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A Wearable Device Data Sharing and Collaboration in Mobile Healthcare Applications

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Abstract - *Nowadays, information and communication technology play's an important role hence mobile and wearable technology (device), personal health records delivers great and increasing role for healthcare. In this work we present one application this application is useful to those peoples who suffering lots of problem. The application developed is practical and feasible; Smart phones have become very popular these days, so we have combined the idea. Smart phone application helping you in this area. An application that needs real-time, fast & reliable data processing. Our system will help those peoples who suffering heart problem. In our system we have to developed different modules that help different people. First we will detect heart beat and send notification to nearest peoples who use this application. We will detect heartbeat and speed of user using android device. Suppose user is doing work out that time user's speed and heartbeat will high that time our system will send notification message (example-user is doing workout)to particular nearest peoples. but user speed is low and heartbeat is high that time system will send notify to nearest peoples something happen wrong to particular place and user also press button of touch press or match current heart beat and normal heart beat if heart beat is high or low then system notify to nearest peoples through KNN algorithm.*

Key Words**:** *Blockchain network Healthcare, eHealth, Privacy, Permissioned Blockchain, Access Control, Scalability, Integrity, Wearable Devices, Mobile Platform.*

1. INTRODUCTION

It is a very exciting time for health care and information technology (IT). Due to improvements in genetic research and the advancement of precision medicine, health care is witnessing an innovative approach to disease prevention and treatment that incorporates an individual patient's genetic makeup, lifestyle and environment. Simultaneously, IT advancement has produced large databases of health information, provided tools to track health data and engaged individuals more in their own health care. Combining these advancements in health care and information technology would foster transformative change in the field of health IT.

In recent years, the rise of wearable technology and the Internet-of-Things has brought great opportunities and challenges to the healthcare domain. Enabled by cloud computing and big data analytics, the data collected from individual devices contributes to big health data and valuable insights can be derived. Hospitals and medical institutions can use these data to link with other Electronic Health Record (EHR) data, such as clinical notes, to facilitate health monitoring, disease diagnoses and treatment. Health insurance companies can make. Detailed and strategic policies according to individual characteristics, benefiting customers to choose flexible insurance plans according to their needs. To handle health data sharing between institutions, there is a need for a secure data sharing infrastructure. However, there are several challenges related to privacy, security, and interoperability. First, health data are highly privacy-sensitive, especially as more data are storing in a public cloud, raising the risks of data exposure. Second, current systems use centralized architecture, which requires centralized trust.

2. LITERATURE SURVEY

A. Title:-The Swiss Army smartphone: cloud-based delivery of USB services (2011)

Authors: Adiseshu Hari, Manoj Jaitly, Yuh-Jye Chang, Andrea Francini.

A smartphone can be configured to look like any Universal Serial Bus (USB) peripheral and can be managed remotely through its wireless data connection. By virtue of these features, smartphones are ideal vehicles for the delivery of a variety of brand-new, USB-powered services that support the management and troubleshooting of mobile laptops. We provide examples of such USB services and describe a general architecture for their implementation. The services are easy to deploy, because they can be extended to remote laptops without prior installation of new software, and wellsuited for delivery through virtualization in a cloud infrastructure. While our examples target mostly the enterprise, USB services, especially virtualized ones, can easily be tailored to suit a broad set of consumer applications.

B. Title: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure...(2003)

Authors: Aram V. Chobanian, MD George L. Bakris, MD Henry R. Black, MD William C. Cushman, MD Lee A. Green, MD, MPH Joseph L. Izzo, Jr, MD Daniel W. Jones, MD Barry J. Materson, MD, MBA Suzanne Oparil, MD Jackson T. Wright, Jr, MD, PhD Edward J. Roccella, PhD, MPH

For More Than 3 Decades, The National Heart, Lung, and Blood Institute (NHLBI) has administered the National High Blood Pressure Education Program (NHBPEP) Coordinating Committee, a coalition of 39 major professional, public, and voluntary organizations and 7 federal agencies. One important function is to issue guidelines and advisories designed to increase awareness, prevention, treatment, and control of hypertension (high blood pressure [BP]). Since the publication of "The Sixth Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure"

C. Title: Status and trends of mobile-health applications for iOS devices: A developer's perspective (2011)

Authors: Chang Liua, Qing Zhua, Kenneth A. Holroydb, Elizabeth K. Seng.

Modern smart mobile devices offer media-rich and context-aware features that are highly useful for electronic-health (e-health) applications. It is therefore not surprising that these devices have gained acceptance as target devices for e-health applications, turning them into m-health (mobile-health) apps. In particular, many e-health application developers have chosen Apple's iOS mobile devices such as iPad, iPhone, or iPod Touch as the target device to provide more convenient and richer user experience, as evidenced by the rapidly increasing number of m-health apps in Apple's App Store. In this paper, the top two hundred of such apps from the App Store were examined from a developer's perspective to provide a focused overview of the status and trends of iOS m-health apps and an analysis of related technology, architecture, and user interface design issues. The top 200 apps were classified into different groups according to their purposes, functions, and user satisfaction. It was shown that although the biggest group of apps was medical information reference apps that were delivered from or related to medical articles, websites, or journals, mobile users disproportionally favored tracking tools. It was clear that m-health apps still had plenty of room to grow to take full advantage of unique mobile platform features and truly fulfill their potential. In particular, introduction of two- or three-dimensional visualization and context-awareness could further enhance m-health app's usability and utility. This paper aims to serve as a reference point and guide for developers and practitioners interested in using iOS as a platform for m-health applications, particular from the technical point of view.

D. Title: The regulation of mobile medical applications

Authors: Ali Kemal Yetisen,*a J. L. Martinez-Hurtado,a Fernando da Cruz Vasconcellos,a M. C. Emre Simsekler,b Muhammad Safwan Akrama and Christopher R. Lowea The rapidly expanding number of mobile medical applications has the potential to transform the patient–healthcare provider relationship by improving the turnaround time and reducing costs. In September 2013, the U.S. Food and Drug Administration (FDA) issued guidance to regulate these applications and protect consumers by minimizing the risks associated with their unintended use. This guidance distinguishes between the subset of mobile medical apps which may be subject to regulation and those that are not. The marketing claims of the application determine the intent. Areas of concern include compliance with regular updates of the operating systems and of the mobile medical apps themselves. In this article, we explain the essence of this FDA guidance by providing examples and evaluating the impact on academia, industry and other key stakeholders, such as patients and clinicians. Our assessment indicates that awareness and incorporation of the guidelines into product development can hasten the commercialization and market entry process. Furthermore, potential obstacles have been discussed and directions for future development suggested

E. Title: Acute Coronary Syndrome (2009)

Authors: By Kristen J. Overbaugh

Acute coronary syndrome (ACS) is the umbrella term for the clinical signs and symptoms of myocardial ischemia: unstable angina, non–ST-segment elevation myocardial infarction, and ST-segment elevation myocardial infarction. This article further defines ACS and the conditions it includes; reviews its risk factors; describes its pathophysiology and associated signs and symptoms; discusses variations in its diagnostic findings, such as cardiac biomarkers and electrocardiographic changes; and outlines treatment approaches, including drug and reperfusion therapies.

3. PROPOSED SYSTEM

We propose a mobile user controlled Blockchain-based system for personal health data sharing and collaboration. In the implementation, we build the system that data compere with dataset sample. System generate user pattern according user behavior, which is a permissioned Blockchain requiring the network nodes to validate, and realizes a privacy preserving personal healthcare system with a broader coverage of the healthcare ecosystem from the end device to the cloud, as well as the emphasis of the user ownership for health data. A mobile application is deployed to collect health data from personal wearable devices, manual input, and medical devices, and synchronize data to the cloud for data sharing with healthcare providers and health insurance companies. To preserve to integrate of health data, within each record, a proof of integrity and validation is permanently retrievable from cloud database and is anchored to the Blockchain network.

4. SYSTEM ARCHITECTURE

We proposed navigation system for heartbeat patients. In our system we have to develop application in that application first system will check heartbeat and send notification to nearest places or peoples who use this application. first user click on button that time system will check heartbeat and speed if speed is low and heartbeat is high that time system will send notification(user in dangerous condition) to nearest peoples (i.e. Nearest Hospital, Parents, etc.) then second suppose user is doing work out that time system will get high speed and also heartbeat is high that time system send notification to particular people (user is doing workout).we have to use two sensor data 1.accelerometer-accelerometer is used for speed detection and second heartbeat sensor data is used for detect heartbeat and also use one algorithm for finding nearest peoples this algorithm is KNN algorithm and also we have to develop touch press system using that touch press system we have to send notification to nearest peoples.

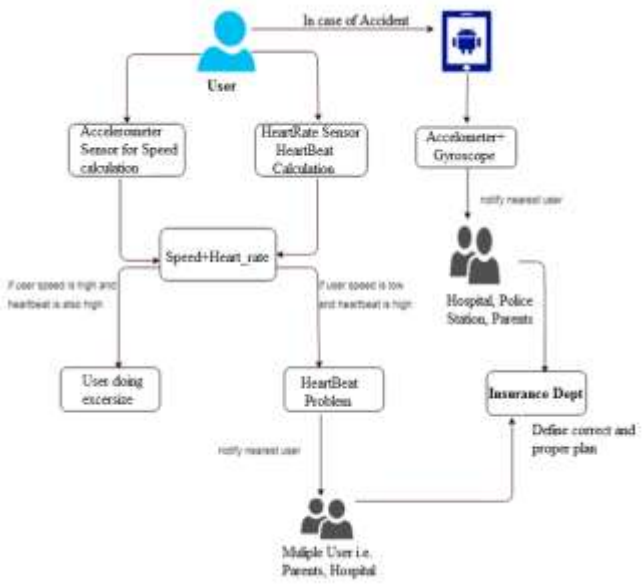

Figure -1: Architecture Diagram

5. EXPECTED RESULT

In propose system user use wearable device like smart watch, smart bands. System collects user data from wearable devices. This data compere with dataset sample. System generate user pattern according user behavior and give alert or help notifications to nearest user.

6. CONCLUSION

Blockchain technology addresses interoperability challenges, is based on open standards, provides a shared distributed view of health data and will achieve widespread acceptance and deployment throughout all industries. In this paper, we design and implement a mobile healthcare system for personal health data collection, sharing and collaboration between individuals and healthcare providers, as well as insurance companies. The system can also be extended to accommodate the usage of health data for research purposes. By adopting Blockchain technology, the system is implemented in a distributed and trustless way. The algorithm to handle data records can preserve both integrity and privacy at the same time.

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