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WILD FIRE ANALYSIS AND PREDICTION

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Abstract— Forest Fire Prediction is a key aspect of forest fire management. This is a prime environmental hassle that creates ecological destruction withinside the form of a threatened panorama of natural sources that disrupts the stableness of the ecosystem, will increase the threat for different herbal hazards, and reduces sources inclusive of water that reasons worldwide warming and water pollution. Fire Detection is a key detail for controlling such incidents. Prediction of forest fire identity entification predicted to lessen the effect of forest fire within side the future**.**

Keywords— Data analysis, data visualization, Prediction

I. INTRODUCTION

Forest fires cause significant material damage in the natural environment followed by violation of the functions in the natural systems and large number of fires is caused by humans, although other factors like drought, wind, topography, plants etc., have important indirect influence on fire appearance and its spreading. Fire threats are increasing by processes of abandonment of farmland and gradual growth of forest and growth of recreation in the natural environment. Fire prevention is a very important way of reducing the damage that can appear if fire occurs.

II. SYSTEM DEVELOPMENT

The BACKGROUND: The proposed system includes a fire risk index that ranges from 1 to 4, with 1 indicating the lowest fire danger and 4 indicating the highest fire risk. This index represents the maximum number of fires that could occur on a given day, and can thus be used to estimate the actual number of fires that day. It is necessary to define the parameters or features observed during the day that will be used in the prediction algorithm in order to execute prediction.

III. Case Diagram of Project

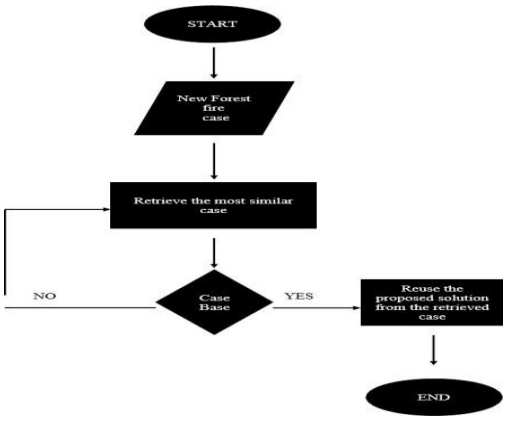

Fig 1. Case diagram

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IV. DFD DIAGRAM OF THE FOREST FIRE ANALYSIS AND PREDICTION

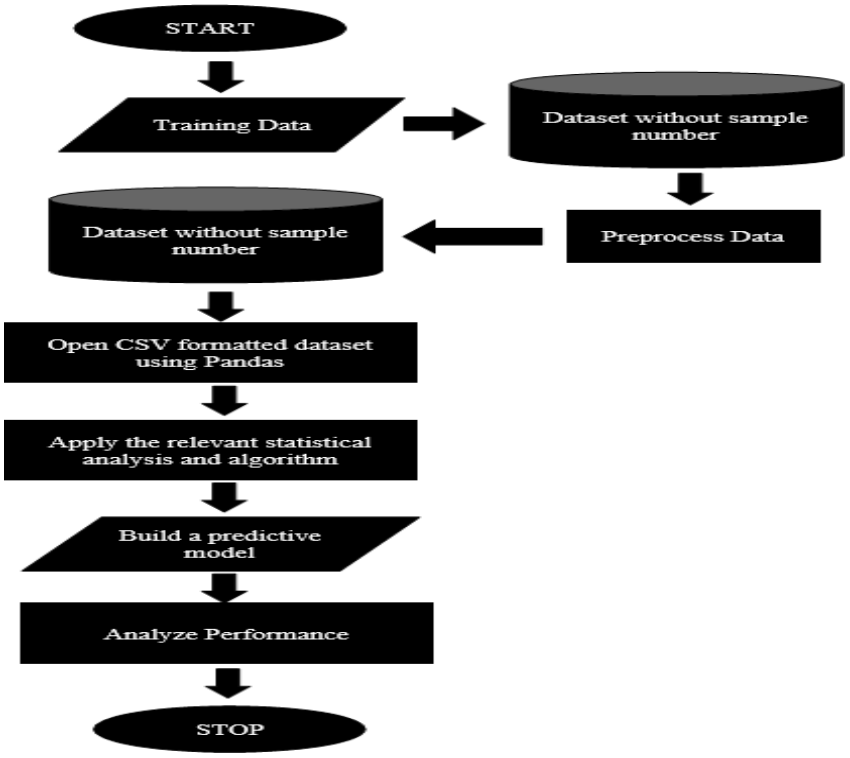

Fig.2 DFD

V. RESULT AND DISCUSSION

A. Data Visualization and Analytics:

After reviewing these data, I'd want to point out that I had never undertaken an analysis on this topic before, and those any statistics, figures, and information I knew only from the news, social media, and networks. As a result, the findings I received were unexpected. I wasn't expecting to see so many fires. Work's main outcomes:

- State with the most fires in year 2008 – 2010: Mizoram;
- The largest number of fires occurred in year 2009;
- Almost 30893 of the fires occurred in the in the year of 2009, the top 5states, depending on the half of the year, are different;
- The greatest number of fires was in summer and autumn;
- The highest number of fires was in July.
- Predicted value of number of forest fire in the year 2008-10 is 69098.

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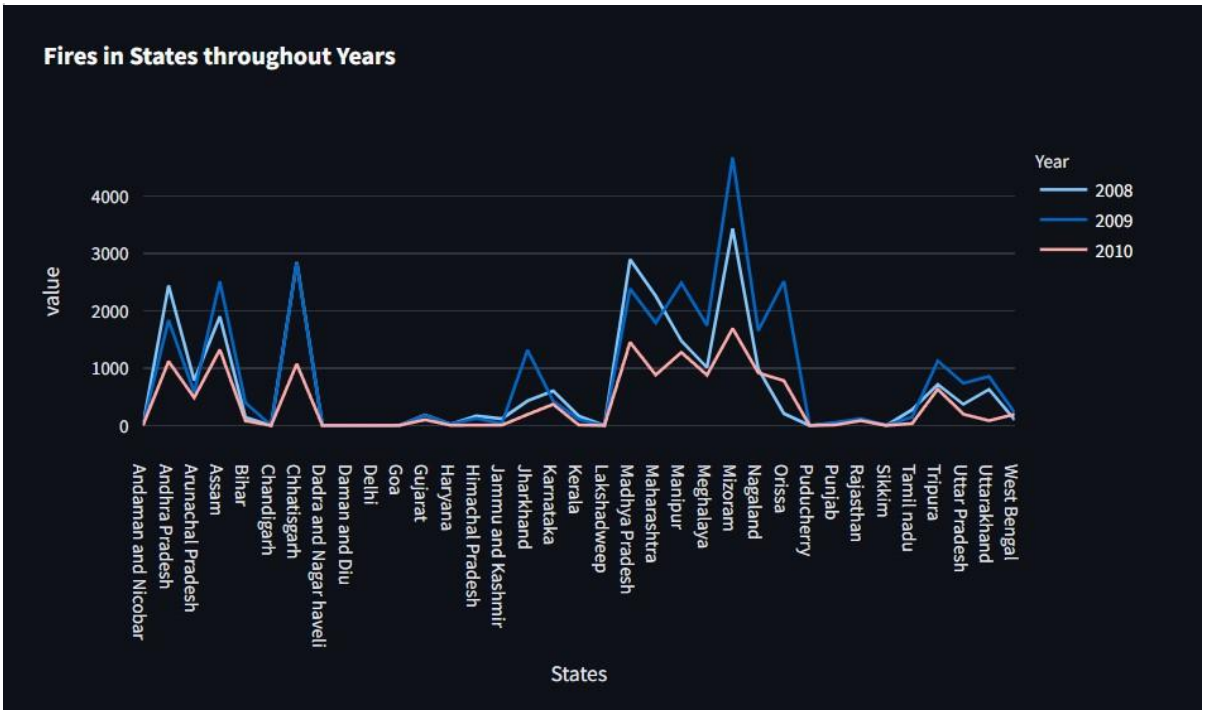

Fig 4. Fire in states

CONCLUSIONS

After reviewing these data, I want to point out that I had never undertaken an analysis on this topic before, and those any statistics, figures, and information I knew only from the news, social media, and networks.

As a result, the findings I received were unexpected. I wasn't expecting to see so many fires. Machine Learning or ML is becoming a new way of predicting the forest fires and damage caused by forest fires, however there may be nonetheless plenty of room for development and capability for additional models to be built.

Wildfires are not just natural disasters; they are a symptom of broader environmental issues such as climate change, deforestation, and land-use practices.

ACKNOWLEDGEMENT

We are grateful to **Prof. Dr. Sasmita Tripathy**, Project guide, Gandhi Institute For Technology, Bhubaneswar, for the assigning me this innovation project and modelling us both technically and morally for achieving success in life.

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Above all, I thank the almighty without whose grace and blessings. I would not have been able to complete my work successfully.

REFERENCES

1. Access reports and datasets provided by government agencies such as the Ministry of Environment, Forest and Climate Change (MoEFCC), Indian Space Research Organisation (ISRO), and state forest departments

2. Books like "Wildland Fire in Ecosystems: Effects of Fire on Flora" by James K. Agee and "Introduction to Wildland Fire" by P.B. Greer provide comprehensive insights into wildfire science and management.
3. Websites like ResearchGate, Academia.edu, and Reddit's r/environment community can be useful for networking, sharing ideas, and seeking advice from fellow researchers.
4. Kaggle's dataset repository to find relevant datasets related to wildfires. You can search for keywords such as "wildfire," "forest fire," or "fire incidents" to discover datasets containing historical wildfire data, satellite imagery, weather data, and more.
5. ImageNet Classification with Deep Convolutional Neural Networks" by Alex Krizhevsky, Ilya Sutskever, and Geoffrey Hinton. 24