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Track and Identify the Human Motion with Alert

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Abstract**-In this work we are explaining the method that can track and identify the human body with the static camera and get the alert that will happen when the camera track any human. In this approach there are so many illumination changes and solves the major occlusion problem. In this the basic works start from the extraction of the data from the camera and start the further processing. Here with tracking we are using the alert to show the human is detected. In this process the color and other features are added to the detected human. Result will show accurately. This process we are tracking the moving person and provide the identity for the tracked person. Results shows that the human is tracked and alert will be shown after track the person.**

1. INTRODUCTION

Tracking of human and identifying are the widely used low-level tasks in many computer virtual applications, like surveillance, monitoring, robot technology, gesture recognition, object recognition etc. There are so many techniques are proposed for the moving objects track and identify.

In this paper we are not only detection and tracking the motion object but also providing the alerts according to the motion.

Tracking aims to describe trajectories of moving objects during time. The main problem to solve for tracking is to find correspondences of the same physical objects in different frames. Some of the relevant works in the field of motion detection and tracking is mentioned in the following section. This paper is organized as follows. Section 2 describes the related methods available. Section 3 briefly describes the proposed methodology. Section 4 deals with the experimental results and problems. Section 5 includes the conclusion and future enhancement.

2. RELATED WORK

After performing the so many operations in the tracking of human we have defined that the problem facing in tracking the moving object I,e without any alerts we can't observe the accurate results. Finally we are concluding that we are proposed an efficient human tracking system.

Some of the examples are provided for tracking the moving objects and identifying:

Automated surveillance for security-conscious venues such as airports, casinos, museums, and government installations: Intelligent software could monitor security cameras and detect suspicious behavior. Furthermore, human operators could search archived video for classes of activity that they specify without requiring manual viewing of each sequence. Having automated surveillance vastly increases the productivity of the human operator and increases coverage of the surveillance.

- Human interaction for mobile robotics: Autonomous mobile robots in the workplace or home could interact more seamlessly with the humans in their environment if they could reliably detect their presence. For example, robots to assist the elderly would know when assistance is needed based on the motion of a person.
- Safety devices for pedestrian detection on motor vehicles: Intelligent software on a camera-equipped car could detect pedestrians and warn the driver.
- Automatic motion capture for film and television: Producing computer-generated imagery of realistic motion currently requires the use of a motion-capture system that stores the exact 2-D or 3-D motion of a human body using visual or radio markers attached to each limb of an actor. With accurate algorithms for human motion tracking, 4the same data could be acquired from any video without any additional equipment.

Currently, no algorithm exists that can perform human motion detection reliably and efficiently enough for the above applications to be realized. Although the problem as a whole remains unsolved, many of the tools necessary for a robust algorithm have been developed. By assembling these task-specific tools into a working system, this thesis will show that a robust system is not far from realization.

Detecting and identifying and showing alerts are going to be better approach compared to that all the other approaches before we have done.

Do the motions of the limbs contain enough information to infer the presence of a human? Experiments performed by Johansson in the 1970 have demonstrated the answer to be 'Yes'. Johansson filmed moving humans in a pitch-black room, the only visual indicator being a white point of light attached to each limb. He showed that a viewer watching the film could easily identify human motion, despite the absence of visual cues such as shape, texture, brightness, and color. An example of these Johansson points is shown in Figure 1.1. It has been further demonstrated that specific individuals or genders can be recognized in the same manner. Given that the human brain can effortlessly recognize this motion, it is conceivable that a computer algorithm could do the same. In addition, single points of motion as used in the Johansson experiment can be efficiently represented on a computer. Unlike pure image processing, which must deal with large numbers of pixels at each time step, this Johansson motion can be specified by a handful of points, each represented by a 2-D position and a 2-D velocity at any given time.

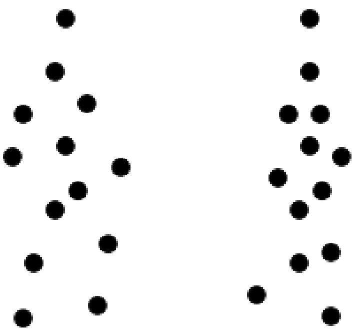
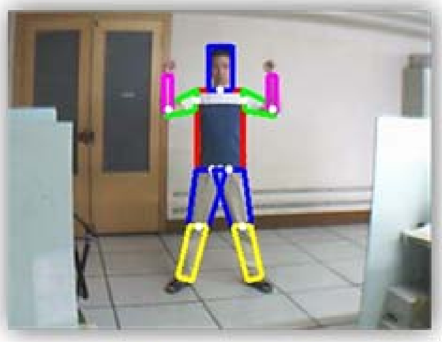


Fig 1.1

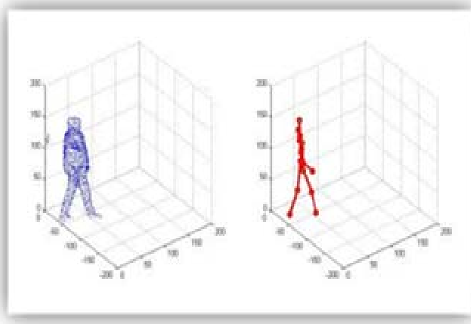
3. PROPOSED ALGORITHM FOR HUMAN MOTION DETECTION IS THE PROBABILITY EVOLUTIONARY ALGORITHM (PEA):

A novel evolutionary algorithm called Probability Evolutionary Algorithm (PEA), and a method based on PEA for visual tracking of human body are presented. PEA is inspired by the Quantum computation and the Quantum-inspired Evolutionary Algorithm, and it has a good balance between exploration and exploitation with very fast computation speed. The individual in PEA is encoded by the probabilistic compound bit, defined as the smallest unit of information, for the probabilistic representation. The observation step is used in PEA to obtain the observed states of the individual, and the update operator is used to evolve the individual. In the PEA based human tracking framework, tracking is considered to be a function optimization problem, so the aim is to optimize the matching function between the model and the image observation. Since the matching function is a very complex function in high-dimensional space, PEA is used to optimize it. Experiments on 2D and 3D human motion tracking demonstrate the effectiveness, significance and computation efficiency of the proposed human tracking method.
Here we are showing the some of the results in the below figures.

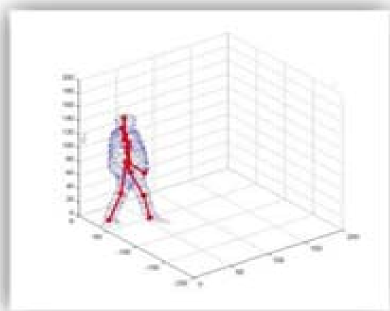
2D Human Tracking



2D Human Tracking



3D Human Tracking



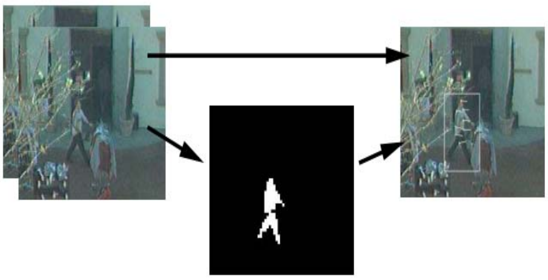
3D Human Tracking

4. UNDERSTANDING THE RECOGNITION PROBLEM:

This is the one the major approach which is used to define the problems facing in detection of moving objects. One of the approaches taken by Song in recognizing human motion is a probabilistic one, in which the common features and variances of the human gait are encapsulated in a single statistical model. This model is stored as a graph containing vertices and edges. Each vertex constitutes a point feature of motion somewhere on the human figure. The vertex is represented by a Euclidean position (x, y) indicating the mean position of the feature on the human body, as well as a mean velocity (vx, vy). In addition, there is a covariance matrix that relates these four parameters to those of every other vertex. Any two vertices connected by an edge are considered to be probabilistically dependent on each other, and those unconnected are considered independent. Although the details of the detection algorithm that uses this model are discussed. It is important to note here that its runtime efficiency is O (M N3), where M is the number of triangles in the graph and N is the number of point features we are evaluating. Thus, for efficiency reasons, it is in our best interest to keep the number of point features in each evaluation to a minimum. Reducing the number of point features in each model evaluation requires us to be more intelligent about choosing them in the first place. It would be impractical to simply find the point motion throughout the entire image, and feed all resulting features to the model in a single evaluation. First of all, the number of features would be very large, giving poor performance. Secondly, we would be supplying a large number of extraneous point features, such as those that are part of the background. In order to avoid wasting time on the background, we use image segmentation to separate foreground portions of the scene from the background.

5. SEGMENTATION PROCESS

Image segmentation is the action of any algorithm that separates regions of an image in a way that resembles how a human would naturally perceive them. Since we are interested in motion, a natural approach is to segment those regions of the image that are moving relative to the background. This process is called background subtraction, and is discussed further in Once we have segmented the image according to motion, point features can be tracked separately in each region.



This allows us to run the model evaluation individually for each region, rather than on the entire image. Since the model evaluation has runtime O (M N3, (it runs faster on two regions of 20 points each than on one region of 40 points. We also discussed about point tracking algorithm. These two basic steps, image segmentation and point feature tracking, constitute the first half of a system for human motion detection and tracking. An example of these algorithms running in the field.

CONCLUSION

In this is paper we have discussed about the efficient detection of moving objects and provide the alerts when the detection occurs in the system. Here we have extracted the accurate color information and 2D and 3D features are also included in this application.

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