

# Human Face Action Recognition System Wireless Sensor Network

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**ABSTRACT**— In this project we implement the Human Face Action Recognition System in Wireless Sensor Network. Detecting movements of human is one of the key applications of wireless sensor networks. Existing technique is detecting movements of a target using face tracking in wireless sensor network work efficiently but here we implementing face action recognition system by using image processing and algorithms with sensors nodes. Using sensor node we can collect the information, data about human facial expressions and movements of human body and comparing old data captured by sensors to the new capturing data, if data is match then we can say that detecting human is same as early. Here we create new framework for face tracking and its movements capturing, achieve tracking ability with high accuracy using Wireless Sensor Networks. We use the Edge Detection Algorithms, Optimal Selection Algorithm, Image Processing Technique, Action Recognition, the big data analysis. Using java language, various types of sensors.

**KEYWORDS**— Mobile Network, Ad-hoc Network, Routing Protocol, Sensor Networks, Surveillance system, Pattern Recognition.

## I. INTRODUCTION

Face Recognition is a technology to extract facial detection by computer and a technique for authenticating them according to the characteristics of these features. Face Recognition is a very challenging research area in Biometrics and Pattern Recognition due to miss seminars in facial expression, . Taking the current video images of a scene, for identifying or verifying one or more persons in the scene using stored at database of the system.

Organizing groups of sensor nodes with its different target movements or accurate distance measurements from the nodes to the targeted person those movements. Face recognition systems can be required a person to externally step up the camera and get their picture , or to automatically taking pictures of the people as they pass by a camera.

Human Face action recognition system is to recognize a human face an based on the following points on the face such as the distance between the eyes, the shape of the nose and other different points .These face points are then compared to the face points computed from a database of pictures.

## II. RELETED WORK

In this project tracking the target in Wireless Sensor Network by using the Brink Detection, Edge Detection, Colour based algorithms that enables Wireless Sensor network to be aware as a target or the person entering the face for track the target movement using Face tracking. Sensor Network is partitioned into multiple face. In the 3 Dimensional Convolution Neural Networks for human action recognition. For the 2 Dimensional Convolution is performed at the convolution layers to collecting the features from local neighbourhood on future map the Additive bias is applied and result is passed through a sigmoid function .

In the tracking a dynamic target in wireless sensor network using enhanced polygon based framework, the mechanism neighbouring node exchange information regarding at what time was the node able to sense the target

signal used for the Sensor nodes regularly exchange messages in case of n target detection the signal strength. In the E client distributed Face recognition system in Wireless Sensor Network ,for The lot of constraints involved in Wireless Sensor Network and issues in Face Recognition the Distributed Recognition it helps to reduce for communication overload and also increase the node life time by distributing the work load on the nodes used as a solution.

In the Development Phases of technologies in Face Recognition system the red, green, blue-d cameras are used as a the solution to the Recognizing Human Face from single images out of Large Database. In the Recognizing Human Face from single images out of Large Database for Improving transportation system for Safety, security purpose ,some Schools , Employee a bus supervisor to look after the children inside the bus the Viola-Jones Face Detection Method is used. In the Face Recognition based on the Combination Method of Multiple Classifier.

In order to a match., anywhere you can put a camera, you can potentially use a facial recognition system. Many cameras can be put on the number of location to maximize security coverage without disturbing the target . After allows for getting images of many people at the same time from video or pictures can be replayed through a facial recognition system for getting information or forensics work after an event. Face scanning can be done at a comfortable distance and does not require the user to touch anything.

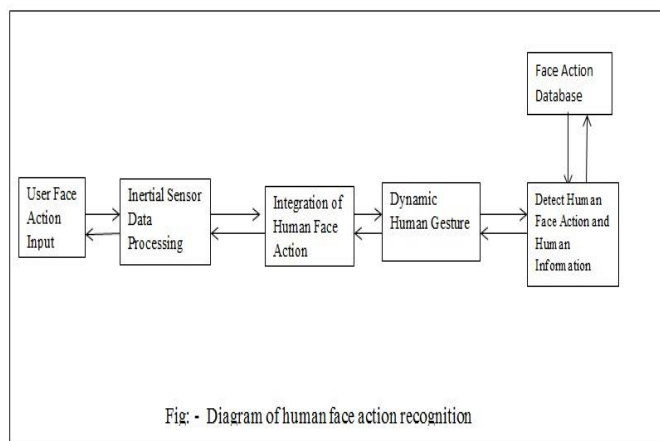


Fig: - Diagram of human face action recognition

**WIRELESS SENSOR NETWORK**

Wireless sensor network is connectionless network. Wireless sensor network it is collection of different type of node or sensors. Sensor which detect various type of objects and collect the data where it present within the environment and sent it to the networks database. a sensor that can sense the atmosphere and give information

about the environment to the network. Sensor is recording the objects that is collecting the records and send to the database by using connectionless protocol that is wireless network which is established. Wireless Sensor Network having types like the Personal Area Network, Local Area Network, and Protocols like Zigbee are also examples of Wireless Sensor Network. Here we are using external camera as a sensor for getting image record and data its attributes. Now we are seeing the Image Processing for this system.

**A. IMAGE PROCESSING**

It is important that various types of images that taken by sensor and images that is different to each other. images that taken by various cameras these all get difficult to match because of images that depends up on the environment, clarity of that camera, number of pixel within the image for that purpose here we have to implement some algorithm for the image detection .The importance of human face images make manipulations of large-scale human face images a really important for research problem and based on that there are many real world applications .Our goal in this project is to address one of the challenging is –in the large database retrieving images and matching there attributes by using algorithms like Edge Detection, Blink Detection, Color segmentation.

**B. DATABASE**

Image captured by the sensor that are storing into the database. Images are getting from sensor nodes and storing into the database. Then taking single image from that database and its attributes are checking with other image for the target.

**C. RELEVANT MATHEMATICS ASSOCIATED WITH THE PROJECT**

Input: Capture Image Information  
Output: Match Found

**SET THEORY:**

Let S be the | Abandon Object detections the final set  
S = .....

Identify the inputs as I

S = I

I = I1, I2, I3,I4 ...| I given Image captured from camera

Identify the outputs as O

S = AR, DO

DO= DO1, DO2 DO3 ...| DO given Detected object

AR = AR1, AR2, AR3 ... | AR gives the alert report

Identify the functions as F

$S = \dots F = F1(), F2(), F3(), F4(), F5(), F6(), F7()$

F1 (I) :: Capture video from camera

F2 (I) :: divide it into frame

F3 (I) :: image processing.

F4 (I) :: detect object

F5 (I) :: analysis and monitoring for particular time.

F6 (I) :: generate alert.

F7 (I):: Send alert report to the system.

### D. PROCESSING ON DETECTED FACE

After detecting the face we are removing detected face background and going for Face Recognition. We are using the Edge Detection for the removing the background of the face. We are using edge detection algorithms for the checking of the colour of the face or image background for detecting the object that is face.



Figure: Face detection based on Edge Detection

### E. SYSTEM ARCHITECTURE

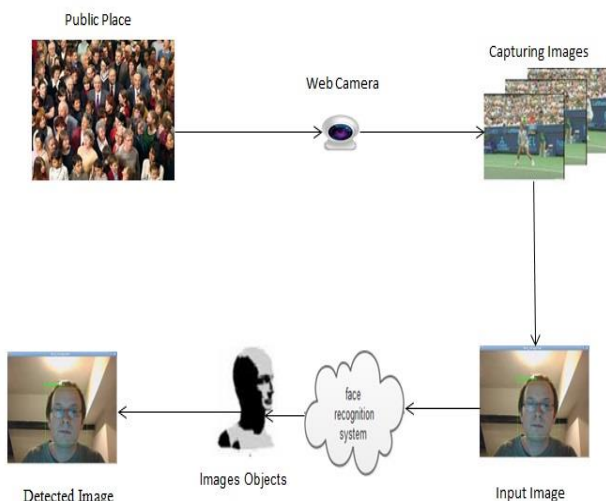


Fig: Architecture System

### VI. ADVANTAGES:

1. Face Recognition is easy to use and in many cases it can be performed the person without knowing.
2. It is the most inexpensive biometric in the market.

### VII. APPLICATIONS:

1. Security purpose
2. Day Care for childrens
3. Residential Security for citizens
4. Voter verification for election system.
5. For ATM/Banking system
6. In Industries for control.

### VIII. CONCLUSION

In this project we conclude that face action recognition system work efficiently. The main functionality of a wireless sensor network is to track an unauthorized target in public place. The main challenge is to how to find the target in a wireless sensor network efficiently. We proposed a idea to achieve a system for detecting movements of a target using polygon (face), Edge Detection algorithms tracking that does not adopt any prediction method. Evaluation results demonstrated that the proposed tracking framework can estimate a targets positioning area, achieve tracking ability with high accuracy, and reduce the energy cost of wireless sensor network.

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