

RESEARCH ARTICLE



ISSN: 2321-7758

## INTELLIGENT PATIENT HEALTH MONITORING SYSTEM USING IOT

OMAR SAADI FATHI ALSHEAR\*<sup>1</sup>, Asist.Prof. Dr Hassan SHARABATY

Faculty of Engineering EEE Department,  
University of Turkish Aeronautical Association  
THK University, Ankara , Turkey  
\*omarsaad529@gmail.com



### ABSTRACT

A contemporary fitness care and similarly to this smart home monitoring ,controlling embedded machine capable of taking care of the patients from all aspects, protecting personalized medicine, vital signs and symptoms monitoring, on-site prognosis and interaction with far flung physicians. The mission offers an experimental concept of affected person's fitness circumstance and screen environmental situations and controlling. the platform includes 1.an open-platform-based totally wise medicine field (I Med Box) with more suitable connectivity and interchange capability for the mixing of devices and offerings, 2.wise pharmaceutical packaging (I Med Pack) with conversation functionality enabled by means of ZIGBEE and actuation functionality enabled via useful substances, and three) bendy and wearable bio-medical sensor device (temperature, blood strain, MEMS sensor) enabled. The proposed platform gadgets (e.g., wearable sensors, sensible medicine applications, and so on.) with in-home healthcare services (e.g., telemedicine) For advanced person revel in and carrier performance. The feasibility of the applied Health platform has been proven in area trials. And if any important signs and symptoms identified then gives alert to predefine care takers through SMS alert. And screen the Situations continuously with an IP address of WIFI.

Kew words: fitness tracking, IOT, Microcontroller

©KY Publications

### 1. INTRODUCTION

Now a day's healthcare is a burden aspect for structures are suffering with growing older population, occurrence of persistent illnesses, and the accompanying rising fees. In reaction to these demanding situations, researchers were actively seeking for revolutionary answers and new technologies that could improve the high-quality of affected person care meanwhile lessen the price of care thru early detection/intervention and greater effective disease/affected person management. it is envisaged that the future healthcare gadget should be preventive, predictive, personalized, pervasive,

participatory, patient-centered, and particular, i.e., p-health system. Health informatics, which is an rising interdisciplinary vicinity to improve p-health, mainly offers with the purchase, transmission, processing, storage, retrieval, and use of various styles of health and biomedical facts. The 2 essential acquisition technologies of fitness statistics are sensing and imaging. This paper focuses best on sensing technologies and critiques the contemporary tendencies in sensing and wearable gadgets for continuous fitness tracking and getting access to the statistics

This invention relates normally to techniques and systems for tracking a person. The prevailing invention relates to interoperability of scientific gadgets. Medical devices are essential to the exercise of current remedy. Physiologic measurements like blood stress and temperature, x-ray and ultrasound imaging, management of intravenous medicines, and guide of crucial lifestyles features are all ordinary techniques that use scientific devices. But, at gift, every tool is designed to face alone as an island. It is hard to deliver together multiple devices into interoperable (inter-related) structures to improve patient care

To cope with this difficulty, the Institute of Electrical and Electronics Engineers Inc. (IEEE) is developing two new factor-of-care clinical tool standards. IEEE P1073.2.2.0—fitness Informatics—factor-of-Care clinical device conversation—utility Profile—affiliation manage characteristic—will offer for the status quo, release and disconnection of an association among a clinical device agent and a machine performing as a manager. In medical tool communications, supervisor structures imply a hard and fast of desired talents whilst inquiring for an association. Agent systems respond through pointing out the capabilities they guide throughout the connection. Once an affiliation is installed, mechanisms must be in area to interrupt the link. IEEE P1073.2.2.0 is referenced. With the aid of other software-profile mode standards within the ISO/IEEE 11073 family. The second one requirements assignment, IEEE P1073.2.2.1—fitness Informatics—factor-Of-Care scientific tool conversation—utility Profile—Polling Mode—will outline a method for retrieving software statistics with clinical devices that talk thru polling protocols. IEEE P1073.2.2.1 will permit “plug-and-play” interoperability for easy clinical gadgets that use for management systems to query gadgets for all data to be communicated.

There is a clean fashion that the devices are becoming smaller, lighter, and much less obvious and greater cozy to wear. Although physiological size gadgets had been extensively used in clinical settings for decades, a few unique functions of unobtrusive and wearable devices due to the latest advances in sensing, networking and statistics fusion have transformed the way that they were utilized in.

First, with their Wi-Fi connectivity together with the widely to be had infrastructure, the devices can offer real-time facts and facilitate well timed far flung intervention to acute events inclusive of stroke, epilepsy and coronary heart attack, particularly in rural or in any other case underserved areas wherein expert treatment can be unavailable. Similarly, for healthful population, unobtrusive and wearable tracking can provide particular data concerning their fitness and fitness, e.g., thru cellular telephone or bendy presentations, such that they could closely music their well-being, with a purpose to now not only sell lively and healthful life-style, but also allow detection of any health hazard and facilitate the implementation of preventive measures at an in advance stage. The goals of this paper are to offer an overview of unobtrusive sensing and wearable systems with precise focus on rising technologies, and also to pick out the important demanding situations associated with this area of studies. Medical data the usage of a primary scientific data collection equipment coupled to a community, the first equipment transmitting statistics conforming to an interoperable layout, wherein the medical facts is transmitted the use of a first Wi-Fi protocol; translating the medical information to a format well matched with a 2d equipment and sending the translated clinical records to the second one appliance the use of one of the first protocol and a second Wi-Fi protocol; and Storing information for each person in accordance with the interoperable layout.

#### EXISTING SYSTEM

A person performs day by day activities at ordinary C program language period of time. This means that the individual is mentally and bodily healthy and leading a regular lifestyles. This tells us that the overall nicely-being of the individual is at a sure preferred. If there is decline or trade inside the regular activity, then the wellbeing of the man or woman isn't always within the normal state. Aged humans desire to guide an unbiased way of life, however at vintage age, human beings grow to be vulnerable to one of a kind accidents, so residing alone has high dangers and is recurrent.

A developing amount of research is said nowadays on improvement of a system to screen the activities of an elderly individual living alone in

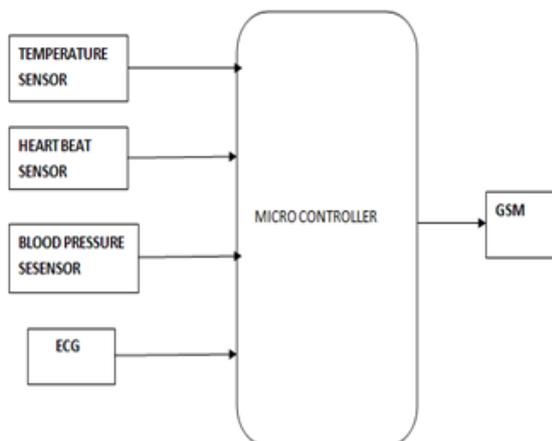
order that help can be furnished earlier than any unforeseen state of affairs passed off.

### PROPOSED SYSTEM

An intelligent health monitoring system based on IOT wireless sensors network has been designed and developed to monitor and evaluate the well-being of the elderly living alone in a home environment. Sensors (temp, blood pressure, in this system we are using temperature, heartbeat, blood pressure sensors values should be displayed on web server page. For ECG sensor we want display the graph in web page, heart beat cross their reference value then automatically warning SMS(like temp is lower temp is high) will be send to user through GSM and also displayed on web page.

EX: The temperature sensor reference value is 35 when temperature is less than 35 or more than 35 then warning message will be send to user and also displayed on webpage like temperature is low.

### 3. ARCHITECTURE AND WORKING THEORY:



**MONITORING SECTION:** The general structure of the system consists of two vital modules: I) Wi-Fi Sensor community (WSN) ii) shrewd fitness tracking software device to acquire sensor records and perform information evaluation. Exploration of the sensor data entails measuring the wellness and detecting behavioral changes of an aged. Fig.1 depicts the block diagram of the health dimension gadget. Block diagram of pc based well-being measurement device A. layout of the Sensing devices: The WSN setup used for monitoring the sensor values. in this proposed gadget we put into effect an health tracking platform such as temperature and in addition to this gives an alert

message to caring folks or hospitals by using wireless (IOT) generation.

There may be a clean fashion that the gadgets are becoming smaller, lighter, and much less obvious and more relaxed to put on. despite the fact that physiological size devices had been broadly utilized in medical settings for decades, a few specific functions of unobtrusive and wearable gadgets because of the recent advances in sensing, networking and statistics fusion have converted the way that they had been utilized in. First, with their wi-fi connectivity collectively with the extensively available infrastructure, the devices can provide real-time records and facilitate timely faraway intervention to acute activities such as stroke, epilepsy and heart attack, mainly in rural or in any other case underserved regions in which professional remedy may be unavailable. further, for healthy populace, unobtrusive and wearable monitoring can provide specified statistics concerning their fitness and fitness, e.g., via mobile phone or flexible displays, such that they are able to closely music their wellbeing, in an effort to now not only promote lively and wholesome way of life, however additionally allow detection of any health danger and facilitate the implementation of preventive measures at an in advance stage. The goals of this paper are to provide an overview of unobtrusive sensing and wearable structures with precise consciousness on emerging technology, and additionally to perceive the primary demanding situations associated with this area of studies. scientific statistics the usage of a first clinical records series equipment coupled to a community, the first appliance transmitting information conforming to an interoperable format, wherein the medical information is transmitted the usage of a first wireless protocol; translating the scientific data to a format well matched with a 2d appliance and sending the translated medical information to the second one equipment the use of one of the first protocol and a 2nd Wi-Fi protocol; and Storing facts for every man or woman in accordance with the interoperable layout.

### 4. HARDWARE MODULES USED

**ARM7 FAMILY:** The ARM7 own family consists of the ARM7TDMI, ARM7TDMI-S, ARM720T, and ARM7EJ-S processors. The ARM7TDMI center is the



These instructions are all prefixed with "AT" and observe (more or less) the style known as the "Hayes command set".

### CONCLUSION AND END RESULT

We presented an interactive embedded size of each day activities via usage of household appliances sensor information. Predicting the behavior of an aged individual changed into based totally on past sensor interest durations. Combination of sensing system with time collection facts processing enabled us to degree how properly an elderly person is able to carry out their daily activities in real-time. up to now, the forecasting system turned into capable of rightly degree the health indices related to use of non-electric appliances. Therefore, a number of the basic aged day by day sports such as sound asleep, toileting, eating and enjoyable are rightly assessed care takers and hospitals by means of the well-being measurement machine. , most of the electrical home equipment utilization intervals are predefined; validation for activities together with getting ready meals is limited. but, extra records processing technique which include sensor sequence pastime sample analysis become able to rightly degree the occurrences of activities along with preparing breakfast, lunch, dinner and snacks. the next step may be to devise a strong forecasting technique inclusive of outliers in the well being of old and sick human beings dimension and alerting device.

### 6. REFERENCES

- [1]. Jakkula V.R, Cook D, Jain G, "Prediction models for a smart home based health care system", Proceedings of the 21st International Conference on Advanced Information Networking and Applications, pp. 761 - 765, 2007 ..
- [2]. Jae H.S, Boreom L, Kwang S.P, "Detection of Abnormal Living Patterns for Elderly Living Alone Using Support Vector Data Description", IEEE Transactions on Information Technology in Biomedicine, Vol. 15, No. 3, Page(s):438-448, May 2011.
- [3]. Arcelus A, Veledar I, Goubran R, Knoefel F, Sveistrup H and Bilodeau M, "Measurements of Sit-to-Stand Timing and Symmetry from Bed Pressure Sensors," IEEE Transactions on Instrumentation and Measurement, vol. 60, no. 5, pp.1732-1740.
- [4]. Tibor B, Mark H, Michel C.A.K, Jan T, "An Ambient Agent Model for Monitoring and Analyzing Dynamics of Complex Human Behavior", Journal of Ambient Intelligence and Smart Environments, Vol 3, No. 4, Page(s): 283-303, 2011.
- [5]. Gaddam A, Mukhopadhyay S.C, Gupta G.S, "Elder Care Based on Cognitive Sensor Network", IEEE Sensors Journal, Vol. 11, No. 3, Page(s): 574 – 581, 2011.
- [6]. Suryadevara N.K, Mukhopadhyay S.C, "Wireless Sensor Network based Home Monitoring System for Wellness Determination of Elderly", IEEE Sensors Journal, Vol: 12, No:6, pp.1965 – 1972, 2012.2010.
- [7]. Brockwell P.J and Davis R.A, "Introduction to Time Series and Forecasting", Springer, 2nd edition, pp.326-330, 2001.
- [8]. Smarr C.A, Fausset C. B and Rogers W. A, "Understanding the potential for robot assistance for older adults in the home environment", Technical Report-HFA-TR-1102, School of Psychology, Human Factors and Aging Laboratory-Georgia Tech- Atlanta, <http://hdl.handle.net/1853/39670> , 2011.
- [9]. Arabnia H.R, Wai C.F, Changhoon L, Yan Z, "Context-Aware Middleware and Intelligent Agents for Smart Environments," IEEE Intelligent Systems, Vol.25, Issue:2, pp.10 – 11, 2010
- [10]. Rahimi S, Chan A.D.C, Goubran R, "Usage Monitoring of Electrical Devices in a Smart Home", Proceedings of the IEEE International Conference on Engineering in Medicine and Biology-EMBC11, Boston, U.S.A, pp. 5307-5310, Sep-2011.
- [11]. Amaya A, Rafik G, Heidi S, Martin B, Frank K, "Context-Aware Smart Home Monitoring Through Pressure Measurement Sequences, Proceedings of the IEEE International Workshop on Medical Measurements and Applications, Ottawa, Canada, pp. 32 37, April 2010.
- [12]. Suryadevara N.K, Gad dam A, Rayudu R.K, Mukhopadhyay S.C, "Wireless Sensors

Network Based Safe Home to Care Elderly People: Behaviour Detection”, Elsevier-Sensors and Actuators: A: Physical, Vol.186, Pages 277-283, 2012.

- [13]. Boni A, Pianegiani F, Petri D, “Low-Power and Low-Cost Implementation of SVMs for Smart Sensors”, IEEE Transactions on Instrumentation and Measurement, vol. 56, no.1, pp.39-44.
- [14]. Susan M, Juan Y, Lorcan C, Bleakley C, Dobson S, “Activity Recognition using Temporal Evidence Theory”, Journal of Ambient Intelligence and Smart Environments, Vol. 2, No. 3, pp.253-269,
- [15]. Kwang E. K, Hyun C.Y, Kwee B. S, “Emotion Recognition using EEG Signals with Relative Power Values and Bayesian Network”, International Journal of Control, Automation and Systems, Vol. 7, Issue. 5, pp. 865-870, Oct-2009.
-