

I-Med BOX

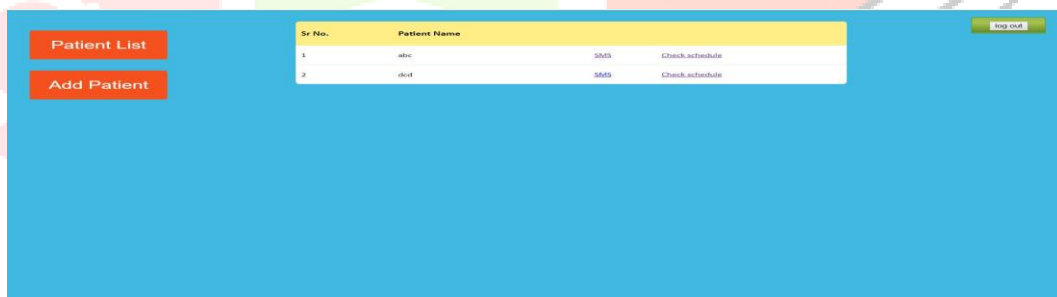
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Abstract: In-home healthcare services based on the Internet-of-Things IOT have great business potential; however, a comprehensive platform is still missing. In this paper, an intelligent home-based platform, the I Home Health-IOT, is proposed and implemented. In particular, the platform involves an open-platform-based intelligent medicine box (I Med Box) with enhanced connectivity and interchangeability for the integration of devices and services, 1.) Reminders using an LED light 2.) Dispense boxes with contacts. 3) Emergency Switch. 4.) Raspberry pie micro controller. 5.) Server the collects the data and forwards it to the website on the doctors end. The proposed platform seamlessly fuses IOT devices with in-home healthcare services for an improved user experience and service efficiency.

Index Terms - Intelligent Medicine Box, Internet-of Things (IOT), Raspberry pie micro controller

1. INTRODUCTION

Numerous countries are undergoing hospital restructuring by reducing number of hospital beds and escalating home healthcare, which is envisioned to perk up health care quality, has fascinated wide-ranging attention. In order to track the physical status of the elderly and, in the meanwhile, to keep them healthy, the proposed idea will be helpful. IOT expands the Internet into our everyday lives by wirelessly connecting various smart objects, and will bring significant changes in the way we live and interact with smart devices. The swift paced life has always taken a toll on the people. The satire is that new medicines are found for the never ending chain of diseases and often require timely medication with course therapy for curing. The existing techniques in market for the reminder include a pill box with a normal alarm. But this does not help in checking, overdose and wrong dosage among the patients. This proposed idea is a valuable solution to the medical noncompliance problem. Dropping patients non-compliance, guarantees better health, longer life expectancy, and better quality of life. The invention uses a dispensing scheme to help patients keep track of their medicine consumption through a series of LED alarm indicator signals and audio alarm indicator signals.



1. Patient List



2. Send Prescription

Sr No.	Medicine Name	Time
1	med1	2018-03-29 13:07:26

3. Record of box being opened and closed



LIST USER LOGOUT

ADD NEW PATIENT

Name

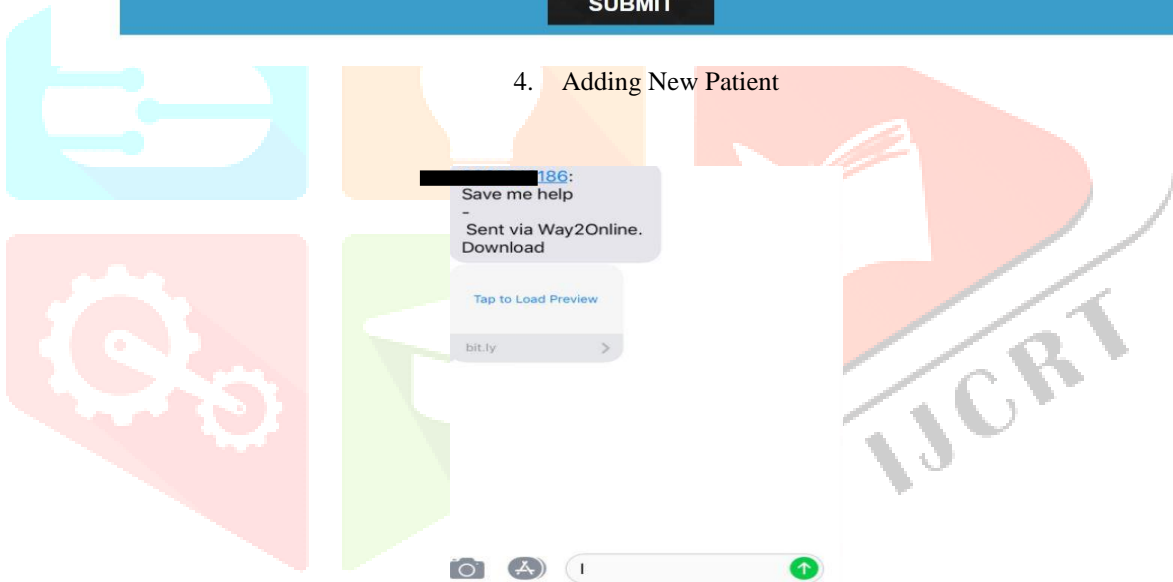
Age

Phone No

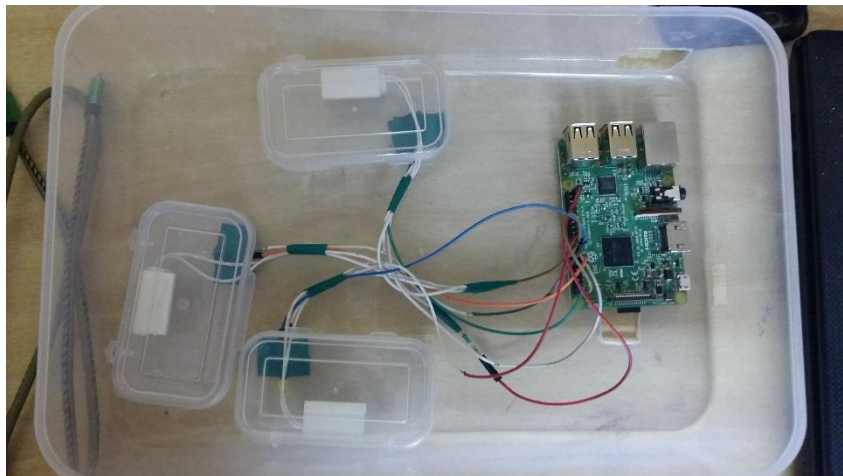
Disease

SUBMIT

4. Adding New Patient



5. Emergency Alerting SMS



6. I-MED BOX with individual boxes for three different schedules

2. Literature Survey

Sr no	Paper	Author	Content information
1.	Healthcare applications of the Internet of Things: A Review	Alok Kulkarni, Sampada Sathe	paper about healthcare internet applications, discuss about the evolution of internet, its concise discussion and applications. IoT is that network of physical objects or "things" fixed with electronics, software, sensors and connectivity to permit it to achieve higher values and facilities by exchanging data with the firm operators and other connected devices.
2	How the Internet of Things Is Revolutionizing Healthcare	David Niewolny	Describes, „How the Internet of Things Is Revolutionizing Healthcare“ [3] is discussing about the reasons for emergence of IoT and designs of applications where IoT is used. The issue is people have only limited time, awareness and accuracy, which means they won't be able to capture data about things networked in the real world consistently.
3.	Wi-Fi enabled sensors for internet of things	S. Tozlu, M. Senel, W. Mao, A. Keshavarzian	Wi-Fi enabled sensors for internet of things describes a practical approach, and give explanations about different sensors available.
4.	Elaine Brow	Elliptic Curve Cryptography	It guarantees practical implementation possibilities in resource constrained devices. Earlier work shows public key algorithms are best choice for use in wireless sensor networking, and that the advantage of smaller Cryptographic keys will be significant in getting better in energy conservation.

Implementation

Patient to server

1. The event triggered by opening one of the box, schedule that has been generated at the client side by the I-MED BOX is received through one of the open ports on the server.
 2. The request contains the event time and the box id no which is received
 3. SQL data which creates an entry in the database.
 4. There are basically the details of the user and Meta data that contains the user's consumption of medicines.
 5. This tabulated data is then shown on the website which the doctor can view and use for diagnostics.
2. Doctor to server
1. The doctor access the website hosted on the server
 2. Then access the tab on the website to view the data of the patient collected by the med box.
 3. The doctor can access another tab where he can write a prescription and assign it to the med box associated to the particular patient.
 4. The website then relays this information to the python code which then executes the code to search for the appropriate box associated to the particular patient.
 5. The execution is done by running the SQL code which accesses the package and runs a match through the database.

Working

1. On the client side there is a microcontroller that records the data from the sensors and LED.
2. It reminds the patient on timely basis to take the medicines by keeping track of time and indicates using LED's
3. The Box also contains an alert switch which is used to send an alert message that the patient is in an emergency situation.
4. The controller then relays this information to the server over the internet which sends a message to the doctor via sms.
5. Then the website displays the alert messages and emergency services are dispatched.
6. The website also contains the records of when the patient has accessed and not accessed the box to consume the medicines.

3. CONCLUSION

An IoT-based intelligent home-centric healthcare IOT platform, it includes the scenario of assisted living for people with physically and mentally disabled, where users can intermingle with smart objects deployed in a home environment to ensure their health and well-being. We proposed Home health system involves different aspects from the hospital, emergency center, body, and even medicine. Our System I-Med Box serves as a home healthcare station providing strong interoperability and network connectivity. The healthcare system can deliver various services, alarms and medication noncompliance control. The Health system combines the health network, telemedicine, and emergency and medication management services. This helps in the swift transformation from Hospital-Centric medical treatment to Home-Centric healthcare and finally bring about ubiquitous and personalized healthcare. The implemented the

most widely adapted technology for the Internet is the standard web services. Wireless identifiable embedded healthcare systems at the edge of the network should be connected to web services and make use of comparable functionalities and this will prove to be a challenge in the future for the internet. These millions of components produce, analyze, consume and process information in dissimilar healthcare environments such as hospitals, households and nursing homes as well as in the work and everyday lives of people. Our Implemented System will bring seamless 'anytime, anywhere' personalized healthcare and monitoring over fast reliable and secure networks.

5. REFERENCES

- [1] Geng Yang, Li Xie, "A Health-IoT Platform Based on the Integration of Intelligent Packaging, Unobtrusive Bio-Sensor, and Intelligent Medicine Box", IEEE transactions on industrial informatics, vol. 10, no. 4, november 2014, Matti Mäntysalo, Xiaolin Zhou, Member, IEEE, Zhibo Pang, Li Da Xu, Senior Member, IEEE, Sharon Kao-Walter, Qiang Chen, and Li-Rong Zheng, Senior Member, IEEE
- [2] Alok Kulkarni, Sampada Sathé "Healthcare applications of the Internet of Things: A Review" ,Department of Electronics and Telecommunication, Computer Engineering Pune University, Maharashtra, India, Alok Kulkar et al. / C, Vol. 5 (5) , 2014, 6229-6232
- [3] David Niewolny, "How the Internet of Things Is Revolutionizing Healthcare", Healthcare Segment Manager, Freescale Semiconductor
- [4] S. Tozlu, M. Senel, W. Mao, and A. Keshavarzian, "Wi-Fi enabled sensors for internet of things: A practical approach," IEEE Commun. Mag., vol. 50, no. 6, pp. 134–143, Jun. 2012.
- [5] Elaine Brow "Elliptic Curve Cryptography" , December 2010 Math 189A: Algebraic Geometry.
- [6] C. E. Koop et al., "Future delivery of health care: Cybercare," IEEE Eng. Med. Biol. Mag., vol. 27, no. 6, pp. 29–38, Nov. 2008
- [7] Z. Pang, "Technologies and architectures of the Internet-ofThings (IoT) for health and wellbeing," Ph.D. dissertation, Dept. Electron. Syst., School Inf. Commun. Technol., Royal Inst. Technology (KTH), Stockholm, Sweden, 2013.
- [8] Aakash Sunil Salgia*, K. Ganesan and Ashwin Raghunath, "Smart Pill Box", Indian Journal of Science and Technology, Vol 8(S2), 189–194, January 2015.
- [9] Nabil GHANMY, Lamia CHAARI FOURATI, Lotfi KAMOUN "Elliptic curve cryptography for WSN and SPA attacks method for energy evaluation", Electronic and Information Technology Lab (LETI)

