*A Project report on*

**Air quality and gas monitor system**

*Submitted in partial fulfilment of the requirements for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

*by*

**K.Deekshitha** **(214G1A0418)**

**S.Mashuda Mouzzam** **(214G1A0456)**

**P.Anandachari** **(214G1A0405)**

**P.Dinesh raj varma**  **(214G1A0422)**

Under the Guidance of

**Mr. B. Varun Kumar, MTech., (Ph.D.)**

Assistant Professor



**ELECTRONICS AND COMMUNICATION ENGINEERING**

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

. ANANTHAPURAMU

**(Affiliated to JNTUA, Approved by AICTE, New Delhi, accredited by NAAC with ‘A’ grade** & **accredited by NBA (B. TECH ECE, EEE&CSE))**

# 2024-2025

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY ANANTHAPURAMU

**(Affiliated to JNTUA, Approved by AICTE, New Delhi, Accredited by NAAC with ‘A’ grade**

**& Accredited by NBA (B. TECH ECE, EEE&CSE))**



# Certificate

This is to certify that the project report entitled Air quality and gas monitor system.is the bonafide work carried out by K.Deekshitha bearing Roll Number 214G1A0418, S.Mashuda Mouzzam bearing Roll Number 214G1A0456, P.Anandachari bearing Roll Number 214G1A0405 and BP.Dinesh raj varma bearing Roll Number 214G1A0422 in partial fulfilments of the requirements for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering during the academic year 2024-2025.

**Project Guide Head of the Department**

Mr. B. Varun Kumar, MTech.,(Ph.D.) Dr. M.L. Ravi Chandra, MTech., Ph.D.,

Assistant Professor, Professor & HOD

Dept. of ECE. Dept. of ECE

Date:

Place: Ananthapuramu **EXTERNAL EXAMINER**

## DECLARATION

We, Ms. K.Deekshitha with reg no: 214g1a0418, Ms. S.Mashuda Mouzzam with reg no: 214g1a0456, Mr. P.Anandachari with reg no: 214g1a0405, Mr. P.Dinesh raj varma with reg no: 214g1a0422 students of SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY, Rotarypuram, hereby declares that the dissertion entitled “SMART BABY CRADLE SYSTEM USING IoT ”embodies the report of our project work carried out by us during IV year Bachelor of Technology under the guidance of Mr. B. Varun Kumar, Department of ECE, SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY, and this work has been submitted for the partial fulfilment of the requirements for the award of the Bachelor of Technology Degree.

The results embodied in this project have not been submitted to any other University of Institute for the award of any Degree or Diploma.

Project Associates

K.Deekshitha REG NO: 214G1A0418

S.Mashuda Mouzzam REG NO: 214G1A0456

P.Anandachari REG NO: 214G1A0405

P.Dinesh raj varma REG NO: 214G1A0422

**VISION AND MISSION**  **Vision and Mission of SRIT:**

**Vision:**

To become a premier Educational Institution in India offering the best teaching and learning environment for our students that will enable them to become complete individuals with professional competency, human touch, ethical values, service motto, and a strong sense of responsibility towards environment and society at large.

**Mission:**

**M1**: Continually enhance the quality of physical infrastructure and human resources to evolve into a center of excellence in engineering education.

**M2**: Provide comprehensive learning experiences that are conducive for the students to acquire professional competences, ethical values, life-long learning abilities and understanding of technology, environment and society.

**M3**: Strengthen industry institute interactions to enable the students work on realistic problems and acquire the ability to face the ever-changing requirements of the industry. **M4**: Continually enhance the quality of the relationship between students and faculty which is a key to the development of an exciting and rewarding learning environment in the college.

**Vision and Mission of the Department of ECE**

**Vision:**

To become a department of excellence in Electronics and Communication and allied areas of engineering by empowering rural students with latest technological updates and human values.

**Mission:**

**DM1**: Continually improve the teaching learning and associated processes to prepare the students with problem solving skills.

**DM2**: Provide comprehensive learning experiences to imbibe industry based technical knowledge and encourage students to pursue higher studies with awareness on ethical values.

**DM3:** Nurture a strong research eco-system that facilitates quality research by faculty and students.

## ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of people who made it possible, whose constant guidance and encouragement crowned our efforts with success. It is a pleasant aspect that we have own the opportunity to express our gratitude to all of them.

It is with immense pleasure that we would like to express my indebted gratitude to our Guide **Mr. B. Varun Kumar, Assistant Professor, Electronics and Communication Engineering Department**, who has guided us a lot and

encouraged us in every step of the project work. We thank him for the stimulating guidance, constant encouragement and constructive criticism which have made possible to bring out this project work.

We are very much thankful to **Dr. M. L. Ravi Chandra, Professor & HOD, Department of Electronics and Communication Engineering,** for his kind support and for providing necessary facilities to carry out the work.

We wish to convey our special thanks to **Dr. G. Balakrishna, Principal** of **Srinivasa Ramanujan Institute of Technology** for giving the required

information in doing our project work. Not to forget, we thank all other teaching, non-teaching staff and our friends who had directly or indirectly helped and supported us in completing our project in time.

We also express our sincere thanks to the Management for providing excellent

facilities**.**

Finally, we wish to convey our gratitude to our family who fostered all the requirements and facilities that we need.

***Project Associates***

### ABSTRACT

Air quality and gas monitoring systems are crucial in assessing and ensuring healthy environments by continuously tracking levels of pollutants and hazardous gases. These systems typically utilize a combination of sensors to detect substances such as carbon monoxide, nitrogen oxides, sulfur dioxide, volatile organic compounds, and particulate matter. The collected data can help monitor compliance with air quality standards, identify sources of pollution, and provide alerts to mitigate risks to human health and safety.

Modern air quality monitors often incorporate IoT (Internet of Things) technology, enabling real-time data acquisition, remote monitoring, and data analytics. By leveraging wireless communication, cloud platforms, and artificial intelligence, these systems offer predictive insights, generate alerts, and facilitate data-driven decisions to enhance environmental health management. The system's adaptability extends across various applications, including urban air monitoring, industrial safety, indoor air quality, and early detection of toxic gas leaks. By providing accurate, real-time air quality assessments, these systems play a key role in public health, environmental awareness, and climate change mitigation strategies.

|  |  |  |
| --- | --- | --- |
|  | **CONTENTS** |  |
| **CHAPTER**  **NO** | **CHAPTER** | **PAGE**  **NO** |
|  | **DECLARATION** |  |
|  | **VISION AND MISSION** |  |
|  | **ACKNOWLEDGEMENT** |  |
|  | **ABSTRACT** | i |
| 1 | **INTRODUCTION** | 1-2 |
|  | 1.1 Importance of Air Quality | 1 |
|  | 1.2 Key components of Air quality monitoring  System | 1 |
|  | 1.3 Applications of Air quality monitoring | 2 |
| 2 | **Understanding air pollutants**  2.1 Common Air Pollutants  2.2 Effects of Air Pollutants on Health and the  environment | 3-5  3  4 |
| 3 | **Gas Detection and Monitoring Systems** | 6-8 |
|  | 3.1 Types of Gas Sensors  3.2 Working Principle of Gas Sensorts  3.3 Sensor Calibration and Accracy | 6  7  8 |
| 4 | **Design and Architecture of Air Quality Monitoring Systems** | 9-11 |
|  | 4.1 System Components and Configuration | 9 |
|  | 4.2 Data Collaction and Transmission Technologies | 10 |
| 5 | **IOT Integration in air quality monitoring**  5.1 Role of lot Devices  5.2 Communication Protocols  5.3 Data Aggregation visualization Tools | 12-14 |
| 6 | **Air Quality indices and Standards**  6.1 AQI(Air Quality Index indices)Measurement  6.2 Global Air Quality Standards | 15-17 |

**CONCLUSION AND FUTURE SCOPE** 18

**REFERENCES** 19