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Original Research Article

Design and Manufacture of Fetal Position Detection Device in Pregnant Women

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ABSTRACT

It is very helpful to identify the position of the fetus in high-risk pregnancies as well as in high-risk mothers who have had unsuccessful pregnancies in the past; In most cases, with improper fetal position, fetal as well as maternal mortality occurs. Designing and building a device that can correctly detect the position of the fetus can be used as a preventive method in pregnant mothers. This device is related to the field of medicine that without sending destructive waves to the fetus, which may lead to many complications for the fetus, the waves sent by the fetus can be detected and interpreted, and with its help, the general condition can be the fetus and its position were obtained with the necessary information. Convenient and easy use by the doctor and mother can lead to early diagnosis of possible disorders and subsequent vital measures will be taken as soon as possible.

Keywords: High-Risk Pregnancies, Designing and Building, Destructive Waves, Subsequent Vital Measures

Introduction

Detection of the position of the fetus in high-risk deliveries as well as information about the condition of the fetus is done with the help of ultrasound device, which interprets the necessary information about the fetus with the help of ultrasound waves; and need an equipment for this [1]. Therefore, building a device that can provide useful information to doctors to diagnose the condition of the fetus is essential and can improve the health of the newborn [2, 3]. Making a positioning device and checking the condition of the fetus without sending destructive waves can provide basic and necessary information about the condition and position of the fetus and because of the ability to educate the mother, it can be easily used at home and if you see a problem, further diagnostic measures Such as the use of ultrasound devices and CT scans will be used. In the search for things related to the present invention, we did not come across a similar issue nationally and internationally [4]; This means that the use of vibrated waves by the fetus and their interpretation in a way that can interpret the necessary information in the medical sciences and the field of women was not observed [5]. The advantage of the present invention is that it is completely new and presented for the first time in the world, and without sending waves [causing complications], it will provide the necessary information to the doctor [6]. Also, due to its simplicity, mothers can be taught to use this invention to follow the condition of the fetus at any time of the day and night, and if they see a problem, to take immediate and timely action [7]. This invention does not cause any harm to the body compared to existing devices. Unlike ultrasound devices and other devices that send different waves or frequencies into the body to obtain the characteristics and condition of the baby, this device receives waves from inside the baby and the mother and displays the information by analyzing the data. The displayed information can also be expressed in audio [8]. Also, this device does not require special expertise and any person [doctor and mother] can use it. Provide a solution to the existing technical problem along with an accurate, sufficient and integrated description of the invention

Main Part 1: [CPU]

All information received from sensors and amplifiers is transferred to this section and the processed information is displayed on the screen.

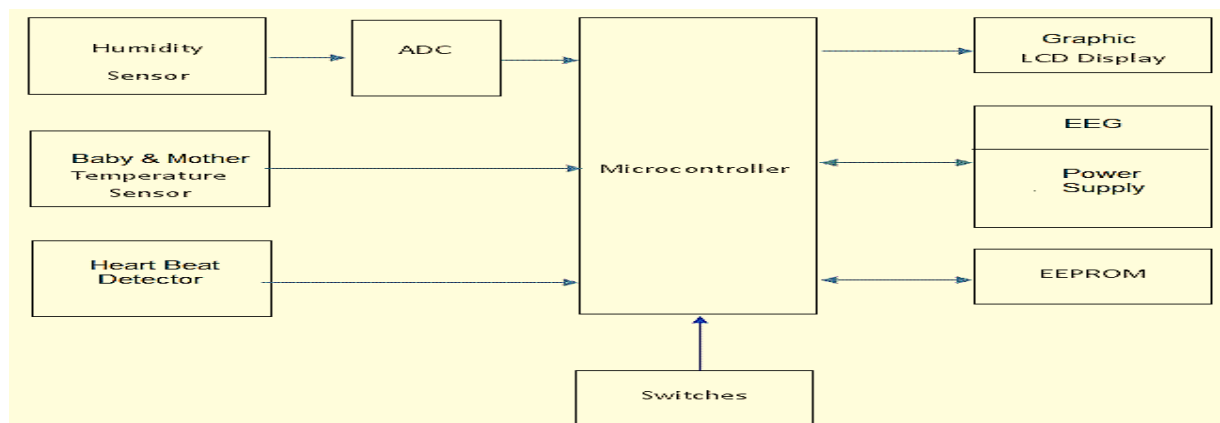


Fig 1: CPU

The second main part: [Diagnosis of the baby's heartbeat]

This part is made of two parts: heart rate sensor and shock sensor or piezo [microphone]. A two-stage sensor is used to reduce detection errors. The heart rate or sound wave due to the collision with these receivers or sensors causes a small voltage in the amplifier circuit, which is considered as the reference voltage for measuring and deciding the whole circuit. In this step, the main circuit or CPU shows the required number on the display by applying calculations to the received data [Fig 2].

The main part 3: [mother heart rate detector]

This section is also made before the two parts of the heart rate sensor and the shock sensor or piezo [microphone]. A two-stage sensor is used to reduce detection errors. The heart rate or sound wave due to the collision with these receivers or sensors causes a small voltage in the amplifier circuit, which is considered as the reference voltage for measuring and deciding the whole circuit. In this step, the main circuit or CPU shows the required number on the display by applying calculations to the received data. An optical heart rate monitor is also used on the mother finger and this feature is available in this device [Fig 2].

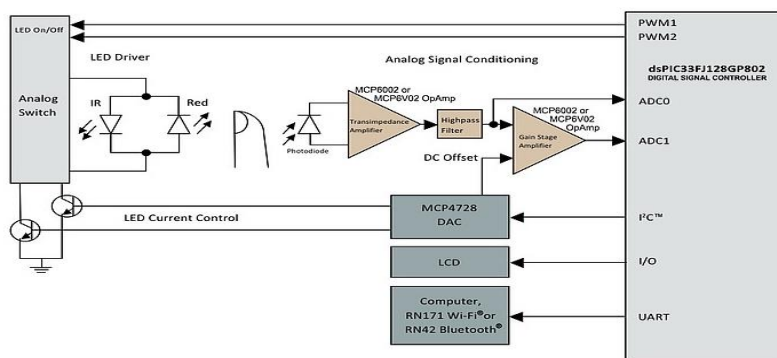


Fig 2: Diagnosis of the Fetus's and Mother's heartbeat

The fourth main part: [baby brain wave detector]

The brain wave sensor is a filtered wave receiver for waves with specific wavelengths, which by upgrading this part, all the abnormalities in the baby can be obtained with the received brain waves [Fig 3].

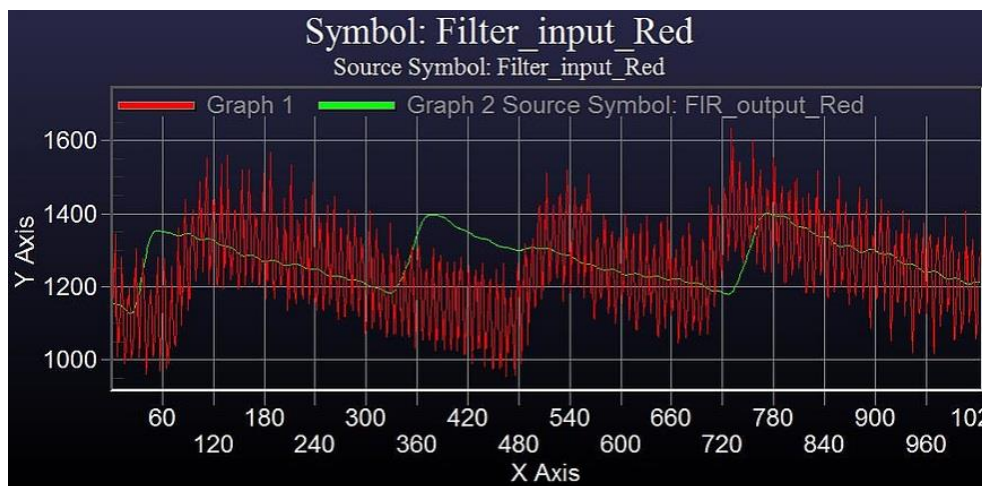


Fig 3: Waves [brain and heart] fetal positioning device

The main part 5: [Recognizing the vital signs of the mother and the environment]

In this part, several temperature and humidity sensors are used to detect the temperature and humidity of the mother and baby.

Part Six Main: Oxygen Sensor

Oxygen sensor to show that the ambient air is standard for the mother's health.

The seventh main episode

In this section, all the information obtained is stored on a memory card and can be backed up. The first sub-part: power supply circuit and device batteries. The whole circuit uses two series lithium polymer batteries with a voltage of 7.4 volts and a current of 2000 mAh.

The second sub-part

the display and the keyboard of the device. The display and keyboard are responsible for displaying information and controlling settings.

Part 3

Box for holding parts and sensors. All parts of the device are placed inside this box.

Part 4

The speaker system. This system is to explain the final information in the system to the user so that the user can access and hear the information without looking at the device [Fig 4].



Fig 4: The final image of the fetal position detector

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