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~~Human Action Recognition~~

Where to focus on for for Human Action Recognition?*CVPR18: Tutorial: Part 1: Human Activity Recognition*

Human Action Recognition

Human Action Recognition**Semantics Guided Neural Networks for Efficient Skeleton Based Human Action Recognition** Generative multi-view human action recognition **3D Action Recognition From Novel Viewpoints Quickly Prototype Human Activity Recognition Apps with ActionAI** *Pose-driven Human Action Recognition and Anomaly Detection HAR#1: Human Action, Activity Recognition: Video-based, Sensor-based: Computer Vision, Sensor-based* ~~\"Human Action\" by Ludwig von Mises (Book Review)~~ *Church Society Podcast: Living in Love and Faith* ~~Glimpse Clouds: Human Activity Recognition from Unstructured Feature Points~~ TensorFlow 2.0 Tutorial for Beginners 14 - Human Activity Recognition using Accelerometer and CNN Human Action (Chapter 1: Acting Man) by Ludwig von Mises *Deep Learning on Lie Groups for Skeleton-Based Action Recognition | Spotlight 1-2B* ~~Human Activity Recognition using Tensorflow~~ **Body Part Recognition and the Development of Kinect Top-View Human Action Recognition Human Action Recognition With Depth**

Abstract: This paper presents an effective approach for recognising human actions from depth video sequences by employing depth motion maps (DMMs) and convolutional neural networks (CNNs). Depth maps are projected onto three orthogonal planes, and frame differences under each view (front/side/top) are then accumulated through an entire depth video sequence generating a DMM.

Article: Real-time human action recognition using depth ...

Action recognition technology has many real-world applications in human-computer interaction, surveillance, video retrieval, retirement home monitoring, and robotics. The commoditization of depth sensors has also opened up further applications that were not feasible before. This text focuses on feature representation and machine learning algorithms for action recognition from depth sensors.

Human Action Recognition with Depth Cameras | Jiang Wang ...

Human Action Recognition with Depth Cameras PDF by Jiang Wang, Zicheng Liu, Ying Wu Part of the SpringerBriefs in Computer Science series. Download - Immediately Available. Share. Description. Action recognition is an enabling technology for many real world applications, such as human-computer interaction, surveillance, video retrieval ...

Human Action Recognition with Depth Cameras: Jiang Wang ...

Abstract. Human action recognition using depth sensors is an emerging technology especially in game console industry. Depth information can provide robust features about 3D environments and increase accuracy of action recognition in short ranges. This paper presents an approach to recognize basic human actions using depth information obtained from the Kinect sensor.

RECOGNITION OF BASIC HUMAN ACTIONS USING DEPTH INFORMATION ...

Human action recognition has been widely used in various fields of computer vision, pattern recognition, and human-computer interaction and has attracted substantial attention. Combining deep...

Robust human action recognition based on depth motion maps ...

Depth Maps-based Human Activity Recognition is the process of categorizing depth sequences with a particular activity. In this problem, some applications represent robust solutions in domains such as surveillance system, computer vision applications, and video retrieval systems.

Depth-based human activity recognition: A comparative ...

Abstract: In this paper, we present a method (Action-Fusion) for human action recognition from depth maps and posture data using convolutional neural networks (CNNs). Two input descriptors are used for action representation. The first input is a depth motion image that accumulates consecutive depth maps of a human action, whilst the second input is a proposed moving joints descriptor which represents the motion of body joints over time.

Deep Convolutional Neural Networks for Human Action ...

Datasets and codes for Human Action Recognition Using Deep Multilevel Multimodal (M2) Fusion of Depth and Inertial Sensors (recently published in the IEEE Sensors Journal) The ImageFolders_KinectV2Dataset folder has all the images related to Kinect V2 dataset.

GitHub - zaamad/Deep-Multilevel-Multimodal-Fusion ...

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In this paper, we present a method (Action-Fusion) for human action recognition from depth maps and posture data using convolutional neural networks (CNNs). Two input descriptors are used for action representation. The first input is a depth motion image that accumulates consecutive depth maps of a human action, whilst the second input is a proposed moving joints descriptor which represents ...

Deep convolutional neural networks for human action ...

skeleton based features cannot deliver high recognition ac-curacy in action recognition, because depth visual appear-ances of human body-parts provide discriminative informa-tion, and most of the usual human actions are de?ned based on the interaction of the body with other objects. For ex-ample, drinking and eating snacks actions have a very sim-

Learning Action Recognition Model From Depth and Skeleton ...

An ef?cient real-time human action recognition system is developed in using decision level fusion of depth and inertial sensor data. Depth and inertial data is effectively merged in to train a hidden Markov model for improving accuracy and robustness of hand gesture recognition.

Human Action Recognition Using Deep Multilevel Multimodal ...

The advent of depth sensors opens up new opportunities for human action recognition by providing depth information. The main purpose of this paper is to pr Human Action Recognition Using Multilevel Depth Motion Maps - IEEE Journals & Magazine

Human Action Recognition Using Multilevel Depth Motion ...

We present a method for view-invariant action recognition from depth cameras based on graph signal processing techniques. Our framework leverages a novel graph representation of an action as a temporal sequence of graphs, onto which we apply a spectral graph wavelet transform for creating our feature descriptor.

Cross-view human action recognition from depth maps using ...

One crucial aspect of action recognition is to extract discriminative features. The depth maps have completely different characteristics from the RGB images. Directly applying features designed for RGB images does not work. Complex actions usually involve complicated temporal structures, human-object interactions, and person-person contacts.

?Human Action Recognition with Depth Cameras on Apple Books

Computer Vision and Pattern Recognition (cs.CV); Machine Learning (cs.LG); Multimedia (cs.MM); Image and Video Processing (eess.IV) Cite as: arXiv:2010.16073 [cs.CV] (or arXiv:2010.16073v1 [cs.CV] for this version)

CNN based Multistage Gated Average Fusion (MGAF) for Human ...

In this paper, a method based on depth spatial-temporal maps (DSTMs) is presented for human action recognition from depth video sequences, which provides compact global spatial and temporal...

Action recognition technology has many real-world applications in human-computer interaction, surveillance, video retrieval, retirement home monitoring, and robotics. The commoditization of depth sensors has also opened up further applications that were not feasible before. This text focuses on feature representation and machine learning algorithms for action recognition from depth sensors. After presenting a comprehensive overview of the state of the art, the authors then provide in-depth descriptions of their recently developed feature representations and machine learning techniques, including lower-level depth and skeleton features, higher-level representations to model the temporal structure and human-object interactions, and feature selection techniques for occlusion handling. This work enables the reader to quickly familiarize themselves with the latest research, and to gain a deeper understanding of recently developed techniques. It will be of great use for both researchers and practitioners.

Traditional computer vision algorithms depend on information taken by visible-light cameras. But there are inherent limitations of this data source, e.g. they are sensitive to illumination changes, occlusions and background clutter. Range sensors give us 3D structural information of the scene and it's robust to the change of color and illumination. In this thesis, we present a series of approaches which are developed using the depth information by Kinect to address the issues regarding human detection and action recognition. Taking the depth information, the basic problem we consider is to detect humans in the scene. We propose a model based approach, which is comprised of a 2D head contour detector and a 3D head surface detector. We propose a segmentation scheme to segment the human from the surroundings based on the detection point and extract the whole body of the subject. We also explore the tracking algorithm based on our detection result. The methods are tested on a dataset we collected and present superior results over the existing algorithms. With the detection result, we further studied on recognizing their actions. We present a novel approach for human action recognition with histograms of 3D joint locations (HOJ3D) as a compact representation of postures. We extract the 3D skeletal joint locations from Kinect depth maps using Shotton et al.'s method. The HOJ3D computed from the action depth sequences are reprojected using LDA and then clustered into k posture visual words, which represent the prototypical poses of actions. The temporal evolutions of those visual words are modeled by discrete hidden Markov models (HMMs). In addition, due to the design of our spherical coordinate system and the robust 3D skeleton estimation from Kinect, our method demonstrates significant view invariance on our 3D action dataset. Our dataset is composed of 200 3D sequences of 10 indoor activities performed by 10 individuals in varied views. Our method is real-time and achieves superior results on the challenging 3D action dataset. We also tested our algorithm on the MSR Action3D dataset and our algorithm outperforms existing algorithm on most of the cases.

This book constitutes refereed proceedings of the Second International Workshop on Deep Learning for Human Activity Recognition, DL-HAR 2020, held in conjunction with IJCAI-PRICAI 2020, in Kyoto, Japan, in January 2021. Due to the COVID-19 pandemic the workshop was postponed to the year 2021 and held in a virtual format. The 10 presented papers were thorougly reviewed and included in the volume. They present recent research on applications of human activity recognition for various areas such as healthcare services, smart home applications, and more.

Deep learning methods offer a lot of promise for time series forecasting, such as the automatic learning of temporal dependence and the automatic handling of temporal structures like trends and seasonality. With clear explanations, standard Python libraries, and step-by-step tutorial lessons you’ll discover how to develop deep learning models for your own time series forecasting projects.

Human action recognition is an active research area benefitting many applications. Example applications include human-computer interaction, assistive-living, rehabilitation, and gaming. Action recognition can be broadly categorized into vision-based and inertial sensor-based. Under realistic operating conditions, it is well known that there are recognition rate limitations when using a single modality sensor due to the fact that no single sensor modality can cope with various situations that occur in practice. The hypothesis addressed in this dissertation is that by using and fusing the information from two differing modality sensors that provide 3D data (a Microsoft Kinect depth camera and a wearable inertial sensor), a more robust human action recognition is achievable. More specifically, effective and computationally efficient features have been devised and extracted from depth images. Both feature-level fusion and decision-level fusion approaches have been investigated for a dual-modality sensing incorporating a depth camera and an inertial sensor. Experimental results obtained indicate that the developed fusion approaches generate higher recognition rates compared to the situations when an individual sensor is used. Moreover, an actual working action recognition system using depth and inertial sensing has been devised which runs in real-time on laptop platforms. In addition, the developed fusion framework has been applied to a medical application.

This book provides a unique view of human activity recognition, especially fine-grained human activity structure learning, human-interaction recognition, RGB-D data based action recognition, temporal decomposition, and causality learning in unconstrained human activity videos. The techniques discussed give readers tools that provide a significant improvement over existing methodologies of video content understanding by taking advantage of activity recognition. It links multiple popular research fields in computer vision, machine learning, human-centered computing, human-computer interaction, image classification, and pattern recognition. In addition, the book includes several key chapters covering multiple emerging topics in the field. Contributed by top experts and practitioners, the chapters present key topics from different angles and blend both methodology and application, composing a solid overview of the human activity recognition techniques.

This book constitutes the refereed proceedings of the workshops held with the 17th International Conference on Image Analysis and Processing, ICIAP 2013, held in Naples, Italy, in September 2013. The proceedings include papers from the five individual workshops focusing on topics of interest to the pattern recognition, image analysis, and computer vision communities, exploring emergent research directions or spotlight cross-disciplinary links with related fields and / or application areas.

The two-volume set LNCS 10484 and 10485 constitutes the refereed proceedings of the 19th International Conference on Image Analysis and Processing, ICIAP 2017, held in Catania, Italy, in September 2017. The 138 papers presented were carefully reviewed and selected from 229 submissions. The papers cover both classic and the most recent trends in image processing, computer vision, and pattern recognition, addressing both theoretical and applicative aspects. They are organized in the following topical sections: video analysis and understanding; pattern recognition and machine learning; multiview geometry and 3D computer vision; image analysis, detection and recognition; multimedia; biomedical and assistive technology; information forensics and security; imaging for cultural heritage and archaeology; and imaging solutions for improving the quality of life.

Research Paper (postgraduate) from the year 2018 in the subject Computer Science - Internet, New Technologies, , course: Machine Learning, language: English, abstract: Human Action Recognition is the task of recognizing a set of actions being performed in a video sequence. Reliably and efficiently detecting and identifying actions in video could have vast impacts in the surveillance, security, healthcare and entertainment spaces. The problem addressed in this paper is to explore different engineered spatial and temporal image and video features (and combinations thereof) for the purposes of Human Action Recognition, as well as explore different Deep Learning architectures for non-engineered features (and classification) that may be used in tandem with the handcrafted features. Further, comparisons between the different combinations of features will be made and the best, most discriminative feature set will be identified. In the paper, the development and implementation of a robust framework for Human Action Recognition was proposed. The motivation behind the proposed research is, firstly, the high effectiveness of gradient-based features as descriptors - such as HOG, HOF, and N-Jets - for video-based human action recognition. They are capable of capturing both the salient spatial and temporal information in the video sequences, while removing much of the redundant information that is not pertinent to the action. Combining these features in a hierarchical fashion further increases performance.