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Air Quality Prediction by Using Linear Regression Algorithm

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ABSTRACT: The Environment describe about the thing which is everything happening in encircles. the Environment is polluted by human daily activities which include like air pollution, noise pollution. If humidity is increasing more than automatically environment is going more hotter. In existing work Major cause ofincreasing pollution is increasing day by day transport and industries. There are 75 % NO or other gas like CO, SO2 and other particle is exist in environment.. The expanding scene, vehicles and creations square measure harming all the air at a feared rate. In Proposed work Air Quality Index (AQI) is a record that gives the public the degree of contamination related with its wellbeing impacts. The AQI centers around the different wellbeing impacts that individuals may encounter dependent fair and square and long stretches of introduction to the poison concentration. The AQI values are not quite the same as nation to nation dependent on the air quality norm of the country. The higher the AQI level more noteworthy is the danger of wellbeing related problems can be solved using linearregression models. Which basically predicting the real values data using continuous parameters synchronized to anticipate AQI of a given district with the most elevated conceivable accuracy.

KEYWORDS: Air quality, Prediction

I. INTRODUCTION

The Environment describe about the thing which is everything happening in encircles. the Environment is polluted by human daily activities which include like air pollution, noise pollution. If humidity is increasing more than automatically environment is going hotter. Major cause of increasing pollution is increasing day by day transport and industries. there are 75 % NO or other gas like CO, SO2 and another particle is existed in environment. The expanding scene, vehicles and creations square measure harming all the air at a feared rate. Therefore, we have taken some attributes data like vehicles no., Pollutants attributes for prediction of pollution in specific zone of Delhi the Air Pollution Forecasting System: Air Quality Index (AQI) is a record that gives the public the degree of contamination related with its wellbeing impacts. The AQI centers around the different wellbeing impacts that individuals may encounter dependent fair and square and long stretches of introduction to the poison concentration. The AQI values are not quite the same as nation to nation dependent on the air quality norm of the country. The higher the AQI level more noteworthy is the danger of wellbeing related problems. The by and large point of this venture is to make a student calculation that will have the option to foresee the hourly contamination focus. Additionally, an Android application will be built up that will provide the clients about the constant contamination convergence of PM2.5 alongside the hourly forecasted value of the toxin fixation from the student calculation. The Android application will also recommend data of the less dirtied.

II. LITERATURE SURVEY

[1] Ni, X.Y.; Huang, H.; Du, W.P. "Relevance analysis and short-term prediction of PM 2.5 concentrations in Beijing based on multi-source data." Atmos. Environ. 2017, 150, 146-161.

The PM2.5 problem is proving to be a major public crisis and is of great public-concern requiring an urgent response. Information about, and prediction of PM2.5 from the perspective of atmospheric dynamic theory is still limited due to the complexity of the formation and development of PM2.5. In this paper, we attempted to realize the relevance analysis and short-term prediction of PM2.5 concentrations in Beijing, China, using multi-source data mining. A correlation analysis model of PM2.5 to physical data (meteorological data, including regional average rainfall, daily mean temperature, average relative humidity, average wind speed, maximum wind speed, and other pollutant concentration data, including CO, NO2, SO2, PM10) and social media data (microblog data) was proposed, based on the Multivariate

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Statistical Analysis method. The study found that during these factors, the value of average wind speed, the concentrations of CO, NO2, PM10, and the daily number of microblog entries with key words 'Beijing; Air pollution' show high mathematical correlation with PM2.5 concentrations. The correlation analysis was further studied based on a big data's machine learning model- Back Propagation Neural Network (hereinafter referred to as BPNN) model. It was found that the BPNN method performs better in correlation mining. Finally, an Autoregressive Integrated Moving Average (hereinafter referred to as ARIMA) Time Series model was applied in this paper to explore the prediction of PM2.5 in the short-term time series. The predicted results were in good agreement with the observed data. This study is useful for helping realize real-time monitoring, analysis and pre-warning of PM2.5 and it also helps to broaden the application of big data and the multi-source data mining methods.

[2] G. Corani and M. Scanagatta, "Air pollution prediction via multi-label\ classification," Environ. Model. Softw., vol. 80, pp. 259-264,2016.

A Bayesian network classifier can be used to estimate the probability of an air pollutant overcoming a certain threshold. Yet multiple predictions are typically required regarding variables which are stochastically dependent, such as ozone measured in multiple stations or assessed according to by different indicators. The common practice (independent approach) is to devise an independent classifier for each class variable being predicted; yet this approach overlooks the dependencies among the class variables. By appropriately modeling such dependencies one can improve the accuracy of the forecasts. We address this problem by designing a multi-label classifier, which simultaneously predict multiple air pollution variables. To this end we design a multi-label classifier based on Bayesian networks and learn its structure through structural learning. We present experiments in three different case studies regarding the prediction of PM2.5 and ozone. The multi-label classifier outperforms the independent approach, allowing to take better decisions.

[3] Mrs. A. GnanaSoundariMtech, (Phd) ,Mrs. J. GnanaJeslin M.E, (Phd), Akshaya A.C. "Indian Air Quality Prediction And Analysis Using Machine Learning". International Journal of Applied Engineering Research ISSN 0973-4562 Volume 14, Number 11, 2019 (SpecialIssue).

We forecast the air quality of India by using machine learning to predict the air quality index of a given area. Air quality index of India is a standard measure used to indicate the pollutant (so2, no2, rspm, spm. etc.) levels over a period. We developed a model to predict the air quality index based on historical data of previous years and predicting over a particular upcoming year as aGradient decent boosted multivariable regression problem. we improve the efficiency of the model by applying cost Estimation for our predictive Problem. Our model will be capable for successfully predicting the air quality index of a total county or any state or any bounded region provided with the historical data of pollutant concentration. In our model by implementing the proposed parameterreducing formulations, we achieved better performance than the standard regression models. our model has 96% accuracy on predicting the current available dataset on predicting the air quality index of whole India, also we use AHP MCDM technique to find of order of preference by similarity to ideal solution.

III. EXISTING ALGORITHMS

With the advancement of technology, the services that can be obtained using the telecom networks have widened, as the expectations of the public. With applications like High-speed internet, Internet of Things, critical communications etc. the telecom network needs to support high data rate, low latency, reliability etc. All these varied requirements can only be supported through significant changes in the existing network. From the use cases for IMT 2020, there are several requirements from the user/device side and several requirements from the network side, which have to be supported in 5G to support the use cases. To satisfy the requirements, several technologies are being considered in 5G. The demand for mobile broadband will continue to increase in the next years, largely driven by the need to deliver ultra-high definition video. However, 5G networks will also be the platform enabling growth in many industries, ranging from the IT industry to the automotive, manufacturing industries entertainment, etc. 5G will enable new applications like for example autonomous driving, remote control of robots and tactile applications, but these also bring a lot of challenges to the network. Some of these are related to provide low latency in the order of few milliseconds and high reliability compared to fixed lines.

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IV. SYSTEM ARCHITECTURE

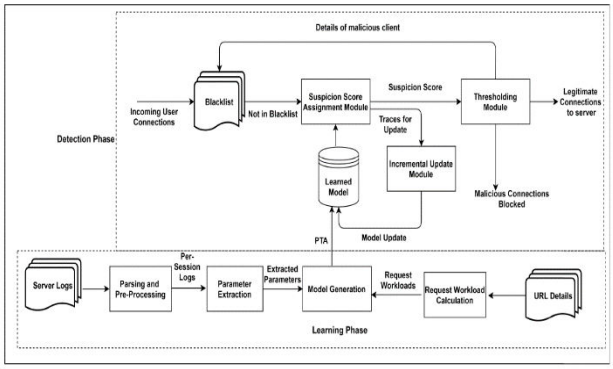
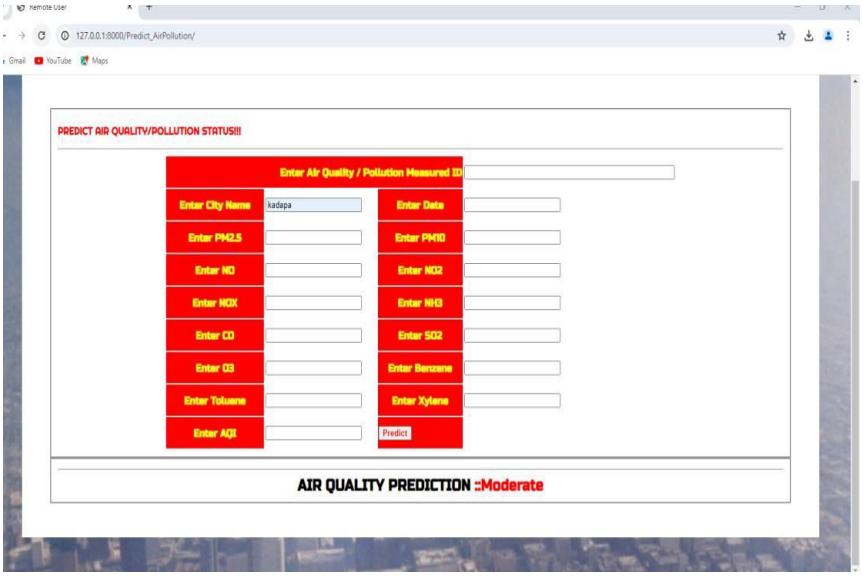


Fig: System Architecture

V. PROPOSED ALGORITHMS

Linear Regression is basically use for predicting the real values data y using continuous parameter. I have categorized this project in various steps and each step introduce different component or module each step define sequence and coincide to predict the AQI of a selected region and month. III. Syst em De sig n This venture has been arranged into various advances. Each progression has an alternate segment or module answerable for at least one undertakings to be refined or executed. These means happen in succession and in synchronization to anticipate the AQI of a given district with the most elevated conceivable accuracy. With the help of this framework the client can be get particular district, months and yield details of anticipated AQI of that month. So when we will give input like location, date and months we will get predicted data from this model. for providing attributes data in system algorithm client have to set a determine area, month and time then accordingly yield value anticipated AQI for that month.. Linear Regression •

VI. RESULT AND DISCUSSION



VII. CONCLUSION

Precision of our model is very acceptable. The anticipated AQI has a precision of96%. Future upgrades incorporate expanding the extent of district and to incorporate whatever number locales as could be allowed as of now this venture targets foreseeing the AQI estimations of various areas of close by New Delhi. Further, by utilizing information of various urban areas the extent of this venturecan be exhausted to anticipate AQI for different urban communities also.

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