VISVESVARAYA TECHNOLOGICAL UNIVERSITY
"JNANA SANGAMA", BELAGAVI-590018

A Project Work Phase-I (17CSP78)
Report on

"Android based application for senior citizens"

Project Report submitted in partial fulfillment of the requirement for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

Submitted by

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CERTIFICATE

Certified that the Project Work Phase-I (17CSP78) entitled **"ANDROID BASED APPLICATION FOR SENIOR CITIZENS"** is a bonafide work carried out by:

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in partial fulfillment for VII semester B.E., Project Work in the branch of Computer Science and Engineering prescribed by Visvesvaraya Technological University, Belagavi during the period of September 2020 to January 2021. It is certified that all the corrections and suggestions indicated for internal assessment have been incorporated. The Project Work Phase-I Report has been approved as it satisfies the academic requirements in report of project work prescribed for the Bachelor of Engineering degree

..…………………… ..……………..……… …...…..…………….……
Signature of the Guide   Signature of the HOD   Signature of the Principal
                                                                                              & CEO

[Mrs.Sneha Karamadi]   [Dr. Rekha B. Venkatapur]   [Dr. K.V.A. Balaji]

DECLARATION

We, the undersigned students of 7th semester, Computer Science & Engineering, KSIT, declare that our Project Work Phase-I entitled **"ANDROID BASED APPLICATION FOR SENIOR CITIZENS"** is a bonafide work of ours. Our project is neither a copy nor by means a modification of any other engineering project.

We also declare that this project was not entitled for submission to any other university in the past and shall remain the only submission made and will not be submitted by us to any other university in the future.

Place:

Date:

Name and USN		Signature
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ABSTRACT

In Android based application for senior citizens, we develop a smart phone application to assist elderly people for independent living indoors. It reduces the health expenditures and burden of health care professionals. It facilitates the care taker by tracking the patients indoors their own homes and avoids certain accidents. Furthermore, it also helps the family members to track the activities, when they are outside from homes.

To elevate the imperativeness and reinforce the health of elders, in order to provide an interactive service management platform to the elders a robust environment of numerous sensors are clubbed together to establish an intuitive platform. Aged people find problem while walking they face problems of obstacles in front of them which may be hazardous for them because of blurriness.

ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task will be incomplete without the mention of the individuals, we are greatly indebted to, who through guidance and providing facilities have served as a beacon of light and crowned our efforts with success.

First and foremost, our sincere prayer goes to almighty, whose grace made us realize our objective and conceive this project. We take pleasure in expressing our profound sense of gratitude to our parents for helping us complete our Project Work Phase-I successfully.

We take this opportunity to express our sincere gratitude to our college **K.S. Institute of Technology,** Bengaluru for providing the environment to work on our project.

We would like to express our gratitude to our **MANAGEMENT,** K.S. Institute of Technology, Bengaluru, for providing a very good infrastructure and all the kindness forwarded to us in carrying out this project work in college.

We would like to express our gratitude to **Dr. K.V.A Balaji, Principal & CEO**, K.S. Institute of Technology, Bengaluru, for his valuable guidance.

We like to extend our gratitude to **Dr. Rekha.B.Venkatapur**, **Professor and Head**, Department of Computer Science & Engineering, for providing a very good facilities and all the support forwarded to us in carrying out this Project Work Phase-I successfully.

We also like to thank our Project Coordinators, **Mr. K Venkata Rao,** Associate Professor, **Mrs. Vaneeta M,** Associate Professor, **Mr. Raghavendrachar S,** Asst. Professor, **Mr. Aditya Pai H,** Asst. Professor, and **Mrs. Sneha K,** Asst. Professor, Department of Computer Science & Engineering for their help and support provided to carry out the Project Work Phase-I successfully.

Also, we are thankful to **Mrs. Sneha K** Designation, for being our Project Guide, under whose able guidance this project work has been carried out Project Work Phase-I successfully.

We are also thankful to the teaching and non-teaching staff of Computer Science & Engineering, KSIT for helping us in completing the Project Work Phase-I work.

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CHAPTER 1

INTRODUCTION

1.1 Overview

As the age of the humans increase most of the people lose their eye sight nowadays, they face more problems in their daily routine life. One such example is persons with low visibility can't operate mobiles in the emergency conditions whenever they need help from required persons, (requirement of doctor). Due to blurriness of eyes, aged people find problem while walking, they face problem of obstacle appearance in front of them which may be hazardous. To overcome these various problem faced by low eyesight and old age people we have come up with a solution which helps them to walk freely and fulfill their requirements using speech reorganization and intimate to the person by text message with the area where the patient is. This project also helps in monitoring the heart rate and body temperature smoke detection, intimation and one more added feature is sensing the darkness and illuminating the light/torch automatically.

"Android based application for senior citizens", aims at providing proper healthcare to patients suffering from three types of health issues.

The three issues for which this project is designed to provide healthcare are:

- ➢ Breathing disorders or lung diseases due to hazardous chemicals in air
- ➢ Poorer eye sight due to ageing factor
- ➢ Skin related diseases due to excessive heat in the surrounding

1.2 Purpose of the project

In the Existing System, there should be some Care Taker along with the Patient who personally monitors the age old patients. Also if their conditions are abnormal, then they will suffer a lot. That also causes more problems. Also in this system the patient will not gain any confidence rather the presence of the care taker will remind them they are still sick. The psychologist says this have to be avoided to make the patient to recover from illness. Doctors say that the medicine will heal only half of the illness and the confidence only will heal them completely.

1.3 Current Approach

One of the key elements of a successful monitoring system for elderly people is unnoticeable, meaning that it should be able to detect the desired parameters without interfering with user's activities. To this purpose, the parameters are more suitable for monitoring user's behavior are positioning and body motility. In this direction, a significant help is given by the recent advancements in mobile and wearable devices. Indeed, latest devices are equipped with different sensors such as LDR, smoke sensor, Global Positioning System (GPS) in android coding and so on, which can be used for detecting user position.

CHAPTER 2

LITERATURE SURVEY

An efficient healthcare system is a requirement for both developed countries, where the cost of healthcare is high and security and privacy are critical issues and developing countries like India, where there is a mass population to be taken care. An efficient, reliable, robust and secure health flow is important to manage patients, their health records smoothly and for the right care to reach to the patient at any time.

With the recent advancements in mobile devices involving secure credential storage, larger storage capability, wireless communication interfaces and computational power, they can be used in healthcare for not only gathering vital health parameters, of a patient, but also assist them to take precautionary measures for an efficient treatment.

Technology employed as a part of healthcare can also help determine location of the patient in case of emergency through location service (GPS) on recent mobile devices.

The main contribution of this paper is, proposal of a robust secure healthcare architecture using Android based mobile device with Bluetooth interface.

CHAPTER 3

PROBLEM IDENTIFICATION

3.1 Problem Statement

Senior citizens face so many problems in their daily routine, losing their eyesight due to which they face problem in walking and find difficulty identifying the obstacles in front of them. To reduce such problems, we have brought up this project which helps the old age people as well as the patients who are suffering from these diseases or issues.

More dangerous situations occur when person is unconscious or not able to take action against emergency for example physically handicapped person or old age citizen who can't step down immediately from emergency place.

Considering other situation like person is not aware about emergency at all and he/she continues their work in hand; in such situation, detecting any emergency with help of sensors and reporting them to outside world, so that concern disaster team takes appropriate action to rescue the needy.

3.2 Project Scope

- With the ongoing changes taking place in today's technology the entire unit can be made into a simple and compact device. Flexible solar power developed on a plastic strip can be attached to the unit as the source of power supply

- The design permits them to keep physically and psychologically fit from unusual wellbeing indications

CHAPTER 4

GOALS AND OBJECTIVES

4.1 Project Goals

- To increase independency in senior citizens

- In this mass population and pollution this application plays a vita l role for skin allergic people

- To overcome the breathing disorder or the lung diseases caused due to hazardous chemical in air

- The main contribution of this project is, proposal of a robust secure healthcare architecture using Android based mobile device with Bluetooth interface

4.2 Project Objectives

- The senior citizens would be able to find help from this application for detecting various issues in the environment
- This application is created and stored in the Android based Smartphone, generates speech output depending upon the incoming messages transmitted via Bluetooth
- People who are prone to skin related problems can also use this application

- Depending on the detection of smoke the particular inputs of the microcontroller are triggered by the comparator

4.3 Work carried in future

- Test the entire component
- Connection made as shown in block diagram
- Coding in embedded c & java (Android)
- Dump the code in Hardware kit
- Interface Hardware and software

Get the output and cross verification or apply for test condition.

4.4 Block Diagram
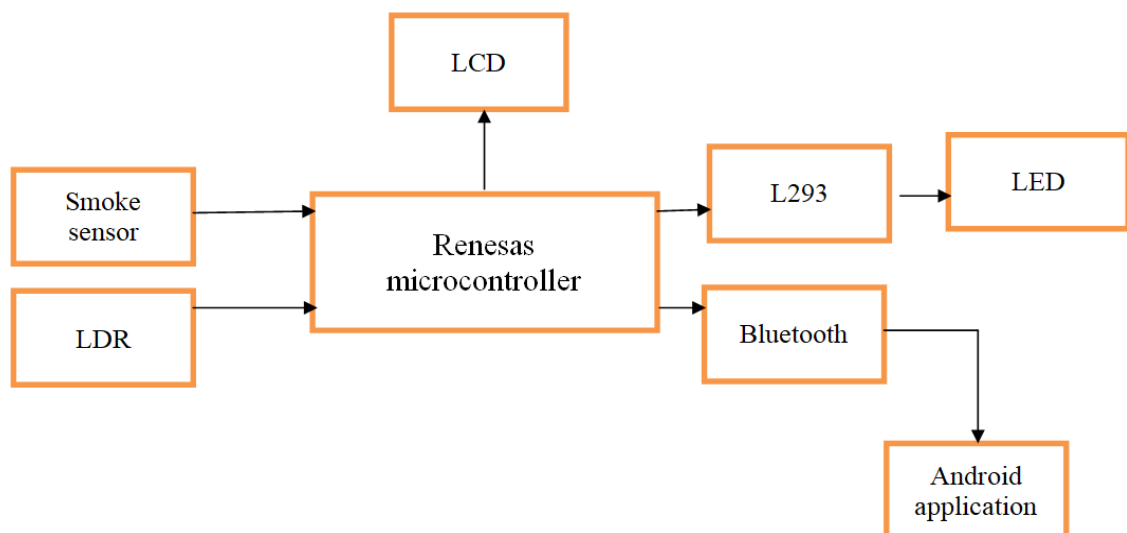
CHAPTER 5

SOFTWARE REQUIRMENTS SPECIFICATION

5.1 Software Requirements

- **Cube Suite+ Compiler:**

    Cube Suite is an integrated development environment used on windows, it allows efficient development. It is also integrated development environment (IDE) for V850 microcontrollers, integrating the necessary tools for the development phase of software (e.g. design, implementation, and debugging) into a single platform by providing an integrated environment.

- **Renesas Flash Programmer**:

    V3 provides usable and functional support for programming the on-chip flash memory of Renesas microcontrollers in each phase of development and mass production.

- **Android 4.0**:

    Android 4.0 builds upon the significant changes made by the tablet-only release Android Honeycomb, in an effort to create a unified platform for both smart phones and tablets.

- **Eclipse:**

    Eclipse is a ground-breaking Java IDE compatible with Mac, Windows, and Linux devices. It gives an extensible system and a central workspace that allows high adaptability.

5.2 Hardware Requirements

- **Renesas Microcontroller:**

    Renesas microcontrollers and microprocessors are fast, highly reliable, low in cost and deliver eco-friendly performance.

- **LM35:**

    The LM35 is an integrated circuit sensor that can be used to measure temperature with an electrical output proportional to the temperature (in °C).

- **Bluetooth:**

    It is a standard for the short range wireless interconnection of mobile phones and the embedded system which conveys the message to alert the patient in prior.

- **LDRs (light-dependent resistors) :**

    LDRs are used to detect light levels, for example, in automatic security lights. Their resistance decreases as the light intensity increases: in the dark and at low light levels, the resistance of an LDR is high and little current can flow through it.

- **Comparator:**

    Comparator circuit can be used to detect either a positive or a negative going input voltage depending upon which input of the operational amplifier we connect the fixed reference voltage source and the input voltage too.

- **Ultrasonic Sensor:**

    An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves and converts the reflected sound into an electrical signal.

- **Functional Requirements:**

    The functional requirements for a system describe what the system should do. These requirements depend on the type of software being developed, the general approach taken by the organization when writing requirements. The functional system requirements describe the system function in detail, its inputs and outputs, exceptions and so on.

    Functional requirements are as follows:
    - The system uses Embedded System to control the activities of other components connected to it.
    - System reaction to a particular input [for eg: smoke in the environment]
    - System behavior at a particular input [sends the alert message to the android]

Non-Functional Requirements

1. Extensibility: The application should be extensible to allow for adding other services in the future.

2. Integration: The system will complete the services. Also, the application shall use APIs such as Google maps.
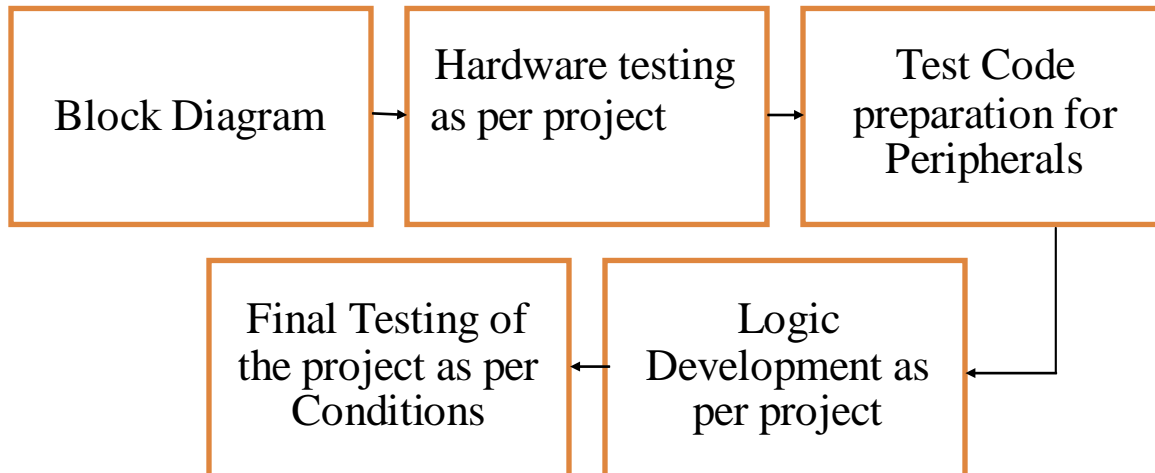
3. Security: The system should be highly secure since only authenticated users gain access to the server. It should respect the following:

> **Confidentiality:** Users shall view data related to them in their database. Also, the application shall insure the privacy of the profile information, the user shall be able to choose what information would be visible for others

> **Integrity:** Only authorized actors shall be able to modify data using authorized operations

> **Availability:** This is a main concern, the application shall be always available as patients may need to access it any time.

> **Maintainability:** The system should be easily maintainable to allow for additional upgrades that may need to be implemented in the future

CHAPTER 6

METHODOLOGY

6.1 Methodology

Block Diagram	→	Hardware testing as per project	→	Test Code preparation for Peripherals

| Final Testing of the project as per Conditions | ← | Logic Development as per project | ← | |

6.2 Steps

Our project consists of 2 sections, one is embeded other one is android.

- In the embedded part, the sensors detect any problems in the environment and sends the alert to the android app with the help of Bluetooth for example we have a smoke sensor which detects the smoke in the surrounding and sends a alert message to the android app.

- In the android part, the alert message is conveyed to the patient or the senior citizens through voice output.

1. Login page: The user can login from their credentials.

2. Home page: Bluetooth connectivity, the patient can send an alert message if there is any emergency to their family which in turn also send the location.

3. User Login

- **Description:** The system provides facility to login into the system
- **Input:** Enter username and password
- **Output:** User profile page
- **Processing:** The system will check the input of user and it validates then the login is done. Otherwise user will be asked to re-enter the username and password

6.2 Description

Once worn by the patient the sensors begin to monitor the surrounding environment conditions. The output of the sensors is a voltage which corresponds to the surrounding environmental conditions. This voltage generated by the sensors is fed to the inputs of the microcontroller. Based upon the program embedded within the controller an output is generated and transmitted to the Android based Smartphone via Bluetooth module.

An application created and stored in the Android based Smartphone, generates speech output depending upon the incoming messages transmitted via Bluetooth.

As per medical precautions, patients suffering from skin related problems should not expose themselves to high temperature. In order to monitor the temperature of the surrounding environment an LM35 is utilized in this demonstration. This sensor is directly connected to the ADC unit of the

microcontroller. In the program embedded within the microcontroller, a threshold voltage range is set in the program. If the output of LM35 sensor crosses this threshold voltage the patient is alerted via speech signal from Android Smartphone of high temperature in the environment.

If a patient is suffering from any breathing problem such as asthma or lung related problems, they are advised to stay away from sources generating air pollution. For example, places where smoke is generated from burning tyres or wood, etc. In such conditions the patient should be alerted in advance in order to take precautionary measures. For this purpose we have provide a smoke sensor connected to a comparator. Depending on the detection of smoke the particular inputs of the microcontroller are triggered by the comparator. If the voltage level crosses the predefined voltage level the patient is alerted via his/her Android Smartphone.

If the room is dimly lit due to environment conditions, the LDR attached to the system activates the high power LED lights.

Another advantage of using Android Smartphone is the presence of GPS. Using this feature, if the patient is finding discomfort in some remote place, he/she can inform their near and dear one's of the current location by sending the locations coordinates.

CHAPTER 7

APPLICATIONS

7.1 Project Applications:

- It helps to aged peoples who suffering from blurriness of eyes
  - ➢ If the room is dimly lit due to environment conditions, the LDR attached to the system activates the high power LED lights

- Regular updates about the environment conditions
  - ➢ Once worn by the patient the sensors begin to monitor the surrounding environment conditions. The output of the sensors is a voltage which corresponds to the environment

- Regular Doctor Visit will be avoided
  - ➢ This application would be helpful for the senior citizens who are advised to stay home and safe in this current crises

- This application can be used in medical fields
  - ➢ An efficient healthcare system is a requirement for both developed countries, where the cost of healthcare is high and security and privacy are critical issues and developing countries like India, where there is a mass population to be taken care

- Pre-alert about hazardous environmental conditions
  - ➢ Depending on the detection of the particular inputs of the microcontroller are triggered by the comparator. If the voltage level crosses the predefined voltage level the patient is alerted via his/her Android Smartphone

- This unit can be used by different patients, based on their diseases

CHAPTER 8

CONTRIBUTION TO SOCIETY

In this ongoing pandemic in all our lives, we all understand and know how much our life matter so as for the senior citizens where physically contacting the caretaker would be a risk, our project would come in aid for the patients.

Our project contributes to the society by providing self reliance among the patients. In this worldwide circumstance, personal assistant can be kept away our application also provides patients safety by sending the location to the family member or any other caretaker during any emergency condition via SMS.

- We develop android smart phone application to assists elderly people for independent living in their own homes
- It reduces the health expenditures and burden of health care professionals in care facility units
- It facilitates the care giver assistant by tracking the elderly persons in their own homes and avoids certain accidents
- Furthermore, it also helps the family members to track the activities, when they are outside from homes

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APPENDIX –I   CSI PUBLISHED PAPER COPY

Android based application for senior citizens

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Abstract

To elevate the imperativeness and reinforce the health of elders, in order to provide an interactive service management platform to the elders a robust environment of numerous sensors are clubbed together to establish an intuitive platform. Aged people find problem while walking they face problems of obstacles in front of them which may be hazardous for them because of blurriness.

I. Introduction

As the age of humans increase, most of the people lose their eye sight nowadays, they face many problems in their daily routine so,we have brought up a device where it works as a multipurpose health assistant which uses an android app to alert the elders through speech command. One such example is the person with low visibility can't operate mobiles in the emergency conditions, and then they need help from others. To overcome these various problems faced by low sight by old aged people we have come up with a solution which helps them to walk freely and fulfill their requirements using speech recognition and intimate to the person by text message with the area where the patient is, and calling to specified persons. This device also helps in monitoring the heart rate, body temperature, smoke detection and intimation. One more added feature is sensing the darkness and illuminating the light/torch automatically.

II. Objectives

- The senior citizens would be able to find help from this application of detecting various problems in the environment.
- This application is created and stored in the Android based Smartphone, generates speech output depending upon the incoming messages transmitted via Bluetooth.
- People who are prone to skin related problems can also use this application.
- Depending on the detection of smoke the particular inputs of the microcontroller are triggered by the comparator.

III. Literature Survey

An efficient healthcare system is a requirement for both developed countries, where the cost of healthcare is high and security and privacy are critical issues and developing countries like India, where there is a mass population to be taken care,an efficient, reliable, robust and secure health flow is important to manage patients, their health records smoothly and for the right care to reach to the patient anytime. For example, secure identifiers can help an individual to reduce errors.

With the recent development in mobile devices involving secure credential storage, larger storage capacity, wireless communication interfaces and computational power, they can be used in healthcare for not only gathering vital health parameters of a patient but also assist them to take precautionary measures for an efficient treatment. Technology employed as a part of healthcare can also determine location of the patient in case of emergency through location service (GPS) on recent mobile devices.

The main contribution of this paper is, proposal of a robust secure healthcare architecture using Android based mobile device with Bluetooth interface.

IV. Working

- LCD is used only for testing purpose.
- Bluetooth to transfer data to the android mobile.
- Only for demo concern, android mobile is used. As a future product, the embedded unit and android application will be integrated in a single unit.
- For demo concern, smoke sensor testing will be shown with incense smoke or perfume smoke.

V. Block Diagram
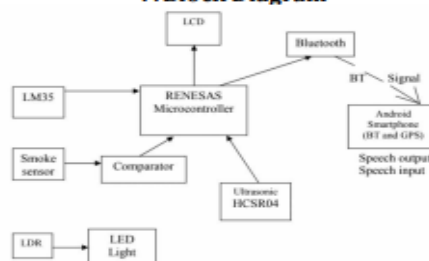
VI. Applications

- It helps to aged peoples who suffering from blurriness of eyes.
- Regular updates about the body conditions.
- Regular Doctor Visit will be avoided.

VII. Future Scope

With the ongoing changes taking place in today's technology the entire unit can be made into a simple and compact device. Flexible solar power developed on a plastic strip can be attached to the unit as the source of power supply.

VIII. Description

- Ultrasonic sensor is utilized to locate the distance of any object from the patient.
- As per medical precautions, patients suffering from skin related problems should not expose themselves to high temperature. In order to monitor the temperature of the surrounding environment an LM35 is utilized in this demonstration.
- If a patient is suffering from any breathing problem such as asthma or lung related problems, they are advised to stay away from sources generating air pollution. For example, places where smoke is generated from burning tyres or wood, etc. In such conditions the patient should be alerted in advance for this purpose we have provided smoke sensor connected to a comparator.
- If the room is dimly lit due to environment conditions, the LDR attached to the system activates the high power LED lights.
- Another advantage of using Android Smartphone is the presence of GPS. Using this feature, if the patient is finding discomfort in some remote place, he/she can inform their near and dear one's of the current location by sending the locations coordinates.

IX. Acknowledgement

We would like to express our deep gratitude to Sneha Karamadi for her valuable and constructive suggestions during the planning and development of this project. Her willingness to give her time so generously has been very much appreciated. We would also like to thank all the professors of KSIT for their continuous support and encouragement.

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APPENDIX- II CERTIFICATES OF PAPER PRESENTED