I. INTRODUCTION

WITH the rapid development of technology, people sometimes forget about important things for themselves, one of which is their health. Living in a good and healthy environment reduces the risk of falling ill. The indicator of a good and healthy environment is good air quality, which is comfortable to breathe. Furthermore, during the pandemic, the quality of the air in a room has become a greater concern for the community. Air contains several pollutants that are not good for inhalation, including Particulate Matter (PM_{10} and $PM_{2.5}$), Ozone (O_3), Carbon Dioxide (CO_2), Volatile Organic Compounds (VOCs) and Formaldehyde (HCHO) [1]. These elements are commonly used in air pollution, but there are other components of air pollution. In addition, air temperature and humidity can also be factors that affect indoor air quality. During a pandemic, it is important to maintain air quality so that it is good and healthy for people to breathe, by keeping the levels of the above-mentioned air pollutants within a predetermined and agreed threshold [2].

Several previous studies have conducted research on building fuzzy logic methods to determine the value of the air quality index and compare it with the value of the air quality index owned by the government [3]. Some studies have even used microcontrollers so that the parameter data for the air quality index is more accurate and can be directly monitored [4][5]. In addition, some studies have also conducted research to determine the indoor air quality index and provide actions based on the values obtained, such as turning on the fan or sending notifications when the air quality index is poor [6][7]. The LSTM method has good performance in forecasting the air quality index [8]. There have been several studies on forecasting the indoor air quality index with ARIMA, but its performance compared to other forecasting methods is unknown [10][12]. Forecasting of the indoor air quality index has also been done. A comparison of indoor air quality index forecasting methods to determine a suitable method is a research opportunity.

This study proposes a system that can detect the appropriate indoor air quality index and a method for predicting the air quality index. The first step is to obtain air quality index parameter data. The next step is to analyse the related parameters and through these parameters classification is performed. Finally, forecasting is performed using ARIMA and LSTM models to compare the best method. Some of the metrics used to measure the accuracy of forecasting methods are Root Mean Squared Error (RMSE) and Mean Absolute Percentage Error (MAPE).

This paper follows the following systematics: Section II discusses related research. Section III introduces the methods used in this study. Section IV is the results and discussion of our test results. Finally, Section V summarizes the key findings of this study.