UNIVERSITI TEKNOLOGI MARA

PORTABLE ENVIRONMENT MONITORING SYSTEM BASED IOT

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ABSTRACT

Air contains many types of particles such as gas, dust, microorganisms, etc. The air is considered in normal condition when the percentage of certain gases are reached such as 78% consisted of nitrogen gas, 21% consisted of oxygen gas, 0.97% for the carbon dioxide while the other gas makes up 0.03%. A monitoring system can be used to observe the data collected in the environment. It can be used to monitor any project-specific data, including temperature, sand moisture, humidity, and air quality. In this project, the monitoring system is measured using the air quality, temperature, and humidity. Looking back, some people were not aware that hazardous fumes were there because they could not be seen with the naked eye in some cases. When in touch with the harmful gas, the scenario may have an impact on the skin and respiratory system. This study attempts to create an Internet-connected microcontroller called Arduino UNO that can detect air quality. Additionally, the goal of this project is to develop an Internet of Things (IoT)-based mobile phone-based portable environment monitor system. The MQ-135 gas sensor, MQ-2 gas sensor, and DHT22 sensor provide the input. In order to warn the user to be more aware and take further action, this system will help the air quality monitoring to be more effective to the people's interior and outdoor area.

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INTRODUCTION

1.1   Research Background

In recent years, there is frequent urbanisation in the city that is unavoidable for the citizens. There are new buildings to be constructed such as new houses, shops or malls. Besides, products that are mass-produced such as food, electrical and electronic appliances, furniture, household items from the industries. Furthermore, some people renovate their houses so that they can live comfortably. These urbanisation are done in order to cater for the customers as the demand is increasing significantly due to the increasing population of citizens. The car use is also rising as it is one of the main forms of transportation for people to go from one place to another place conveniently instead of using public transportation such as bus, light railway train (LRT), mass railway train (MRT), commuter or taxi.

These activities will contribute to the rise of carbon-footprint where it can be a root for the air pollution, heat wave and greenhouse effect. Not only that, there are some hazardous gases produced that are colourless. This will become more difficult if someone inhaled these gases unconsciously. The situation becomes worse when people that live close to that area will receive the consequences where their health will deteriorate due to being exposed to the polluted air for a long time. They might suffer respiration-related diseases. Furthermore, they will also suffer skin diseases or worse, become unconscious if they inhaled poisonous gas unknowingly.

1.2   Motivation

Even though there are cases that cannot be avoided, it can be solved if IoT is also implemented. This is because the usage of smart things or IoT has increased significantly. IoT is a network of interrelated devices that connect and exchange data with other IoT devices and the cloud where they are typically embedded with technology such as sensors and software and can include mechanical and digital machines and consumer objects. There are many applications of IoT implemented in technologies such as smart television, smart home, smart