### **Project Flow**

The user interacts with the UI (User Interface) to choose the image.

* The chosen image is analyzed by the model which is integrated with the flask application.
* CNN Models analyze the image, then the prediction is showcased on the Flask UI.

To accomplish this, we have to complete all the activities and tasks listed below

* Data Collection: Collect or download the dataset that you want to train your CNN on.
* Data Preprocessing: Preprocess the data by resizing, normalizing, and splitting the data into training and testing sets.
* Model Building:

a. Import the necessary libraries for building the CNN model

b. Define the input shape of the image data

c. Add layers to the model:

i. Convolutional Layers: Apply filters to the input image to create feature maps

ii. Pooling Layers: Reduce the spatial dimensions of the feature maps

iii. Fully Connected Layers: Flatten the output of the convolutional layers and apply fully connected layers to classify the images

d. Compile the model by specifying the optimizer, loss function, and metrics to be used during training

* Model Training: Train the model using the training set with the help of the ImageDataGenerator class to augment the images during training. Monitor the accuracy of the model on the validation set to avoid overfitting.
* Model Evaluation: Evaluate the performance of the trained model on the testing set. Calculate the accuracy and other metrics to assess the model's performance.
* Model Deployment: Save the model for future use and deploy it in real-world applications.