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PATIENT FACE RECOGNITION USING IOT

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Abstract— There are several cases where the patients in ICU couldn't be frequently and properly monitored. Also real time parameter values don't seem to be efficiently measured in clinic in addition as in hospitals. Sometimes it becomes difficult for hospitals to frequently check patient's conditions could also be it thanks to the in adequate time to spend for every patient. Also continuous monitoring of an ICU patient isn't possible. To deal to these kinds of situations, our system is helpful. The System uses combination of two techniques: face detection and face recognition .Our system is meant to be utilized in hospitals for face recognition of patient. The parameters like happy, joy, fear, disgust, sad are captured using camera and compared with previously stored images in library. Doctors can login from anywhere and check the present condition of patient and take according decision.

Keywords—Internet of Things, Raspberry Pi

I. INTRODUCTION

In today's scenario, monitoring ICU's patient is done manually i.e. by the nurses in every hospital.

So we our developing system in which, surveillance of patient can be done by camera. The camera will capture video 24/7 and will take images after some time of delay. The feature of this project would be monitoring patient's emotion by capturing the image and comparing it with the previously stored images. So that doctor can login anytime to check the condition of patient and take decisions according to the current situation.

This system is to be implemented for the ICU's patients in hospital to reduce the manual work done by the nurses and doctors. So that it will doctor take decisions regarding patients from outside the hospital also. The implementation of the system uses open CV Algorithm, Tensor flow library for facial emotion recognition and camera. Also the patient's relative can login and check the current situation and report of patient.

So to help doctors by monitoring and recognizing the patient's emotion we are trying to develop this system

II. RESEARCH BACKGROUND

As core computing part of our system we are using camera and Rpi for developing our system.

The camera will continuously do video surveillance. And after sometime of delay camera will captured the image.

The open CV algorithm and tensor flow library will compare image with another previously stored images.

The Database used storing data is SQL Lite. We used this database because of cross platform and its flexibility.

III. LITERATURE SURVEY

Existing Systems:

1. Development of a Mobile Phone e-Health Monitoring Application
   - Monitoring patient and calculating ECG.
   - ECG Processing and QRS Detection. The QRS detection provides fundamentals for automated ECG analysis algorithm.
2. Patient Health Monitoring System based on Zigbee Communication Protocol.
   - Based on Zigbee communication protocol and Wireless Sensor Network (WSN).
   - Peer to peer network topology is implemented.
   - Physical observations are sent from Zigbee node to Remote wireless monitor via universal serial bus
3. Remote Heart Rate Monitoring System Using IoT.
   - Heart rate can be monitored without actually visiting the patient.
   - The system uses pulse rate sensor, Arduino UNO, Raspberry Pi3 and Thing speak cloud to implement the system
   - Notifications can be received by email or SMS.
4. Human Health Monitoring System.
   - Heart rate and temperature are measured by pulse rate sensor.
   - The data collected is then sent via GSM Module or SMS.

Limitations:

- Poor image quality limits facial recognition effectiveness..
- Small image size makes facial recognition more difficult and uneasy to detect.
- Different facial angles can throw off facial recognition reliability.
- Data processing and storage can limit facial recognition technology.

IV. PROPOSE SYSTEM DESIGN

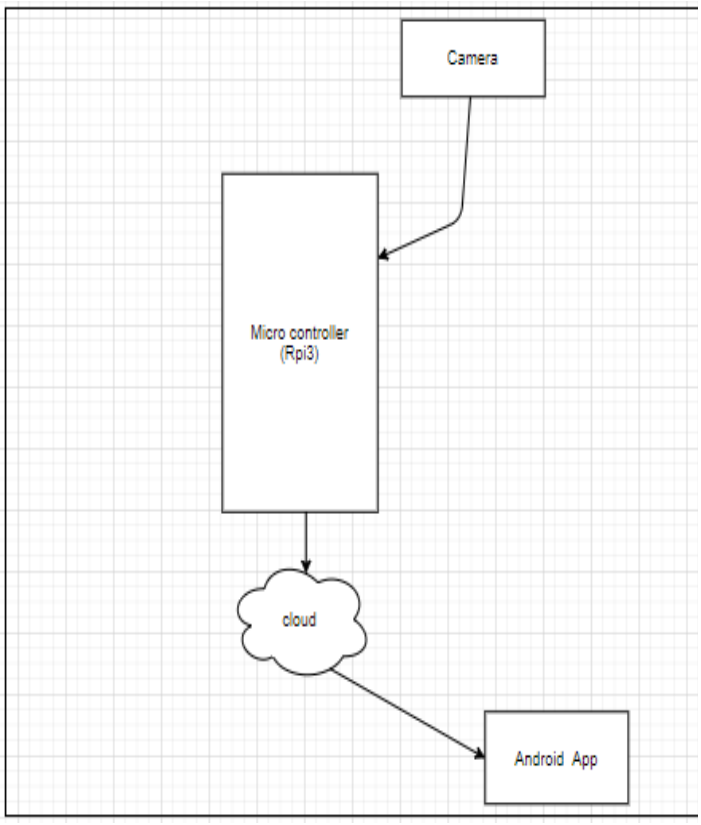

Figure: System Architecture

System Architecture gives us the overall description about the how system is working System that contains both input and output and also short description about the operation I gives basic idea about what type of functionality is performed. In this system we two scenarios:

Patient's Scenario:

- Login to the android application.
- Fill out all details required.

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Doctor's Scenario:

- Login to the Android App.
- Analyze the report.
- Taking decisions.
- Update the report timely.

Mathematical Model

System S as a whole can be defined with the following main components.

Let S be the System

$S = \{I, O, P\}$

Where,

I = Input

O= Output

P = Processing

$I = \{I1, Ic, R_{pi}\}$

Where,

I1 = Image

Ic = Camera

$O = \{O_N, O_{sync}\}$

Where,

O_N = Notification to doctor and relatives

O_{sync} = DataBase Synchronization

$P = \{P_0, P_1\}$

Where,

P_0 = Open CV algorithm.

P_1 = Tensor flow library.

FEASIBILITY STUDY:

A crucial and key aspect for the initial investigation that reviews anticipated costs and benefits and recommends a course of action supported operational, technical, economic, and time factors. the aim of the study is to figure out if the system is feasible enough to sustain the market and being used at an enormous rate.

Technical Feasibility:

In this study, the aim is to verify the feasibility whether the proposed system is possible to be developed by using existing technologies or not. It is found that the specified hardware and software are available for development of the proposed system. Hence, the solution is technically feasible. The project is technically feasible because the technologies used to implement are ESP32 Development Board, Various Low-Price Sensors as Hardware and Embedded, Python Libraries, ArdunioIDE &

Android Studio which are easy to understand and are open source.

Economic feasibility:

In this study, the aim is to verify the costs and benefits directly/indirectly associated with the proposed system and thus the project is economically feasible as long as it is tangible or intangible benefits out weight cost. The system development costs are reasonably significant. Thus, we can say that the proposed system is within the budget and this was achieved because most of the technologies used are open source.

Behavioral Feasibility:

In this study, the aim is to verify the usability of the proposed system. The proposed system is deployed with android app so that both users can login into app and get current repot of patient. Both of the deliverables are easy and user friendly to install as well as makes use of intuitive user interface for user friendly experience.

DATA FLOW:

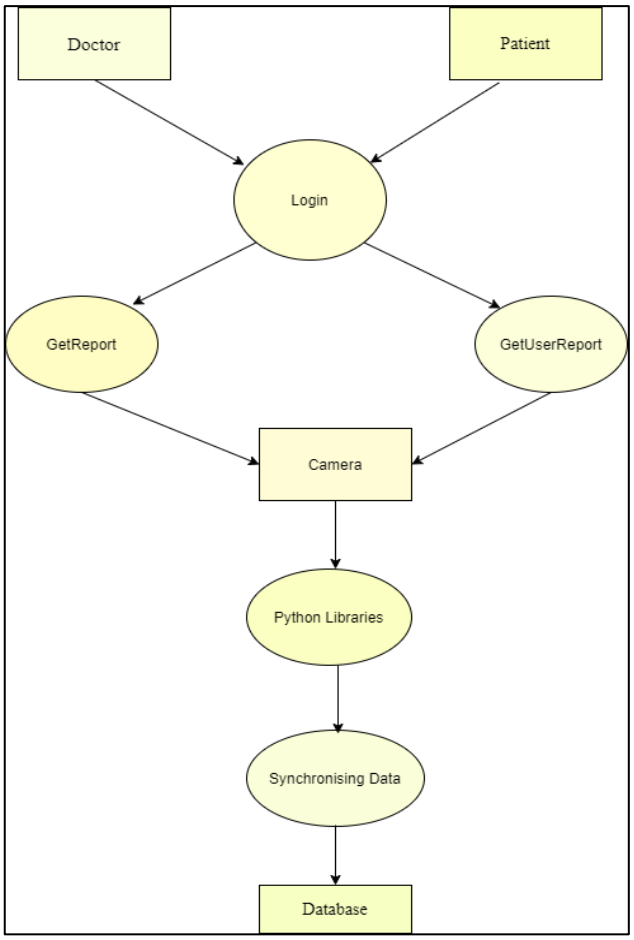

Figure: Data Flow Diagram

ADVANTAGES:

- This system is developed to be helpful to the doctors and can be monitor without actually visiting the patient's room.
- By monitoring the patient emotions doctor can do analysis and take according decisions to it.
- System automatically updates the app after image recognition.
- Patients relative an also login to app and check the condition.

APPLICATIONS:

- ICU's Patients in the hospitals.
- Coma Patients.
- Patients who needs complete bed rest.

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CONCLUSION

This project is aimed to be helpful for hospitals for monitoring the patient's facial recognition. The system uses facial template and algorithm for matching images to determine the current condition of patient and stores the data in database. The system is effective for information retrieval.

REFERENCES

[1] (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 3, No. 3, 2012 Development of a Mobile Phone Based e-Health Monitoring Application Available: https://thesai.org/Downloads/Volume3No3/Paper7-Development_of_a_Mobile_Phone_Based_e-Health_Monitoring_Application.pdf

[2] C. Premalatha1, R.P. Keerthana2, R. Abarna3 International Research Journal of Engineering and

Technology (IRJET) e-ISSN: 2395-0056 Volume: 06 Issue: 01 | Jan 2019 www.irjet.net p-ISSN: 2395-0072Available:https://www.irjet.net/archives/V6/i1/IRJET-V6I1163.pdf

[3] Mohanad Abdulhamid, Kiprono Victor1 Department of Electrical Engineering, Al‑Hikma University, Baghdad, Iraq, 1Department of Electrical Engineering, University of Nairobi, Nairobi, Kenya Available:http://www.eijas.org/article.asp?issn=25890603;year=2019;volume=4;issue=2;spage=49;epage=56;aulast=Abdulhamid

[4] Sufiya S Kazi1, Gayatri Bajantri2, Trupti Thite3 International Research Journal of Engineering and Technology(IRJET)e-ISSN:2395-0056 Volume:05Issue:04Apr-2018 p-ISSN: 2395-0072

Availablehttps://www.irjet.net/archives/V5/i4/IRJET-V5I4653.pdf

[5] Xiao-Ling Xia 1, Cui Xu*2, Bing Nan3 `College of computer science. Donghua University, Shanghai, China Available: https://www.researchgate.net/publication/319487998_Facial_Expression_Recognition_Based_on_TensorFlow_Platform/link/59ae9dc4a6fdcce55a4791f9/download