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Finger Detection and Gesture Recognition in Tabletop Display System Jul 24 2023

Deep Learning for Biometrics Jan 06 2022 This timely text/reference presents a broad overview of advanced deep learning architectures for learning effective feature representation for perceptual and biometrics-related tasks. The text offers a showcase of cutting-edge research on the use of convolutional neural networks (CNN) in face, iris, fingerprint, and vascular biometric systems, in addition to surveillance systems that use soft biometrics. Issues of biometrics security are also examined. Topics and features: addresses the application of deep learning to enhance the performance of biometrics identification across a wide range of different biometrics modalities; revisits deep learning for face biometrics, offering insights from neuroimaging, and provides comparison with popular CNN-based architectures for face recognition; examines deep learning for state-of-the-art latent fingerprint and finger-vein recognition, as well as iris recognition; discusses deep learning for soft biometrics, including approaches for gesture-based identification, gender classification, and tattoo recognition; investigates deep learning for biometrics security, covering biometrics template protection methods, and liveness detection to protect against fake biometrics samples; presents contributions from a global selection of pre-eminent experts in the field representing academia, industry and government laboratories. Providing both an accessible introduction to the practical applications of deep learning in biometrics, and a comprehensive coverage of the entire spectrum of biometric modalities, this authoritative volume will be of great interest to all researchers, practitioners and students involved in related areas of computer vision, pattern recognition and machine learning.

Handbook of Fingerprint Recognition Oct 15 2022 A major new professional reference work on fingerprint security systems and technology from leading international researchers in the field. Handbook provides authoritative and comprehensive coverage of all major topics, concepts, and methods for fingerprint security systems. This unique reference work is an absolutely essential resource for all biometric security professionals, researchers, and systems administrators.

Real-time Immersive Human-computer Interaction Based on Tracking and Recognition of Dynamic Hand Gestures Jun 11 2022 With fast developing and ever growing use of computer based technologies, human-computer interaction (HCI) plays an increasingly pivotal role. In virtual reality (VR), HCI technologies provide not only a better understanding of three-dimensional shapes and spaces, but also sensory immersion and physical interaction. With the hand based HCI being a key HCI modality for object manipulation and gesture based communication, challenges are presented to provide users a natural, intuitive, effortless, precise, and real-time method for HCI based on dynamic hand gestures, due to the complexity of hand postures formed by multiple joints with high degrees-of-freedom, the speed of hand movements with highly variable trajectories and rapid direction changes, and the precision required for interaction between hands and objects in the virtual world. Presented in this thesis is the design and development of a novel real-time HCI system based on a unique combination of a pair of data gloves based on fibre-optic curvature sensors to acquire finger joint angles, a hybrid tracking system based on inertia and ultrasound to capture hand position and orientation, and a stereoscopic display system to provide an immersive visual feedback. The potential and effectiveness of the proposed system is demonstrated through a number of applications, namely, hand gesture based virtual object manipulation and visualisation, hand gesture based direct sign writing, and hand gesture based finger spelling. For virtual object manipulation and visualisation, the system is shown to allow a user to select, translate, rotate, scale, release and visualise virtual objects (presented using graphics and volume data) in three-dimensional space using natural hand gestures in real-time. For direct sign writing, the system is shown to be able to display immediately the corresponding SignWriting symbols signed by a user using three different signing sequences and a range of complex hand gestures, which consist of various combinations of hand postures (with each finger open, half-bent, closed, adduction and abduction), eight hand orientations in horizontal/vertical plans, three palm facing directions, and various hand movements (which can have eight directions in horizontal/vertical plans, and can be repetitive, straight/curve, clockwise/anti-clockwise). The development includes a special visual interface to give not only a stereoscopic view of hand gestures and movements, but also a structured visual feedback for each stage of the signing sequence. An excellent basis is therefore formed to develop a full HCI based on all human gestures by integrating the proposed system with facial expression and body posture recognition methods. Furthermore, for finger spelling, the system is shown to be able to recognise five vowels signed by two hands using the British Sign Language in real-time.

Handbook of Biometric Anti-Spoofing Aug 25 2023 This authoritative and comprehensive handbook is the definitive work on the current state of the art of Biometric Presentation Attack Detection (PAD) - also known as Biometric Anti-Spoofing. Building on the success of the previous, pioneering edition, this thoroughly updated second edition has been considerably expanded to provide even greater coverage of PAD methods, spanning biometrics systems based on face, fingerprint, iris, voice, vein, and signature recognition. New material is also included on major PAD competitions, important databases for research, and on the impact of recent international legislation. Valuable insights are supplied by a selection of leading experts in the field, complete with results from reproducible research, supported by source code and further information available at an associated website. Topics and features: reviews the latest developments in PAD for fingerprint biometrics, covering optical coherence tomography (OCT) technology, and issues of interoperability; examines methods for PAD in iris recognition systems, and the application of stimulated pupillary light reflex for this purpose; discusses advancements in PAD methods for face recognition-based biometrics, such as research on 3D facial masks and remote photoplethysmography (rPPG); presents a survey of PAD for automatic speaker recognition (ASV), including the use of convolutional neural networks (CNNs), and an overview of relevant databases; describes the results yielded by key competitions on fingerprint liveness detection, iris liveness detection, and software-based face anti-spoofing; provides analyses of PAD in fingervein recognition, online handwritten signature verification, and in biometric technologies on mobile devices includes coverage of international standards, the E.U. PSDII and GDPR directives, and on different perspectives on presentation attack evaluation. This text/reference is essential reading for anyone involved in biometric identity verification, be they students, researchers, practitioners, engineers, or technology consultants. Those new to the field will also benefit from a number of introductory chapters, outlining the basics for the most important biometrics.

Finger Print Magazine Nov 16 2022

Formal to Practical Security Jan 26 2021 The security issues set by the global digitization of our society have had, and will continue to have, a crucial impact at all levels of our social organization, including, just to mention a few, privacy, economics, environmental policies, national sovereignty, medical environments. The importance of the collaborations in the various fields of computer science to solve these problems linked with other sciences and techniques is clearly recognized. Moreover, the collaborative work to bridge the formal theory and practical applications becomes increasingly important and useful. In this context, and since France and Japan have strong academic and industrial backgrounds in the theory and practice of the scientific challenges set by this digitized world, in 2005 we started a formal French-Japanese collaboration and workshop series on computer security. The three first editions of these French-Japanese Computer Security workshops in Tokyo, September 5-7, 2005 and December 4-5, 2006 and in Nancy, March 13-14, 2008 were very fruitful and were accompanied by several important research exchanges between France and Japan. Because of this success, we launched a call for papers dedicated to computer security from its foundation to practice, with the goal of gathering together national versions of the rich set of papers and ideas presented at the workshops, yet opening the call to everyone interested in contributing in this context. This volume presents the selection of papers arising from this call and this international collaboration.

A Smartwatch Based Gesture Recognition System May 10 2022 Smartwatch is becoming one of the most popular wearable device with many major smartphone manufacturers such as Samsung and Apple releasing their smartwatches recently. Apart from the fitness applications, the smartwatch provides a rich user interface that has enabled many applications like instant messaging and email. Since the smartwatch is worn on the

wrist, it introduces a unique opportunity to understand user's hand and arm movements using its accelerometer and gyroscope sensors. Although user's arm gestures are likely to be identified with ease using the smartwatch sensors, it is not clear how much of user's hand and finger gestures can be recognized. In this paper, we show that motion energy measured at the smartwatch is sufficient to uniquely identify user's hand and finger gestures. We identify essential features of accelerometer and gyroscope that reflect the movements of tendons (passing through the wrist) when performing a finger or hand gesture. With these features, we build a classifier that can uniquely identify 37 (13 finger, 14 hand and 10 arm) gestures with an accuracy of 98%. We further extend our gesture recognition to identify the characters written by the user with her index finger on a surface, and show that such finger-writing can also be accurately recognized with 95% accuracy. All these data are collected by using bluetooth during user doing the gestures. And the classification algorithms are implemented in an Android app so that the result can be shown in real time. Our presented results will enable many novel applications like remote control and finger-writing-based input to devices using smartwatch.

New Trends in Image Analysis and Processing - ICIAP 2019 Sep 21 2020 This book constitutes the refereed proceedings of five workshops and an industrial session held at the 20th International Conference on Image Analysis and Processing, ICIAP 2019, in Trento, Italy, in September 2019: Second International Workshop on Recent Advances in Digital Security: Biometrics and Forensics (BioFor 2019); First International Workshop on Pattern Recognition for Cultural Heritage (PatReCH 2019); First International Workshop eHealth in the Big Data and Deep Learning Era (e-BADLE 2019); International Workshop on Deep Understanding Shopper Behaviors and Interactions in Intelligent Retail Environments (DEEPRETAIL 2019); Industrial Session.

Advanced Biometric Technologies Feb 07 2022 The methods for human identity authentication based on biometrics - the physiological and behavioural characteristics of a person have been evolving continuously and seen significant improvement in performance and robustness over the last few years. However, most of the systems reported perform well in controlled operating scenarios, and their performance deteriorates significantly under real world operating conditions, and far from satisfactory in terms of robustness and accuracy, vulnerability to fraud and forgery, and use of acceptable and appropriate authentication protocols. To address some challenges, and the requirements of new and emerging applications, and for seamless diffusion of biometrics in society, there is a need for development of novel paradigms and protocols, and improved algorithms and authentication techniques. This book volume on "Advanced Biometric Technologies" is dedicated to the work being pursued by researchers around the world in this area, and includes some of the recent findings and their applications to address the challenges and emerging requirements for biometric based identity authentication systems. The book consists of 18 Chapters and is divided into four sections namely novel approaches, advanced algorithms, emerging applications and the multimodal fusion. The book was reviewed by editors Dr. Girija Chetty and Dr. Jucheng Yang We deeply appreciate the efforts of our guest editors: Dr. Norman Poh, Dr. Loris Nanni, Dr. Jianjiang Feng, Dr. Dongsun Park and Dr. Sook Yoon, as well as a number of anonymous reviewers.

Advanced Studies in Biometrics Jun 18 2020 Automatic person authentication, the identification and verification of an individual as such, has increasingly been acknowledged as a significant aspect of various security applications. Various recognition and identification systems have been based on biometrics utilizing biometric features such as fingerprint, face, retina scans, iris patterns, hand geometry, DNA traces, gait, and others. This book originates from an international summer school on biometrics, held in Alghero, Italy, in June 2003. The seven revised tutorial lectures by leading researchers introduce the reader to biometrics-based person authentication, fingerprint recognition, gait recognition, various aspects of face recognition and face detection, topologies for biometric recognition, and hand detection. Also included are the four best selected student papers, all dealing with face recognition.

How to Take Finger Prints Mar 28 2021

Hand Gesture Sequence Recognition for Touchless Computer Interfaces May 22 2023 Human computer interface is a challenging field for image processing and pattern recognition. There is a need for precise and robust human computer interfaces for new and innovative products and applications. As we see more and more various types of computer devices that surround us in our daily lives both at work and at home, developing pioneering new ways of communication with computers and robots will lead the next generation of development in human computer interfaces. My objective was to communicate with a computer using a human-machine interface utilizing hand gestures without the use of any electronic aids such as data gloves or any other type of sensing devices. A key feature of this new hand gesture recognition system is that the hand gesture is based on non-motion. A multi-feature criteria structure of region acquisition based on length, width, and depth, the presence of skin color, and a combination of non-motion and time all contribute to determining hand gestures. The combination of RGB and depth images, segmentation of the hand from the image, skin color detection, pattern recognition and pattern classification processes are all automated. The Signer - Vue System will identify hand gestures by recognizing the number of fingers presented from 1, 2, 3, 4, 5, and 0, the zero being represented by a closed fist, using a laptop computer and the Kinect. These hand features will be recognized by this new hand gesture recognition system without the use of additional sensors or data gloves.

The Single Finger Print Identification System Oct 23 2020

Guide to Finger-print Identification Apr 28 2021

Gesture-Based Communication in Human-Computer Interaction Oct 03 2021 Research on the multifaceted aspects of modeling, analysis, and synthesis of - man gesture is receiving growing interest from both the academic and industrial communities. On one hand, recent scientific developments on cognition, on - fect/emotion, on multimodal interfaces, and on multimedia have opened new perspectives on the integration of more sophisticated models of gesture in c- putersystems. On the other hand, the consolidation of new technologies enabling "disappearing" computers and (multimodal) interfaces to be integrated into the natural environments of users are making it realistic to consider tackling the complex meaning and subtleties of human gesture in multimedia systems, - abling a deeper, user-centered, enhanced physical participation and experience in the human-machine interaction process. The research programs supported by the European Commission and s- eral national institutions and governments individuated in recent years strategic ?elds strictly concerned with gesture research. For example, the DG Infor- tion Society of the European Commission (www.cordis.lu/ist) supports several initiatives, such as the "Disappearing Computer" and "Presence" EU-IST FET (Future and Emerging Technologies), the IST program "Interfaces & Enhanced Audio-Visual Services" (see for example the project MEGA, Multisensory - pressive Gesture Applications, www.megaproject.org), and the IST strategic - jective "Multimodal Interfaces." Several EC projects and other funded research are represented in the chapters of this book. A wider range of applications can bene?t from advances in research on gesture, from consolidated areas such as surveillance to new or emerging ?elds such as therapy and rehabilitation, home consumer goods, entertainment, and aud- visual, cultural and artistic applications, just to mention only a few of them.

Handbook of Vascular Biometrics Jun 23 2023 This open access handbook provides the first comprehensive overview of biometrics exploiting the shape of human blood vessels for biometric recognition, i.e. vascular biometrics, including finger vein recognition, hand/palm vein recognition, retina recognition, and sclera recognition. After an introductory chapter summarizing the state of the art in and availability of commercial systems and open datasets/open source software, individual chapters focus on specific aspects of one of the biometric modalities, including questions of usability, security, and privacy. The book features contributions from both academia and major industrial manufacturers.

Fingerboard Geography for the String Class Dec 17 2022 String pedagogue Barbara Barber has developed an intonation system which teaches string players the layout of the fingerboard and takes the guesswork out of playing in tune. In String Class Fingerboard Geography, "Finger Marches" establish the 1st finger "home base" note on all four strings. Finger Pattern Exercises -- four basic color-coded patterns for violin, viola, cello and bass -- develop quick, precise action in the left hand without the need for fingerboard tapes. Fingerboard Geography exercises teach note names, distances and intervals for all the notes in 1st position (cellos and basses shift). "No Fear Shifting" has students sailing effortlessly all the way to 8th position on their first day of shifting. Can be used as a daily warm-up routine and complements perfectly any beginning string method. All four instruments are included in one simple book.

Finger-tip Recognition for 3d Mixed Reality Applications Sep 14 2022 Developments in depth sensors like Microsoft Kinect and Leap Motion, have lead to significant improvements in systems for Human Computer Interaction (HCI). One of the several areas benefiting from this advancement is the domain of hand gesture recognition. Gesture recognition is one of the most natural ways to communicate even among humans. As such, developing a system that can accurately recognize hand gestures can be considered as a key milestone in HCI. Among the several ways to recognize hand gestures, detection and tracking of fingertips is one of the most common approach. In this thesis, we develop and implement an algorithm to detect, recognize and generate framework compatible skeletal information for fingertips with reasonable accuracy in real-time using Microsoft Kinect V2, MS Kinect SDK and the HUNA framework. The skeletal information is then mapped to a 3D space in Unity and can be used for various 3D Mixed reality applications. As the algorithm is based on depth data, it is inherently tolerant to changes in illumination and background clutter, which a significant proportion of other approaches struggle against. The algorithm outperforms other contour-based approaches to the problem and provides reliable fingertip detection with a very low false positive rate.

Gesture Recognition System for Hand and Arm Signals Jan 18 2023 This report describes an evaluation of a computer system for recognizing human hand and arm signals as a means of interacting with virtual environments. The system consists of two video cameras, software to track the positions of the gesturer's head and hands, and software to recognize gestures by analyzing the position and movement of the hands. The software was hosted on a standard PC. A set of 14 gestures from Army Field Manual 21-60. Visual Signals, was used to test the system. Ten participants individually performed each gesture twice as discrete trials, with a brief rest period between each trial. The average recognition rate was 68%. The highest average recognition rate for an individual was 86%; the lowest was 57%. Three of the 14 gestures were always recognized correctly, and one was never recognized correctly. While no tracking failures occurred for four of the gestures, tracking failures ranged from 10% to 100% for the other ten. The system's capabilities for untagged optical tracking and recognition of gestures involving certain types of repetitive motion advance the state-of-the-art in computer-based gesture recognition. However, for training applications, substantial improvements are needed in tracking reliability and recognition of gestures involving the depth dimension.

Smart Card Research and Advanced Applications Jun 30 2021 Smart cards or IC cards offer a huge potential for information processing purposes. The portability and processing power of IC cards allow for highly secure conditional access and reliable distributed information processing. IC cards that can perform highly sophisticated cryptographic computations are already available. Their application in the financial services and telecom industries are well known. But the potential of IC cards go well beyond that. Their applicability in mainstream Information Technology and the Networked Economy is limited mainly by our imagination; the information processing power that can be gained by using IC cards remains as yet mostly untapped and is not well understood. Here lies a vast uncovered research area which we are only beginning to assess, and which will have a great impact on the eventual success of the technology. The research challenges range from electrical engineering on the hardware side to tailor-made cryptographic applications on the software side, and their synergies. This volume comprises the proceedings of the Fourth Working Conference on Smart Card Research and Advanced Applications (CARDIS 2000), which was sponsored by the International Federation for Information Processing (IFIP) and held at the Hewlett-Packard Labs in the United Kingdom in September 2000. CARDIS conferences are unique in that they bring together researchers who are active in all aspects of design of IC cards and related devices and environments, thus stimulating synergy between different research communities from both academia and industry. This volume presents the latest advances in smart card research and applications, and will be essential reading for smart card developers, smart card application developers, and computer science researchers involved in computer architecture, computer security, and cryptography.

Challenges and Applications for Hand Gesture Recognition Oct 27 2023 Due to the rise of new applications in electronic appliances and pervasive devices, automated hand gesture recognition (HGR) has become an area of increasing interest. HGR developments have come a long way from the traditional sign language recognition (SLR) systems to depth and wearable sensor-based electronic devices. Where the former are more laboratory-oriented frameworks, the latter are comparatively realistic and practical systems. Based on various gestural traits, such as hand postures, gesture recognition takes different forms. Consequently, different interpretations can be associated with gestures in various application contexts. A considerable amount of research is still needed to introduce more practical gesture recognition systems and associated algorithms. *Challenges and Applications for Hand Gesture Recognition* highlights the state-of-the-art practices of HGR research and discusses key areas such as challenges, opportunities, and future directions. Covering a range of topics such as wearable sensors and hand kinematics, this critical reference source is ideal for researchers, academicians, scholars, industry professionals, engineers, instructors, and students.

Human Behaviour Analysis Using Intelligent Systems May 30 2021 Human-computer interaction (HCI) is one of the most significant areas of computational intelligence. This book focuses on the human emotion analysis aspects of HCI, highlighting innovative methodologies for emotion analysis by machines/computers and their application areas. The methodologies are presented with numerical results to enable researchers to replicate the work. This multidisciplinary book is useful to researchers and academicians, as well as students wanting to pursue a career in computational intelligence. It can also be used as a handbook, reference book, and a textbook for short courses.

2017 4th International Conference on Computer Applications and Information Processing Technology (CAIPT) Nov 04 2021 information technology

Hand Gesture Recognition Using Kinect Apr 21 2023 Hand gesture recognition (HGR) is an important research topic because some situations require silent communication with sign languages. Computational HGR systems assist silent communication, and help people learn a sign language. In this thesis, a novel method for contact-less HGR using Microsoft Kinect for Xbox is described, and a real-time HGR system is implemented with Microsoft Visual Studio 2010. Two different scenarios for HGR are provided: the Popular Gesture with nine gestures, and the Numbers with nine gestures. The system allows the users to select a scenario, and it is able to detect hand gestures made by users, to identify fingers, and to recognize the meanings of gestures, and to display the meanings and pictures on screen. The accuracy of the HGR system is from 84% to 99% with single hand gestures, and from 90% to 100% if both hands perform the same gesture at the same time. Because the depth sensor of Kinect is an infrared camera, the lighting conditions, signers' skin colors and clothing, and background have little impact on the performance of this system. The accuracy and the robustness make this system a versatile component that can be integrated in a variety of applications in daily life.

Identification by Finger-prints, Palms, Soles and Toes Aug 21 2020

Knowledge Science, Engineering and Management Dec 05 2021 This two-volume set of LNAI 11775 and LNAI 11776 constitutes the refereed proceedings of the 12th International Conference on Knowledge Science, Engineering and Management, KSEM 2019, held in Athens, Greece, in August 2019. The 77 revised full papers and 23 short papers presented together with 10 poster papers were carefully reviewed and selected from 240 submissions. The papers of the first volume are organized in the following topical sections: Formal Reasoning and Ontologies; Recommendation Algorithms and Systems; Social Knowledge Analysis and Management ; Data Processing and Data Mining; Image and Video Data Analysis; Deep Learning; Knowledge Graph and Knowledge Management; Machine Learning; and Knowledge Engineering Applications. The papers of the second volume are organized in the following topical sections: Probabilistic Models and Applications; Text Mining and Document Analysis; Knowledge Theories and Models; and Network Knowledge Representation and Learning.

Gesture Recognition 48 Success Secrets - 48 Most Asked Questions on Gesture Recognition - What You Need to Know Jul 12 2022 Gesture recognition' is a subject in computer discipline and lingo technics with the objective of explaining mortal signals through arithmetical calculations. Gestures may stem as of whatever animal motion either state however normally stem as of the face either hand. Current centers in the area contain chord acknowledgment as of the face and hand gesticulation acknowledgment. There has never been a Gesture recognition Guide like this. It contains 48 answers, much more than you can imagine; comprehensive answers and extensive details and references, with insights that have never before been offered in print. Get the information you need--fast! This all-embracing guide offers a thorough view of key knowledge and detailed insight. This Guide introduces what you want to know about Gesture recognition. A quick look inside of some of the subjects covered: Hidden Markov model, Gesture recognition, Macintosh - Hardware, Finger tracking - Other tracking techniques, Augmented reality - Input devices, Human-computer

interaction - Factors of change, Asimo - Abilities, Qualcomm - Acquisitions, Macintosh computer - Hardware, Immersive technology - Interaction, Kinect - Technology, Artificial intelligence systems integration - OpenAIR Protocol, Outline of Apple Inc. - Companies, Affective computing - Body gesture, Samsung Galaxy S II Plus - Software and services, Ben Goertzel - Papers, Wii Remote, Artificial neural network -, Handheld projectors - Hand gesture recognition, PenPoint OS - Awards and innovation, OpenCV - Applications, FingerWorks, Jaron Lanier - Musical performances, Gesture recognition - Algorithms, Google Inc. - Acquisitions and partnerships, Machine learning - Software, Omek Interactive - Company overview, Tablet computer - Modbook, Finger tracking - Tracking without interface, Tablet computer - Features, Artificial intelligence (video games) - Usage, Ultrabook - History, Remote control - Alternatives, and much more...

Finger Placement Correction for Static Gesture Recognition in American Sign Language Apr 09 2022

Gesture-Based Communication in Human-Computer Interaction Feb 24 2021 This book constitutes the thoroughly refereed post-proceedings of the International Gesture Workshop, GW'99, held in Gif-sur-Yvette, France, in March 1999. The 16 revised long papers and seven revised short papers were carefully reviewed for inclusion in the book. Also included are four invited papers and the transcription of a round table discussion. The papers are organized in sections on human perception and production of gesture, localization and segmentation, recognition, sign language, gesture synthesis and animation, and multimodality.

Finger Gesture Recognition Using HTK Toolkit Aug 13 2022

Brayley's Arrangement of Finger Prints Identification and Their Uses Sep 02 2021

Robust Hand Gesture Recognition for Robotic Hand Control Sep 26 2023 This book focuses on light invariant bare hand gesture recognition while there is no restriction on the types of gestures. Observations and results have confirmed that this research work can be used to remotely control a robotic hand using hand gestures. The system developed here is also able to recognize hand gestures in different lighting conditions. The pre-processing is performed by developing an image-cropping algorithm that ensures only the area of interest is included in the segmented image. The segmented image is compared with a predefined gesture set which must be installed in the recognition system. These images are stored and feature vectors are extracted from them. These feature vectors are subsequently presented using an orientation histogram, which provides a view of the edges in the form of frequency. Thereby, if the same gesture is shown twice in different lighting intensities, both repetitions will map to the same gesture in the stored data. The mapping of the segmented image's orientation histogram is firstly done using the Euclidian distance method. Secondly, the supervised neural network is trained for the same, producing better recognition results. An approach to controlling electro-mechanical robotic hands using dynamic hand gestures is also presented using a robot simulator. Such robotic hands have applications in commercial, military or emergency operations where human life cannot be risked. For such applications, an artificial robotic hand is required to perform real-time operations. This robotic hand should be able to move its fingers in the same manner as a human hand. For this purpose, hand geometry parameters are obtained using a webcam and also using KINECT. The parameter detection is direction invariant in both methods. Once the hand parameters are obtained, the fingers' angle information is obtained by performing a geometrical analysis. An artificial neural network is also implemented to calculate the angles. These two methods can be used with only one hand, either right or left. A separate method that is applicable to both hands simultaneously is also developed and fingers angles are calculated. The contents of this book will be useful for researchers and professional engineers working on robotic arm/hand systems.

Internet of Wearable Things Feb 19 2023 Internet of wearable things (IoWT) has been used to exchange the information with other devices in recent years, regarding to provide body health information and make the wearables as a biomarker, many researchers such as scientists in the academia or engineers in the industry are trying to design a more reliable and smarter system in the fields of IoWT. This thesis described a novel upper limbs (hand and arm) motion detection system which used cooperative wearable sensing network consists of wearable armband and smart glove made by customizable pressure sensor arrays to detect personal dynamic hand gestures. The strength of such "cooperative wearable sensing network" is to reduce false positive with multi-sensors information fusion. A deep learning technique "Long Short-Term Memory" algorithm had been computed to build an effective model to classify hand gestures by training and testing the collected IMU (Inertial Measurement Unit), Electromyography (EMG), finger and palm's pressure data. In the experiments, this IoWT system was evaluated in common hand gesture recognition and specific scenario in smart health: smoking cessation study. Wearable sensors have the potential to improve current approaches by providing personalized feedback and objective verification of smoking status. This thesis combined the proposed IoWT system in hand gesture recognition with an Android software application to monitor smoking in real-time by detecting smoking and non-smoking dynamic hand gestures in daily life, such as "answering the phone", "drinking", "writing", etc. Findings have implications for using cooperative sensing technology in HGR fields and tobacco cessation treatment delivery and assessment of smoking status. This thesis describes wearable sensor systems design, Android things framework to establish a cooperative wearable sensing network, and streaming sensor data analysis through deep learning. A controlled smoking cessation pilot study was used as a case study to evaluate the design consideration and system performance of the developed IoWT system.

Biometric Recognition Nov 23 2020 This book constitutes the refereed proceedings of the 7th Chinese Conference on Biometric Recognition, CCBR 2012, held in Guangzhou, China, in December 2012. The 46 revised full papers were carefully reviewed and selected from 80 submissions. The papers address the problems in face, iris, hand biometrics, speaker, handwriting, gait, soft biometrics, security and other related topics, and contribute new ideas to research and development of reliable and practical solutions for biometric authentication.

Using a Wii Remote for Finger Tracking and Gesture Recognition Mar 20 2023 There has been much recent innovations in the field of HCI in the last decade, with touch- based devices as well as other forms of interaction first introduced by the Nintendo Wii. This book looks at another form of HCI as an alternative - using your fingers to directly manipulate objects on screen. The Wii remote is the key device that, when used with a source of infra red light, enables finger tracking and allows this form of interaction. The project examines experimental set-ups and methods as well as outlines possible methods for gesture recognition using this tracking approach. In this book I describe how a HCI system can be implemented using the Wii remote that allows manipulation of objects on screen through simple dynamic gestures and how it can be extended for symbolic gesture recognition using higher level modelling. The proposed and implemented gesture recognition engine uses modelling of dynamics for manipulation gestures and is based on a finite state machine framework for symbolic gestures.

Finger Prints Aug 01 2021 "I should say that one of the inducements to making these inquiries into personal identification has been to discover independent features suitable for hereditary investigation." -Sir Francis Galton, "Personal Identification and Description" (1889) In *Finger Prints* (1907), Sir Francis Galton described the research he did related to the use of fingerprints for identification. Through this work, he validated a theory first proposed by Sir William Herschel and gave the use of fingerprinting a scientific validity that laid the groundwork for its use in criminal investigations. This edition of his book contains minor revisions the author made to the original 1883 publication.

Ten Little Fingers and Ten Little Toes Jul 20 2020 As everyone knows, nothing is sweeter than tiny baby fingers and chubby baby toes. . . . And here, from two of the most gifted picture-book creators of our time, is a celebration of baby fingers, baby toes, and the joy they--and the babies they belong to--bring to everyone, everywhere, all over the world This is a gorgeously simple picture book for very young children, and once you finish the rhythmic, rhyming text, all you'll want to do is go back to the beginning . . . and read it again The luminous watercolor illustrations of these roly-poly little ones from a variety of backgrounds are adorable, quirky, and true to life, right down to the wrinkles, dimples, and pudges in their completely squishable arms, legs, and tummies.

Intelligent Computing & Optimization Dec 25 2020 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.

Intelligent Robotics and Applications Mar 08 2022 The 4-volume set LNAI 13455 - 13458 constitutes the proceedings of the 15th International Conference on Intelligent Robotics and Applications, ICIRA 2022, which took place in Harbin China, during August 2022. The 284 papers included in these proceedings were carefully reviewed and selected from 442 submissions. They were organized in topical sections as follows: Robotics, Mechatronics, Applications, Robotic Machining, Medical Engineering, Soft and Hybrid Robots, Human-robot Collaboration, Machine Intelligence, and Human Robot Interaction.