

**INTERIM PROGRESS REPORT
REVIEW I**

on

Smart IoT Enabled Intelligent - Health Medicine Device

Submitted by

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**Semester – VIII
Academic Year: 2018–19**

Under the supervision of

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I. Abstract

The time required to take medicine isn't printed on medicine box or can't be read by many. Sometimes people even forget to take pills. Anyone who has difficulty remembering to take their medication because of busy schedule benefited from the project. The project can be used by nurses in the hospitals who gets confuse to give medicines to patients. This project deals with particular time a patient needs to take pills which can be changed according to his requirement. It even ensures that right medicine at appropriate time is taken, moreover it monitors the number of pills left in the box. Efforts to improve medication management were observed to be fragmented and inconsistent: although there is a general acknowledgement that poor medication management. Establishment of a safe and secure Health Medicine Device that will keep track of real time information of the patient's medicine schedule and also will inform the hospital in case of any emergency regarding patient health. It is helpful to people who are forgetful about taking medicine in proper time, especially the elderly people. It can be used by nurses as well to avoid confusion in medication of patients. The time required to take medicine isn't printed on medicine box or can't be read by people. Sometimes they forget to take pills. This project deals with particular time a patient needs to take pills which can be changed according to his requirement. It even ensures that right medicine at appropriate time is taken ,moreover it monitors the number of pills left, if few , order of pill is sent by system to medical shop automatically through GSM.

II. Introduction

People rely on their medications to keep them healthy, but complex medication schedules can lead to mistakes like missing doses, taking incorrect amounts, or taking medicines at the wrong times. These mistakes could lead to unnecessary doctor or hospital visits, illness and even death. Hence there is a need to design a Medication Dispensing Device that can help people to take medication on schedule. This would prevent unplanned hospital or doctor visits related to incorrect medication use.

Our medicine box is programmable that allows users to specify the pill quantity and day to take pills, and the serve times for each day. Our smart medicine device contains three separate sub-boxes. Therefore, users can set information for different pills. When the pill quantity and time have been set, the medicine box will remind users to take pills using an alarm and LED indicator. Compared with the traditional pill box that requires users or nurses to load the box every day or every week. Our smart medicine device would significantly release users burden on frequent preloading of pills for users.

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III. Literature Review

[1] An IoT-Aware Architecture for Smart Healthcare Systems. Luca Catarinucci, Danilo De Donno, Luca Mainetti ,IEEE Internet of Things Journal, November 2015.

Automatic monitoring and tracking of patients, personnel, and biomedical devices with a complex network infrastructure relying on a CoAP, 6LoWPAN, and REST paradigms has been implemented

[2] A Health-IoT Platform Based on the Integration of Intelligent Packaging, Unobtrusive Bio-Sensor and Intelligent Medicine Box. Geng Yang, Li Xie, Matti Mäntysalo, Xiaolin Zhou, IEEE Transactions on Industrial Informatics, November 2014.

IoT-based intelligent home-centric healthcare platform connects smart sensors attached to human body for physiological monitoring and pharmaceutical packaging for daily medication.

[3] An Electronic Pillbox for Continuous Monitoring of Medication Adherence, Tamara. L. Hayes John, M. Hunt, Andre Adami, and Jeffrey A. Kaye, IEEE Engineering in Medicine and Biology Society, October 2012.

“Magic Medicine Cabinet” which used RFID to identify which medications were taken out of a cabinet, face recognition to identify who approached the device, and a broadband connection to be able to provide an integrated “situation health portal”. Thus, users were required to use the medicine cabinet and to store all medications in separate bottles that could be RFID tagged.

[4]Interventions to improve medication compliance in older patients living in the community: a systematic review of the literature. (Van Eijken M, Tsang S, Wensing Metal,Drugs Aging , 2016).

In this paper we studied randomised controlled trials (RCTs) on interventions aimed to improve compliance with medication regimens in older patients living in the community. It is known from other reviews that multifaceted interventions, a

combination of interventions, are more often effective than single-focus interventions, probably because these address a wider range of barriers. Also, an individual approach with specifically tailored interventions is effective at improving compliance.

[5] Mei-Ying Wang, John K. Zao Wedjat: A Mobile Phone Based Medication Reminder and Monitor.

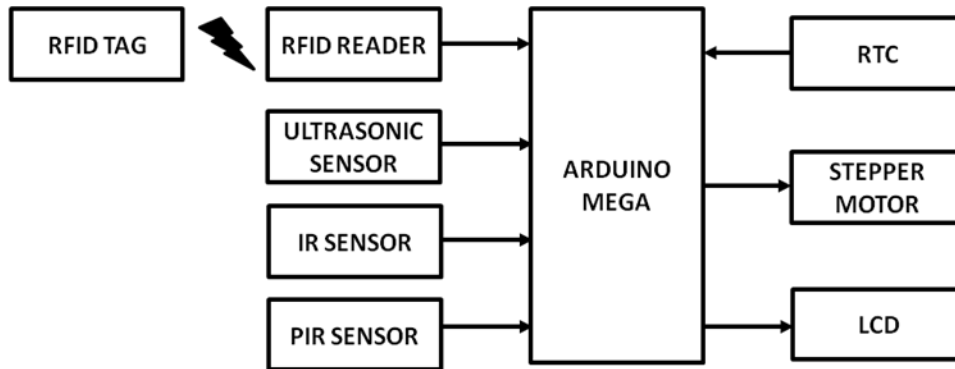
In this paper, we studied, a smart phone application designed to help patients avoiding these mistakes. It can remind its users to take the correct medicines on time and record the in-take schedules for later review by healthcare professionals. It has two distinguished features: (1) it can alert the patients about potential drug-drug/drug-food interactions and plan a proper in-take schedule to avoid these interactions; (2) it can revise the in-take schedule automatically when a dose was missed.

[6]“Retirement home staff and residents”,(Elizabeth Broadbent, Rie Tamagawa, Ngaire Kerse, Brett Knock, Anna Patience, and Bruce MacDonald, preferences for healthcare robots”, 18th IEEE International Symposium on Robot and Human Interactive Communication, 2018).

As the proportion of people in the older age groups grows, demands on care providers increase. The ability of robotic technology to meet these demands is limited by a lack of acceptance by older people. This study investigates which tasks staff and residents in a retirement village would like a robot to assist with, as well as their attitudes towards robots and preferences for their appearance.

IV. System Model Description

BLOCK DIAGRAM:



Arduino Mega2560 : Used to serve for multiple ports required.

RFID : To avoid misplacement of pills.

Ultrasonic Sensor : To measure the empty space of tray.

IR Sensor : To count the number of pills in tray.

PIR Sensor : To achieve accuracy of count of pills.

RTC : To indicate time range in which medicine should be taken.

Stepper Motor : To automatically open tray on completion of its rotation in specified time.

LCD : To display alert of time and confirmation of medicine taken.

IV. REFERENCES

- [1] An IoT-Aware Architecture for Smart Healthcare Systems. Luca Catarinucci, Danilo De Donno, Luca Mainetti ,IEEE Internet of Things Journal, November 2015.
- [2]A Health-IoT Platform Based on the Integration of Intelligent Packaging, Unobtrusive Bio-Sensor and Intelligent Medicine Box. Geng Yang, Li Xie, Matti Mäntysalo, Xiaolin Zhou, IEEE Transactions on Industrial Informatics, November 2014.
- [3]An Electronic Pillbox for Continuous Monitoring of Medication Adherence, Tamara. L. Hayes John, M. Hunt, Andre Adami, and Jeffrey A. Kaye, IEEE Engineering in Medicine and Biology Society, October 2012.
- [4]Interventions to improve medication compliance in older patients living in the community: a systematic review of the literature. (Van Eijken M, Tsang S, Wensing Metal,Drugs Aging , 2016).
- [5] Mei-Ying Wang, John K. Zao Wedjat: A Mobile Phone Based Medication Reminder and Monitor.
- [6]“Retirement home staff and residents”,(Elizabeth Broadbent, Rie Tamagawa, Ngaire Kerse, Brett Knock, Anna Patience, and Bruce MacDonald, preferences for healthcare robots”, 18th IEEE International Symposium on Robot and Human Interactive Communication, 2018).

V. Statement of Contribution

This interim progress report, and the activities that it has entailed, has been a collaborative effort amongst the group members.

Prateek Srivastava

- Created ABET for first review.
- Tested the components required for the project.

Arpana Arland

- Created ABET for first review.
- Tested the components required for the project.

Nitin Asthana

- Created PPT for first review.
- Working on Arduino mega coding.

Sushant Kumar

- Created PPT for first review.
- Created interim progress report.

Declaration

Arpana Arland :
Sushant Kumar :
Nitin Asthana :
Prateek Srivastava :

Project Supervisor
Mrs. V. Padmajothi :

Project Coordinator
Mrs. J. Subhashini :

VI. INTERIM PROGRESS REPORT EVALUATION RUBRICS

Project Title : Smart IoT Enabled Intelligent - Health Medicine Device
 Project Code : 15EC496L
 Team Members :
 Arpana Arland (RA1511004010706)
 Sushant Kumar (RA1511004010713)
 Prateek Srivastava (RA1511004010721)
 Nitin Asthana (RA1511004010717)

Name of Evaluator : _____

Rubrics	Possible Points	Assigned Marks
• ABET Project Proposal Form	5	
Aim & Objectives, Abstract • Objective complete and well-written • provides all necessary background principles for the experiment	5	
Content-Introduction, Literature review, System model Technically correct; Contain in-depth and complete details of the project	10	
Language (Word Choice, Grammar) • Sentences are complete and grammatical. They flow together easily • Words are chosen for their precise meaning. • Engineering terms and jargon are used correctly; No misspelled words. Numerical Usage and Illustrations • All figures, graphs, charts, and drawings are accurate, consistent with the text, and of good quality. They enhance understanding of the text. • All items are labelled and referred to in the text. • All equations are clear, accurate, and labelled. • All variables are defined and units specified. • Discussion about the equation development and use is stated.	5	
Total Points	25	

Date:

Signature of the Project Guide

