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REAL-TIME DATA ACQUISITION OF PRESSURE, HUMIDITY, MOISTURE AND TEMPERATURE USING SENSORS

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Abstract: *-A prominent research is going on the real-time data acquisition.. Various researchhad done on the offline data acquisition and it has a major problem of analysing the data online. Since the real-time data acquisition is the newer approach in this area. It gives the real-time data and we can get it at the same time. In this project it is proposed to use the pressure, moisture, humidity and temperature sensors to get the data online. The GPRS is used to get the data online from the cloud. From the moisture content which is detected from the sensor, the DC motor runs with the help of motor driver. The values of the data displays using LCD display.*

Keywords- *GPRS, UART, Cloud storage, GUI, Dropbox.*

I. INTRODUCTION

Data acquisition systems, as the name suggests, are products or processes used to collect information to document or analyse some events. In the simplest form, a technician logging the temperature of an oven on a piece of paper is performing data acquisition. As technology has advanced, this type of process has been simplified and made more accurate, versatile, and reliable through digital equipment. Equipment ranges from simple recorders to sophisticated computer systems. Data acquisition products serve as a primary point in a system, tying together a wide variety of products, such as sensors that indicate temperature, flow, level, or pressure. Figure 1 shows the basic block diagram of DAQ system.

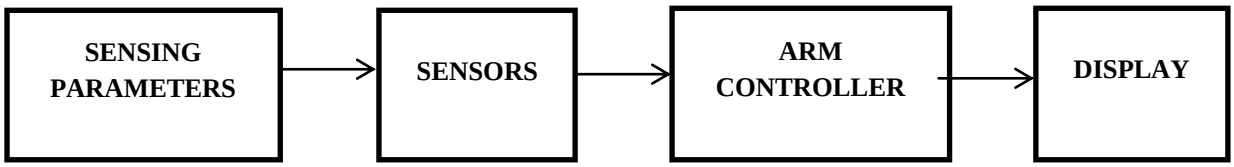


Fig 1 : Basic block diagram of DAQ system

II. RELATED WORK

In order to get the real-time values of pressure, temperature, moisture, humidity, the below model is proposed as in figure 2 and figure 3.

The figure 2 indicates the transmitter part which consists of sensors, LCD, GPRS, power supply, driver, DC motor and microcontroller. The pressure sensor connected to the UART1 of microcontroller, the moisture sensor is connected to the port P0.10, humidity sensor is connected to port P0.29, and the temperature sensor is connected to port P0.30. The humidity and temperature sensors are the analogsensors which is given to the ADC which converts to digital data. The L293D motor driver is connected to the port P0.19 of the controller. The GPRS is connected to the UART0 of the controller.

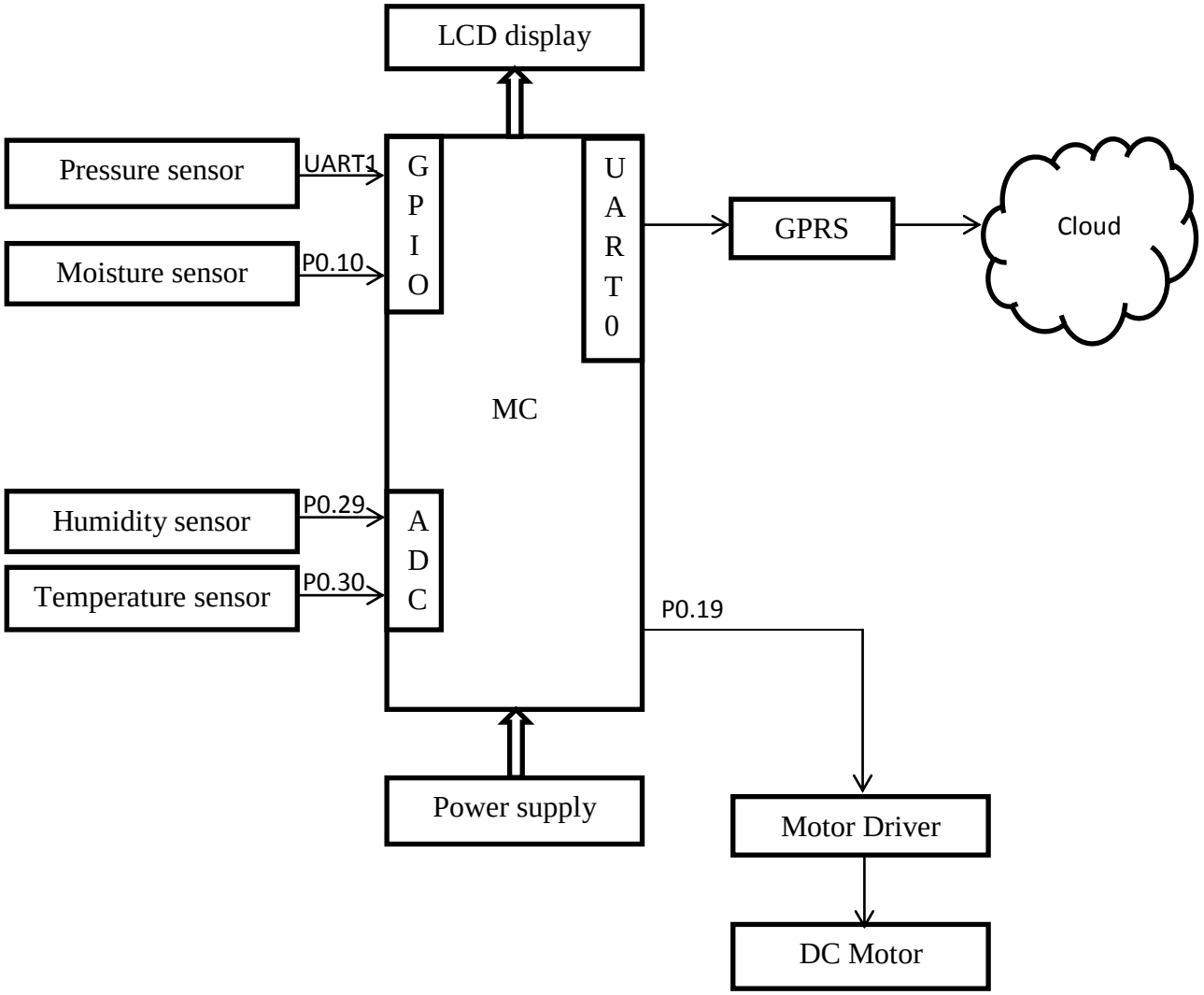


Fig 2 Block diagram of acquisition system **(A) Transmitter**

The figure 3 indicates the receiver part, consists of GPRS, GUI, Dropbox and free cloud. The data is taken from the cloud using GPRS and it is interfaced to the GUI(PC). The dropbox is interfaced between the GUI and free cloud.

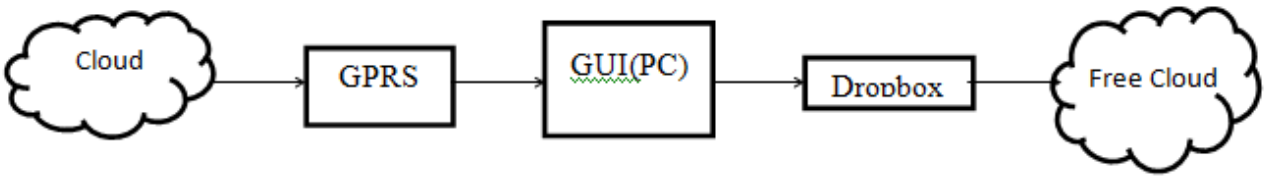
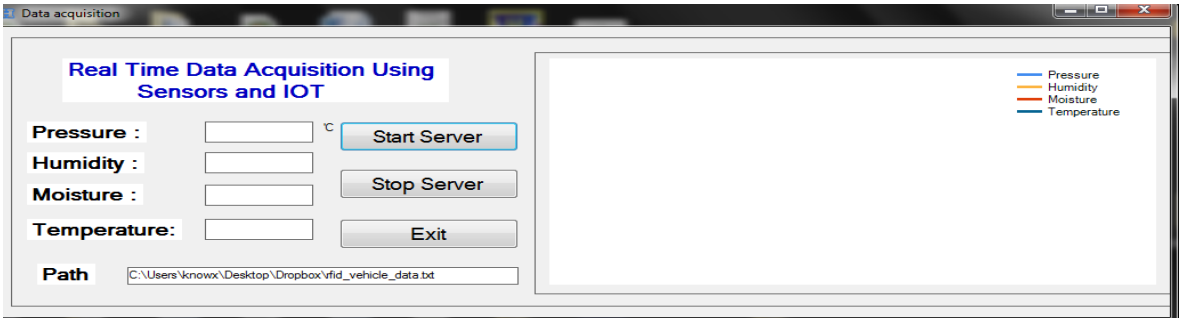


Fig 3 Block diagram of acquisition system (B) Receiver

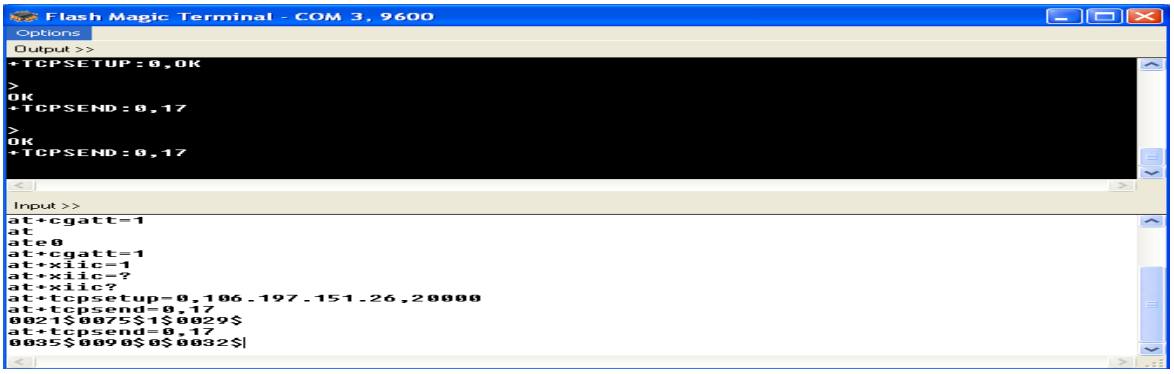
III. EXPERIMENTAL RESULTS

The following snapshots are the results of the data acquisition system.

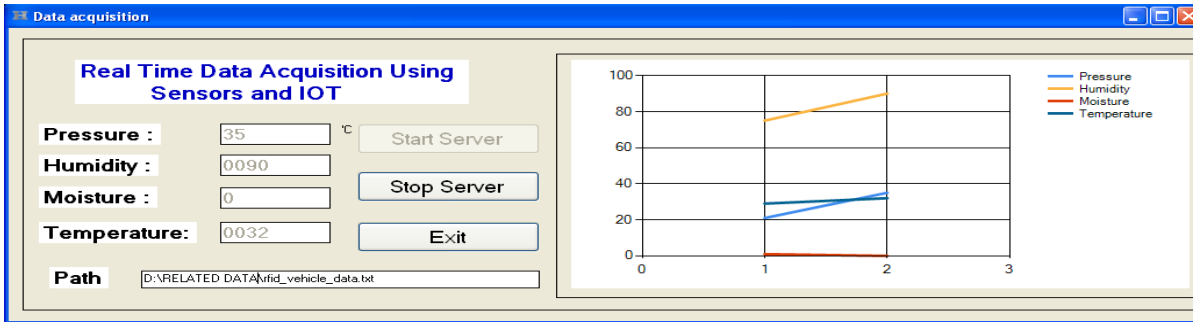
i. Snapshot of the default output page



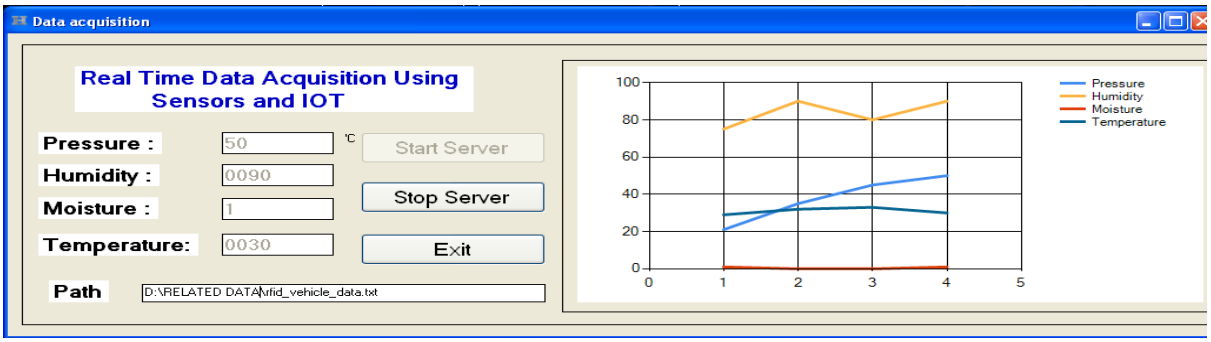
i. Snapshot of the data input page



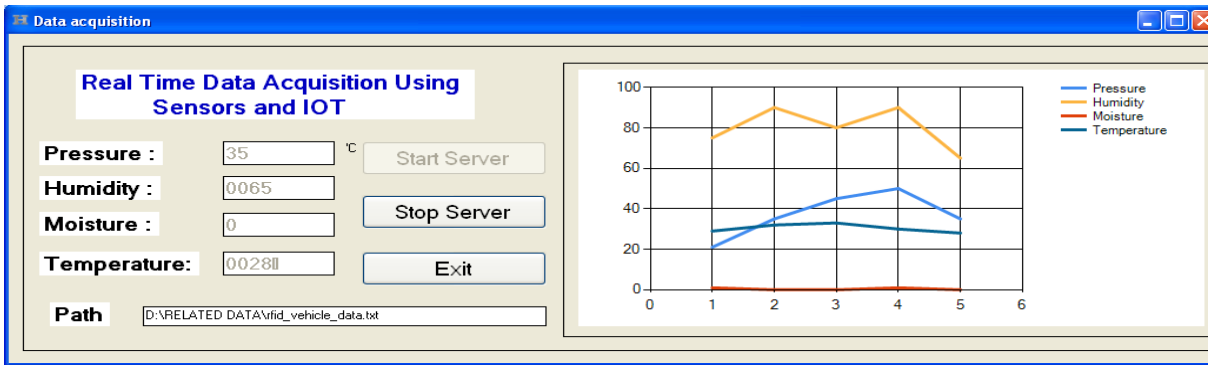
ii. Snapshot of the first output readings



iii. Snapshot of second output readings



iv. Snapshot of third output readings



IV. CONCLUSION AND FUTURE WORK

In this project, four parameters are sensed they are pressure, moisture, humidity and temperature. Pressure sensor is used to sense the pressure which inturn gives the serial output which is plotted in the graph with respect to the time axis. Moisture sensor is used to sense the moisture content of the soil by using the comparator circuit which inturn controls the rotation of the DC motor and it is plotted in the graph with respect to the time axis. Humidity sensor is used to sense the humidity of the atmosphere which is plotted with respect to time. Temperature sensor is used to sense the temperature of the environment and is plotted with respect to time.

The result have shown that the pressure, humidity, moisture and temperature values. The graph shows the corresponding values plot with respect to time. These values can be used for different applications. The moisture value is used to run the DC motor. Temperature value gives the current room temperature. Pressure value can be used to generate voltage which inturn used to generate electricity.

Further by using the pressure values we can generate the electricity and these pressure values are stored in the cloud which can be taken at any time and also it can control remotely. For the real time data acquisition, the data is taken using the GPRS and from the cloud. This is called online analysis. For offline analysis the data is stored in the cloud and it is taken whenever data is needed through the free cloud IP address.

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