

**Mobile system for monitoring vital signs**

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**GRP project proposal**

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1. **Introduction**

**1.1 Brief introduction**

Different vital signs reflect the health level of human body. The abnormal appearance of vital signs is considered a symptom of disease, moreover, it can also be used to predict the occurrence of some chronic disease. General vital sign of human body including heart rate, brain wave, weight (also known as body fat rate, BFT) and the quality of blood, for example blood pressure. For certain groups of people, additional data is requisite as well, for instance, sleep quality for pregnancy and the old, and blood sugar for people who has diabetes. Most of these data might not be of much concern of public attention, however, it is this lack of attention which is the cause of illness. The main goal of the system is to receive the monitored data and analyzes them with corresponding algorithm, to generating a report for users and giving some suggestion based on their health status.

* 1. **Background**

The importance of a monitoring system for vital signs is increasing year by year. According to the statistics from WTO, cardiovascular disease (CVDs) is the most fatal of death worldwide, every year the rate of death is always at the top among all disease. Statistics show that in the year 2016, it is estimated that about 17.9 million of patients died from CVDs, which accounts for 31% of all global deaths. Among these deaths, 85% of them are due to heart attack and stroke [1]. Diabetes mellitus (DM) is considered as a global epidemic, which makes a great influence on global population. Due to an approximately estimation, 6%-8% of world’s population is suffer from DM. Compared to the number of 336 million affected people in 2011, it predicts that in 2030, the increase will be 50.8% and nearly 552 million people will involve in DM [2]. The increasing incidence of disease is a trend in modern society, therefore, early diagnosis is becoming more and more significant. With a health monitoring system, early symptom is more likely be perceived and treatment can be carried out earlier to reduce the mortality. Positive findings from U.K. Department of Health study showed that with the assistant of mobile health monitoring technology, mortality of CVDs and DM patients has decreased by up to 45%.[3]

* 1. **Motivation**

We propose to develop and implement a system for monitoring human health based on measured data. There are already many different detection systems on the market, such as Apple, Xiaomi, and Huawei. In general, these systems have basic functions which are same as our expected system such as heart rate, temperature and so on. However, there are still some deficiency exist in these systems. For example, the Xiaomi system is inadequate in monitoring heart rate, users cannot view tracks by period. For Huawei system, its data reception is unstable which may lead to the imprecision of receiving data. Apple does better in previous aspect, it also provides medical advice for users, however, high expense is also as a serious problem. In our system, there is a useful function that most of system does have. The system should output the average value according to the user’s level. (user level calculated based on user’s age, height, and weight) Our system should also integrate the statistics of multiple sensors, then give user a succinct suggestion, such as how much exercise to get, recommend foods or what behaviors to avoid.

**1.4 Technology Support**