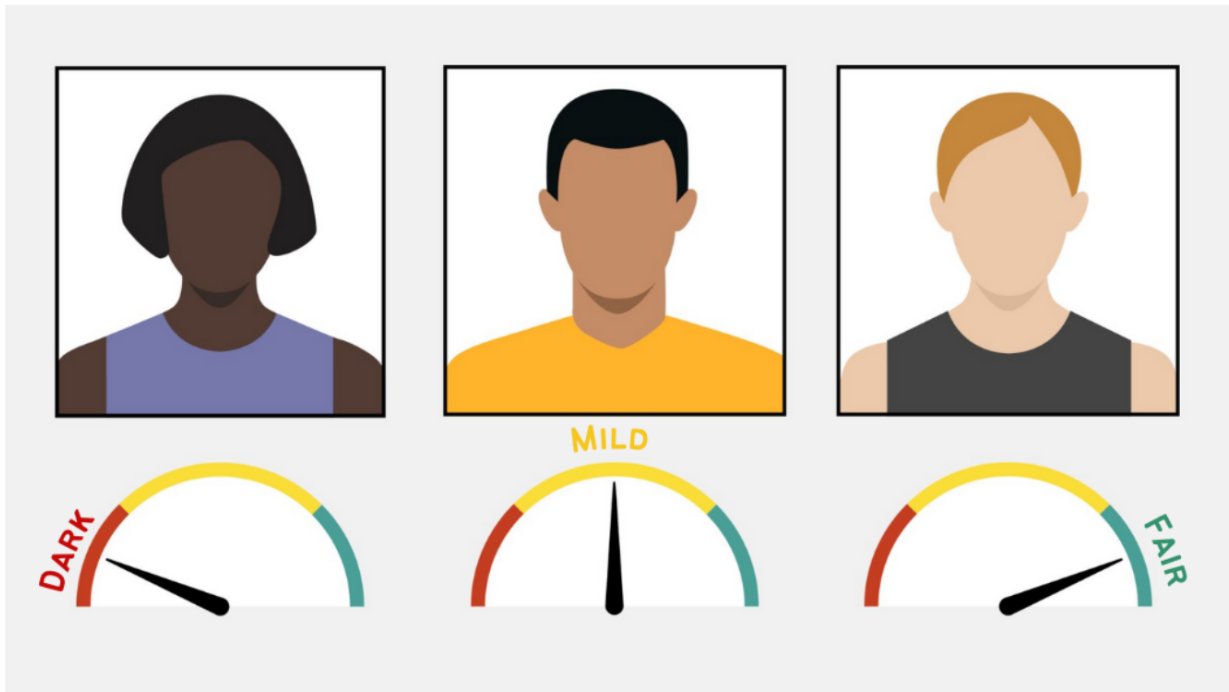# HUMAN SKIN TONE DETECTION PROJECT

Human Skin-Tone Detection Project Report

12.05.2021

Group(B1)
Verzeo EduTech

ML & Web Development batches(March-April 2021)

<u>Aim</u> :

To create a web portal to detect the skin tone (i.e, Fair,Mild or Dark) from a human face image.

<u>Objective</u> :

1. To make a webpage for a client so that he/she/they can upload his/her/their photo in it to detect his/her/their skin colour.

2. To make a backend program which will detect whether the skin colour is mild,dark or fair and deliver the result to the client on the webpage.

<u>Specifications</u> :

This project consists of three major parts, first is web development where the client will upload their photo to detect their skin colour that is mild,dark, or fair and a result will be provided based on the client's input.

Secondly, in the backend there will be a program that is based on Artificial Intelligence that will use the concept of image processing and extract the skin part of the image.

The Third thing is based on machine learning where we will first teach our system to differentiate between mild, dark and fair skin and use that learning to detect the skin colour of the image given by the client.

Milestones:

I.   Webpage

Create a webpage for the client where he or she can upload his/her/their photo and get the desired response(i.e. Colour of the skin).

The front end of the webpage will be designed using HTML, CSS and Bootstrap. It will prompt the client to add an image from its device for skin colour detection.

The backend can be designed using Django.

We've 8 group members who are from Web Development. Thus, 4 of them will work for the frontend and the other 4 will work for the backend part respectively.

II.   Image Processing and Artificial Intelligence

This is the backend part. In this,an AI-based image processing needs to be done on the photo given by the user to extract the skin tone of the image.
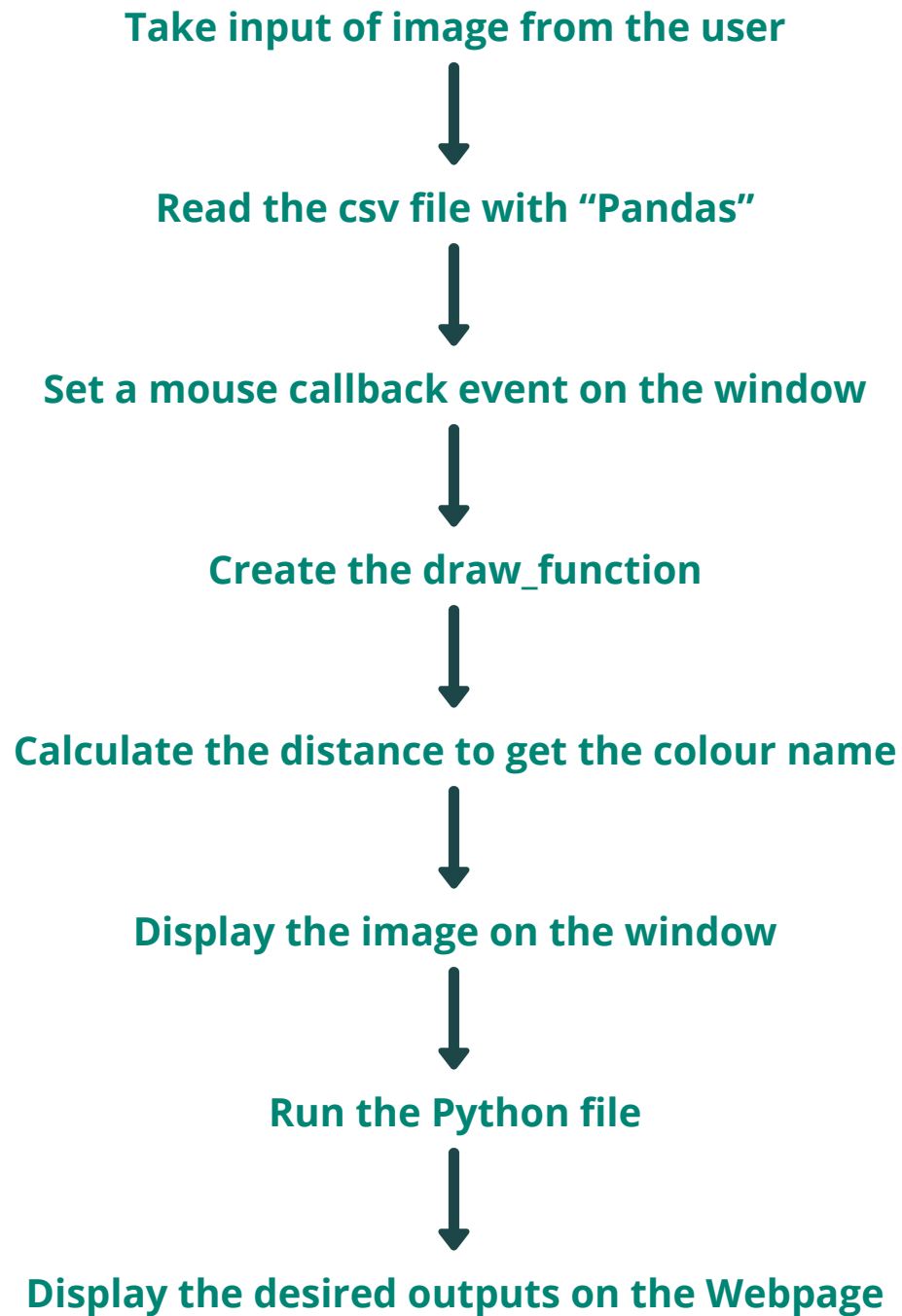
III.   Machine Learning

In this part,we have to teach our backend model to learn how to differentiate skin tones of an image so that it could evaluate the output of the given input. Since we will be teaching our model to differentiate between skin tones, this comes under supervised learning and since there are multiple classifications in skin tone for which we will use KNN algorithm.

Database:

In this part, we have to know about Firebase Real-time Database. Firebase real-time database is a cloud-hosted NoSQL database that lets you store and sync your users in real-time. The realtime database is really just one big JSON object that developers can manage in real time. With API, the Firebase database provides your web with both the current value of the data and any updates to that data.Real time syncing makes it easy for your users to access their data from any device, be it web or mobile.

Methodology:

Take input of image from the user

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Read the csv file with "Pandas"

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Set a mouse callback event on the window

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Create the draw_function

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Calculate the distance to get the colour name

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Display the image on the window

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Run the Python file

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Display the desired outputs on the Webpage

NOTE : We might change the methodology or the algorithm while we actually implement or get ahead with the project in order to give the best possible solution.

Group Members:

- Abhishek Jena (WebD)
- Amaan Mohamed (ML)
- Anirudh Sharma (WebD)
- Azarudeen R (WebD)
- Bopanna Tejesh (ML)
- Krishna Chaitanya (ML)
- Kushagra Srivastava (ML)
- Milind Palagadu (ML)
- Mohammed Arshad (ML)
- Mudit Shekhar (ML)
- Paargavi Muthamil Selvan (ML)
- Pallavi Yemmireddi (ML)
- Pavitra Poojary (WebD)
- Sai Bhargav Reddy Chekka (WebD)
- Sangani Sai Kumar (ML)
- Sathvika Chilukumari (WebD)
- Shashank Rai (ML)
- Shashi Suman (WebD)
- Shiva Kumar (ML)
- V Venkat Bhargav (WebD)