Avalanche Forecasting Prediction Using Auto AI Service

1.INTRODUCTION:

Problem statement: Avalanche Forecasting Prediction

- **Overview:**

It is a platform choosen for predictive modeling and analysis. Here we provide the organisation with a machine learning model which simplifies the work of the company in various aspects.

- **Purpose:**

To build a machine learning model that helps to improve the accuracy and efficacy of avalanche forecasts, that are setting out to cover the world with the best Avalanche and snow data possible and to reduce avalanche-related deaths and impacts across the world

2.LITERATURE SURVEY:

- **Existing Problem:**

Each year avalanche kills more than 150 people worldwide. The most common cause of death by avalanche is asphyxiation .If the person buried under an avalanche more than 15 minutes then there is no chance of survive. So the life of the people in that region is difficult to live

- **Proposed Solution:**

The main goal of the project is to prevent the people from the avalanche by priory informing them there is a chance to the occurrence of avalanche or not. The model gets the data from the IOT based sensors. To analyse the data coming from different sensors we are applying various machine learning algorithms. If there is a chance of avalanche then the notification will be sent to people so that they can take decisions accordingly and the model is been built in Auto AI that

Predict the prediction column like 2 means ,is occurance of avalanche is high,1 is occurance of avalanche is medium, 0 means occurance of avalanche is low. This model is tested based on the accuracy and efficacy of avalanche forecasts.

3.THEORETICAL ANALYSIS:

- **Block diagram:**
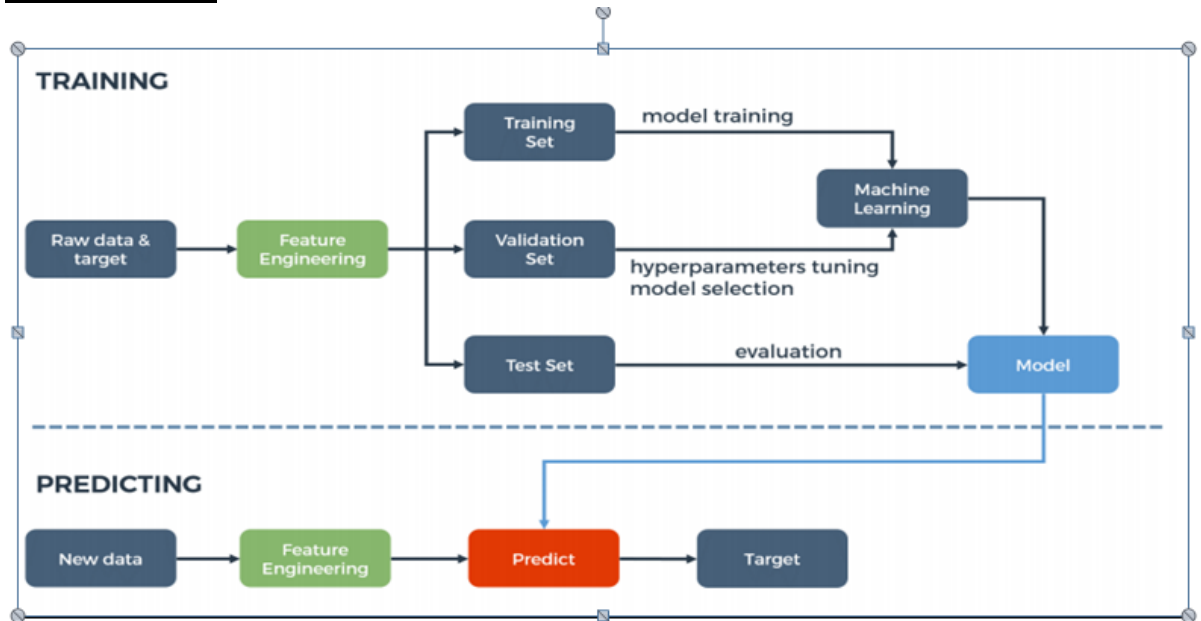
- **Hardware Software designing:**

Python based computer vision and knowledge about various machine learning algorithms and how to implement them. Knowledge of how to use ibm Watson studio for the deployment of the project.

4. EXPERIMENTAL INVESTIGATIONS:

- **Step 1:** Collection of data set from kaggle.
- **Step 2:** On the IBM Watson studio platform use the auto AI to build a model that predicts the avalanche forecasting based on the given details.
  a. For that first we need to create an account on the IBM Watson studio.
  b. Using add to project choose auto AI.
  c. Then upload the dataset that is taken from kaggle into the data assets

.

d. Choose the best machine learning model to predict the cost.

e. Deploy the model.

f. Test the model against various values.

g. Then create a service credential and also cloud foundry app.

Data assets

0 assets selected.

	Name	Type	Created by	↑ Last modified
☐ CSV	Avalanche (1).csv	Data Asset	Doradla Kavya	Aug 01, 2020, 03:18 PM

AutoAI experiments

New AutoAI experiment +

Name	Status	Model type	Last modified
avalanche	✓ Completed	Multiclass Classification	Aug 01, 2020, 03:25 PM

h. Make a node-RED flow.

i.   After the deployment of the model UI can be seen.

Home

Default

prediction   **0**

Slope *
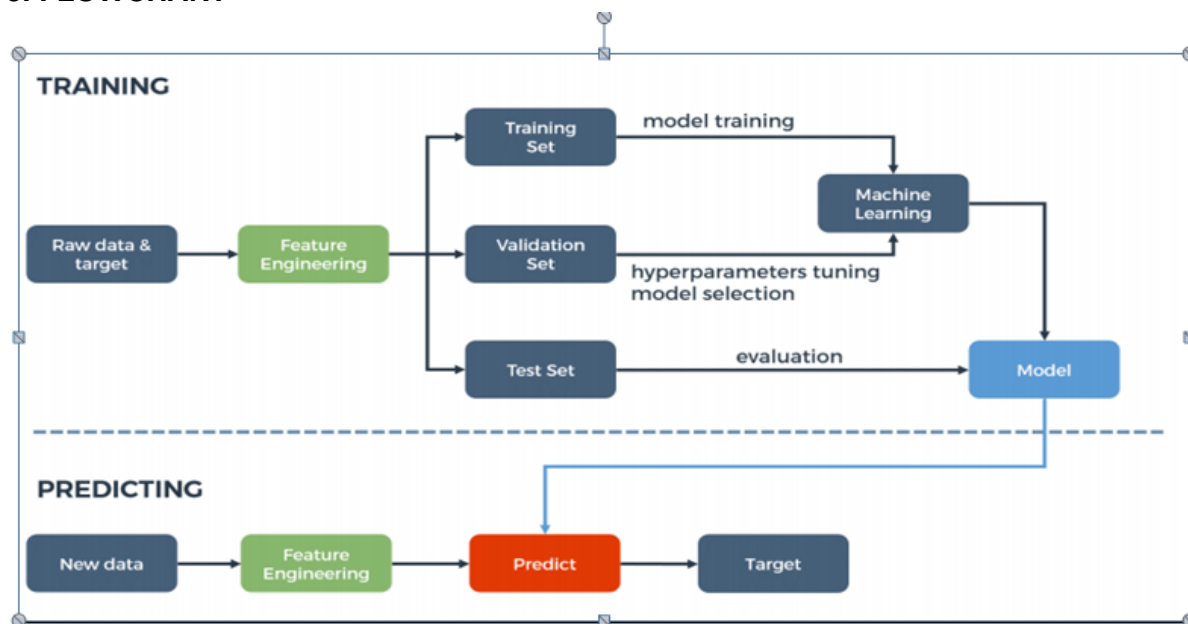24

Forest Density *
L

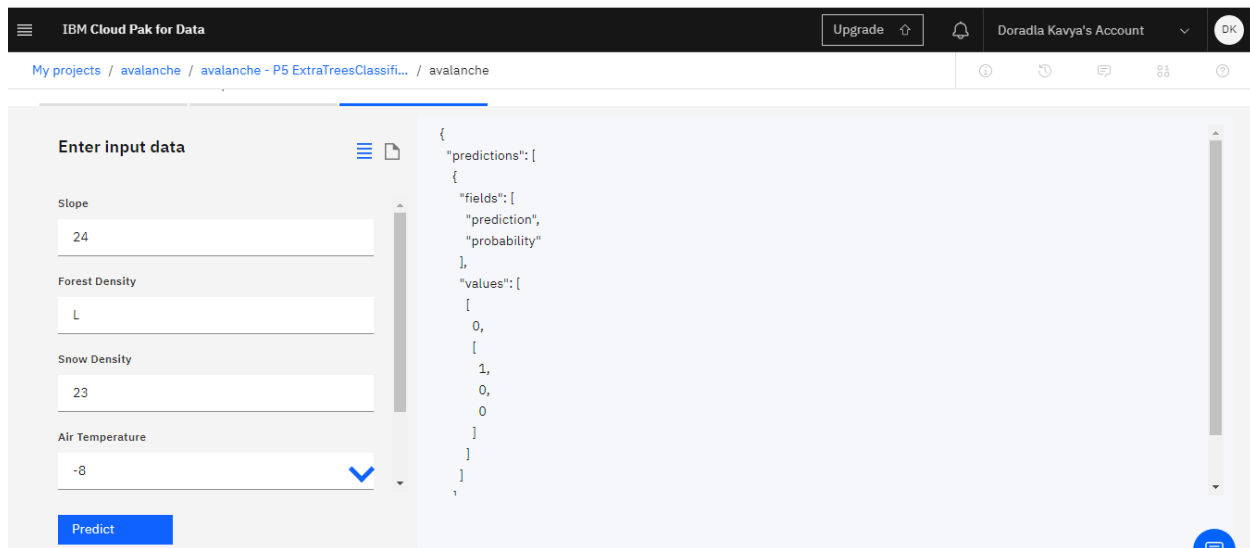Snow Density *
23

Air Temperature *
-8

Wind *
19

SUBMIT   CANCEL

5. FLOWCHART

6. RESULT:

The machine learning model Predicts the avalanche forecasting based on the output we can say that the avalanche is high,low or medium(2 means high,1 means medium,0 means low)

```
{
 "predictions": [
  {
   "fields": [
    "prediction",
    "probability"
   ],
   "values": [
    [
     0,
     [
      1,
      0,
      0
     ]
    ]
   ]
  }
```

7. ADVANTAGES AND DISADVANTAGES:

ADVANTAGES:

This model helps the avalanche forecasting to predict the prediction column based on the factors like forest density, snow density etc.

DISADVANTAGES:

Sometimes the prediction column may not depend on forest density ,snow density etc

8. APPLICATIONS:

This model that predicts the prediction column of avalanche forecasting to reduce avalanche-related deaths and impacts across the world-wide

9. CONCLUSION:

This was a great experience with Smartbridge learning new and interesting things and also applying them in innvoation field. Related to my project I can say that the machine learning model that is created to predict the prediction column of avalanche forecasting has a wide range of application and makes the work of avalanche forecasting more simpler. This gives all the predictions just by giving basic details of the avalanche that says 2 means high,1 means medium,0 means low.

I learnt a lot from this project and also thank all the mentors and the bootcamp that was very supportive and helpful at every point of work.

10. FUTURE SCOPE:

This can be implemented more efficiently by adding some more factors depending on which the model predicts the prediction column of avalanche forecasting that can be provided.

11. BIBLIOGRAPHY:

- Kaggle for downloading the dataset.
- Smartbridgebootcamp to learn how to work on IBM Watson studio