

Microsoft Coco Common Objects In Context Arxiv

Software methodologies, tools and techniques have become an ever more important part of our lives, and are crucial to the decision-making processes that affect us every day. This book presents papers from the 19th International Conference on New Trends in Intelligent Software Methodology Tools, and Techniques (SoMeT20), held in Kitakyushu, Japan from 22–24 September 2020. The SoMeT conferences bring together researchers and practitioners to share their original research results and experience of practical developments in software science and related new technologies, and this book explores new trends and theories that highlight the direction and development of intelligent software methodologies, tools and techniques. It covers newly developed techniques, enhanced methodologies, software related solutions and recently developed tools, as well as indicating the direction of future research, and the 40 revised papers included here have been selected by the SoMeT20 international reviewing committee on the basis of technical soundness, relevance, originality, significance, and clarity. The book is divided into 5 chapters: artificial intelligence techniques on software engineering, and requirement engineering; software methods for informatics, medical informatics and bio-medicine applications; applied software tools, techniques and related software engineering models; intelligent-software systems design, software quality, software evolution and validation techniques; and knowledge science and intelligent computing. Providing an overview of the state-of-the-art in software science and its supporting technology, this book will be of interest to all those working in the field.

This two-volume set of LNCS 12509 and 12510 constitutes the refereed proceedings of the 15th International Symposium on Visual Computing, ISVC 2020, which was supposed to be held in San Diego, CA, USA in October 2020, took place virtually instead due to the COVID-19 pandemic. The 114 full and 4 short papers presented in these volumes were carefully reviewed and selected from 175 submissions. The papers are organized into the following topical sections: Part I: deep learning; segmentation; visualization; video analysis and event recognition; ST: computational bioimaging; applications; biometrics; motion and tracking; computer graphics; virtual reality; and ST: computer vision advances in geo-spatial applications and remote sensing Part II: object recognition/detection/categorization; 3D reconstruction; medical image analysis; vision for robotics; statistical pattern recognition; posters

This book constitutes the refereed proceedings of the 14th European Conference on Ambient Intelligence, Aml 2018, held in Larnaca, Cyprus, in November 2018. The 12 revised full papers presented together with 6 short papers were carefully reviewed and selected from 36 submissions. The papers cover topics such as: Ambient Services and Smart Environments; Sensor Networks and Artificial Intelligence; Activity and Situation Recognition; Ambient Intelligence in Education.

Modeling data from visual and linguistic modalities together creates opportunities for better understanding of both, and supports many useful applications. Examples of dual visual-linguistic data includes images with keywords, video with narrative, and figures in documents. We consider two key task-driven themes: translating from one modality to another (e.g., inferring annotations for images) and understanding the data using all modalities, where one modality can help disambiguate information in another. The multiple modalities can either be essentially semantically redundant (e.g., keywords provided by a person looking at the image), or largely complementary (e.g., meta data such as the camera used). Redundancy and complementarity are two endpoints of a scale, and we observe that good performance on translation requires some redundancy, and that joint inference is most useful where some information is complementary. Computational methods discussed are broadly organized into ones for simple keywords, ones going beyond keywords toward natural language, and ones considering sequential aspects of natural language. Methods for keywords are further organized based on localization of semantics, going from words about the scene taken as whole, to words that apply to specific parts of the scene, to relationships between parts. Methods going beyond keywords are organized by the linguistic roles that are learned, exploited, or generated. These include proper nouns, adjectives, spatial and comparative prepositions, and verbs. More recent developments in dealing with sequential structure include automated captioning of scenes and video, alignment of video and text, and automated answering of questions about scenes depicted in images.

This book contains the proceedings of the 22nd EANN "Engineering Applications of Neural Networks" 2021 that comprise of research papers on both theoretical foundations and cutting-edge applications of artificial intelligence. Based on the discussed research areas, emphasis is given in advances of machine learning (ML) focusing on the following algorithms-approaches: Augmented ML, autoencoders, adversarial neural networks, blockchain-adaptive methods, convolutional neural networks, deep learning, ensemble methods, learning-federated learning, neural networks, recurrent -- long short-term memory. The application domains are related to: Anomaly detection, bio-medical AI, cyber-security, data fusion, e-learning, emotion recognition, environment, hyperspectral imaging, fraud detection, image analysis, inverse kinematics, machine vision, natural language, recommendation systems, robotics, sentiment analysis, simulation, stock market prediction.

This book constitutes the refereed proceedings of the 9th IAPR TC3 International Workshop on Artificial Neural Networks in Pattern Recognition, ANNPR 2020, held in Winterthur, Switzerland, in September 2020. The conference was held virtually due to the COVID-19 pandemic. The 22 revised full papers presented were carefully reviewed and selected from 34 submissions. The papers present and discuss the latest research in all areas of neural network-and machine learning-based pattern recognition. They are organized in two sections: learning algorithms and architectures, and applications.

Dramatic statements about the promise and peril of artificial intelligence for humanity abound, as an industry of experts claims that AI is poised to reshape nearly every sphere of life. Who profits from the idea that the age of AI has arrived? Why do ideas of AI's transformative potential keep reappearing in social and political discourse, and how are they linked to broader political agendas? Yarden Katz reveals the ideology embedded in the concept of artificial intelligence, contending that it both serves and mimics the logic of white supremacy. He demonstrates that understandings of AI, as a field and a technology, have shifted dramatically over time based on the needs of its funders and the professional class that formed around it. From its origins in the Cold War military-industrial complex through its present-day Silicon Valley proselytizers and eager policy analysts, AI has never been simply a technical project enabled by larger data and better computing. Drawing on intimate familiarity with the field and its practices, Katz instead asks us to see how AI reinforces models of knowledge that assume white male superiority and an imperialist worldview. Only by seeing the connection between artificial intelligence and whiteness can we prioritize alternatives to the conception of AI as an all-encompassing technological force. Bringing together theories of whiteness and race in the humanities and social sciences with a deep understanding of the history and practice of science and computing, *Artificial Whiteness* is an incisive, urgent critique of the uses of AI as a political tool to uphold social hierarchies.

This book gathers a collection of high-quality, peer-reviewed research papers presented at the International Conference on Intelligent Computing, Communication and Devices (ICCD 2018), which address three core dimensions of the intelligent sciences—intelligent computing, intelligent communication, and intelligent devices. Intelligent computing includes areas such as intelligent and distributed computing, intelligent grid and cloud computing, Internet of Things, soft computing and engineering applications, data mining and knowledge discovery, semantic and web technology, hybrid systems, agent computing, bioinformatics, and recommendation systems. In turn, intelligent communication is concerned with communication and network technologies, such as mobile broadband and all-optical networks, which are the key to groundbreaking advances in intelligent communication technologies. It includes communication hardware, software and networked intelligence, mobile technologies, machine-to-machine communication networks, speech and natural language processing, routing techniques and network analytics, wireless ad hoc and sensor networks, communications and information security, signal, image

and video processing, network management, and traffic engineering. Lastly, intelligent devices refer to any equipment, instruments, or machines that have their own computing capability, and covers areas such as embedded systems, radiofrequency identification (RFID), radiofrequency microelectromechanical systems (RF MEMS), very large-scale integration (VLSI) design and electronic devices, analog and mixed-signal integrated circuit (IC) design and testing, microelectromechanical systems (MEMS) and microsystems, solar cells and photonics, nanodevices, single electron and spintronic devices, space electronics, and intelligent robotics.

The term "data" being mostly used, experimented, analyzed, and researched, "Data Science and its Applications" finds relevance in all domains of research studies including science, engineering, technology, management, mathematics, and many more in wide range of applications such as sentiment analysis, social media analytics, signal processing, gene analysis, market analysis, healthcare, bioinformatics etc. The book on Data Science and its applications discusses about data science overview, scientific methods, data processing, extraction of meaningful information from data, and insight for developing the concept from different domains, highlighting mathematical and statistical models, operations research, computer programming, machine learning, data visualization, pattern recognition and others. The book also highlights data science implementation and evaluation of performance in several emerging applications such as information retrieval, cognitive science, healthcare, and computer vision. The data analysis covers the role of data science depicting different types of data such as text, image, biomedical signal etc. useful for a wide range of real time applications. The salient features of the book are: Overview, Challenges and Opportunities in Data Science and Real Time Applications Addressing Big Data Issues Useful Machine Learning Methods Disease Detection and Healthcare Applications utilizing Data Science Concepts and Deep Learning Applications in Stock Market, Education, Behavior Analysis, Image Captioning, Gene Analysis and Scene Text Analysis Data Optimization Due to multidisciplinary applications of data science concepts, the book is intended for wide range of readers that include Data Scientists, Big Data Analysts, Research Scholars engaged in Data Science and Machine Learning applications.

This double volume set (LNAI 10863-10864) constitutes the refereed proceedings of the 25th International Workshop, EG-ICE 2018, held in Lausanne, Switzerland, in June 2018. The 58 papers presented in this volume were carefully reviewed and selected from 108 submissions. The papers are organized in topical sections on Advanced Computing in Engineering, Computer Supported Construction Management, Life-Cycle Design Support, Monitoring and Control Algorithms in Engineering, and BIM and Engineering Ontologies.

The four-volume set LNCS 11056, 110257, 11258, and 11073 constitutes the refereed proceedings of the First Chinese Conference on Pattern Recognition and Computer Vision, PRCV 2018, held in Guangzhou, China, in November 2018. The 179 revised full papers presented were carefully reviewed and selected from 399 submissions. The papers have been organized in the following topical sections: Part I: Biometrics, Computer Vision Application. Part II: Deep Learning. Part III: Document Analysis, Face Recognition and Analysis, Feature Extraction and Selection, Machine Learning. Part IV: Object Detection and Tracking, Performance Evaluation and Database, Remote Sensing.

Create advanced applications with Python and OpenCV, exploring the potential of facial recognition, machine learning, deep learning, web computing and augmented reality. Key Features Develop your computer vision skills by mastering algorithms in Open Source Computer Vision 4 (OpenCV 4) and Python Apply machine learning and deep learning techniques with TensorFlow and Keras Discover the modern design patterns you should avoid when developing efficient computer vision applications Book Description OpenCV is considered to be one of the best open source computer vision and machine learning software libraries. It helps developers build complete projects in relation to image processing, motion detection, or image segmentation, among many others. OpenCV for Python enables you to run computer vision algorithms smoothly in real time, combining the best of the OpenCV C++ API and the Python language. In this book, you'll get started by setting up OpenCV and delving into the key concepts of computer vision. You'll then proceed to study more advanced concepts and discover the full potential of OpenCV. The book will also introduce you to the creation of advanced applications using Python and OpenCV, enabling you to develop applications that include facial recognition, target tracking, or augmented reality. Next, you'll learn machine learning techniques and concepts, understand how to apply them in real-world examples, and also explore their benefits, including real-time data production and faster data processing. You'll also discover how to translate the functionality provided by OpenCV into optimized application code projects using Python bindings. Toward the concluding chapters, you'll explore the application of artificial intelligence and deep learning techniques using the popular Python libraries TensorFlow, and Keras. By the end of this book, you'll be able to develop advanced computer vision applications to meet your customers' demands. What you will learn Handle files and images, and explore various image processing techniques Explore image transformations, including translation, resizing, and cropping Gain insights into building histograms Brush up on contour detection, filtering, and drawing Work with Augmented Reality to build marker-based and markerless applications Work with the main machine learning algorithms in OpenCV Explore the deep learning Python libraries and OpenCV deep learning capabilities Create computer vision and deep learning web applications Who this book is for This book is designed for computer vision developers, engineers, and researchers who want to develop modern computer vision applications. Basic experience of OpenCV and Python programming is a must.

This book proposes neural networks algorithms and advanced machine learning techniques for processing nonlinear dynamic signals such as audio, speech, financial signals, feedback loops, waveform generation, filtering, equalization, signals from arrays of sensors, and perturbations in the automatic control of industrial production processes. It also discusses the drastic changes in financial, economic, and work processes that are currently being experienced by the computational and engineering sciences community. Addresses key aspects, such as the integration of neural algorithms and procedures for the recognition, the analysis and detection of dynamic complex structures and the implementation of systems for discovering patterns in data, the book highlights the commonalities between computational intelligence (CI) and information and communications technologies (ICT) to promote transversal skills and sophisticated processing techniques. This book is a valuable resource for a. The academic research community b. The ICT market c. PhD students and early stage researchers d. Companies, research institutes e. Representatives from industry and standardization bodies

Recent years have seen a vast development in various methodologies for object detection and feature extraction and recognition, both in theory and in practice. When processing images, videos, or other types of multimedia, one needs efficient solutions to perform fast and reliable processing. Computational intelligence is used for medical screening where the detection of disease symptoms is carried out, in prevention monitoring to detect suspicious behavior, in agriculture systems to help with growing plants and animal breeding, in transportation systems for the control of incoming and outgoing transportation, for unmanned vehicles to detect obstacles and avoid collisions, in optics and materials for the detection of surface damage, etc. In many cases, we use developed techniques which help us to recognize some special features. In the context of this innovative research on computational intelligence, the Special Issue "Advanced Computational Intelligence for Object Detection, Feature Extraction and Recognition in Smart Sensor Environments" present an excellent opportunity for the dissemination of recent results and achievements for further innovations and development. It is my pleasure to present this collection of excellent contributions to the research community. - Prof. Marcin Woźniak, Silesian University of Technology, Poland –

This book constitutes the thoroughly refereed post-conference proceedings of the 18th International Conference on Information Security Applications, WISA 2017, held on Jeju Island, Korea, in August 2017. The 12 revised full papers and 15 short papers presented in this volume were carefully reviewed and selected from 53 submissions. The papers are organized in topical sections such as attack and

defense; theory in security; web security and emerging technologies; systems security and authentication; crypto protocols; and attack detections and legal aspects.

This 2-volume set constitutes the refereed proceedings of the 9th Iberian Conference on Pattern Recognition and Image Analysis, IbPRIA 2019, held in Madrid, Spain, in July 2019. The 99 papers in these volumes were carefully reviewed and selected from 137 submissions. They are organized in topical sections named: Part I: best ranked papers; machine learning; pattern recognition; image processing and representation. Part II: biometrics; handwriting and document analysis; other applications.

I-Media-Cities. Innovative e-Environment for Research on Cities and the Media presents the results of an innovative project undertaken by the film archives of Athens, Barcelona, Bologna, Brussels, Copenhagen, Stockholm, Frankfurt, Turin and Vienna, in conjunction with several leading research centres and technological innovators. Together they have developed a digital platform for viewing a wide range of images and motion pictures. More than 1,000 films dating from 1890 to 1989 have been incorporated in the platform, expressly selected to give the project coherence and meaning. Each city is represented both singularly and generally, revealing similarities and differences between them. The producers, actors, directors, places, people, and historical, social and political events are listed to facilitate analysis in areas such as sociology, urban anthropology, town planning, and architectural history, among others. The objective is to propose a new way of disseminating film collections, bringing them to a wider public, and stimulating research into cities in the fields of the humanities.

This two volume set (CCIS 1257 and 1258) constitutes the refereed proceedings of the 6th International Conference of Pioneering Computer Scientists, Engineers and Educators, ICPCSEE 2020 held in Taiyuan, China, in September 2020. The 98 papers presented in these two volumes were carefully reviewed and selected from 392 submissions. The papers are organized in topical sections: database, machine learning, network, graphic images, system, natural language processing, security, algorithm, application, and education. The chapter “Highly Parallel SPARQL Engine for RDF” is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

The rapid growth of the world population has resulted in an exponential expansion of both urban and agricultural areas. Identifying and managing such earthly changes in an automatic way poses a worth-addressing challenge, in which remote sensing technology can have a fundamental role to answer—at least partially—such demands. The recent advent of cutting-edge processing facilities has fostered the adoption of deep learning architectures owing to their generalization capabilities. In this respect, it seems evident that the pace of deep learning in the remote sensing domain remains somewhat lagging behind that of its computer vision counterpart. This is due to the scarce availability of ground truth information in comparison with other computer vision domains. In this book, we aim at advancing the state of the art in linking deep learning methodologies with remote sensing image processing by collecting 20 contributions from different worldwide scientists and laboratories. The book presents a wide range of methodological advancements in the deep learning field that come with different applications in the remote sensing landscape such as wildfire and postdisaster damage detection, urban forest mapping, vine disease and pavement marking detection, desert road mapping, road and building outline extraction, vehicle and vessel detection, water identification, and text-to-image matching.

TensorFlow Deep Learning Projects 10 real-world projects on computer vision, machine translation, chatbots, and reinforcement learning Packt Publishing Ltd

Gain expertise in advanced deep learning domains such as neural networks, meta-learning, graph neural networks, and memory augmented neural networks using the Python ecosystem Key Features Get to grips with building faster and more robust deep learning architectures Investigate and train convolutional neural network (CNN) models with GPU-accelerated libraries such as TensorFlow and PyTorch Apply deep neural networks (DNNs) to computer vision problems, NLP, and GANs Book Description In order to build robust deep learning systems, you'll need to understand everything from how neural networks work to training CNN models. In this book, you'll discover newly developed deep learning models, methodologies used in the domain, and their implementation based on areas of application. You'll start by understanding the building blocks and the math behind neural networks, and then move on to CNNs and their advanced applications in computer vision. You'll also learn to apply the most popular CNN architectures in object detection and image segmentation. Further on, you'll focus on variational autoencoders and GANs. You'll then use neural networks to extract sophisticated vector representations of words, before going on to cover various types of recurrent networks, such as LSTM and GRU. You'll even explore the attention mechanism to process sequential data without the help of recurrent neural networks (RNNs). Later, you'll use graph neural networks for processing structured data, along with covering meta-learning, which allows you to train neural networks with fewer training samples. Finally, you'll understand how to apply deep learning to autonomous vehicles. By the end of this book, you'll have mastered key deep learning concepts and the different applications of deep learning models in the real world. What you will learn Cover advanced and state-of-the-art neural network architectures Understand the theory and math behind neural networks Train DNNs and apply them to modern deep learning problems Use CNNs for object detection and image segmentation Implement generative adversarial networks (GANs) and variational autoencoders to generate new images Solve natural language processing (NLP) tasks, such as machine translation, using sequence-to-sequence models Understand DL techniques, such as meta-learning and graph neural networks Who this book is for This book is for data scientists, deep learning engineers and researchers, and AI developers who want to further their knowledge of deep learning and build innovative and unique deep learning projects. Anyone looking to get to grips with advanced use cases and methodologies adopted in the deep learning domain using real-world examples will also find this book useful. Basic understanding of deep learning concepts and working knowledge of the Python programming language is assumed.

How does the computer learn to understand what it sees? Deep Learning for Vision Systems answers that by applying deep learning to computer vision. Using only high school algebra, this book illuminates the concepts behind visual intuition. You'll understand how to use deep learning architectures to build vision system applications for image generation and facial recognition. Summary Computer vision is central to many leading-edge innovations, including self-driving cars, drones, augmented reality, facial recognition, and much, much more. Amazing new computer vision applications are developed every day, thanks to rapid advances in AI and deep learning (DL). Deep Learning for Vision Systems teaches you the concepts and tools for building intelligent, scalable computer vision systems that can identify and react to objects in images, videos, and real life. With author Mohamed Elgendy's expert instruction and illustration of real-world projects, you'll finally grok state-of-the-art deep learning techniques, so you can build, contribute to, and lead in the exciting realm of computer vision! Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the technology How much has computer vision advanced? One ride in a Tesla is the only answer you'll need. Deep learning techniques have led to exciting breakthroughs in facial recognition, interactive simulations, and medical imaging, but nothing beats seeing a car respond to real-world stimuli while speeding down the highway. About the book How does the computer learn to understand what it sees? Deep Learning for Vision Systems answers that by applying deep learning to computer vision. Using only high school algebra, this book illuminates the concepts behind visual intuition. You'll understand how to use deep learning architectures to build vision system applications for image generation and facial recognition. What's inside Image classification and object detection Advanced deep learning architectures Transfer learning and generative adversarial networks DeepDream and neural style transfer Visual embeddings and image search About the reader For intermediate Python programmers. About the author Mohamed Elgendy

is the VP of Engineering at Rakuten. A seasoned AI expert, he has previously built and managed AI products at Amazon and Twilio. Table of Contents PART 1 - DEEP LEARNING FOUNDATION 1 Welcome to computer vision 2 Deep learning and neural networks 3 Convolutional neural networks 4 Structuring DL projects and hyperparameter tuning PART 2 - IMAGE CLASSIFICATION AND DETECTION 5 Advanced CNN architectures 6 Transfer learning 7 Object detection with R-CNN, SSD, and YOLO PART 3 - GENERATIVE MODELS AND VISUAL EMBEDDINGS 8 Generative adversarial networks (GANs) 9 DeepDream and neural style transfer 10 Visual embeddings

The six volume set LNCS 11361-11366 constitutes the proceedings of the 14th Asian Conference on Computer Vision, ACCV 2018, held in Perth, Australia, in December 2018. The total of 274 contributions was carefully reviewed and selected from 979 submissions during two rounds of reviewing and improvement. The papers focus on motion and tracking, segmentation and grouping, image-based modeling, deep learning, object recognition object recognition, object detection and categorization, vision and language, video analysis and event recognition, face and gesture analysis, statistical methods and learning, performance evaluation, medical image analysis, document analysis, optimization methods, RGBD and depth camera processing, robotic vision, applications of computer vision.

This book constitutes the thoroughly refereed proceedings of the Second International Conference on Machine Learning for Networking, MLN 2019, held in Paris, France, in December 2019. The 26 revised full papers included in the volume were carefully reviewed and selected from 75 submissions. They present and discuss new trends in deep and reinforcement learning, pattern recognition and classification for networks, machine learning for network slicing optimization, 5G system, user behavior prediction, multimedia, IoT, security and protection, optimization and new innovative machine learning methods, performance analysis of machine learning algorithms, experimental evaluations of machine learning, data mining in heterogeneous networks, distributed and decentralized machine learning algorithms, intelligent cloud-support communications, resource allocation, energy-aware communications, software defined networks, cooperative networks, positioning and navigation systems, wireless communications, wireless sensor networks, underwater sensor networks.

This book will provide an introduction to recent advances in theory, algorithms and application of Boolean map distance for image processing. Applications include modeling what humans find salient or prominent in an image, and then using this for guiding smart image cropping, selective image filtering, image segmentation, image matting, etc. In this book, the authors present methods for both traditional and emerging saliency computation tasks, ranging from classical low-level tasks like pixel-level saliency detection to object-level tasks such as subitizing and salient object detection. For low-level tasks, the authors focus on pixel-level image processing approaches based on efficient distance transform. For object-level tasks, the authors propose data-driven methods using deep convolutional neural networks. The book includes both empirical and theoretical studies, together with implementation details of the proposed methods. Below are the key features for different types of readers. For computer vision and image processing practitioners: Efficient algorithms based on image distance transforms for two pixel-level saliency tasks; Promising deep learning techniques for two novel object-level saliency tasks; Deep neural network model pre-training with synthetic data; Thorough deep model analysis including useful visualization techniques and generalization tests; Fully reproducible with code, models and datasets available. For researchers interested in the intersection between digital topological theories and computer vision problems: Summary of theoretic findings and analysis of Boolean map distance; Theoretic algorithmic analysis; Applications in salient object detection and eye fixation prediction. Students majoring in image processing, machine learning and computer vision: This book provides up-to-date supplementary reading material for course topics like connectivity based image processing, deep learning for image processing; Some easy-to-implement algorithms for course projects with data provided (as links in the book); Hands-on programming exercises in digital topology and deep learning.

The sixteen-volume set comprising the LNCS volumes 11205-11220 constitutes the refereed proceedings of the 15th European Conference on Computer Vision, ECCV 2018, held in Munich, Germany, in September 2018. The 776 revised papers presented were carefully reviewed and selected from 2439 submissions. The papers are organized in topical sections on learning for vision; computational photography; human analysis; human sensing; stereo and reconstruction; optimization; matching and recognition; video attention; and poster sessions.

This book constitutes the refereed post-conference proceedings of the 6th International Symposium on Computational Modeling of Objects Presented in Images, CompIMAGE 2018, held in Cracow, Poland, in July 2018. The 16 revised full papers presented in this book were carefully reviewed and selected from 30 submissions. The papers cover the following topics: digital geometry; digital tomography; and methods and applications.

The eight-volume set comprising LNCS volumes 9905-9912 constitutes the refereed proceedings of the 14th European Conference on Computer Vision, ECCV 2016, held in Amsterdam, The Netherlands, in October 2016. The 415 revised papers presented were carefully reviewed and selected from 1480 submissions. The papers cover all aspects of computer vision and pattern recognition such as 3D computer vision; computational photography, sensing and display; face and gesture; low-level vision and image processing; motion and tracking; optimization methods; physics-based vision, photometry and shape-from-X; recognition: detection, categorization, indexing, matching; segmentation, grouping and shape representation; statistical methods and learning; video: events, activities and surveillance; applications. They are organized in topical sections on detection, recognition and retrieval; scene understanding; optimization; image and video processing; learning; action, activity and tracking; 3D; and 9 poster sessions.

Visual Perception and Control of Underwater Robots covers theories and applications from aquatic visual perception and underwater robotics. Within the framework of visual perception for underwater operations, image restoration, binocular measurement, and object detection are addressed. More specifically, the book includes adversarial critic learning for visual restoration, NSGA-II-based calibration for binocular measurement, prior knowledge refinement for object detection, analysis of temporal detection performance, as well as the effect of the aquatic data domain on object detection. With the aid of visual perception technologies, two up-to-date underwater robot systems are demonstrated. The first system focuses on underwater robotic operation for the task of object collection in the sea. The second is an untethered biomimetic robotic fish with a camera stabilizer, its control methods based on visual tracking. The authors provide a self-contained and comprehensive guide to understand underwater visual perception and control. Bridging the gap between theory and practice in underwater vision, the book features implementable algorithms, numerical examples, and tests, where codes are publicly available.

Additionally, the mainstream technologies covered in the book include deep learning, adversarial learning, evolutionary computation, robust control, and underwater bionics. Researchers, senior undergraduate and graduate students, and engineers dealing with underwater visual perception and control will benefit from this work. Focusing on soft computing techniques and application in various engineering research domains, this book presents the state-of-the-art outcomes from ongoing research works being conducted in various research laboratories and educational institutions. The included research works deal with estimated models and give resolutions to complex real-life issues. In the field of evolutionary computing and other domains of applications, such as, data mining and fuzzy logic, soft computing techniques play an incomparable role, where it successfully handles contemporary computationally intensive and complex problems that have usually appeared to be inflexible to traditional mathematical methods. Comprising the concepts and applications of soft computing with other emerging research domains, this book cherishes varieties of modern applications in the fields of natural language processing, image processing, biomedical engineering, communication, control systems, circuit design etc. .

This book is your guide to master deep learning with TensorFlow, with the help of 10 real-world projects. You will train high-performance models in TensorFlow to generate captions for images automatically, predict stocks' performance, create intelligent chatbots, perform large-scale text classification, develop recommendation systems, and more. The 30-volume set, comprising the LNCS books 12346 until 12375, constitutes the refereed proceedings of the 16th European Conference on Computer Vision, ECCV 2020, which was planned to be held in Glasgow, UK, during August 23-28, 2020. The conference was held virtually due to the COVID-19 pandemic. The 1360 revised papers presented in these proceedings were carefully reviewed and selected from a total of 5025 submissions. The papers deal with topics such as computer vision; machine learning; deep neural networks; reinforcement learning; object recognition; image classification; image processing; object detection; semantic segmentation; human pose estimation; 3d reconstruction; stereo vision; computational photography; neural networks; image coding; image reconstruction; object recognition; motion estimation. .

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