

SMARTPHONE APPLICATION THAT USED IN HEALTHCARE

Anjali Singh¹, Kritika Verma², Ritika Tripathi³

^{1,2}UG, Department of Electronics & Communication Engineering,

³Asst. Prof., Department of Electronics & Communication Engineering,
Raj Kumar Goel Institute of Technology for Women, UP (India)

ABSTRACT

Smart-phone is the trend of unified communications which integrate telecom and Internet services onto a single device because it has combined the portability of cell-phones with the computing and networking power of PCs. Mobile technology has the potential to revolutionize how physicians practice medicine. During recent years, many physicians have been simultaneously using a pager, cellular telephone, and personal digital assistant (PDA) to keep in communication with the hospital and to access medical information or calendar functions. Many physicians have begun replacing multiple devices with a "smart-phone," which functions as a cellular telephone, pager, and PDA. The goal of this article is to provide an overview of the currently available platforms that make up the smart-phone devices and the available medical software. Each platform has its unique advantages and disadvantages, and available software will vary by device and is in constant flux.

Keywords: Smart-Phones, Nursing Practice, E-Health, Medical Applications, Handheld Computing

I INTRODUCTION

"The common thread is that physicians in all specialties—especially more recent graduates—are relying more and more on modern technology to advance their concern to provide medical care more efficiently, cost effectively, and 'creatively' through digital instruments that are readily available," Edward Mc Eachern, Jackson & Coker's VP of marketing, told InformationWeek Healthcare. "What this indicates in terms of future trends is that mobile device manufacturers and companies that supply app solutions are well aware of the growing market in the healthcare field for their products and services"[1]. In this paper, we want to bring attention to the importance of Smartphone in medical field. We first give some background on smart-phones and discuss their trend of having common development platforms for the case of service creation and deployment in section 2. In section 3 we describe how the Smartphone use for measuring the blood pressure. Section 4 related the heart rate concept and CPR guide and discuss emergency case in section 5, we conclude in section 6.

II SMART-PHONE

The Smartphone is a high-end mobile phone, which combines the functions of personal digital assistants (PDAs) and mobile phones. The Smartphone term is generally used to describe the most advanced phones, computing capacity and connections to modern-day on the phone. like most phones, feature phones, which are

considered today to be the qualities that go beyond mobile phones that had been promoted, such as smart phones in the past. Smartphone's run mobile operating systems such as IOS Apple, Google Android, Microsoft Windows 7 Mobile, Symbian, Nokia, RIM BlackBerry OS, and embedded Linux distributions such as Maemo and Meego. These systems can be installed in many different phones, and generally each device can receive multiple OS software updates during their lifetime.

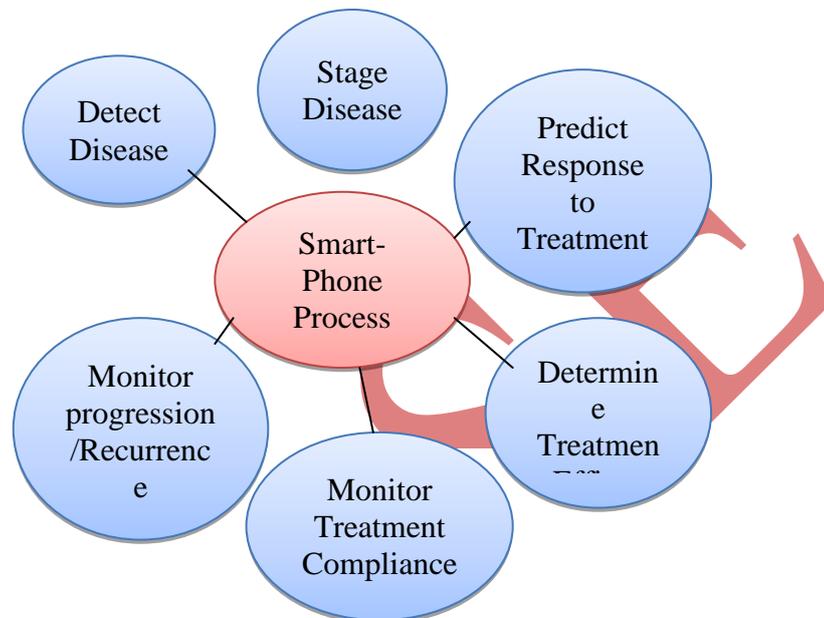


Fig1: Measure the Progress Of Disease Or The Effect Of Treatment By Using Smart-Phone

A Smartphone is a mobile phone built on a operating system with more advanced computing capability connectivity than a feature phone. The first Smartphone's combined the functions of a personal digital assistant (PDA) with a mobile phone. Later models added the functionality of portable media players, low-end compact digital cameras, pocket video cameras, and GPS navigation units to form one multi-use device[2]. Many modern Smartphone also include high-resolution touch screen and web browsers that display standard web pages as well as mobile-optimized sites. High-speed data access is provided by Wi-Fi and mobile broadband. In recent years, the rapid development of mobile app markets and of mobile commerce have been drivers of Smartphone adoption. The smart phone is one of the fastest growing sectors in the technology industry, and its impact in medical has already been significant.

III BLOOD PRESSURE

As more and more people measure their blood pressure at home, smartphone apps are springing up to help. Early ones allow a user to enter blood pressure readings from which the app makes graphs and offers suggestions [3]. A French company called Withings has developed a blood pressure cuff that completely automates the process. Plugging the cuff into an iPhone starts the application. After the cuff takes your blood pressure, it saves the measurement to your phone and sends it to an online database that you can access with any

computer connected to the Internet. You can track the ups and downs of your blood pressure or send the measurements to your doctor.

IV HEART RATE

To check your heart rate but don't feel confident measuring your pulse? Several apps turn your phone into an automated pulse checker. For example, Instant Heart Rate, from a company called Azumio, uses a phone's camera to measure how fast the heart is beating. Run the 99¢ app (available for i-Phone or Android), place your index finger over the lens, wait a few seconds, and voila — your heart rate appears on the screen. Other apps help you calculate your target heart rate for exercise [4]. With a hands-free microphone, the Smartphone has been used to record heart sounds for tracking heart rate and heart rate variability. The phone's camera along with its light-emitting diode light source has been shown to measure heart rate accurately.

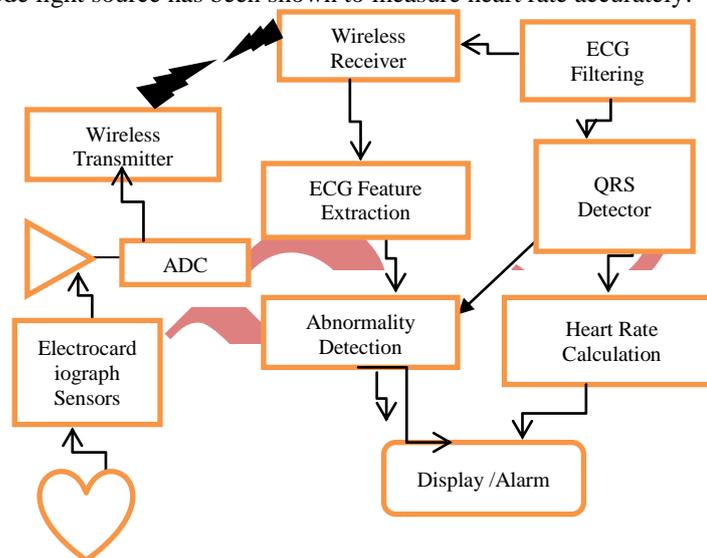


Fig 2: Block Diagram Of Biomedical Signal Transceiver For Real Time Acquisition, Processing And Heart Condition Monitoring System.

4.1 CPR Guide

If you see a person suddenly collapse with a cardiac arrest, the best things you can do for him or her are call 911, send someone to find an automated electronic defibrillator, and start cardiopulmonary resuscitation (CPR). An app from the American Heart Association, called Pocket First Aid & CPR, can guide you through the steps of performing CPR and using the defibrillator [10]. It also includes in-depth information for other health emergencies (\$3.99 for iPhone, \$2.99 for Android). Although this app is easy to use, the descriptions and videos can be lengthy. It's best to go through it before you need it, and then use it as a refresher when responding to an emergency.

V IN CASE OF EMERGENCY

While it's a good idea to have an ICE (in case of emergency) contact in your phone's address book, an ICE app is also a good investment. The several available versions let you record your name, medical conditions, blood type, allergies, and medical contact information. If you install one of these, make sure the ICE button is on your start screen. Free versions may not show the icon if your phone is locked, so it's worth buying the upgrade to make sure your emergency information is readily available.

5.1 On the Horizon

Today's apps offer only a hint of how Smartphone's will eventually be used in health care. A company called AliveCor has created a case for the iPhone that lets it record an electrocardiogram. Wireless devices like bathroom scales and blood pressure monitors programmed to communicate with a Smartphone can alert an individual with heart failure and his or her medical team that trouble is brewing. Wearable sensors that constantly track the heart rate or rhythm could sound an early warning about an impending heart attack. Apps and their gadgets are becoming so sophisticated and powerful that the FDA has announced its intention to regulate ones that are meant to be used with an FDA-regulated medical device (like a blood pressure cuff), or ones that turn a mobile device into a regulated medical device (like an electrocardiography machine)[5].

VI DIABETES LEVEL MEASUREMENT

Patients with diabetes are also among those who could benefit from smartphone technology, by using Diabeo. Diabeo is an app that collects information such as self-measured plasma glucose, carbohydrate counts, and planned physical activity prior to making insulin dosing recommendations. Researchers in France conducted a 6-month multicenter study of 180 adult patients with type 1 diabetes with glycated haemoglobin above 8% [6]. They found that patients using Diabeo together with telephone conversations had lower glycated haemoglobin levels than those with clinic visits. The app was used safely with no differences in hypoglycaemic events.

The ability to automatically monitor patients with diabetic and heart conditions from their smart phones is being developed. This technology extends to other conditions such as movement disorders or bipolar disorder [7-9]. Additionally, engineers are testing the Smartphone to be used as a device for monitoring patients' balance using the phone's accelerometer.

VII LIMITATIONS

The major limitation of the review stems from the overall paucity of high-quality studies such as multicentered or controlled trials using the smartphone in medicine. While we did find some studies of patient monitoring and communication, even these categories leave many questions to be answered, and future studies are either planned or underway [11].

Additionally, we again note that this review did not include papers that demonstrated novel uses of the smartphone in the field of surgery and its surgical subspecialties. As internal medicine physicians [12]. Another limitation of this study is the rapid and evolving nature of this technology. We intended to make this review as up-to-date as possible, including the addition of new reports just prior to publication of this paper; however, this topic is evolving as rapidly as advancements in the industry are made.

VIII CONCLUSION

It is clear that smart phones have become well integrated into the healthcare field. These devices provide a wealth of information and resources to physicians, while also speeding communication and improving efficiency. While it is inevitable that smart phones will remain an essential part of health care, the concern that the quality of the patient – physician interaction will decline is just as enduring. Society must decide, then, is it better to give more care, more efficiently, to more people.

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