**IoT Project Document**

**Healthcare Advanced Protection System (HAPS)**

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**June 2022**

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# Introduction

Internet of Things (IoT) rises as a powerful domain where embedded devices and sensors can connect and exchange information over the Internet. High-quality health care helps prevent diseases and improve quality of life. A rising interest of body wearable sensors has recently emerged as powerful tools for healthcare applications and different devices are currently available commercially for different purposes including personal healthcare, activity awareness and fitness [1]. But in this project, we are focused on organizations and hospitals’ needs in improving quality of healthcare services and patients monitoring system. In this project we propose and implement the Healthcare Advanced Protection System (HAPS).

# HAPS

HAPS is an integrated and smart patient monitoring platform that can be used in various type of hospitals and clinics with different medical services. Patients monitoring using latest cutting-edge IoT technologies today is one of the biggest interest of researchers, engineers and companies in medical field around the world. With this platform hospitals, doctors and nurses can always be aware of their under-supervision patient immune vitals signs and keep them under control.

The HAPS is consisting of three main parts:

1. The gadget which is physically attached to the patient and measure patient’s body temperature, heartbeat rate, and pulse oximetry and send them to the main cloud server real-time.
2. An application that the treatment staff can interact with the system and monitor their patient using their mobile phone through the mobile application or with web application.
3. The core software or the back-end of the application which is responsible for communicating with gadgets and collect their transferred data, storing and presenting needed information by the applications.

## Back-end

HAPS core software is a fast message bus for collecting data that is coming from patients’ gadget and a powerful API for dealing with applications. …

## Smart Gadget

For this project we created our very first gadget and, in this prototype there are three sensors for \_ and an Arduino Uno for managing sensors, keypad and the character LCD. …

## Web App

## Mobile App

It is so hard to find a person that doesn’t use a smart phone these days and they are so comfortable with them because phones are light, portable and have many capabilities. So, with all these feature and advantages, having a mobile application for this service is necessary. For this purpose, we use the flutter framework. Flutter framework is introduced and developed by google and is a cross-platform framework for creating beautiful, fast and interactive applications for IOS, Android, Web, macOS, Linux and Windows with just one codebase.

Our App follows an MVC-like architecture and keep Data Management (Model), Screens (View) and Services (Controller) in separate parts and also our app is written modular and its code is reusable.

Doctors and nurses can sign in to the app with their account and monitor their under-supervision patients’ profile, their latest and historical vital signs in real-time. They can also receive alert in case of emergency.

# Conclusion

References

[1] Azzawi, Mustafa & Hassan, Rosilah & Abu Bakar, Khairul Azmi. (2016). A Review on Internet of Things (IoT) in Healthcare. International Journal of Applied Engineering Research. 11. 10216-10221.