iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** X **Month of publication:** October 2022

DOI: https://doi.org/10.22214/ijraset.2022.47020

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue X Oct 2022- Available at www.ijraset.com

Weather Prediction

V Venkatrama Ravi[1], M Mukesh Reddy[2], K Sai Teja[3], Ch Sai Niteesh[4], Dr. B. Sekhar Babu[5]

Abstract: ***Weather maintains and sustains a extremely delicate balance of life on planet Earth. Climate conducts a totally critical function in many key production sectors, e.g., farming. global climate change with high charging nowadays, which is why old weather forecasts are becoming closer and fewer powerful and still be annoying. The weather is altogether one in every of 1 in every of the best natural barriers all told parts of our lives within the world, we'd like to seem at the weather including temperature, rain, humidity, etc. The aim of our paper is to effectively forecast weather.***
Earth's climate will change over an extended period of your time and also what quite impact it'll wear the lives of future generations. Our various day to day choices is littered with the weather and having an accurate due to forecast the weather may be a crucial process. But these predictions often don't seem to be always faithful life. Our approach greatly enhancing the model accuracy by implement various Machine learning algorithms.
Keywords: Ridge regression, Predicators, Mean Squared Error

I. INTRODUCTION

Weather forecasting is that the use of science and technology to predict the weather of a region at a given time. In today's world, precise forecasts are crucial. We rely greatly on weather projections in everything we do. It's a significant to accurately anticipate the weather so on create sure daily operations that are simple and smooth. The weather of 1 area can have a considerable influence on the weather of other areas. The prediction of weather is crucial for various applications climate monitoring, drought detection, severe weather prediction, agriculture and production, communication, pollution dispersal, so fort

II. LITERATURE SURVEY

Majority of the scholars have worked on prediction of weather using Different sorts of methods in past few years. This section explains variety of them. A comparative analysis on weather prediction using ML Techniques data is presented in various research articles. To begin, weather prediction encompasses a good selection of issues. Even the foremost basic weather forecasts don't seem to be flawless. Forecast accuracy is from one to 2 degrees above or below the actual temperature. Although this weather prediction accuracy isn't poor, as predictions are produced for a extended period. But the accuracy of weather prediction are significantly poor from time to time. Furthermore, forecast is off by considerably more in some locations where the climate is inconsistent. Machine Learning Algorithms with a spread of classifiers like Naive Bayes Bernoulli, Logistic Regression, Gaussian, and support vector machine are accustomed assess more accurate output.

III. MACHINE LEARNING

Machine Learning might be a subset of computing which helps software models to become way more accurate without being explicitly programmed to undertake and do so. Various machine learning models are developed by various entities for the forecasting of weather. These models use various algorithms to get the specified solution to urge the desired Solution to a given problem.

For our model we've used:

1) *Ridge Regression:* Ridge Regression may be a model tuning method that's accustomed analyse any data that suffers from multicollinearity.
   The worth function for ridge regression:
   $\text{Min}(||Y - X(\text{theta})||^2 + \lambda||\text{theta}||^2)$

2) *Mean Squared Error:* The MSE describes you the way close a curve is to a bunch of points. It identifies the everyday of a group of errors.
   MSE formula = $(1/n) * \Sigma(\text{actual} - \text{forecast})2$

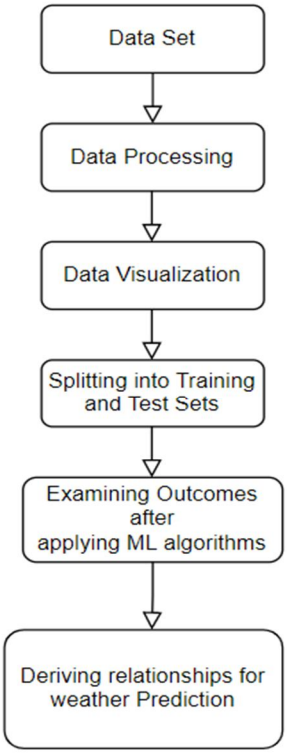
©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue X Oct 2022- Available at www.ijraset.com

IV. PROPOSED MODEL

In our proposed model, the collected dataset is split into sections that are useful to the machine learning model and parts that don't seem to be. After that, the dataset goes through data pre-processing, which involves passing the info through a process that replaces missing and error values within the dataset with mean values or the foremost frequently occurring value in this field. Following the info pre-processing, a target is identified within the cleaned dataset. Later the dataset is split into training and testing datasets. Identifying a bunch of predicators within the dataset. Generating a set of predictions by using predict method in ridge regression. Now, comparing Predictions along with target values in datasets using MSE. If a more robust value is seen in MSE, then identify the new set of predicators in order to reduce MSE value.

V. FLOW CHART



VI. IMPLEMENTATION

A. Data Set

DATA SET SOURCE: ncdc.noaa.gov/cdo-web/search
We have taken Delhi and Chennai data from this source from 2000-01-06 to 2022-09-23.

B. Tools Used

Jupyter Notebook: Build and exchange documents with live code, calculations, visualizations, and narrative text using this open-source web application.

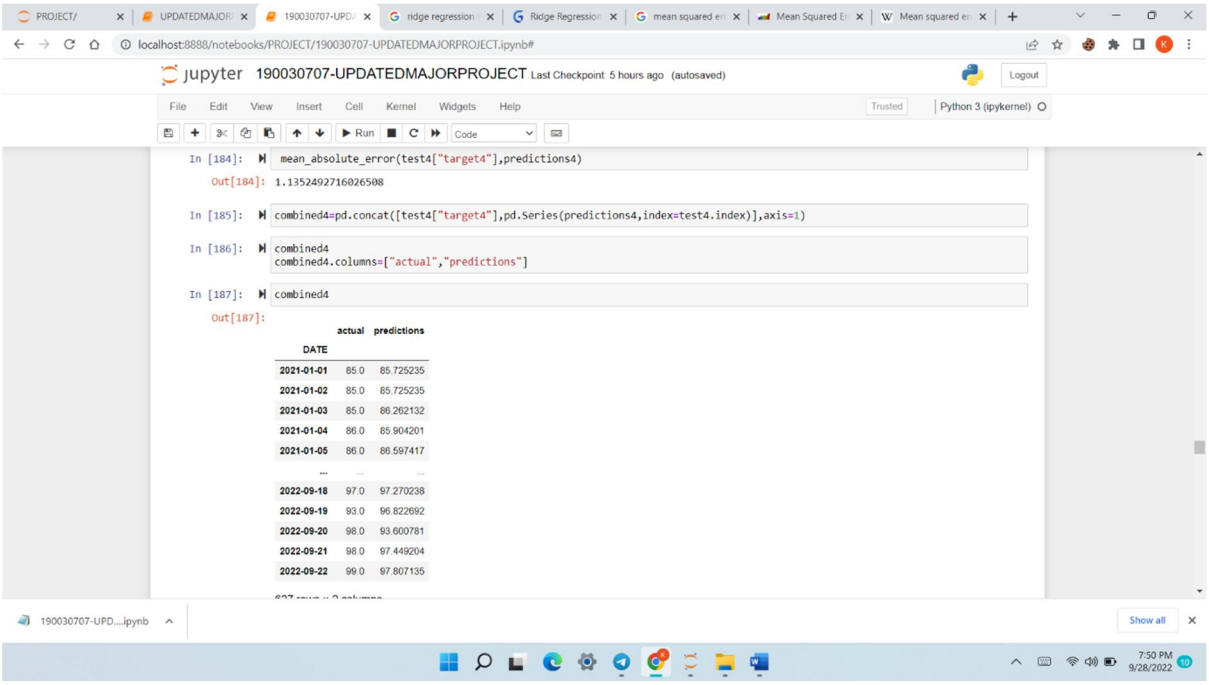
C. Libraries Used

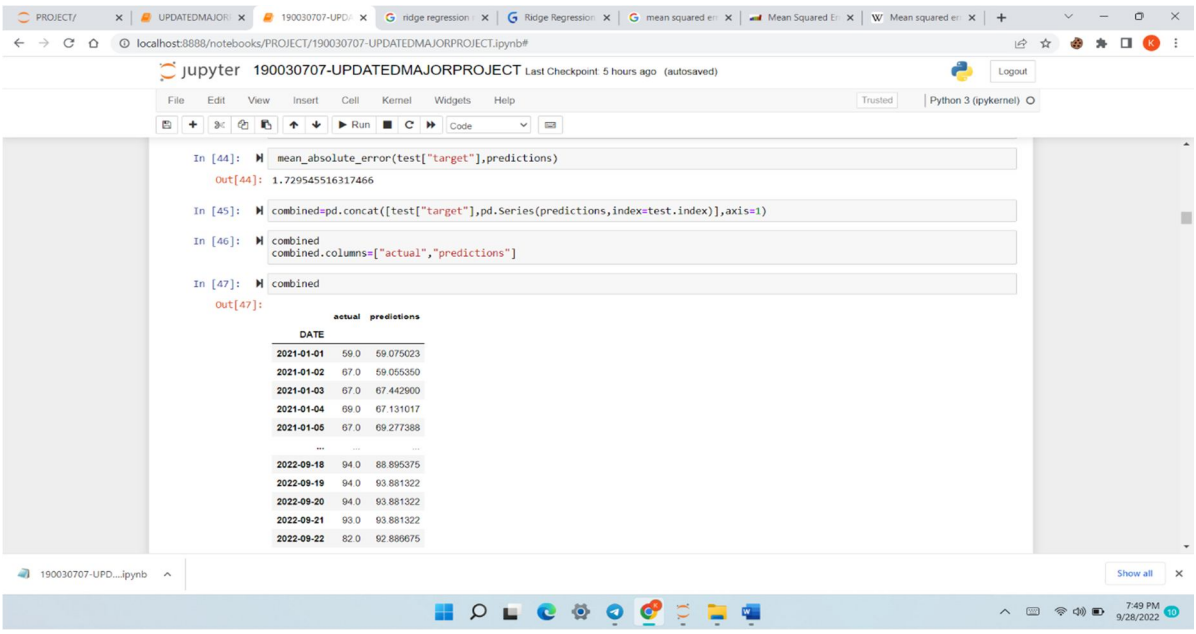
1) Sklearn: A machine learning library that aids within the development of machine learning models.
2) Pandas: Handle and import datasets.
3) Numpy: it's a library for mathematicians

©IJRASET: All Rights are Reserved

VII. RESULTS

We have used Ridge Regression as our model and Mean squared error in order to trace how much we are aloof from actual value.





VIII. FUTURE WORKS

We discovered that feature scaling is a vital aspect of ML models during this project. The essential concept is to create sure that everyone amongst the functionality are on the identical scale. Our aim is to feature more variables which could affect the weather of a given area. Since outliers are bad for ML models, they should be avoided or omitted before determining the foremost effective match. This not only improves the model's precision, but it also keeps the findings consistent, which may show a discrepancy if outliers were included. Professional weather forecasters aren't flawless, but they're usually more reliable than this linear regression model's predictions. Weather might be a non-linear system, per this.

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue X Oct 2022- Available at www.ijraset.com

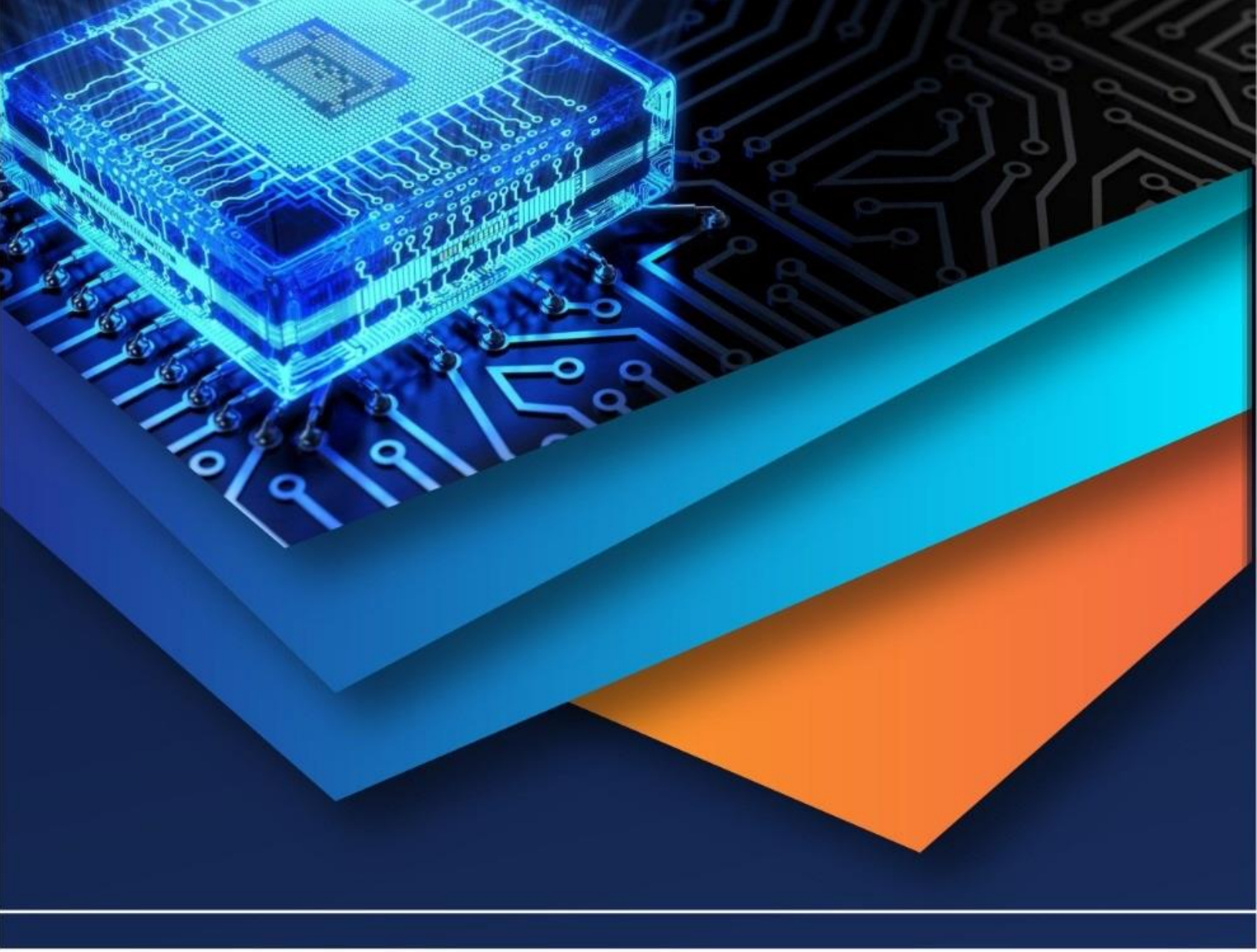
IX. CONCLUSION

Machine Learning algorithms to form intelligent models are going to be accustomed forecast weather to a selected accuracy. These models are less computational resources demanding compared to traditional physical models.

REFERENCES

[1] https://www.mygreatlearning.com/blog/what-is-ridge-regression/
[2] https://www.simplilearn.com/tutorials/statistics-tutorial/mean-squared-error#:~:text=The%20Mean%20Squared%20Error%20measures,it%20relates%20to%20a%20function.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)