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Principles Techniques Applications

The application areas include the recognition of primitive postures in ballet/classical Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability.

Gesture Recognition: Principles, Techniques and ...

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The application areas include the recognition of primitive postures in ballet/classical Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability.

Gesture Recognition - Principles, Techniques and ...

Hand gesture recognition has many applications in the scientific and technological fields, for example: human

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computer interfaces (HCI), active prosthesis, and interaction with virtual ...

Gesture Recognition: Principles, Techniques and Applications

The application areas include the recognition of primitive postures in ballet\classical Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability.

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Gesture recognition : principles, techniques and applications

Gesture Recognition Principles Techniques Applications The application areas include the recognition of primitive postures in ballet/classical Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability.

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Gesture Recognition | SpringerLink
Various tools and techniques relevant to image processing, pattern recognition and computational intelligence, which have necessary applications in gesture

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recognition, are also briefly explained here. The chapter outlines possible applications of gesture recognition. The scope of the book is also appended at the end of the chapter.

Introduction | Springer for Research & Development

The authors in Sungho & Wonyong (2016) came up with two dynamic hand gesture recognition techniques using low complexity recurrent neural network (RNN) algorithms for wearable devices, the first was based on video signal and uses convolutional neural network (CNN) with RNN for classification, and the other

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used accelerometer data and applied RNN for classification.

A systematic review on hand gesture recognition techniques ...

Automated human gesture recognition is receiving significant research interest, with applications ranging from novel acquisition techniques to algorithms, data processing, and classification methodologies. This tutorial presents an overview of the fundamental components and basics of the current 3D optical image acquisition technologies for gesture recognition,

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including the most promising ...

OSA | Fundamentals of automated human gesture recognition ...

12.5.2 Gesture Recognition. Hand gestures are recognized by wearing a data glove with a sensor. Hand shape is also detected by the data glove. Hand position is detected by a sensor attached to the glove. Research on gesture recognition without any kinds of devices is being carried out. For example, using two cameras, the left image of a hand shape and the right image are taken.

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Gesture Recognition - an overview | ScienceDirect Topics

Research papers based on hand gestures have adopted many different techniques, including those based on instrumented sensor technology and computer vision. In other words, the hand sign can be classified under many headings, such as posture and gesture, as well as dynamic and static, or a hybrid of the two.

J. Imaging | Free Full-Text | Hand Gesture Recognition ...

The application areas include the recognition of primitive postures in ballet/classical

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Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability.

Gesture Recognition on Apple Books
Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms. Gestures can originate from any bodily motion or state but commonly originate from the face or hand.

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Current focuses in the field include emotion recognition from face and hand gesture recognition. Users can use simple gestures to control or interact with devices without physically touching them. Many approaches have been made using cameras and comp

Gesture recognition - Wikipedia

Dive into the code for using sensor data for tasks such as gesture detection and voice recognition. Focusing on the neural network of the applications, specifically on training and inference, you will review the code behind "OK Google," "Alexa," and smartphone

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features on Android and Apple .

Applications of TinyML | edX

Abstract In this paper, we propose a hand gesture recognition model based on superficial electromyographic signals. The model responds in approximately 29.38 ms (real time) with a recognition accuracy of 90.7%. We apply a sliding window approach using a main window and a sub-window.

Real-Time Hand Gesture Recognition Based on

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Abstract: With the advancement of wireless

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technologies and sensing methodologies, many studies have shown the success of re-using wireless signals (e.g., WiFi) to sense human activities and thereby realize a set of emerging applications, ranging from intrusion detection, daily activity recognition, gesture recognition to vital signs monitoring and user identification involving even finer-grained motion sensing.

Wireless Sensing for Human Activity: A Survey
- IEEE ...

Dive into the code for using sensor data for tasks such as gesture detection and voice

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recognition. Focusing on the neural network of the applications, specifically on training and inference, you will review the code behind “OK Google,” “Alexa,” and smartphone features on Android and Apple .

Applications of TinyML | Harvard University Abstract. In recent years, to develop more spontaneous and instant interfaces between a system and users, technology has evolved toward designing efficient and simple gesture recognition (GR) techniques. As a tool for acquiring human motion, a tactile sensor system, which converts the human touch signal

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into a single datum and executes a command by translating a bundle of data into a text language or triggering a preset sequence as a haptic motion, has been developed.

This book presents a thorough analysis of gestural data extracted from raw images and/or range data with an aim to recognize the gestures conveyed by the data. It covers image morphological analysis, type-2 fuzzy logic, neural networks and evolutionary computation for classification of gestural

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data. The application areas include the recognition of primitive postures in ballet/classical Indian dances, detection of pathological disorders from gestural data of elderly people, controlling motion of cars in gesture-driven gaming and gesture-commanded robot control for people with neuro-motor disability. The book is unique in terms of its content, originality and lucid writing style. Primarily intended for graduate students and researchers in the field of electrical/computer engineering, the book will prove equally useful to computer hobbyists and professionals engaged in

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building firmware for human-computer interfaces. A prerequisite of high school level mathematics is sufficient to understand most of the chapters in the book. A basic background in image processing, although not mandatory, would be an added advantage for certain sections.

"This book highlights various aspects of the state-of-art practices and new directions of Hand Gesture Recognition (HGR) research offerings"--

Time-of-flight (TOF) cameras provide a depth

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value at each pixel, from which the 3D structure of the scene can be estimated. This new type of active sensor makes it possible to go beyond traditional 2D image processing, directly to depth-based and 3D scene processing. Many computer vision and graphics applications can benefit from TOF data, including 3D reconstruction, activity and gesture recognition, motion capture and face detection. It is already possible to use multiple TOF cameras, in order to increase the scene coverage, and to combine the depth data with images from several colour cameras. Mixed TOF and colour systems can be used for

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computational photography, including full 3D scene modelling, as well as for illumination and depth-of-field manipulations. This work is a technical introduction to TOF sensors, from architectural and design issues, to selected image processing and computer vision methods.

This book constitutes the refereed proceedings of the Third International Conference on Computer Vision/Computer Graphics collaboration techniques involving image analysis/synthesis approaches MIRAGE 2007, held in Rocquencourt, France, in March

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2007. The 55 revised full cover foundational, methodological, and application issues.

This thesis focuses on bare hand gesture recognition by proposing a new architecture to solve the problem of real-time vision-based hand detection, tracking, and gesture recognition for interaction with an application via hand gestures. The first stage of our system allows detecting and tracking a bare hand in a cluttered background using face subtraction, skin detection and contour comparison. The second stage allows recognizing hand gestures using

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bag-of-features and multi-class Support Vector Machine (SVM) algorithms. Finally, a grammar has been developed to generate gesture commands for application control. Our hand gesture recognition system consists of two steps: offline training and online testing. In the training stage, after extracting the keypoints for every training image using the Scale Invariance Feature Transform (SIFT), a vector quantization technique will map keypoints from every training image into a unified dimensional histogram vector (bag-of-words) after K-means clustering. This histogram is treated as an

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input vector for a multi-class SVM to build the classifier. In the testing stage, for every frame captured from a webcam, the hand is detected using my algorithm. Then, the keypoints are extracted for every small image that contains the detected hand posture and fed into the cluster model to map them into a bag-of-words vector, which is fed into the multi-class SVM classifier to recognize the hand gesture. Another hand gesture recognition system was proposed using Principle Components Analysis (PCA). The most eigenvectors and weights of training images are determined. In the testing stage, the

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hand posture is detected for every frame using my algorithm. Then, the small image that contains the detected hand is projected onto the most eigenvectors of training images to form its test weights. Finally, the minimum Euclidean distance is determined among the test weights and the training weights of each training image to recognize the hand gesture. Two application of gesture-based interaction with a 3D gaming virtual environment were implemented. The exertion videogame makes use of a stationary bicycle as one of the main inputs for game playing. The user can control and direct left-right

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movement and shooting actions in the game by a set of hand gesture commands, while in the second game, the user can control and direct a helicopter over the city by a set of hand gesture commands.

Consumer electronics (CE) devices, providing multimedia entertainment and enabling communication, have become ubiquitous in daily life. However, consumer interaction with such equipment currently requires the use of devices such as remote controls and keyboards, which are often inconvenient, ambiguous and non-interactive. An important

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challenge for the modern CE industry is the design of user interfaces for CE products that enable interactions which are natural, intuitive and fun. As many CE products are supplied with microphones and cameras, the exploitation of both audio and visual information for interactive multimedia is a growing field of research. Collecting together contributions from an international selection of experts, including leading researchers in industry, this unique text presents the latest advances in applications of multimedia interaction and user interfaces for consumer electronics. Covering issues of

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both multimedia content analysis and human-machine interaction, the book examines a wide range of techniques from computer vision, machine learning, audio and speech processing, communications, artificial intelligence and media technology. Topics and features: introduces novel computationally efficient algorithms to extract semantically meaningful audio-visual events; investigates modality allocation in intelligent multimodal presentation systems, taking into account the cognitive impacts of modality on human information processing; provides an overview on gesture control technologies for CE;

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presents systems for natural human-computer interaction, virtual content insertion, and human action retrieval; examines techniques for 3D face pose estimation, physical activity recognition, and video summary quality evaluation; discusses the features that characterize the new generation of CE and examines how web services can be integrated with CE products for improved user experience. This book is an essential resource for researchers and practitioners from both academia and industry working in areas of multimedia analysis, human-computer interaction and interactive user interfaces.

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Graduate students studying computer vision, pattern recognition and multimedia will also find this a useful reference.

This volume constitutes the third of three parts of the refereed proceedings of the First International Conference on Computer Science and Information Technology, CCSIT 2010, held in Bangalore, India, in January 2011. The 46 revised full papers presented in this volume were carefully reviewed and selected. The papers are organized in topical sections on soft computing, such as AI, Neural Networks, Fuzzy Systems, etc.;

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distributed and parallel systems and algorithms; security and information assurance; ad hoc and ubiquitous computing; wireless ad hoc networks and sensor networks.

There is an important overlap between science and design. The most significant technological developments cannot be produced without designers to conceptualize them. By the same token, designers cannot do their job properly without a good understanding of the scientific or technical principles that are being developed within the product. Science

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and Technology reveals the significance of the essential yet understudied intersection of design and scientific academic research and encompasses technological development, scientific principles, and the point of overlap between science and design.

Encourages readers to comprehend the role of science in all facets of design Discusses the fundamental involvement of science required for engineering and design irrespective of whether the design is from an individual, business, or social perspective Covers the ontology, characteristics, and application of science in major fields of design education

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and design research, with an introduction of emerging practices transforming sustainable growth through applied behavioral models Depicts the art and science of material selection using new design techniques and technology advances like augmented reality, AI, and decision-support toolkits This unique book will benefit scientists, technologists, and engineers, as well as designers and professionals, across a variety of industries dealing with scientific analysis of design research methodology, design lifecycle, and problem solving.

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This three-volume set LNCS 11139–11141 constitutes the refereed proceedings of the 27th International Conference on Artificial Neural Networks, ICANN 2018, held in Rhodes, Greece, in October 2018. The papers presented in these volumes was carefully reviewed and selected from total of 360 submissions. They are related to the following thematic topics: AI and Bioinformatics, Bayesian and Echo State Networks, Brain Inspired Computing, Chaotic Complex Models, Clustering, Mining, Exploratory Analysis, Coding Architectures, Complex Firing Patterns, Convolutional Neural Networks, Deep Learning (DL), DL in Real Time

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Systems, DL and Big Data Analytics, DL and Big Data, DL and Forensics, DL and Cybersecurity, DL and Social Networks, Evolving Systems - Optimization, Extreme Learning Machines, From Neurons to Neuromorphism, From Sensation to Perception, From Single Neurons to Networks, Fuzzy Modeling, Hierarchical ANN, Inference and Recognition, Information and Optimization, Interacting with The Brain, Machine Learning (ML), ML for Bio Medical systems, ML and Video-Image Processing, ML and Forensics, ML and Cybersecurity, ML and Social Media, ML in Engineering, Movement and Motion Detection,

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Multilayer Perceptrons and Kernel Networks,
Natural Language, Object and Face
Recognition, Recurrent Neural Networks and
Reservoir Computing, Reinforcement Learning,
Reservoir Computing, Self-Organizing Maps,
Spiking Dynamics/Spiking ANN, Support Vector
Machines, Swarm Intelligence and Decision-
Making, Text Mining, Theoretical Neural
Computation, Time Series and Forecasting,
Training and Learning.

Nowadays, the technological advances allow
developing many applications on different
fields. In this book Motion Tracking and

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Gesture Recognition, two important fields are shown. Motion tracking is observed by a hand-tracking system for surgical training, an approach based on detection of dangerous situation by the prediction of moving objects, an approach based on human motion detection results and preliminary environmental information to build a long-term context model to describe and predict human activities, and a review about multispeaker tracking on different modalities. On the other hand, gesture recognition is shown by a gait recognition approach using Kinect sensor, a study of

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different methodologies for studying gesture recognition on depth images, and a review about human action recognition and the details about a particular technique based on a sensor of visible range and with depth information.

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