Chapter 12
Design of Wireless IoT Sensor Node and Platform for Fire Detection

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ABSTRACT

We observe fire hazards causing life loss and property loss frequently in domestic and industrial scenarios. In industries we usually have many blocks or buildings, and it is impossible to check every building every second of the day. So, the authors' model continuously checks for fire and gives a signal: either buzzer or light depending on the requirement. This is an embedded way of hardware application and software. They also used different machine learning models and algorithms to predict the future time of the fire, using regression. For prototype applications, they use linear regression, and for real-time applications, they use k-means clustering or any other model for better accuracy.

INTRODUCTION

Today the industrial sector is facing many issues regarding fire hazards situations so this project may help my many cases where we predict future hazards activities may happen and we can stop them. Not only the industrial sector, but we can also use this application where hazardous situations may happen due to fire. Here we use requirements like ESP8266, Humidity and Temperature Sensor. Here the significance of NodeMCU is that it makes doing the work easier, it will upload the values into Google Sheets. NodeMCU is Wi-Fi, a module where inbuilt Wi-Fi is present in it and all the required libraries are imported into it. NodeMCU has an inbuilt microcontroller with a specified pin configuration. Here google sheets are used as a replica of a miniature and static database to collect the temperature and humidity values. Later the sheet in which the data is stored is used to link different automated services making the developers work easy. The functionality performed by the sheet is programmed by using google script through API. And we use machine learning algorithms to train and test the given form of data using regression and detect when the fire hazardous situation comes in future. In a real application, we can implement it in many sectors of industry.

LITERATURE REVIEW

The authors in the paper (Shi & Songlin, 2020) demonstrated the conventional smoke sensing structures have a few drawbacks as they are consisting of excessive implementation costs, problems in perceiving operating states, low precision, accuracy and many issues in management. To cope with those problems, a brand-new form of smart wi-fi heat or temperature tracking machine primarily based totally on NB-IoT generation is innovatively designed, which realizes real-time remote monitor.

The planned system (Benzekri et al., 2020) relies on grouping environmental wireless sensing element network knowledge from the forest and predicting the prevalence of a fire victimization artificial intelligence, a lot of significantly Deep Learning (DL) models. the mix of such a system supported the construct of the net of Things (IoT) is formed of an LPWAN network.

The implemented prototype (Putra & Nazaruddin, 2019) gives us the basic understanding and implementation of interaction Between the Virtual facet mistreating the Virtual automaton experimentation platform. It is often employed in hearth rescue operations to flee from blocked conditions and to possess a quicker response within the case of a U-turn.

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