Week1 Assessment - forest fire detection

Create a word file of the following content

- What is DL
- What is Neural Network and its types
- What is CNN in simple words
- Create short notes about the pipeline we have discussed in a lecture

- **DEEP LEARNING:**

  - Firstly, artificial neural networks deals with the structure and function of neuron and way it responds and provides stimuli ,simply mimicking the human brain. Thus, deep learning is its subset where unlike machine learning and NLP doesn't run under speech and sentiment recognition of language by learning through ML algorithms and getting trained but deals with learning patterns using CNN and can be simply said that it acts as a "computer vision". It's application can be seen in facial biometrics and etc.

**-Neural Network and its types:**

- Neural networks is simply an interconnectedness of artificial neurons called units. It consists of three layers namely i) input layer ii) hidden layer iii) output layer. Each layer has its own significance where input layer is known to take inputs and output layer generate the output simply the response while the key role is of the hidden layer which is used to calculate the actual weights for each inputs according to get an output through the concept of Back propagation. The calculation of weights simply relays on the concept of activation functions like sigmoid function, tangent function and RELU function etc.

  There are two types of Neural Networks:

  Artificial Neural Networks(ANN) and Convolutional Neural Networks(CNN).

  -Artificial Neural Networks deals with text recognitions and capture the sentiment behind it using machine learning algorithms with concepts of NLP

  -Convolutional Neural Networks deals with detecting patterns and classify accordingly using the concepts of deep learning, it simply acts as computer vision it make patterns from images rather then text.

**-Convolutional Neural Networks(CNN):**

- A CNN is a special type of deep learning model that deals with recognizing patterns in images. It simply acts as an eye connected to our brain as an visionary factor. It helps to learn through images and make final decisions like "it is an apple". However its real life applications can be seen to recognize faces in photos, also detecting cancer cells in the scans.

**-Pipeline of the project:**

1) Data collection and data loading

- data is collected through Kaggle.com.

-data is split into training dataset, validation dataset and testing dataset.

2) Image Processing and Image augmentation

- In image processing the dimensions of all the images are made similar so that it is easy to compute and predict patterns by the model.

- In image augmentation it focuses on converting the horizontal and vertical objects in the image so as to make it easy by the model and produce accurate results.

3) Build CNN

- It is done using tensor flow where we build CNN and train the model using training dataset accordingly to predict the forest fires from the imaeges and validate it during training and test it after the training.

4) Test ,evaluate

- Here, model is tested accordingly using test dataset also it is evaluated using a few performance metrics like accuracy etc…