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Daily Life Activity Tracking on Android

Ayesha Samreen

M. Tech Student, Dept. of C.S., P.E.S College of Engineering, Mandya, Karnataka, India

ABSTRACT: In this paper, we create android cell phone application to helps elderly individuals for autonomous 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. Smart home is regarded as an independent healthy living for elderly person. Advances in phone technology and newstyle of computing paradigm (i.e., cloud computing) permits realtime acquisition, processing, and tracking of activities in smarthome.

KEYWORDS: Daily Life Activities, Activity Tracking, Smart Homes, Android Smartphone.

I. INTRODUCTION

The developing statistic change towards a maturing populace is bringing uncommon changes into our general public. Nursing homes and care office units are eminent arrangement for elderly individuals. A man who lives in these units moves toward becoming discouraged because of absence of autonomy. Maturing society requests a dependable answer for remain dynamic for quite a while, counteract social confinement and help for performing day by day life exercises freely in their own particular homes. The headway in remote and universal advancements offers ainteresting chance to make unavoidable condition and applications to bolster elderly individuals. Savvy home is considered as one procedure to give a level of autonomy at homes and enhance their personal satisfaction [1]. It gives a stage to lessen the wellbeing consumptions and weight of medicinal services experts.
In both created and creating nations, quantities of Smartphone clients are expanding step by step. Cell phone runs an entire working framework and gives a stage to application engineers and clients. Google Android is a standout amongst the most focused markets because of its open source stage. Several applications have been created going from the intelligent amusements to social insurance area. Particularly the therapeutic space applications empower the clients to associate with the framework to give ongoing client help and help to enhance the general population way of life.

II. RELATED WORK

Countless homes have been produced as a physical tested to bolster the elderly society. Chowdhury etal. [3] built up a RFID-based healing facility ongoing patient administration framework. They built up the framework by taking after Agile System Development Methodology (ASDM) utilizing C# in Microsoft Visual Studio.net 2003 condition. It encourages programmed spilling understanding recognizable proof in doctor's facilities with the assistance of cell phones like PDA and advanced mobile phones.

The Harvard University research project, CodeBlue [4], deploy low-power wireless devices to provide ad hoc sensornetwork infrastructure for emergency medical care. They developed patient triage application in .NET compactframework, running on an iPAQ PDA with Windows CE. The application is capable of operating as active tags to store the information of a patient's identity, status, and history.

Oresko et al. [5] executed a model framework for wearable Cardiovascular Disease (CVD) location on Windows cell phone. It is equipped for performing ongoing ECG procurement and show, highlight extraction, and beat arrangement.

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They created two cell phone based stages for ceaseless observing and recording of a patient's ECG signals. Application effectively recognizes continuous CVD and creates customized heart wellbeing rundown reports.
John K. et al. [6] built up a cell phone application Wedjat, to stay away from in-take prescription missteps. It can remind its clients to take the right drugs on time and keep an in-take record for later survey by social insurance experts. It was created on a Windows Mobile 6.0 with the assistance of inherent schedule of .NET system.

Haghigh et al. [7] developed a mobile data mining for intelligent healthcare support on Nokia 95 phone to facilitate blood pressure patients. A general approach for Situation-Aware Adaptive Processing (SAAP) of data streams that incorporate situation awareness into data stream processingusing fuzzy logic. Their prototype system can reason about
situations of normal, prehypotension, hypotension, prehypertensionand hypertension.

As discussed above, smartphone has already been used for the provision of health care applications. In the context of
aging society, we present a daily life activity tracking application over android smartphone to enhance their independence and quality of life.

III. PROPOSED SYSTEM

The figure. 1., contains essentially microcontroller, temperature sensor, gas sensor, humidity sensor, LCD, GSM,and an android smartphone. Many embedded systems have substantially different designs according to their functions and utilities. In this project design, structured modular design concept is adopted and the system is mainly composed of a single microcontroller, interfaced to sensors like temperature sensor (LM35), humidity sensor, Gas sensor and GSM.
The microcontroller located at the centre of the block diagram forms the control unit of the entire project. Embedded within the microcontroller is a program that helps the microcontroller to take action based on the inputs provided by the output of the sensors.

- In this demonstration, a temperature sensor is used to detect the change in room temperature. The output of the temperature sensor is connected to the I/O pins of the microcontroller which is connected to the ADC unit present on-chip. If the temperature sensor detects room temperature is 40' C or above, the microcontroller will send the data to the Android Smartphone via GSM.
- Similarly Gas and Humidity sensor's data are checked for certain thresholds.
- A Humidity sensor is utilized to recognize the variation in room's humidity percentage. The output of the humidity sensor is associated with the I/O pins of the microcontroller which is associated with the ADC unit introduce on-chip. On the off chance that the humidity sensor distinguishes room's humidity percentage is 40% or over, the microcontroller will send the information to the Android Smartphone by means of GSM.
- A Gas sensor is used to detect the leakage of gas in the environment where the embedded system is setup. If it detects gas leakage, it will also send the information to the android smartphone via GSM.
- The android application will fetch current values of these three parameters –Temperature Gas and Humidity and displays in it. We can analyse the rise in any of these three parameters by looking on to the values fetched each time the system is started.

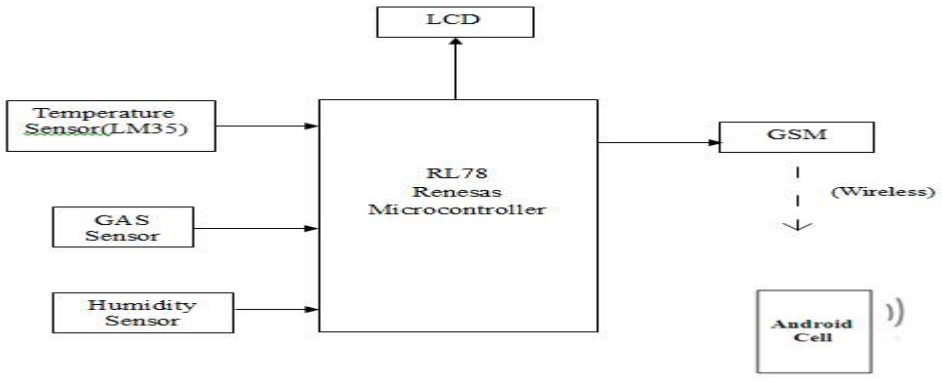

Figure. 1. Block diagram

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A. GSM Module (SIM 900)

SIM900 is a Tri-band GSM/GPRS engine that handles frequencies EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. SIM900 highlights GPRS multi-opening class 10/class 8 (optional) and reinforces the GPRS coding driving forces CS-1, CS-2, CS-3 and CS-4. You can use AT Command to get information in SIM card. The SIM interface supports the handiness of the GSM Phase 1 detail and also supports the convenience of the new GSM Phase 2+ confirmation for FAST 64 kbps SIM (expected for use with a SIM application Tool-kit).Both 1.8V and 3.0V SIM Cards are kept up.
The SIM interface is controlled from an inside controller in the module having clear voltage 2.8V. All pins reset as yields driving low. The "AT" or "at" prefix must be set toward the begin of each summon line. To end a charge line enter<CR>. Summons are for the most part trailed by a response that includes."<CR><LF><response><CR><LF>". All through this record, only the responses are appeared, <CR><LF> are disposed of purposefully.

B. RENESAS RL78x 16bit Microcontroller:
The Renesas Electronics RL78 microcontroller is a 16-bit CPU core with a CISC architecture with abundant features with inbuilt ADC.

C. Max232:
The max232 is a dual driver/receiver that includes a capacitive voltage generator to supply EIA-232 voltage levels from a single 5-V supply. Each receiver converts EIA-232 inputs to 5-V TTL/CMOS levels. These receivers have a typical threshold of 1.3 V and a typical hysteresis of 0.5V and can accept 30-V inputs. Each driver converts TTL/CMOS input levels into EIA-232 levels.

D. Alpha-numeric LCD Display:
A fluid precious stone show (LCD) is a level board, electronic visual show, in light of Liquid Crystal Technology. It comprises of a variety of small sections called pixels that can be controlled to present data. LCD are utilized as a part of an extensive variety of use, for example, PC screen, TV, instrument board, flying machine cockpit show and so on.

E. Android:
Android is a Linux-based cell phone working framework created by Google. Android is exceptional in light of the fact that Google is effectively building up the stage yet giving it away for nothing to equipment makes and telephone bearers who need to utilize Android on their gadgets. It is a product stack for cell phones that incorporates a working framework, middleware and key applications. The Android SDK gives the devices important to start creating applications on the Android stage utilizing Java programming dialect.

F. Sensors: Temperature, Humidity and Gas Sensor
Each sensor checks the surrounding environment conditions and sends analog data. This will be converted to digital format by the inbuilt ADC in the microcontroller. The data will be processed and will be compared with the set thresholds before alerting the user.

IV. RESULT

In this level incorporation of the equipment segments into Android Application.Here we are utilizing Renesas Microcontroller connecting between all Modules.The application fetches the current values for temperature, smoke and humidity and displays them with respective date and time. It also saves old records for analysis purpose.The microcontroller uses GSM Module (SIM 900) for sending text messages to the user.

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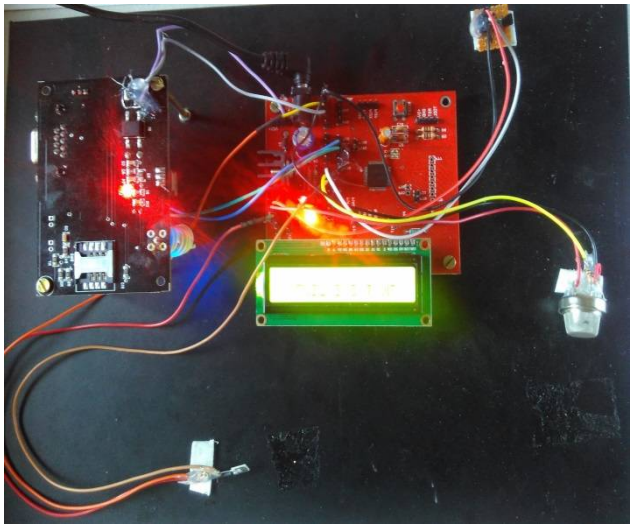

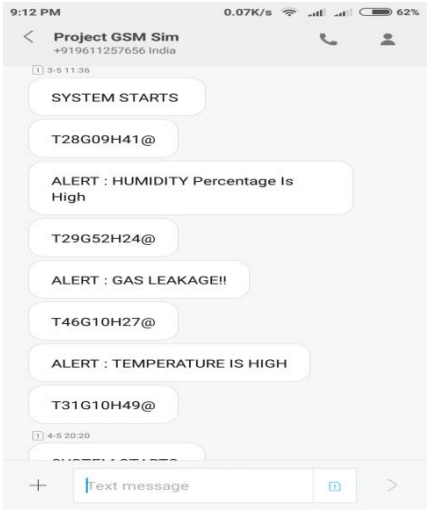

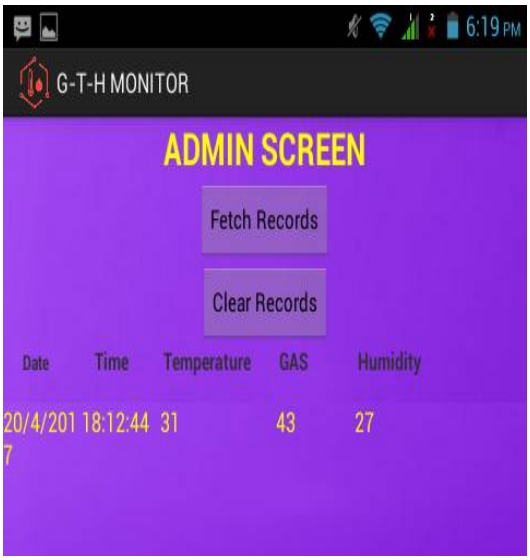

Figure 2:Snapshot of overall diagram

V. CONCLUSION

To provide mobility for tracking the daily life activities, smartphone is a convenient and suitable device due to its rich functionalities. In this project, we have utilized the smart phone, smart home, and cloud computing services that may help to reduce the demands on elder's attentions and effort while performing daily life activities. List of subscribed elderly persons, and alerts for critical situations are generated for care givers and family members. It reduces the health expenditures and burden of health care professionals. Our application is well integrated with smart home environment.

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VI. FUTURE WORK

In future to this system, most of the units can be embedded within the controller on a single chip such as GSM, with change in technology thereby making the existing system more effective..

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BIOGRAPHY

Ayesha Samreenis a final year student of Master of Technology (M.Tech) Pursuing in Computer Science and Engineering, P.E.S college of Engineering, Mandya, Karnataka, India. She received Bachelor of Engineering (BE) in 2015 from Ghousia College of Engineering, Ramanagara, Karnataka, India. Herresearch interests are Embedded System, Android application,IOT, Wireless sensor networks, Web2.0etc.