Forest Fires Detection using Linear Regression Model

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Abstract: *Forest fires became one of the foremost important problems that cause damage to several. Areas around the world. The paper displays machine learning regression techniques for predicting forest fire-prone areas. The data set used in this paper is presented within the UCI machine learning repository that consists of climate and physical factors of the Montesano's park in Portugal. The accuracy of the linear regression algorithm gives more accuracy than ridge regression and lasso regression algorithms.*

Keywords: Forest Fire Prediction, Linear Regression Model.

I. INTRODUCTION

MOTIVATION:

Our Nature are our first priority. They all are motivation for us to done this work. Several Forest are burn and Lots of animals are dead, such as Fire occur in Amazon that provide rapid guidance to predict the Forest Fire.

II. PROBLEM STATEMENT

To develop a system that predicts Fire in Forest using Linear Regression model. Train a prediction model using Linear Regression Model Predict the possibility of wildfire of the given set of attributes.

III. LITERATURE REVIEW

The disturbances caused by the fire cannot be avoided and it can occur in the young, recently established vegetation as well as in a fully grown natural forest. Fire has concentrated effects on vegetation development since fire wipe out unwanted vegetation and thus creating emergent space for other species to occupy (Oliver, 1990). The skilful burning of the vegetation cover has affected water and vegetation composition of the disturbed areas and eventually adapted to the new conditions.

The government and the forest department of Mississippi State in USA had learned from their practical experiment, the effects and benefits of prescribed burning. Before acquiring all these knowledge, they have lost most of their natural forest to fire. They learned that fire is created with a set of goals and in a controlled manner will be the best tool for forest management, but it is cautioned regarding the creation of public nuisance due to this activities.

IV. SOFTWARE REQUIREMENT SPECIFICATION

INTRODUCTION

Forest fire is a hysterical fire occurring in a vegetation and it may spread rapidly resulting in fierce blow ups and shoulder the physiognomies of a fire storm. Fire has a prodigious capability to rescind the unabridged shrubbery cover but the fared burning or prescribed burning can rejuvenate landscapes, facilitates crop production, pest control and prevents disastrous effects. Fire has played a major role in shaping the forest ecosystems. Some of the regenerations are dependent on burning and others are prone to burning which ultimately leads to extinction of local species and trigger substantial changes in the ecosystems.

PERFORMANCE REQUIREMENTS:

Performance requirements for proposed system are as follows, System will perform if proper database is been provided.

No safety requirements is been needed as our system is purely software oriented.

No safety requirement of Security it is fully open source

Software Quality Attributes:

- Correctness
- Reusable
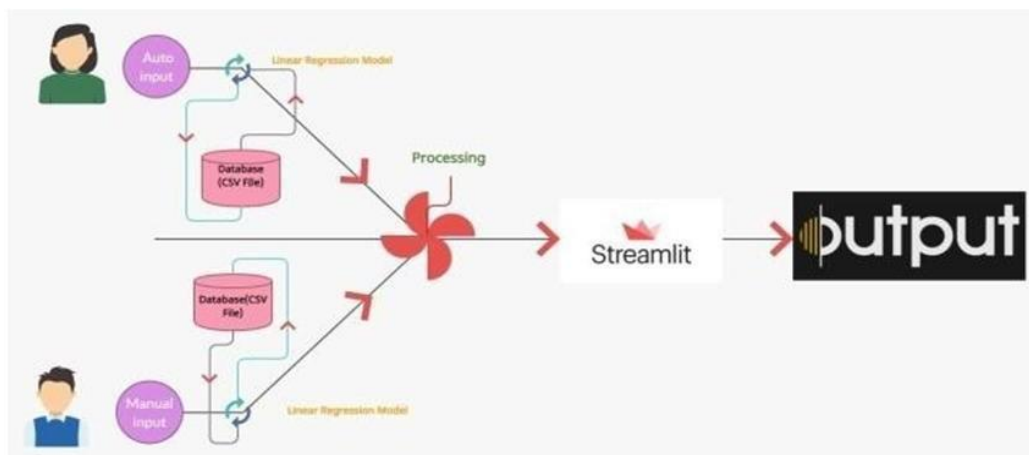- Portable

V. SYSTEM REQUIREMENT

CSV

Software Required:

- Google Collab.
- Libraries: Streamlit pandas matplotlib sklearn.linear model
- *Anaconda navigator(3)*
- Python 3.8.8
- Pycharm or Vscode

Hardware Required:

- Any System That Supports GPS
- With Strong Internet Connectivity
- Any Web Browser

VI. SYSTEM ARCHITECTUE

Fig: System Architecture

VII. PROPOSED ALGORITHM:

Step 1: Initiate

Step 2: Get the Location from User

Step 3: From location get Wind Speed, Temperature, and Humidity**.** Step 4: Analyse the input data

Step 5: Compare input data with previous data for response Step 6: if there is chances of fire occurrence in forest it shows forest in danger else it shows forest is Safe

Step 7: Give response to User

Step 8: For another Forest Location Step 9: follow step 2 to step 7 Step 10: Stop

Data Flow Diagram:
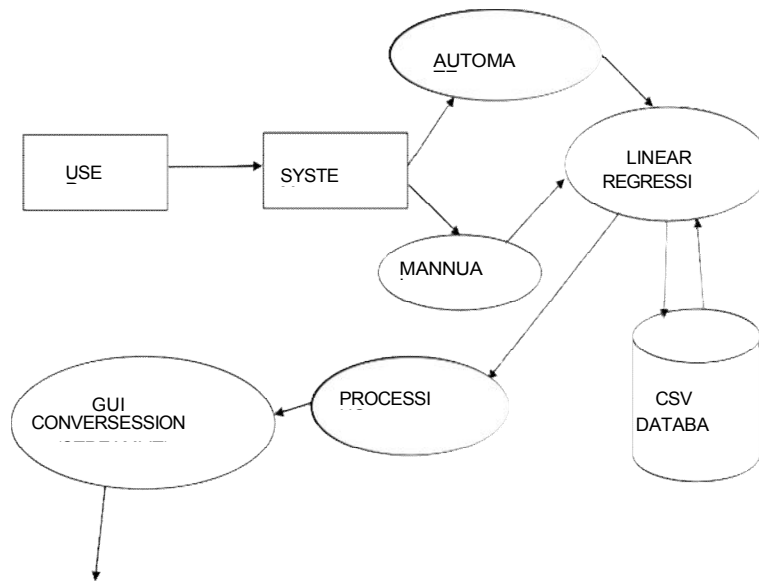
Fig: Data Flow Diagram

Advantages:

- By Early Predicting the fire occurrence we saves Too Many Life .
- Saves The Nature.
- When fire is occur Oxygen level is low, by early prediction.
- We can able to face and stop the fire in forest and saves oxygen.
- Nature providing different types of gift to us, now it's our time to give gift to nature by saving it from natural fire.

VIII. CONCLUSION

Forest Fire Prediction has been proposed by using linear regression and dividing the datasets according to Fire Occurrences. The algorithm achieves most accurate result. The beauty of the algorithm lies in the way that it can give the result for saving the nature. In future, this approach can be extended by for other disasters as well. Application of certain transformation might also improve the model efficiency. As well we are able to fight with natural fire occurrence in forest and saves the lives of animals

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