Ear Landmark Detection

AND

Convex Hull extraction

(GROUP-1)

Objective of the project :

* Ear landmark detection and convex hull are techniques used in computer vision and image processing to detect and identify features in images or videos of human faces. These techniques have a wide range of applications, including facial recognition, biometrics, and animation.
* Ear landmark detection is a method of identifying specific points on a person's ear, such as the top and bottom of the ear, the earlobe, and the helix. These landmarks are used to create a unique profile of the ear, which can then be used for identification purposes
* Convex hull, on the other hand, is a geometric concept that defines the smallest convex polygon that encloses a set of points. In the context of facial recognition, a convex hull can be created around the landmarks identified in the ear, providing a way to define the shape of the ear.

Reference website :

[GitHub - kbulutozler/ear-landmark-detection-with-CNN: A tool to detect 55 landmark points on a given ear image.](https://github.com/kbulutozler/ear-landmark-detection-with-CNN)

* This model takes 224x224 images as input and outputs the predicted landmark points.
* If we input an image of right ear the model will recognise it and will give information and can produce generated corresponding left ear of it

Extra Features we will be focusing on:

* The available features of ear landmark detection and convex hull include the ability to detect and identify specific points on the ear, the ability to create a unique profile of the ear, and the ability to compare the shape of the ear between different images. These features have been used in a wide range of applications, including biometrics, animation, and facial recognition.
* In terms of missing features, there is a need for more robust and accurate methods for ear landmark detection and convex hull. For example, current methods may struggle with identifying landmarks in images or videos with low resolution or poor lighting conditions. There is also a need for methods that can effectively deal with occlusions and partial obscurations of the ear.
* We try to improve the model inorder to make the model recognize the ear and produce landmarks in situations where there is less brightness and when in public places focusing only on the face and the nearest ear
* We will train the model to recognize the ear from a distance and improve the recognizing capability in all conditions
* We will add a feature to the model where in it can also detect the ear where small part of it is covered (when people wear ear-rings)
* We will make the model recognize in abstract motion which helps recognizing the ear easily while people are travelling

In conclusion, ear landmark detection and convex hull are important techniques in computer vision and image processing that have a wide range of applications. Although there are available features and limitations, there is a need for further development and refinement to improve the accuracy and robustness of these techniques.