Abstract

More and more datasets made for Human Activity Recognition (HAR) have been made available for publics in recent years. And Human Activity Recognition has gain attention due to its wide range of application from surveillance, medical personal [1] assisted tool, robotic to the interaction between human and machine. And with deep learning technics applied recently especially for image classification researchers have switch [2] and focus more and more from [3] traditional processing to deep learning technics. Although, [4] extracting the correct [5] features for further processing still a challenge, traditional technics [6] still been used for in HAR to avoid computational complexity that come with deep learning methodologies. Understanding human behaviors is a challenging problem in computer vision, we have witnesses [7] recently significant advances with proposed novel methodologies [8] for tracking, pose estimation, [9] and movement recognition. This survey is a succinct description of different existent technics and methods apply in HAR, following previous survey [10] and papers.
Keywords: Human action recognition, Activity recognition,  feature extraction

1. Introduction.

Since the early fourteen hundred with Da Vinci work and studies which was [11] interested in Human Appearances to help his student drawing perfectly [12] Human action such as people climbing, going upstairs or going downstairs[https://www.slideshare.net/zukun/cvml2011-human-action-recognition-ivan-laptev-9017571]. With his work, one of well documented [13] research in early [14] Human Action Recognition Da Vinci insist that a painter

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1
  Possibly confused word: *personal*

2
  [switch → switch**ed**]
3
  [more ~~from~~ → more **on**]

4
  [Although,/ ]
5
  Unusual word pair

6
  [technics **has**]

7
  Possibly confused word: *witnesses*

8
  Repetitive word: *methodologies*

9
  [estimation,/ ]

10
  Repetitive word: *survey*

11
  [~~was~~ → were]

12
  Overused word: *perfectly*

should be fully 15 aware of the body structure (nerves system, muscles and bones structures, etc.) to understand various motions.

Intelligent environment (intelligent 16 home, intelligent electronic devices) exploit data collected from users and anticipate the probability of the end result 17 whether bad or worst case scenario. The system is able to 18 get the information, interpreted it and then take an action 19 or suggest an action. As we are in the era of intelligent automate system 21. 20 And common 22 tasks: walking, standing, running, sleeping, etc. are being study 23 and interpreted by computer 24 system.

Identify humans from video sources has attracted increasing attention in several application domains, such as for content-based video annotation and retrieval, video surveillance, and other applications[1]–[3], but giving semantic meaning to human action or behavior is so challenging, in fact it not necessarily easy to understand what an action 26 really 27 mean. 25 This complexity is source 28 of challenges from an academic point of view. In fact, there is no better way to categorized research due to its complexity, but mainly following [4] we can categorize 29 in three type : 30 Surveillance, Control 31 and Analysis.

 People counting or crowd flux, flow, and congestion analysis in public area 33 such as train, bus station or mall[5] can be grouped 34 in Surveillance applications 35, Human Computer Interfaces[6] or virtual reality can be grouped 36 in Control applications and Diagnosis of patient can be grouped 38 37 as such in Analysis applications 39 of Human Action Recognition or Computer vision field. 32 The potential 40 amount of applications 41, the speed 42 and price of current hardware especially in poor countries 43 and the focus on security issues have intensified the work within the computer vision community towards retrieving, collecting and analyzing human behavior. Furthermore, the

13 [well documented → well-documented]

14 Unusual word pair

15 Overused word: *fully*

16 Unusual word pair

17 [end result → result]

18 [is able to → **can**]

19 [take an action → take action]

20 Sentence fragment

21 [the system]

22 Overused word: *common*

23 [are being study → are being stud**ied**]

24 [a computer or the computer]

25 Wordiness

26 Repetitive word: *action*

27 Overused word: *really*

28 [a source or the source]

29 Repetitive word: *categorize*

30 [type : → type:]

31 [Control**,**]

32 Wordiness

33 [area → areas]

34 Passive voice

35