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(Accredited by NBA and NAAC)

Department of Computer Science and Engineering

SCIENCE AND TECHNOLOGY PROJECT (STP) PROPOSAL

VIRUTUAL HOSPICE FOR MEDICAL AND SURGICAL TREATMENT

Submitted by

Murugalakshmi . K

To

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

DOTE campus, Chennai-600025

2015-2016

APPLICATION FOR SCIENCE & TECHNOLOGY PROJECTS

1	Name of the Student	Murugalakshmi . K
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2	Name of the Guide	Dr.G.Geetha
	Designation	Professor(CSE)
	Insitutional Address	Jerusalem College of Engineering, Velachery Main Road, Chennai-600100
	Phone No. & Mobile No.	044-2246 1404, 9600100255
3	Project Title	Virtual Hospice for Medical and Surgical Treatment
4	Sector in which your Project proposal is to be Considered	Engineering & Technology
5	Project Details	
	Introduction	Annexure-I
	Objective	Annexure-I
	Work Plan	Annexure-II
	Budget	Annexure-III
	Methodology	Annexure-IV
	Any other Details	Annexure-V
6	Has a similar project been carried out in your college / elsewhere. If so furnish details of the previous project and highlight the improvements suggested in the present one	Nil

CERTIFICATE

This is to certify that Miss. Murugalakshmi.K is a bonafide final year student of P.G. professional courses of our college and it is also certified that two copies of utilization certificate and final report along with seminar paper will be sent to the Council after completion of the project by the end of April 2016.

Signature of the Guide **Signature of the HOD** **Signature of the Principal/ Head of the Institution**

Annexure I

INTRODUCTION:

Healthcare System is currently understood to encompass healthcare services that are available to everyone, independent of time and location. Systems that can fulfill the promise of delivering healthcare services at any time and any location will have significant implications for the treatment of chronic disease conditions as well as maintaining and encouraging healthy and independent living. A systems approach is needed to integrate sensors with safe, secure and timely collection, dissemination and interpretation of data related to health status. It also highlights that the role of user and decision-maker may or may not overlap.

Wearable technologies have moved out of the clinic to monitor patients going about their day-to-day life over extended periods. Sensors are primarily used to monitor three types of signals: activity, physiological and environmental. Data from these sensors can be collected, analyzed and made available to the wearers, caregivers, or healthcare professionals with the goal of improving the management and delivery of care, engaging patients and encouraging independent living. The compatibility of these flexible sensors with daily life and the ease with which they interface with other information communication technologies that has driven the widespread experimentation and investigation of their use for healthcare.

Cloud Computing, in a simple words, means Internet based Computing. Since the Internet can be thought of as clouds, and therefore the term cloud computing is used. Process execution and computation is done through the Internet. The users who use Cloud can have access to any resource and database with proper authority through the Internet anytime from anyplace and for as long as they need it, without having to worry about any management or maintenance of actual resources. Besides, resources and databases in cloud are usually very scalable and dynamic. Private cloud framework is proposed that addresses the privacy and trust issues and provides encrypted storage with public clouds. The proposed method uses Homomorphic Encryption for protecting the user data.

OBJECTIVE:

The objective of this project can be summarized as:

- ✓ To propose a new network enabled system that supports various wearable sensors and contains on-board general computing capabilities for executing individually tailored event detection, alerts, and network communication with various medical informatics services.
- ✓ To evaluate the performance of such system (QOS factors) by using wearable sensors like pressure sensors, galvanic skin response sensors, flex sensors, piezo-electric film sensors and temperature sensors.
- ✓ To provide the security and real time monitoring.

Annexure-II

TIME AND ACTIVITY CHART

PHASE I

Activity – Phase I	**Months**						
	0	**1**	**2**	**3**	**4**	**5**	**6**
Receive Grant							
Purchase of equipment							
Learning about Microcontroller and Android based application development							
User Interface Design							
Command Interface Module							
Activity Dispatch and Analysis Module							

Phase-I

A. Learning about Microcontroller and Android based application development
B. User Interface Design
C. Command Interface Module
D. Activity Dispatch and Analysis Module

Activity –Phase II	Months					
	7	8	9	10	11	12
Algorithm Design and Implementation						
Monitoring the Data						
Storing to the Cloud						
Interface sensors with a source system						
Acknowledgement						
Deployment and Verification of the system						

Phase -II

E. Algorithm Design and Implementation
F. Monitoring the Data
G. Storing to the Cloud
H. Interface sensors with a source system
I. Acknowledgement
J. Deployment and Verification of the system

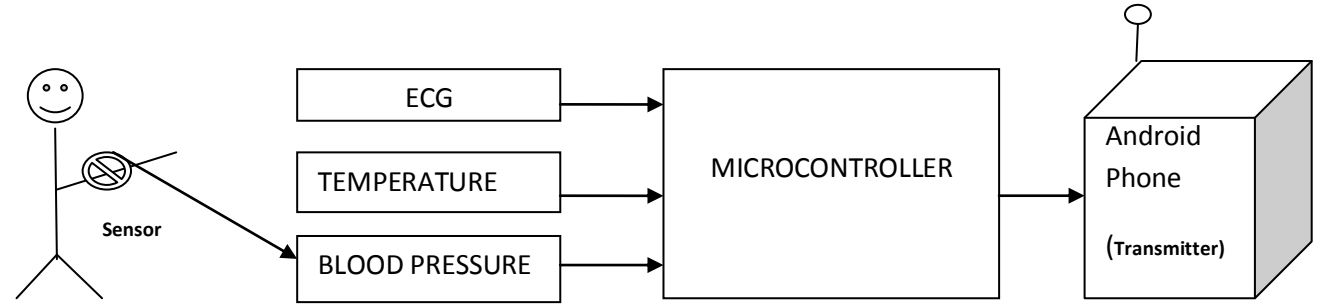
BUDGET:

S.No	Component	Cost
1	Mobile with Android	7000
2	PIC Microcontroller	1000
3	WEARABLE SENSORS (TEMP,PRESSURE,HEART BIT RATE)	30000
	TOTAL	38,000

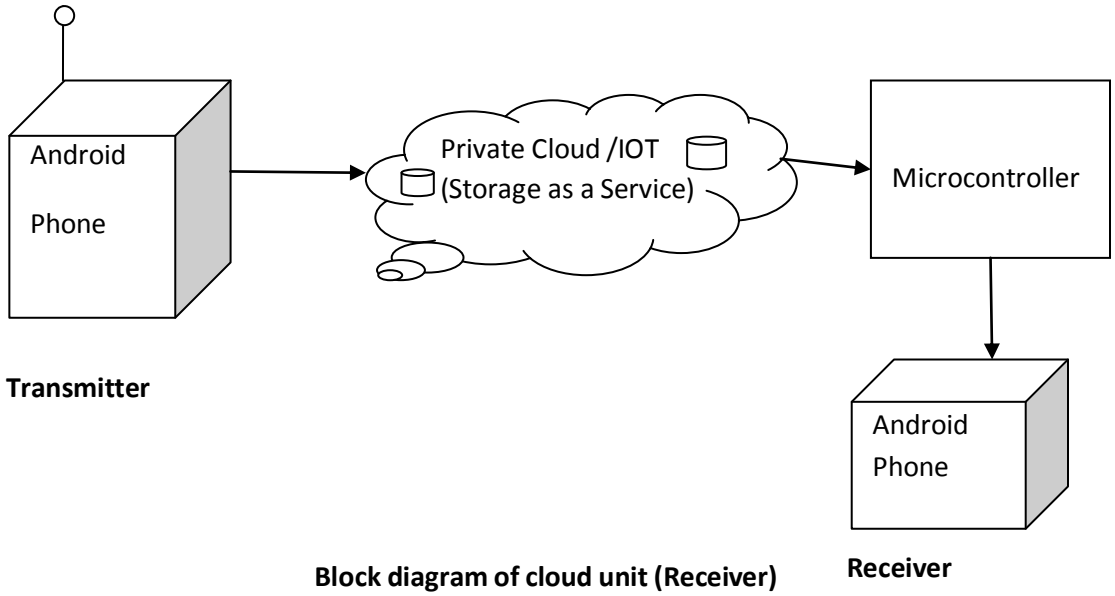
Annexure –III

Methodology:

The proposed system is being implemented in cloud computing platform with support for wearable sensors and android mobile phones. The system can be categorized into two based on the tasks that needs to be manipulated:

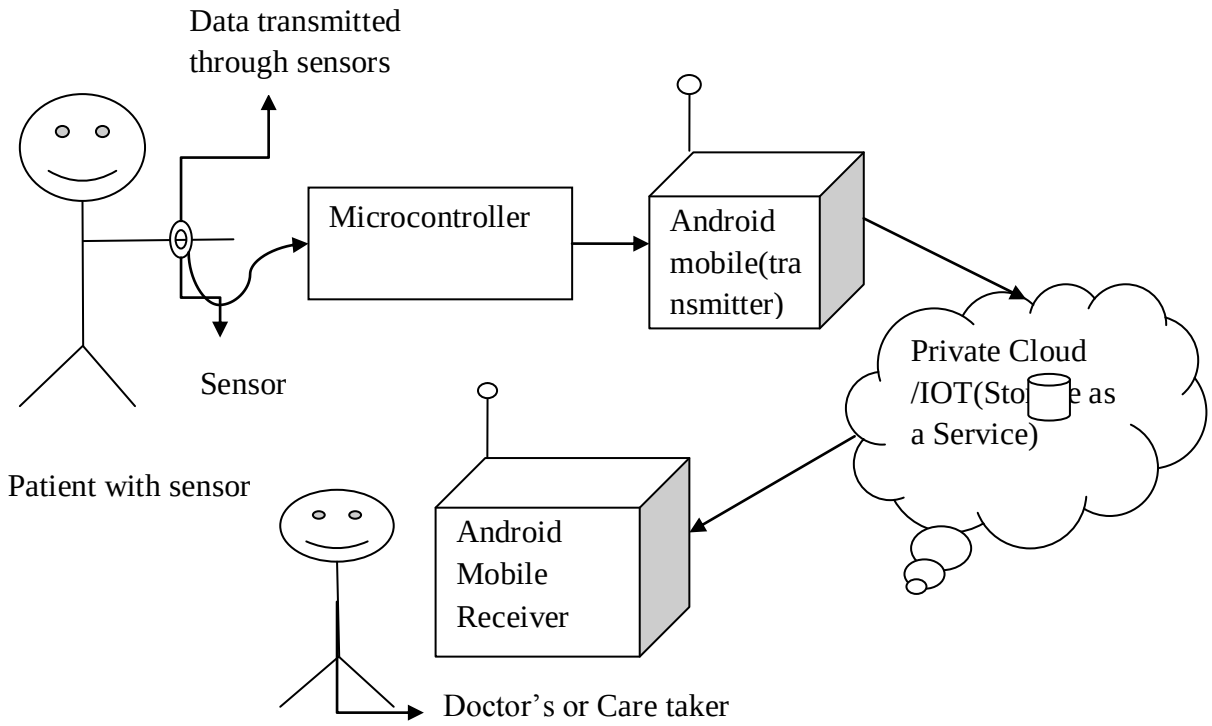


Block diagram of patient Unit (Transmitter)



Block diagram of cloud unit (Receiver)

ARCHITECTURE OF PROPOSED SYSTEM



Block Diagram of Cloud Based Healthcare monitoring system using wearable sensors

Description:

The health care monitoring system which uses wearable sensors and cloud computing technology.To create the Android Application for monitoring the patient`s activities. The doctor or caretaker responds the patient's request through the cloud.

Transmitter: (Patient to Cloud)

Patient unit: The patient unit consists of three different types of sensors for measure the temperature, BP and ECG of the human body in its working environment. The sensors are connected in the basis of wearable sensor network. The microcontroller of the patient unit acquires the sensor information by the help of the signal conditioning circuit. And in the mean time microcontroller passes that acquired information the Main Controller Unit by the help of the internet transmitter module to the cloud.

Receiver: (Cloud to Doctor/Care taker)

Doctor Unit: The doctor or caretaker responds the patient's request through the cloud. Private cloud framework is proposed that addresses the privacy and trust issues and provides encrypted storage with public clouds. The proposed method uses Homomorphic Encryption for protecting the user data .

Annexure-V

The goal of Healthcare monitoring individuals in the home and community settings can be achieved. When monitoring has been performed in the home, researchers and clinicians have integrated ambient sensors in the remote monitoring systems. However some challenges remain, including efficient energy harvesting, human-device interfacing, improving the quality and range of measurements. The integration of different power sources, sensors, processing and testing in a non-controlled human environment is essential to establishing confidence in the diagnostic capabilities of these systems and their ability to change outcomes. A new network enabled system that supports various wearable sensors and contains on-board general computing capabilities for executing individually tailored event detection, alerts, and network communication with various medical informatics services.The system evaluate the performance of such system (QOS factors) by using wearable sensors like pressure sensors, galvanic skin response sensors, flex sensors, piezo-electric film sensors and temperature sensors.It provide the security and real time monitoring.

References:

1. Mary M. Rodgers, Vinay M. Pai, and Richard S. Conroy **"Recent Advances in Wearable Sensors for Health Monitoring"** IEEE SENSORS JOURNAL, VOL. 15, NO. 6, JUNE 2015.

2. Jiafu Wan and Caifeng Zou, South China University of Technology Sana Ullah, King Saud University Chin-Feng Lai, National Chung Cheng University Ming Zhou, Huazhong University of Science and Technology Xiaofei Wang, Seoul National University **"Cloud-Enabled Wireless Body Area Networks for Pervasive Healthcare"** IEEE Network • September/October 2013.

3. O. O. Ogunduyile, K. Zuva, O. A. Randle, and T. Zuva, **"Ubiquitous healthcare monitoring system using integrated triaxial accelerometer,** SpO2 and location sensors," Int. J. UbiComp, vol. 4, pp. 1–13, Sep. 2013.

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