**TITLE OF PROJECT REPORT**



**A PROJECT REPORT**

*Submitted by*

**STU. NAME 1-Gouri Sankar Nayak UID-18BEM1053**

**STU. NAME 2-Vishal UID-18BEM1057**

**STU.NAME3-ShivaUID-18BEM1060**

**STU.NAME4-Bimalendu Pui UID-18BEM1052**

***In partial fulfillment for the award of the degree***

***of***

**BACHELOR OF ENGINEERING**

**in**

**MECHATRONICS ENGINEERING**

**Under the Guidance**

**Of**

**(INDERPREET SIR)**

**University Institute of Engineering**

**CHANDIGARH UNIVERSITY**

**APRIL – 2020**

**CHANDIGARH UNIVERSITY**

**BONAFIDE CERTIFICATE**

Certified that this project report **“…TITLE OF THE PROJECT-To design and implement Arduino based weather monitoring and flood detection system” .**

is the bonafide work of “**…………..NAME OF THE CANDIDATE(S).……”**

**STU. NAME 1-Gouri Sankar UID: 18BEM1053**

**STU. NAME 2-Vishal UID: 18BEM1057**

**STU. NAME 3-Shiva UID: 18BEM1060**

**STU. NAME 4-Bimalendu Pui UID: 18BEM1052**

who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Signature of the Head of the Department Signature of the Supervisor

**SIGNATURE SIGNATURE**

<<Name>> <<Name>>

**HEAD OF THE DEPARTMENT SUPERVISOR**

<<Academic Designation>>

<<Department>> <<Department>>

<<Full address of the Dept & College >> <<Full address of the Dept & College >>

**CERTIFICATE FOR EVALUATION**

**College Name : University Institute of Engineering**

**Branch : Mechatronics Engineering.**

**Year / Semester: IV / VIII**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO** | **Name of the Students**  **Who have done**  **the project** | **Title of the project** | **Name of the**  **Supervisor with**  **Designation** |
| **1.** | **Gouri Sankar Nayak** | **To design and implement Arduino based weather monitering system and flood detection system** | **Prof.INDERPREET SINGH** |
| **2.** | **Vishal** |
| **3.** | **Shiva** |
| **4.** | **Bimalendu Pui** |

The reports of the project work submitted by the above students in partial fulfillment for the award of Bachelor of Engineering degree in Mechatronics Engineering of Chandigarh University were evaluated and confirmed to be the reports of the work done by the above students and then evaluated.

**INTERNAL EXAMINER EXTERNAL EXAMINER**

**ACKNOWLEDGEMENT**

This project, though done by us would not have been possible, without the support of various people, who by their cooperation have helped us in bringing out this project successfully.

Our special heartfelt thanks to Chairperson **Prof.** for providing ate of art facility during project work.

We are grateful to our Principal, **Dr.**  for her patronage towards our project.

We thank our Professor & Head**, Dr.**  who had always served as an inspiration for us to perform well.

We would like to express our faithful thanks to **Supervisor Name,** for having extended all the department facilities without slightest hesitation.

We would like to express our unbounded gratefulness to **Mr.**  and **Mr.** for their valuable guidance and encouragement throughout the project.

We thank all faculty members and supporting staff for the help they extended to us for the completion of this project.

**ABSTRACT**

This paper mainly combines between two-study fields based control systems and data acquisition technique, to create a database system depending on the employed attributes to generate the presented data. The main attributes have been chosen based on the sensors used to build the system in order to create an effective weather station project. The proposed sensors used to measure and store Temperature, Humidity, and Wind speed data. The acquired data can be displayed in two ways identified as direct and indirect due to periodic data read and storing the data as real database system respectively. Real database creation technology is considered the main challenge of this work, which gives an opportunity to mine the data, recorded in the past. Furthermore, the entire system supervises and governs locations locally based on the periodic change that occurs in the climate conditions, in order to keep the proposed locations in desired weather situations. Finally, light sensing module is included with the module to provideweather station system by the information regarding day / night times based light intensity.

**TABLE OF CONTENTS**

|  |  |
| --- | --- |
| **TITLE** | **PAGE NO.** |
| **ACKNOWLEDGEMENTS……………………………………………………** | i |
| **ABSTRACT…………………………………………………………………….** | ii |
| **TABLE OF CONTENTS………………………………………………………** | iii |
| **LIST OF TABLES……………………………………………………………..** | vii |
| **LIST OF FIGURES……………………………………………………………** | viii |
| **ABBREVIATIONS…………………………………………………………….** | ix |
|  |  |
| **CHAPTER 1 INTRODUCTION** |  |
| * 1. **Introduction**   In this project we have aimed to enhance weather monitoring system at lowest cost possible. Our system is cable of capturing real time environmental data via different sensors we have installed. Our system can sense temperature, humidity, pressure, altitude, light intensity, rain, flood and air quality. Moreover data collected by these sensors can be accessed or observed on Think speak webpage across the globe. | 1 |
| 1.2 Definition of the Problem |  |
| 1.2.1 Problem Statement |  |
| 1.2.2 Need for Research |  |
| 1.4 Background Study |  |
| 1.**5 Objective and Scope of Research**   * The main objective of our project is to collect environmental data via variety of sensors and to display it graphically on Thinkspeak webpage . * To save life of Human/animals and to Minimize destruction/damage that a sudden flood can cause and lowering the risk by alerting in advance about flood or abrupt incr. in water level . * To gather environmental data for research purpose or to make weather prediction . * To acquire data from sensors and transmit weather data remotely around globe |  |

|  |  |
| --- | --- |
| **CHAPTER 2 REVIEW OF LITERATURE** |  |
| **2.1 Literature Review** |  |
| 2.2 Existing Approaches |  |
| 2.3 Critical Appraisal of Existing Approaches |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **CHAPTER 3: METHODOLOGY**  3.1 Plan of Work | |  | |
| 3.1 Plan of Work   |  |  |  | | --- | --- | --- | | **S.NO** | **NAME OF TEAM MEMEBER** | **WORK ALLOCATED TO EACH TEAM MEMBER** | | 1. | BIMALENDU BHASKAR PUI | Presentation and coding of HC-SR04 and MQ-135 sensor module | | 2. | GOURI SANKAR NAYAK | Literature review, and report writing and all paper related work | | 3. | VISHAL | Prototyping and final assembling of components. | | 4. | SHIVA THAKUR | Purchasing and specification of project hardware and detailing of sensors | | |  | |
| 3.2 General Methodology | |  | |
| **CHAPTER 4 RESULT AND DISCUSSION** | |  | |
| 4.1 Results and Discussion | |  | |
| 4.2 General Discussion |  | |
| **CHAPTER 5 CONCLUSION AND FUTURE SCOPE OF WORK** |  | |
| 5.1 Conclusion  The paper demonstrates a simple and low cost system design to measure climate components in perfect competence. The availability of such system is extremely preferred particularly, with the establishments, companies that depend considerably on taking decisions based on inputs variations; consequently, weather prediction processes will be taken into considerations. In addition, the system is considered perfect for controlling the sites based on the change in weather conditions. The system works as a supervisor controller, which govern places depending on the fluctuations of the weather or other conditions via feedback operation principles. Hereby, we conclude that the proposed system can be separated in to two different parts. The first part is excessively helpful for the companies and other organizations that are put in charge to plane and manage their works based on weather situations; such as, Transportation systems, Airways, and the Agriculture as a high priority, etc. The second part is designed mainly to control the sites based on the change in the states of user specification depending on a feedback reported by input changes due to weather fluctuations; such as, controlling the |  | |
| 5.2 Future Scope of Work |  | |
|  |  | |
| **REFERENCES………………………………………………………………..** |  | |
| **LIST OF PUBLICATIONS BASED ON THIS THESIS…………………...** |  | |

**LIST OF TABLES**

|  |  |  |
| --- | --- | --- |
| **TABLE NO.** | **TITLE** | **PAGE NO.** |
|  |  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **LIST OF FIGURES**   |  |  |  | | --- | --- | --- | | **FIGURE NO.** | **TITLE** | **PAGE NO.** | |  |  |  | |

**ABBVREVIATIONS (if any)**

|  |  |
| --- | --- |
| UAV | Unmanned Aerial Vehicle |
| NIR | Near Infrared Region |
| TIR | Thermal Infrared Region |
| EMS | Electromagnetic Spectrum |
| CWSI | Crop Water Stress Index |
| NDVI | Normalized Difference Vegetation Index |
| RNDVI | Red Normalized Difference Vegetation Index |
| GNDVI | Green Normalized Difference Vegetation Index |
| VIS | Visible Range |