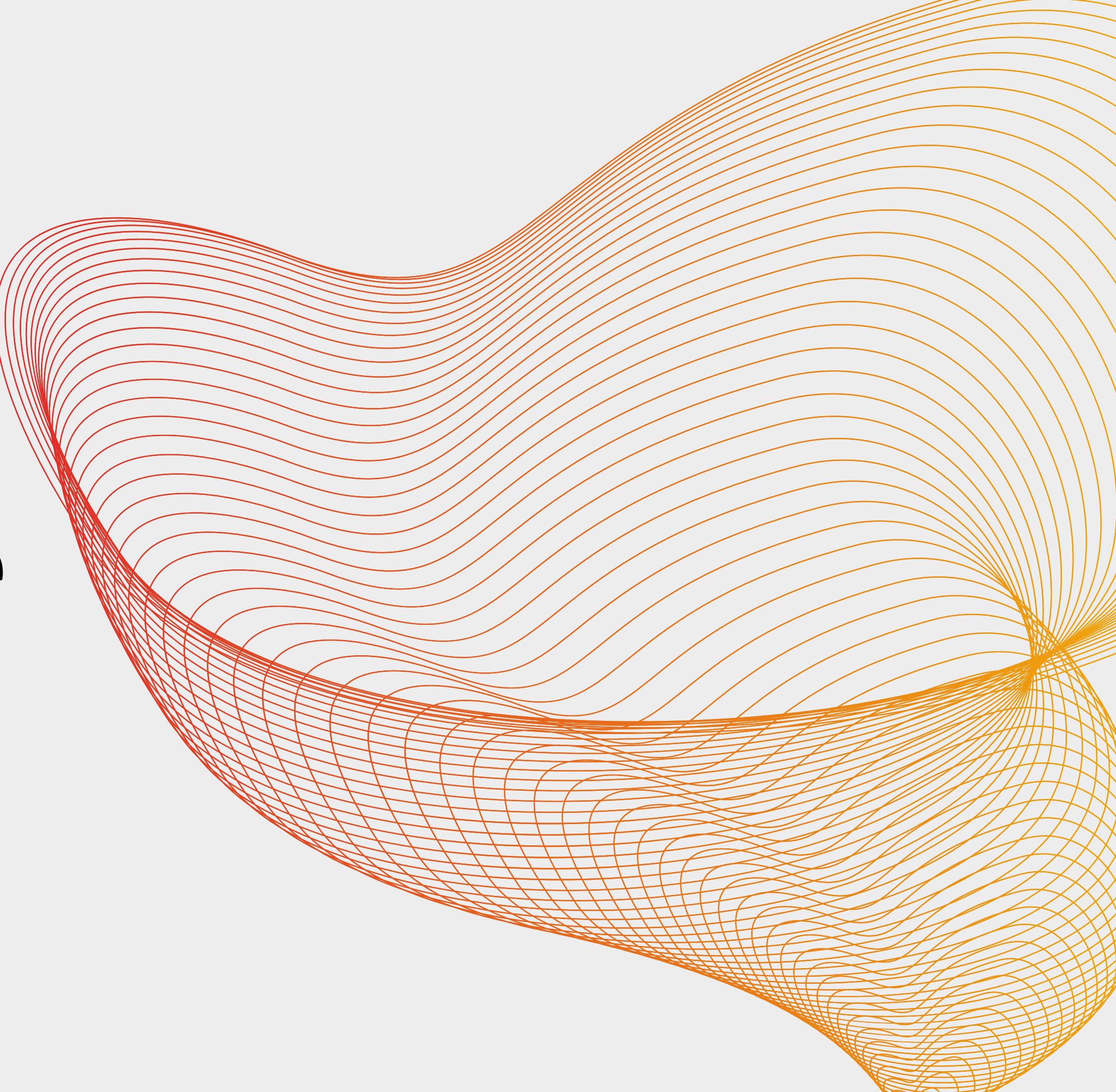




Face Shape Finder AI

Diego Rangel



Agenda

- Business Understanding
- Data
- Preprocessing
- Modeling
- Evaluation
- Recommendations
- Next Steps



ZENNI®

Eyewear for Everyone

The goal is to implement an AI powered feature to identify face shapes into this section of the Zenni website.

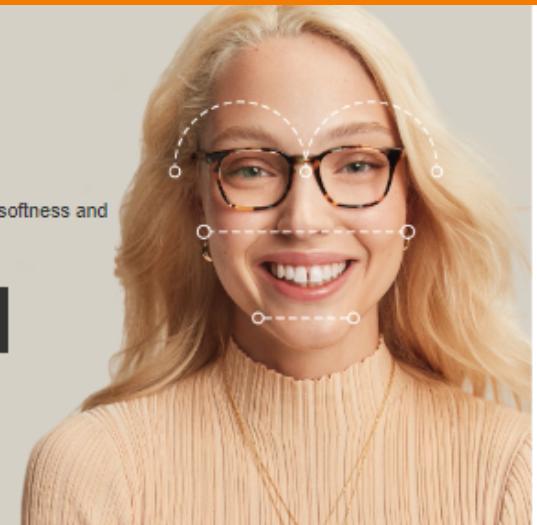
Glasses for Your Face Shape

Find the most flattering frames with our face shape glasses guide.

Heart Face Shape

Square and aviator glasses bring softness and balance to angular heart faces.

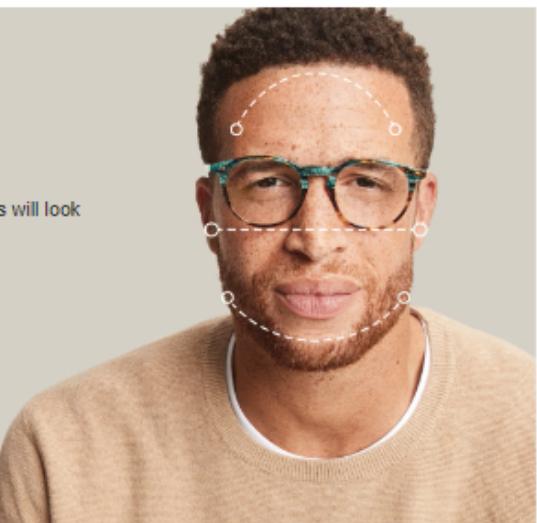
[FRAMES FOR HEART FACES](#)



Oval Face Shape

Proportionally balanced oval faces will look good in almost any frame style.

[FRAMES FOR OVAL FACES](#)



Square Face Shape

Round and oval glasses add balance and structure to square faces.

[FRAMES FOR SQUARE FACES](#)



Diamond Face Shape

Round, oval, and cat-eye styles add softness to angular diamond faces.

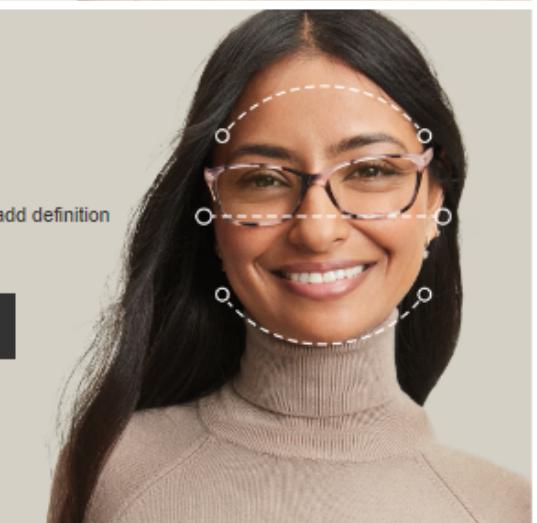
[FRAMES FOR DIAMOND FACES](#)



Round Face Shape

Rectangle and geometric frames add definition to round faces with soft features.

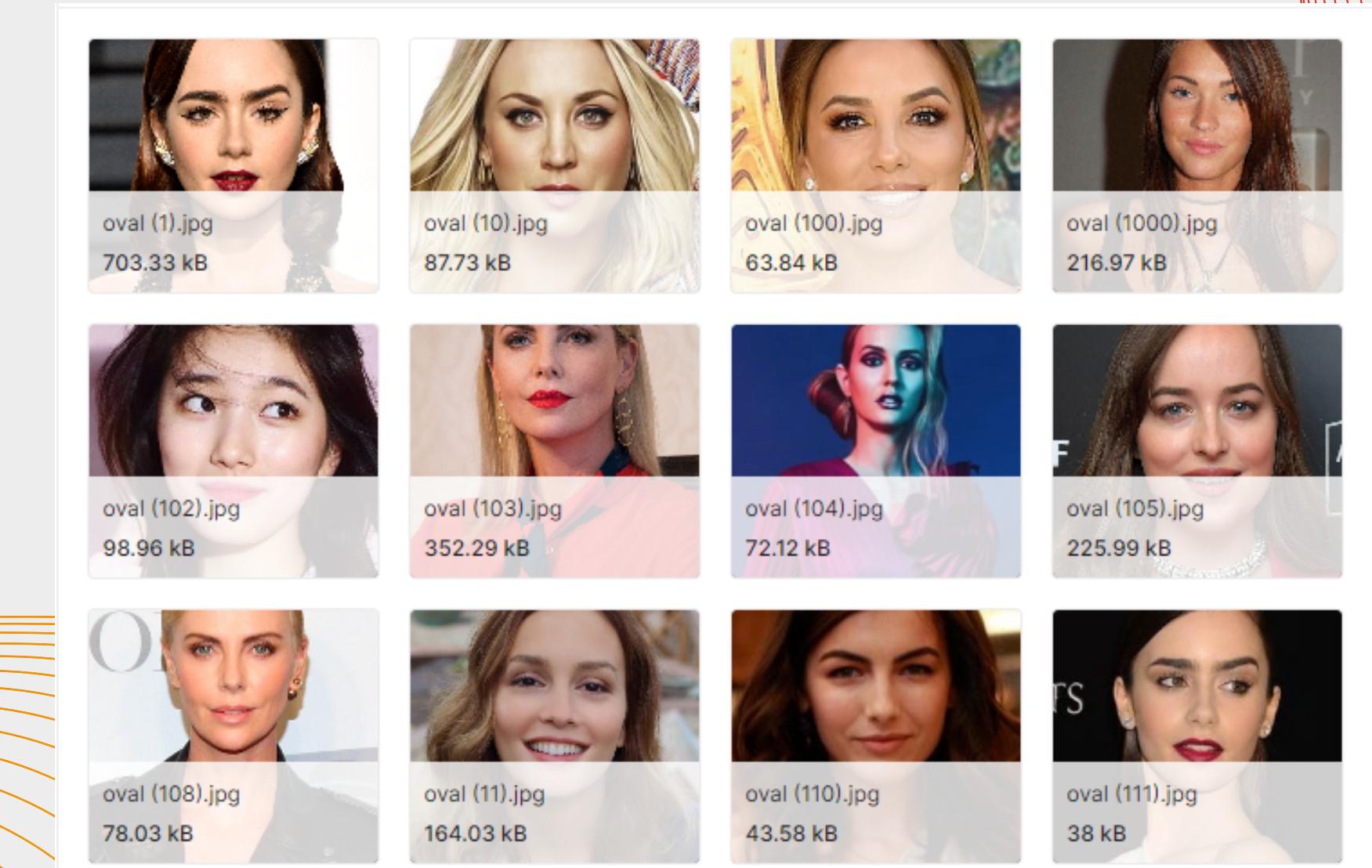
[FRAMES FOR ROUND FACES](#)



Data Understanding

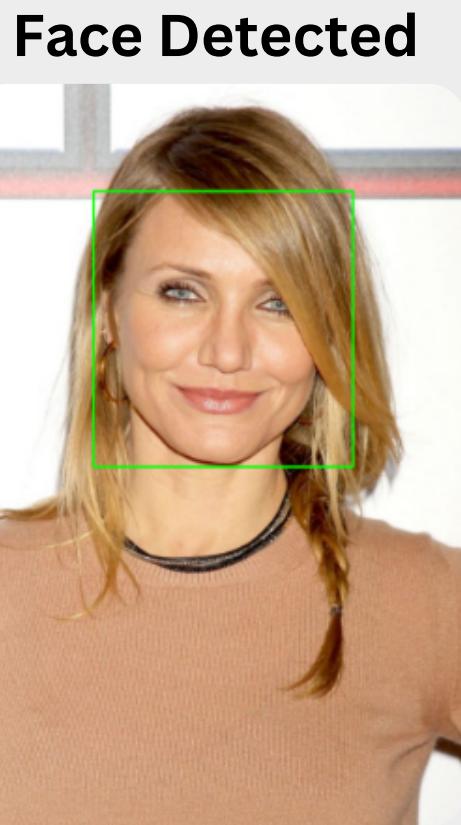
This dataset contains a total of **5000 images** of the female celebrities from all around the globe which are categorized according to their **face-shape** namely:
Heart, Oblong, Oval, Round and Square.

kaggle



Preprocessing

I used the **Haar cascade** algorithm to detect faces in all the images and cropped the detected areas to remove excess noise. While I initially tried two types of edge detection to improve my model, I ultimately found that using the cropped images without edge detection produced better results.

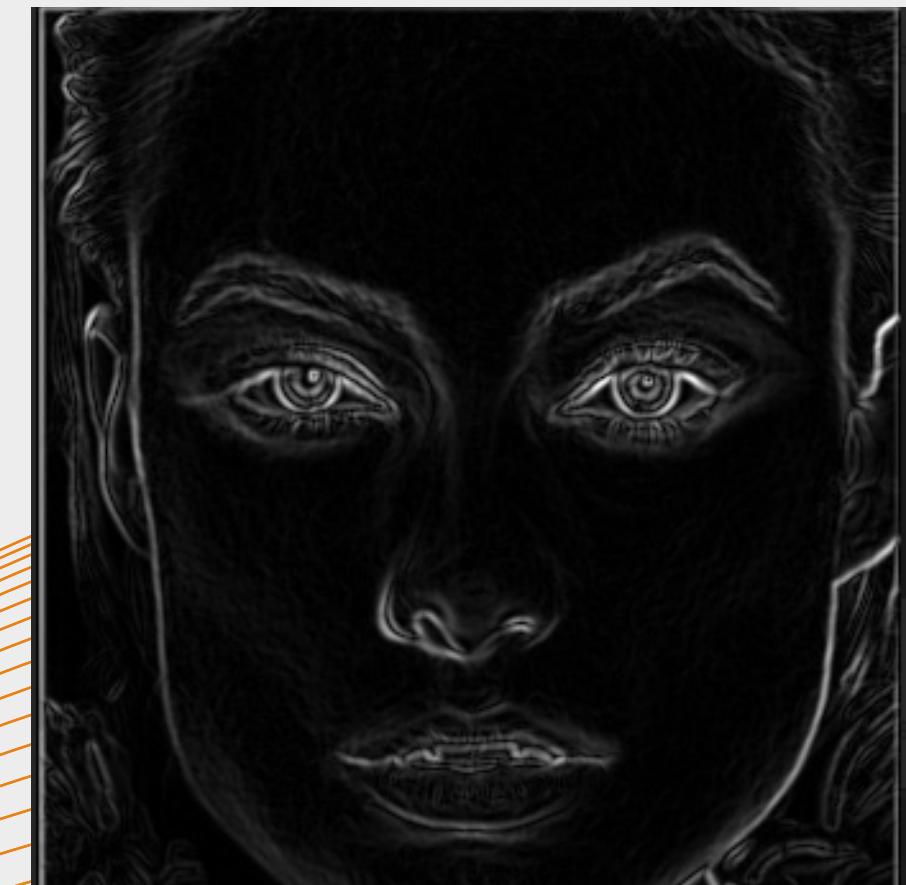
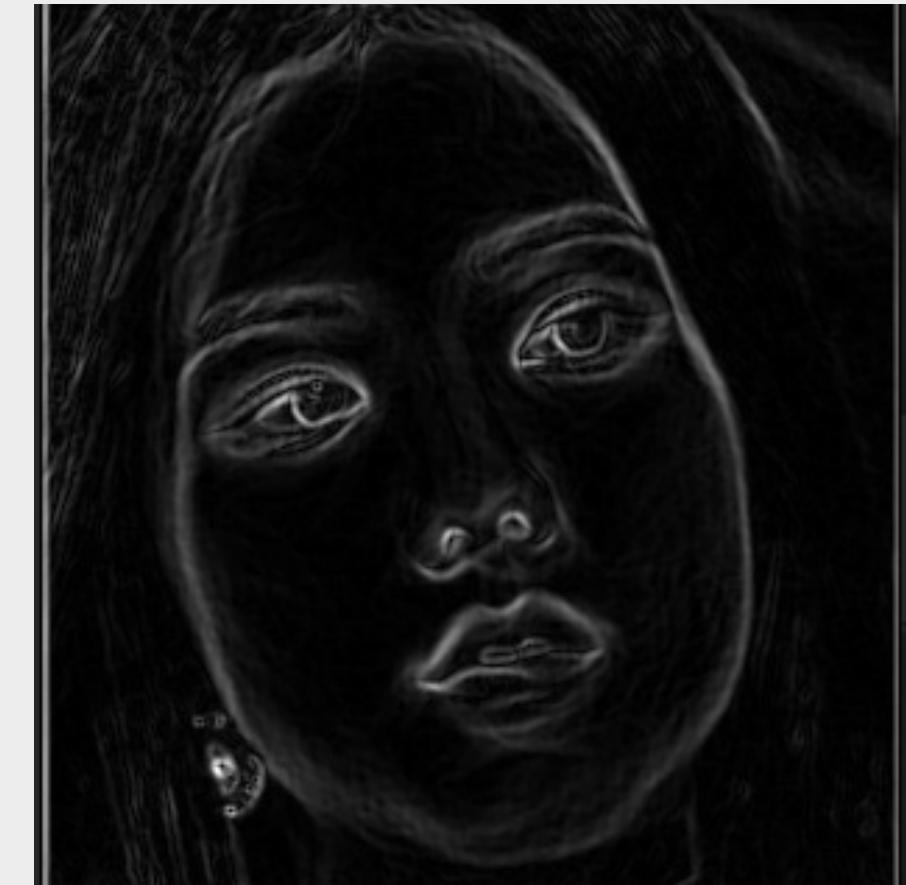
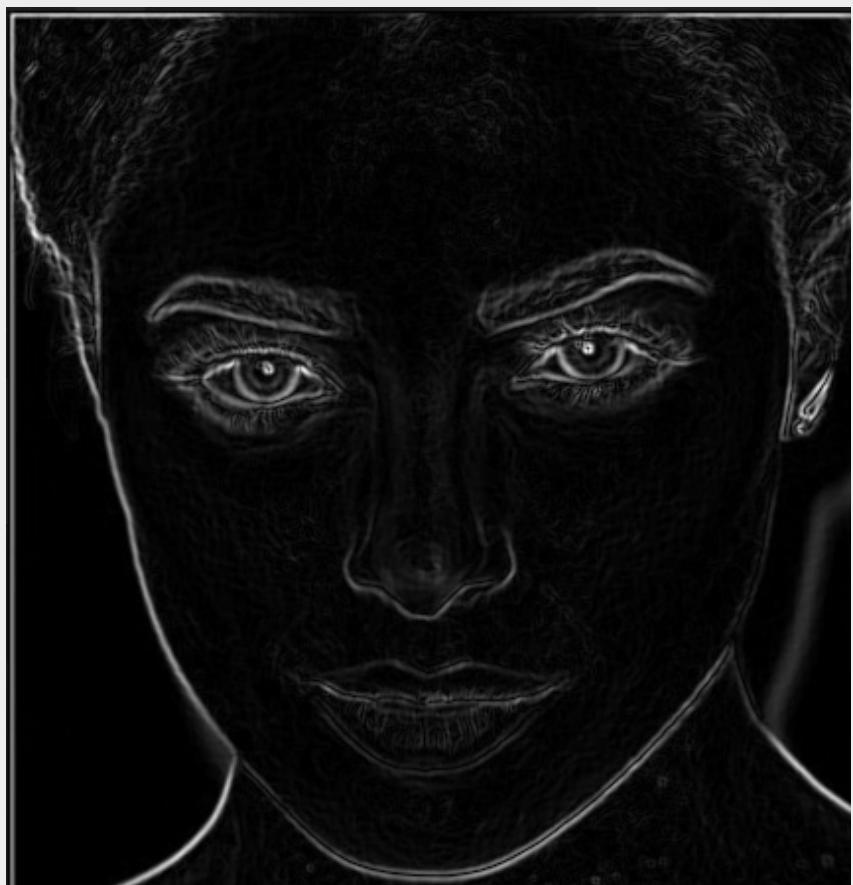
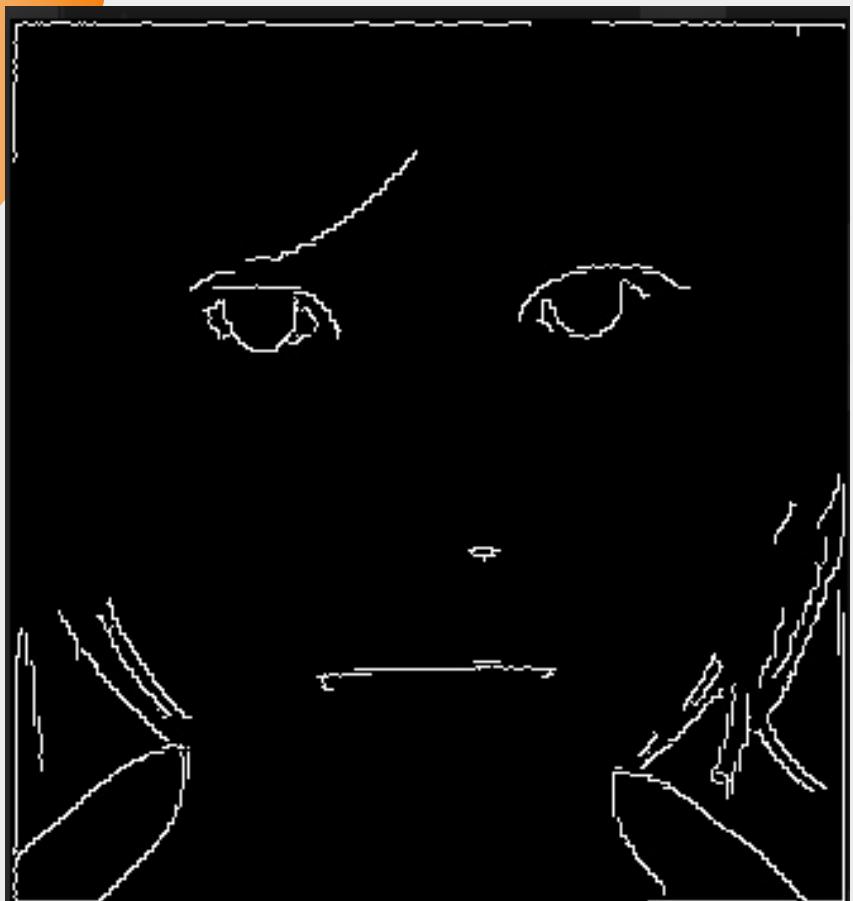


Canny Edge Detection



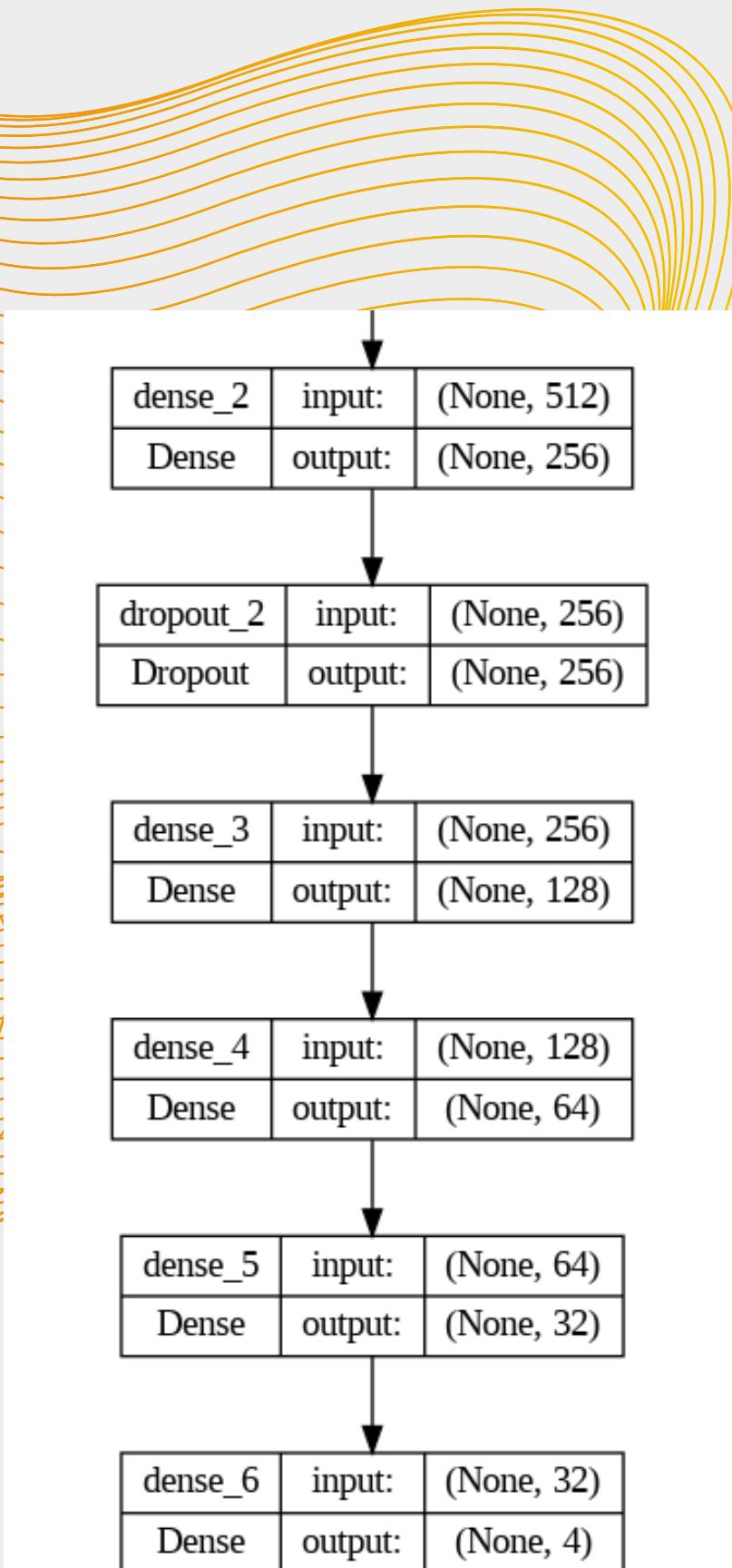
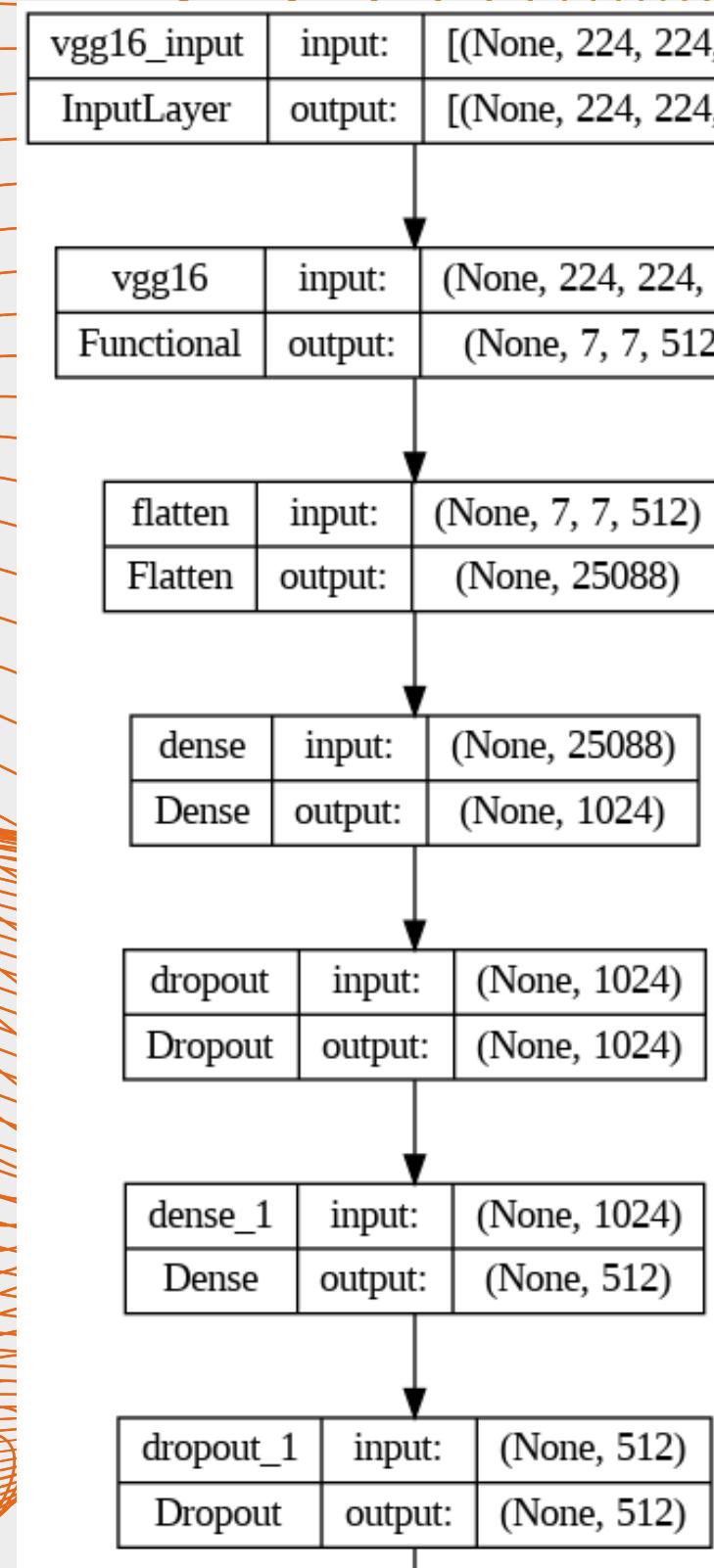
Sobel Edge Detection





Modeling

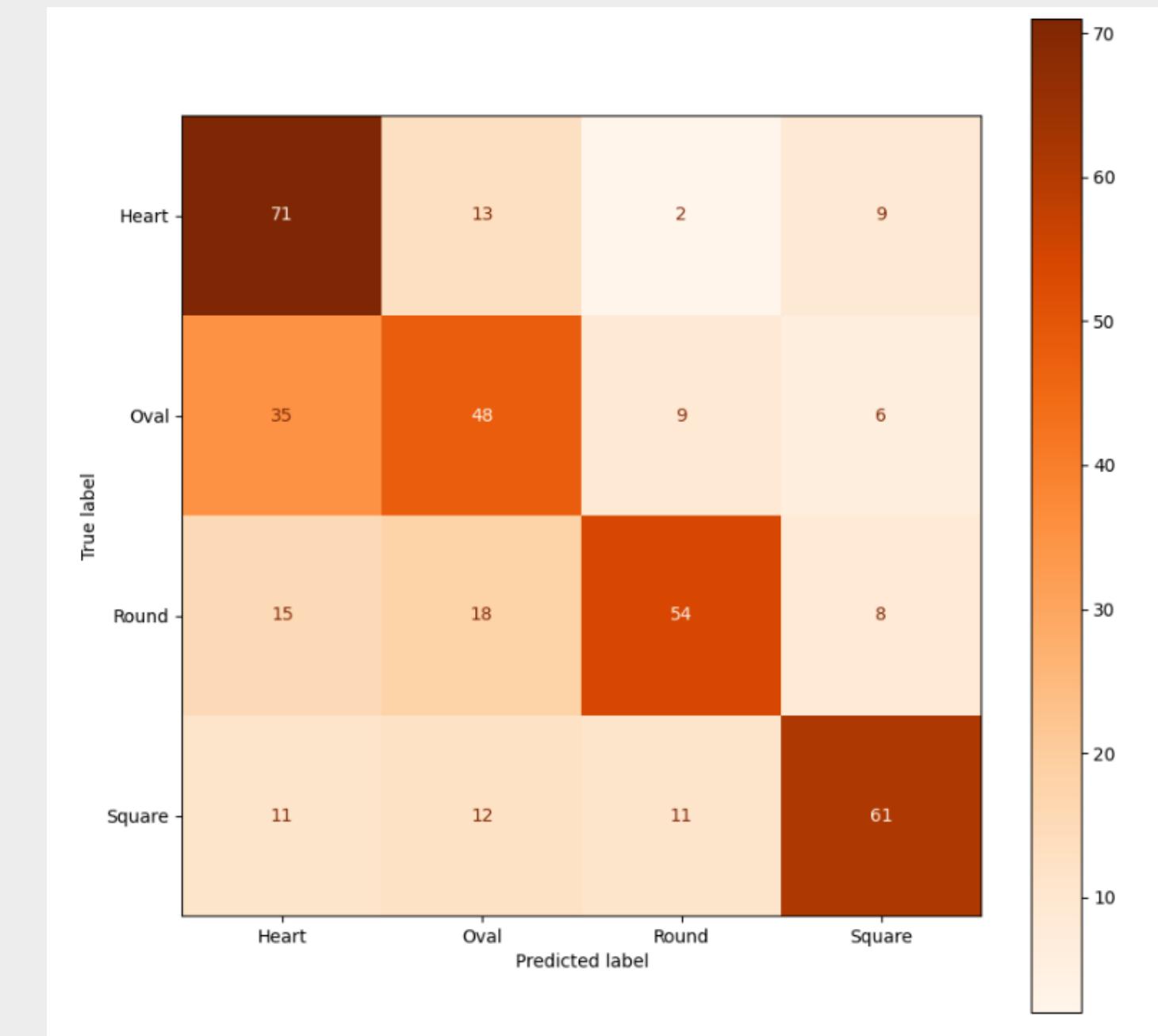
For this image classification task, I used transfer learning. more specifically, VGG16 pre-trained model. I further enhanced the model's complexity by adding six additional dense layers. This approach led to improved results in our experiments.



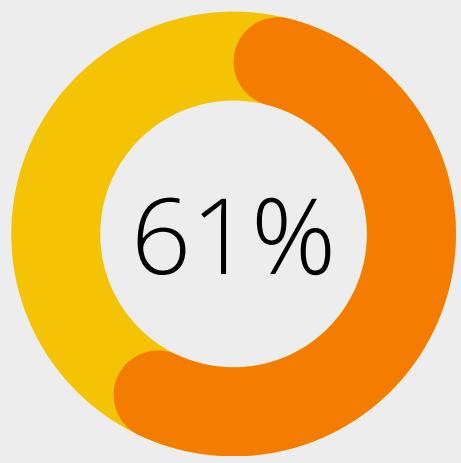


Evaluation

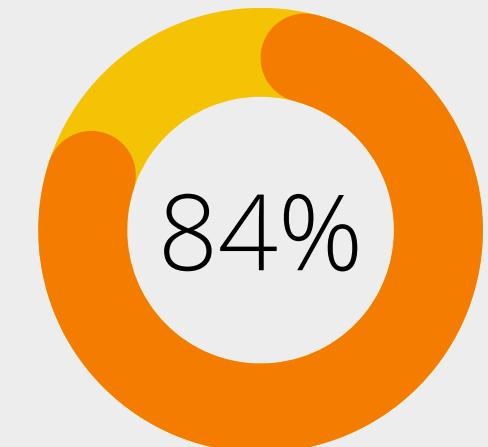
The scores decent, but there is room for improvement. We can see that the main issue is the misclassification of the Oval class.



Validation



Test



Recommendations

- Add the model to the website, along with a service rating button to be able to track client satisfaction
- Keep adding new client images to the database

Next Steps

- Deploy a demo application
- Recommendation system



Thank You



<https://github.com/D1eg0Rng>