

Abstract

Indoor air quality is a very important factor and needs to be considered for health. Poor indoor air quality can trigger illness, reduce productivity and disrupt the comfort of people in the space. In residential areas, hospitals, schools, nursing homes and other specialized environments, indoor air pollution can affect groups that are more vulnerable to health problems due to their health conditions or age. This research aims to predict indoor air quality using the Long Short Term Memory (LSTM) method and provide alerts when the prediction results exceed a predetermined limit. The accuracy level is measured using Mean Absolute Percentage Error (MAPE) by calculating the difference between the original data and the prediction results. In this study, a system was created that utilizes Internet of Things (IoT) technology that can monitor the state of indoor air quality such as temperature, TVOC, CO₂ and HCHO gas levels. The system uses the WP6003 Air Box Reader tool as an indoor air quality detector that is connected to the website created. This website can display data that is being recorded, download datasets that have been recorded, visualize predictions of temperature, TVOC, CO₂ and HCHO and notify if any data crosses a predetermined limit. The results obtained are quite good prediction accuracy by getting a MAPE value of 0.30452, RMSE 0.023475 and the average value of the test data is 24.035 which means that if the RMSE value is close to 0, the prediction results will be more accurate. Anomalies result in values of room temperature and HCHO that are above normal limits.

Keywords: air quality, IoT, WP6003 Air Box Reader, Accuracy, LSTM