

Smart Monitoring System for Asthma Patients

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Abstract— Management of asthma is challenging as it involves understanding the causes and avoiding issues that are many and varied from person to person. Moreover, it is difficult for physicians to constantly monitor the health of many patients and the natural causes at the same time; or to obtain sufficient information about the environment in which the patient lives. So our proposed system is aimed at developing the smart monitoring system for asthma patients. This system is based on constant measure of CO₂ and dust level in atmosphere using sensors and the IOT model is used to push the notification in smart phone which notifies the level of CO₂ and dust in atmosphere.

Keywords: Smart Monitoring System, Asthma Patients, IOT model, CO₂

I. INTRODUCTION

Air quality has a profound effect on the concentration of atmospheric elements. To avoid such environmental imbalances, the air quality monitoring system is very important. Wireless Sensor networks are an excellent technology that can hear, measure, and collect data from the real world and, based on a specific local decision-making process that transmits logical information to the user. These networks allow the physical environment to be measured at higher resolutions, and significantly increase the quality and quantity of real-world data and application information such as pollution monitoring. So the constant monitoring of air quality and quantity is mandatory.

II. LITERATURE SURVEY-

- 1) Zhe Cao et al in 2012 proposed the work of portable small wireless nerves to monitor respiratory infections. The proposed system has two integrated sensor areas with a Bluetooth transmitter to transmit wireless data. The designed system works as a spirometer and as a sleep recorder to detect lung diseases. A major problem with this system is that the Bluetooth module is used to transmit data wirelessly, which can only transmit short distances.
- 2) Anniel Tecihmann et al in 2014 proposed a study of a wearable and flexible heart monitoring device by combining two values of non-contact nerves. Research suggests a wearable item that can be held in a patient's shirt pocket. In order to achieve optimal performance this device must combine the two nerve levels in a non-contact way by inserting into several layers of tissue used by the patient. One sensor is focused on breathing awareness and the other is focused on getting pulse. The main problem with this study is that only two parameters are considered and real-time monitoring is not taken into the study.
- 3) Alice M. Kwan et al in 2015 proposed a study to monitor lung function using visual acuity. [8] The study was

based on the observation of lung functions by using biomarkers made of chemicals to monitor the various amounts emitted by the respiratory system. This study included pressure measurements in image format, in many cases not understood by ordinary people. Other causes of asthma patients are the temperature that can be taken from the focus of this study.

III. EXISTING SYSTEM

Measuring dust and natural Co₂ levels there is no continuous monitoring of levels. Handicrafts are done to predict the level of dust in the environment. Strong winds sweep through the dust of small amounts of mineral particles from the earth to the air, across continents and oceans. In the atmosphere, dust affects the climate by reflecting and absorbing sunlight, influencing clouds, and sowing the oceans with nutrients that allow small plants to grow.

Existing air surveillance systems often do not fully address human exposure to toxic air pollution and assess the emerging health effects.

IV. PROPOSED SYSTEM

The proposed system is used to predict dust and Co₂ levels in the environment and will indicate when it has exceeded the maximum level. Dust sensor and Co₂ sensor is used to predict environmental quality and the Android app is used to monitor dust and Co₂ level in the environment.

A microcontroller that measures data from dust and CO₂ sensor and will determine whether patients can be affected and provide a signal and alarm.

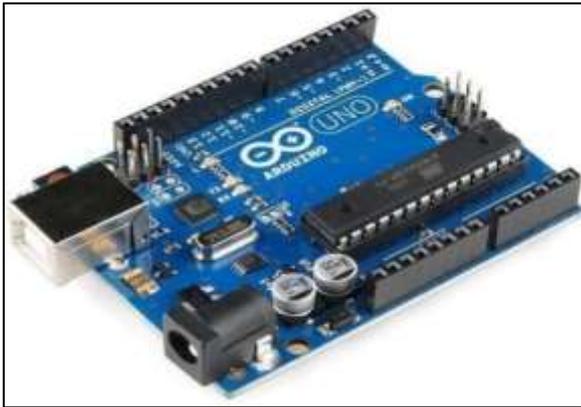
Dust is divided into three sizes, with different effects on the human respiratory system. A small amount of particles deep in the lungs can enter and is more likely to remain in the lining and cause respiratory illness.

A. Hardware Requirements-

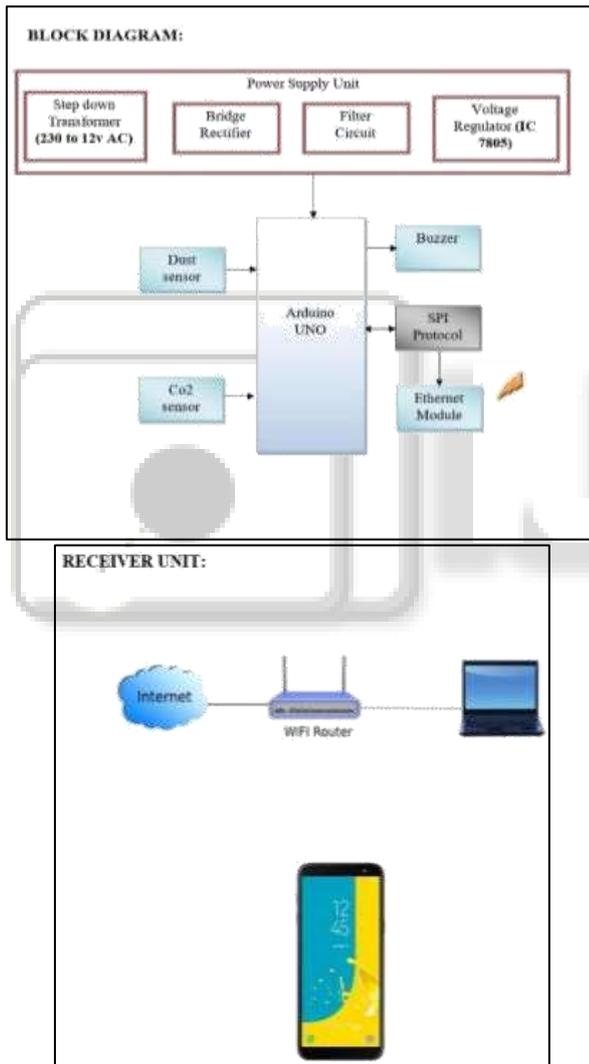
- Arduino Uno
- CO₂ sensor
- Dust sensor
- SPI protocol
- Ethernet module
- Power supply unit

B. Software Requirements-

- Arduino IDE
- Embedded C



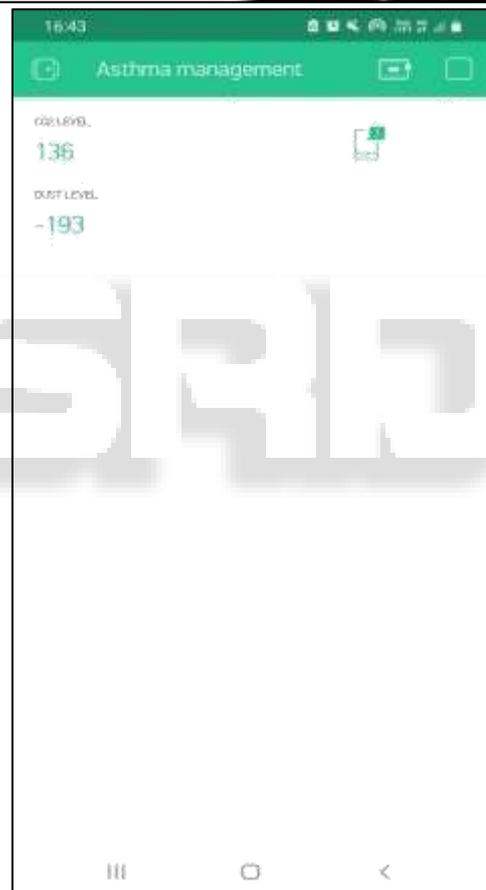
V. BLOCK DIAGRAM



VI. ADVANTAGES

- It controls of ventilation in public buildings and small homes.
- The dust sensor used to detect the dust level at atmosphere of the environment
- It will helpful to find asthma patient whether the patient should present or not indicated.

VII. MODULE



Output on mobile screen

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