Wearable devices make it possible to monitor health in home and enable early detection of disease in body. The wearable devices that already used in daily lives includes wristbands, smart clothing such as smart socks and wearable healthcare bracelets, legbands, and body sensors [1]. The data captured by these devices (weight, heart rate, blood pressure) could be integrated for health monitoring and disease prediction. Smart sock is one of the wearable devices on the market. Abnormal foot pressures can be indications for many physical diseases such as diabetes, obesity and rheumatoid arthritis. Smart sock is designed based on that which also captured the data and analyze by its system on application [2](shown in figure1). However, an application with graphical foot pressure is need. Furthermore, the result is not accurate enough because the analysis based on single foot pressure data is too small. Wearable healthcare bracelets are also a product which are popular in recent years.

Through the bracelet, users can record real-time data of exercise, sleep and diet in daily life, and synchronize these data with mobile phones and computers, so as to guide healthy life through data. Date of daily exercise routes, calories consumed and calories consumed can also been stored by the bracelet. Nevertheless, the bracelet focuses on real-time health data such as heart rate and emergency scenarios which ignores long-term health monitoring and prediction of many chronic diseases. [3] [4]A body sensor network for mobile healthcare monitoring has been used in Australia. The body sensor measures the patients’biosignals. The biosignals are transmitted over wireless communication links to remote locations where have experts to view the biosignals and give some advice. [5] This device is only suitable for patients and needs cooperation of medical experts which is difficult for promotion of public.

This device uses several vital signs for health monitoring and disease predictions. Based on enough data, it makes the result more accurate. Additionally, the data are all important data for physical condition analysis. It focuses on long term health monitoring which makes the result more accurate. In addition, the device integrates several kinds of physical data including weight, heart rate and blood pressure to show to the user so it is convenient and can be promoted to the public.

With the development of technology, the appearance of new materials and human needs for health care, wearable sensors have been developed rapidly. Apple watch series 4 adds ECG sensor. If a closed loop is formed between the skin, the sensor and the metal dial, the built-in electrode will detect the electrical pulse of the heart.

Wearable device sensors can be combined with mobile devices to provide medical care information for doctors, researchers and patients, monitor the vital signs of patients in real time, and provide medical care directly. The parameters measured included EEG, heart rate, heart rate variability, blood pressure, blood oxygen, weight and weight gain, activity (walking and exercise), sleep quality and blood glucose. Figure 2shows the sensors and instruments available for the project.

图形用户界面, 文本, 应用程序, 聊天或短信

描述已自动生成

Figure 1. the smart sock

图片包含 室内, 桌子, 不同, 躺

描述已自动生成

Figure 2. The devices dedicated to the project: mobile devices, smart health bands (Xiaomi, Honor, and Bozlun), smart scales, ECG sensor, blood pressure (clinical grade and wearable), glucose meters, and oximeters. The testing protocols for these sensors and devices have been developed.

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