent developments, discoveries, and practices in primary aluminum science and technology. The annual Light Metals volume has become the definitive reference in the field of aluminum production and related light metal technologies. The 2019 collection includes papers from the following symposia: 1. Alumina and Bauxite 2. Aluminum Alloys, Processing, and Characterization 3. Aluminum Reduction Technology 4. Cast Shop Technology 5. Cast Shop Technology: Energy Joint Session 6. DGM-TMS Symposium on Lightweight Metals 7. Electrode Technology for Aluminum Production 8. REWAS 2019: Cast Shop Recycling Technologies 9. Scandium Extraction and Use in Aluminum Alloys 10. Ultrasonic Processing of Liquid and Solidifying Alloys Manufacturing and Engineering Technology brings together around 200 peer-

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reviewed papers presented at the 2014 International Conference on Manufacturing and Engineering Technology, held in San-ya, China, October 17-19, 2014. The main objective of these proceedings is to take the Manufacturing and Engineering Technology discussion a step further. Contributions cover Manufacture, Mechanical, Materials Science, Industrial Engineering, Control, Information and Computer Engineering. Furthermore, these proceedings provide a platform for researchers, engineers, academics as well as industrial professionals from all over the world to present their research results and development activities in Manufacturing Science and Engineering Technology.

The three volume set LNAI 7506, LNAI 7507 and LNAI 7508 constitutes the refereed proceedings of the 5th International Conference on Intelligent Robotics and Applications, ICIRA 2012, held in Montreal, Canada, in October 2012. The 197 revised full papers presented were thoroughly reviewed and selected from 271 submissions. They present the state-of-the-art developments in robotics, automation and mechatronics. This volume covers the topics of robotics for rehabilitation and assistance; mechatronics and integration technology in electronics and information devices fabrication; man-machine interactions; manufacturing; micro and nano systems; mobile robots and intelligent autonomous systems; motion control; multi-agent systems and distributed control; and multi-sensor data fusion algorithms.

This volume constitutes the papers of several workshops which were held in conjunction with the 26th International Conference on Database Systems for Advanced Applications, DASFAA 2021, held in Taipei, Taiwan, in April 2021. The 29 revised full papers presented in this book were carefully reviewed and selected from 84 submissions. DASFAA 2021 presents the following five workshops: 6th International Workshop on Big Data Quality Management (BDQM 2021) 5th International Workshop on Graph Data Management and Analysis (GDMA 2021) First International Workshop on Machine Learning and Deep Learning for Data Security Applications (MLDLDSA 2021) 6th International Workshop on Mobile Data Management, Mining, and Computing on Social Network (MobiSocial 2021) 2021 International Workshop on Mobile Ubiquitous Systems and Technologies (MUST 2021) Due to the Corona pandemic this event was held virtually.

Computer Vision Technology for Food Quality Evaluation, Second Edition continues to be a valuable resource to engineers, researchers, and technologists in research and development, as well as a complete reference to students interested in this rapidly expanding field. This new edition highlights the most recent developments in imaging processing and analysis techniques and methodology, captures cutting-edge developments in computer vision technology, and pinpoints future trends in research and development for food quality and safety evaluation and control. It is a unique reference that provides a deep understanding of the issues of data acquisition and image analysis and

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offers techniques to solve problems and further develop efficient methods for food quality assessment. Thoroughly explains what computer vision technology is, what it can do, and how to apply it for food quality evaluation Includes a wide variety of computer vision techniques and applications to evaluate a wide variety of foods Describes the pros and cons of different techniques for quality evaluation

The Army Materials and Mechanics Research Center of Water town, Massachusetts in cooperation with the Materials Science Group of the Department of Chemical Engineering and Materials Science of Syracuse University has conducted the Sagamore Army Materials Research Conference since 1954. The main purpose of these conferences has been to gather together over 150 scientists and engineers from academic institutions, industry and government who are uniquely qualified to explore in depth a subject of importance to the Department of Defense, the Army and the scientific community. This volume, RISK AND FAILURE ANALYSIS FOR IMPROVED PERFORMANCE AND RELIABILITY, addresses the areas of Techniques of Failure Analysis, Risk and Failure Analysis for Design Against Fracture, Risk and Failure Analysis for Design Against Fatigue, Elevated Temperature Effects, Environmental Effects, Systems Approach to Production Reliability Integration and Outlook - Emerging Needs and Techniques. We wish to acknowledge the dedicated assistance of Joseph M. Bernier of the Army Materials and Mechanics Research Center and Helen Brown DeMascio of Syracuse University throughout the stages of the conference planning and finally the publication of this book is deeply appreciated.

This book constitutes the refereed proceedings of the 15th International Conference on Green, Pervasive, and Cloud Computing, GPC 2020, held in Xi'an, China, in November 2020. The 30 full papers presented in this book together with 8 short papers were carefully reviewed and selected from 96 submissions. They cover the following topics: Device-free Sensing; Machine Learning; Recommendation Systems; Urban Computing; Human Computer Interaction; Internet of Things and Edge Computing; Positioning; Applications of Computer Vision; CrowdSensing; and Cloud and Related Technologies.

In the current age of information explosion, newly invented technological sensors and software are now tightly integrated with our everyday lives. Many sensor processing algorithms have incorporated some forms of computational intelligence as part of their core framework in problem-solving. These algorithms have the capacity to generalize and discover knowledge for themselves and to learn new information whenever unseen data are captured. The primary aim of sensor processing is to develop techniques to interpret, understand, and act on information contained in the data. The interest of this book is in developing intelligent signal processing in order to pave the way for smart sensors. This involves the mathematical advancement of nonlinear signal processing theory and its applications that extend far beyond traditional techniques. It bridges the

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boundary between theory and application, developing novel theoretically inspired methodologies targeting both longstanding and emergent signal processing applications. The topics range from phishing detection to integration of terrestrial laser scanning, and from fault diagnosis to bio-inspired filtering. The book will appeal to established practitioners, along with researchers and students in the emerging field of smart sensor signal processing.

The Definitive Reference for Food Scientists & EngineersThe Second Edition of the Encyclopedia of Agricultural, Food, and Biological Engineering focuses on the processes used to produce raw agricultural materials and convert the raw materials into consumer products for distribution. It provides an improved understanding of the processes used in

This book presents part of the iM3F 2020 proceedings from the Mechatronics track. It highlights key challenges and recent trends in mechatronics engineering and technology that are non-trivial in the age of Industry 4.0. It discusses traditional as well as modern solutions that are employed in the multitude spectra of mechatronics-based applications. The readers are expected to gain an insightful view on the current trends, issues, mitigating factors as well as solutions from this book.

The three-volume set LNCS 12305, 12306, and 12307 constitutes the refereed proceedings of the Third Chinese Conference on Pattern Recognition and Computer Vision, PRCV 2020, held virtually in Nanjing, China, in October 2020. The 158 full papers presented were carefully reviewed and selected from 402 submissions. The papers have been organized in the following topical sections: Part I: Computer Vision and Application, Part II: Pattern Recognition and Application, Part III: Machine Learning.

The two volume set LNAI 7101 and 7102 constitute the refereed proceedings of the 4th International Conference on Intelligent Robotics and Applications, ICIRA 2011, held in Aachen, Germany, in November 2011. The 122 revised full papers presented were thoroughly reviewed and selected from numerous submissions. They are organized in topical sections on progress in indoor UAV, robotics intelligence, industrial robots, rehabilitation robotics, mechanisms and their applications, multi robot systems, robot mechanism and design, parallel kinematics, parallel kinematics machines and parallel robotics, handling and manipulation, tangibility in human-machine interaction, navigation and localization of mobile robot, a body for the brain: embodied intelligence in bio-inspired robotics, intelligent visual systems, self-optimising production systems, computational intelligence, robot control systems, human-robot interaction, manipulators and applications, stability, dynamics and interpolation, evolutionary robotics, bio-inspired robotics, and image-processing applications.

This book gathers selected papers presented at the conference “Advances in 3D Image and Graphics Representation, Analysis, Computing and Information Technology,” one of the first initiatives devoted to the problems of 3D imaging in all contemporary scientific and application areas. The aim of the conference was

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to establish a platform for experts to combine their efforts and share their ideas in the related areas in order to promote and accelerate future development. This second volume discusses algorithms and applications, focusing mainly on the following topics: 3D printing technologies; naked, dynamic and auxiliary 3D displays; VR/AR/MR devices; VR camera technologies; microprocessors for 3D data processing; advanced 3D computing systems; 3D data-storage technologies; 3D data networks and technologies; 3D data intelligent processing; 3D data cryptography and security; 3D visual quality estimation and measurement; and 3D decision support and information systems.

This book contains selected contributions on surface modification to improve the properties of solid materials. The surface properties are tailored either by functionalization, etching, or deposition of a thin coating. Functionalization is achieved by a brief treatment with non-equilibrium gaseous plasma containing suitable radicals that interact chemically with the material surface and thus enable the formation of rather stable functional groups. Etching is performed in order to modify the surface morphology. The etching parameters are selected in such a way that a rich morphology of the surfaces is achieved spontaneously on the sub-micrometer scale, without using masks. The combination of adequate surface morphology and functionalization of materials leads to superior surface properties which are particularly beneficial for the desired response upon incubation with biological matter. Alternatively, the materials are coated with a suitable thin film that is useful in various applications from food to aerospace industries.

This book focuses on the emerging advances in distributed communication systems, big data, intelligent computing and Internet of Things, presenting state-of-the-art research in frameworks, algorithms, methodologies, techniques and applications associated with data engineering and wireless distributed communication technologies. In addition, it discusses potential topics like performance analysis, wireless communication networks, data security and privacy, human computer interaction, 5G Networks, and smart automated systems, which will provide insights for the evolving data communication technologies. In a nutshell, this proceedings book compiles novel and high-quality research that offers innovative solutions for communications in IoT networks.

This book is a printed edition of the Special Issue "Intelligent Sensing Technologies for Nondestructive Evaluation" that was published in Sensors

This book presents high-quality research in the field of 3D imaging technology. The second edition of International Conference on 3D Imaging Technology (3DDIT-MSP&DL) continues the good traditions already established by the first 3DIT conference (IC3DIT2019) to provide a wide scientific forum for researchers, academia and practitioners to exchange newest ideas and recent achievements in all aspects of image processing and analysis, together with their contemporary applications. The conference proceedings are published in 2 volumes. The main topics of the papers

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comprise famous trends as: 3D image representation, 3D image technology, 3D images and graphics, and computing and 3D information technology. In these proceedings, special attention is paid at the 3D tensor image representation, the 3D content generation technologies, big data analysis, and also deep learning, artificial intelligence, the 3D image analysis and video understanding, the 3D virtual and augmented reality, and many related areas. The first volume contains papers in 3D image processing, transforms and technologies. The second volume is about computing and information technologies, computer images and graphics and related applications. The two volumes of the book cover a wide area of the aspects of the contemporary multidimensional imaging and the related future trends from data acquisition to real-world applications based on various techniques and theoretical approaches.

The book Intelligent Systems and Applications - Proceedings of the 2020 Intelligent Systems Conference is a remarkable collection of chapters covering a wider range of topics in areas of intelligent systems and artificial intelligence and their applications to the real world. The Conference attracted a total of 545 submissions from many academic pioneering researchers, scientists, industrial engineers, students from all around the world. These submissions underwent a double-blind peer review process. Of those 545 submissions, 177 submissions have been selected to be included in these proceedings. As intelligent systems continue to replace and sometimes outperform human intelligence in decision-making processes, they have enabled a larger number of problems to be tackled more effectively. This branching out of computational intelligence in several directions and use of intelligent systems in everyday applications have created the need for such an international conference which serves as a venue to report on up-to-the-minute innovations and developments. This book collects both theory and application based chapters on all aspects of artificial intelligence, from classical to intelligent scope. We hope that readers find the volume interesting and valuable; it provides the state of the art intelligent methods and techniques for solving real world problems along with a vision of the future research.

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