

INDOOR AIR QUALITY MONITORING SYSTEM USING MACHINE LEARNING WITH IOT

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Abstract : In the recent situation, managing air pollution is one of the driving challenges. Mostly frequently the educational organizations in creating countries suffer from contaminated environment due to inadequate plan and poor framework. The pupil in the class and lecturers or teacher in school or colleges could suffer from wellbeing issues due to drawn out of introduction to such environment. In this project, we will be building a prototype which will be detecting pollution causing gases like CO, CH₄, LPG, CO₂, and smoke along with biological parameters such as temperature and humidity. Along with IOT sensors we will be using Machine Learning Algorithm to train the data observed from the IOT sensors.

Index Terms – Air Pollution, Sensors, Algorithm, Biological Parameters.

I. INTRODUCTION

The residents of metropolitan areas are profoundly affected by the pollution. It is not possible to guarantee a toxic free environment to the residents in the metropolitan areas. Since people spend maximum time inside a building, it is necessary to have a device which monitors the pollutants in a building. Some dangerous pollutants are CO₂, CH₄, LPG and volatile organic compounds. Bad quality of air leads to severe health issues which lead to lack of focus in work, studies, etc. Even though there are existing system which detect pollution they might be expensive or not portable. To find a solution to this issue a prototype will be developed which will monitor the pollutants.

II. RELATED WORK

[1] The system develops an intelligent environment prototype using low cost sensors. Calibration of the sensors is done using machine learning techniques. Design of IoT-enabled ventilation system by prediction of pollutants in indoor environment.

[2] People living in urban areas are highly affected by pollution. This system developed an air quality monitoring system which was expensive and not portable.

[3] Low cost air quality monitoring system developed by Shaban was designed to measure the concentration of few pollutants. Aim is to design a system of high precision, portable device capable of measuring the concentration of most indoor environmental pollutants.

[4] This system uses infrastructural approach to filter the noise of sensor data by storing it. There are two forms of noisy data: one is missed data and the other one is unreliable reading. A gas sensor may be used in different perspective for different purposes for monitoring the environment.

[5] This system used the most common calibration technique which is external calibration where an external reference is chosen and other sensors are then calibrated with respect to external references.

III. EXISTING SYSTEM

A low cost device equipped with some environment sensors as developed earlier did not work effectively due to the high drifting of low cost sensors. The existing system used machine learning algorithm for calibration of sensors.

Here, when two similar sensors were used to measure values for the same parameter it was found to be different.

IV. PROPOSED SYSTEM

To overcome this an enhanced system will be developed with reasonable sensor rates. The proposed system will be using a machine learning algorithm i.e., Naïve Bayes algorithm. The sensed data obtained by the sensors will be used to train the data set. Hence the problem of getting two different output for the same parameter using similar sensors will not arise in the existing system.

V. RESULTS AND DISCUSSION

In this proposed framework using equipment component we are collecting information from the environment. At that point this information (CO₂, LPG, Methane, temperature and humidity), we are putting away to the cloud server it is called ThingSpeak and from this cloud server we are passing the information to the web server. At that point discuss contamination anticipating prepare will be conjured and result appeared to the client.

VI. CONCLUSION

In this proposed system using hardware component we are collecting data from the environment. Then this data (CO₂, LPG, Methane, temperature and humidity), we are storing to the cloud server it is called Thing Speak and from this cloud server we are passing the data to the web server. Then air pollution predicting process will be invoked and result showed to the user.

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