A low-cost smart Biomedical device

To measure Body Temperature, Heart Rate, ECG and Fractured Angle Through Motion

ABSTRACT

This synopsis presents the design and the implementation of a mobile application-based Health Care system in Bangladesh. Through this system, any patient can communicate with their doctors easily. The main purpose of this project is to provide a better opportunity for the patients to communicate comparatively faster with their doctors than before. It can be utilized both in rural and urban areas. The doctors on the other hand can also keep a track of their patients. The device was comparatively cheaper to make and will certainly beat other such existing devices on the market both in terms of sensitivity and price. The system will be accessible from an android application via the internet and a back-end database. The report includes content designing, hardware implementation and android mobile application development.

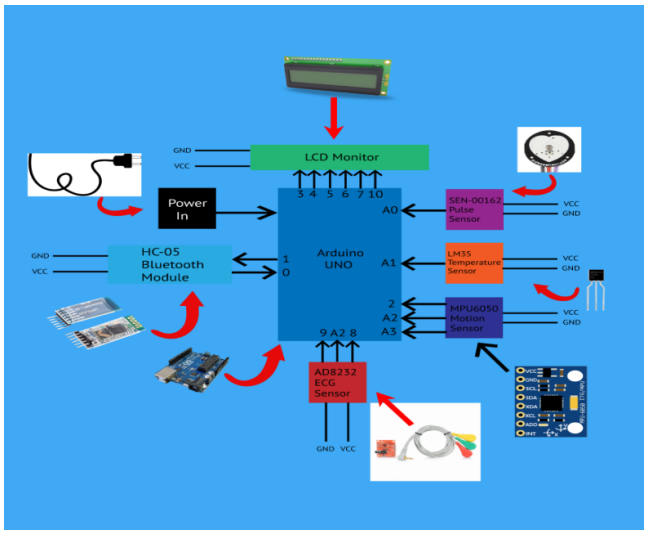

Figure 1: Hardware diagram of the device

Method with System Diagram/Design

The device in terms of creation or modification faced both hardware and software innovations. In terms of hardware, sensors such as LM35 temperature sensor, SEN-11574 pulse sensor and HC-05 Bluetooth module all attached to the Arduino. In terms of software, a graphical interface in the application was crafted using Android Application, JS, and a backend database to keep a record of the information sent to the user. The diagram given below shows the integration of the sensors into the main Arduino and the packaging of the entire system inside a box to be carried around. The power supplied to the device is either from a DC source of 5V or from an AC source via an adapter.

Novelty of Project and Significance

Our team believes that this idea has been tried before, but the devices created and available in the market lack the combined facilities provided by this device as well as the cost efficiency. So, in terms of costing and services provided, our device is extremely unique. In addition to that, our device if availing continuous connection to the internet can at any time send real time data to the doctors requiring urgent knowing of the patient's stats for quick steps to recovery.

Impact on society/environment

We have already seen that patients who require regular checkups regarding their recovery or improvement of health will have to undergo a lot of processes to see a doctor and spend a huge bulk of their time in the hospital for organizational faults, especially in an overpopulated and developing country as Bangladesh. With the

introduction of a device which is affordable and can give the necessary stats of the patient to the doctor taking in real time values, this will save a lot of time and also space in the hospitals to accommodate more patients who require emergency treatment. People will also save a lot of money that they previously used for doctors' visiting charges and get online help when necessary.

Business Model/Financial Scalability plan

The basic idea regarding the launch of this product into the market will start with the minimizing of the size of the device as well as making the device portable. After a particular price has been determined to get over the tech-costs and cost of making process, we shall require investments from medical, pharmaceutical and tech firms. We shall also make contracts with hospitals to issue the device licensed in their names under particular charges. We shall also be open to introducing new features to the devices as per our client's needs and providing maximum services through the Research and Development section of our firm. If possible, we are expecting joint ventures with other firms in the short run and will also yearn for a government funding to introduce the device into the national sector.