Project flow

Team Id	PNT2022TMID20850
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Project Name	Emerging Methods For Early Detection Of Forest Fires

Project Flow is a measure of the amount of change that is expected to occur within a project over time. It depicts the progression of a project product from conception and design to delivery and deployment. The project flow describes the predefined sequence of activities required to plan, produce, deliver, and maintain the project product, and also the information, materials, and resources needed by the project.

There are key factors that add to project flow, These elements are as follows:

1. Project tasks and activities
2. Any interactions between activities and tasks
3. Resources and budget
4. Time limits and activity schedules
5. Information required to keep project activities running
6. Deliverable for the project.

The project flow for this project is as follows:

The user interacts with a web camera to read the information from images or video inputs.

Once the model gets the input image from the video frame, if a fire is detected, it is displayed on the console, an alerting sound is generated, and an alert message is sent to the authorities.

If we want to complete the above goals,then we need to complete the following process:

1. **DATASET COLLECTION:**

Collect the dataset/information about forest fires or we need to create it. Artificial intelligence or machine learning dataset collection is the process of collect the information of our targeted data.in this project we need to collect all the information about forest fire in image or video formatted data .then we need to process and train the data for our machine learning model.

The significance of collecting accurate and appropriate data

Regardless of the field of study or preferred method of data definition (quantitative vs. qualitative), accurate data collection is critical to the integrity of research. The use of appropriate data collection instruments (existing, modified, or newly developed) as well as clearly defined instructions for their proper use reduces the possibility of errors occurring.

Among the consequences of improperly collected data are

Inability to accurately answer research questions
inability to replicate and validate the study
distorted findings resulting in resource waste
deceiving other researchers into pursuing fruitless avenues of investigation, compromising decisions for public policy
and harming both human and animal subjects are just a few of the problems that can arise.

2.IMAGE PREPROCESSING:

Image Pre-processing is very important to create a model .First we need to collect all the images and save it with one common directory. And then we create a label for all the images data. Because machine can learn all the information of the images with label.so we must need to give the labeled data on my machine. All the images must be captured by high quality camera. After we complete the process above then we need to segregate the dataset into train and test data.

• Import the library for the Image Data Generator.

• Specify the arguments and parameters for the Image Data Generator class

Applying it to the train set and test set.

3.MODEL BUILDING:

Model building is a crucial part of this project. Before we create a model we must be complete all the pre-processing steps like datasets collection and pre-processing the images.model building play a vital role in machine learning development because its allows you to predict and detect the object using given data.

Steps to build the model

Import the necessary libraries to build the model.

Separate the dataset to train and test.

Developing the CNN algorithm.

Developing the CNN layers like convolution and hidden layers.

Add the path for train and test folder to the machine.

Train the data for machine.

Save the model.

Finally test the model.

Testing the model and Alerting process

Test the image and video using an open CV.

Configure the twilio module for SMS service.

Send the alert SMS service if the fire were detected.