One-Shot Learning with Face2Vec

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- https://github.com/EdibHamzaArslan/OneShotLearning-with-Face2Vec
- https://github.com/EdibHamzaArslan/Face2Vec-with-CelebaDataset
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The classic deep learning models are need to a lot of data for recognize objects. But the one-shot learning models need to just one data(img).
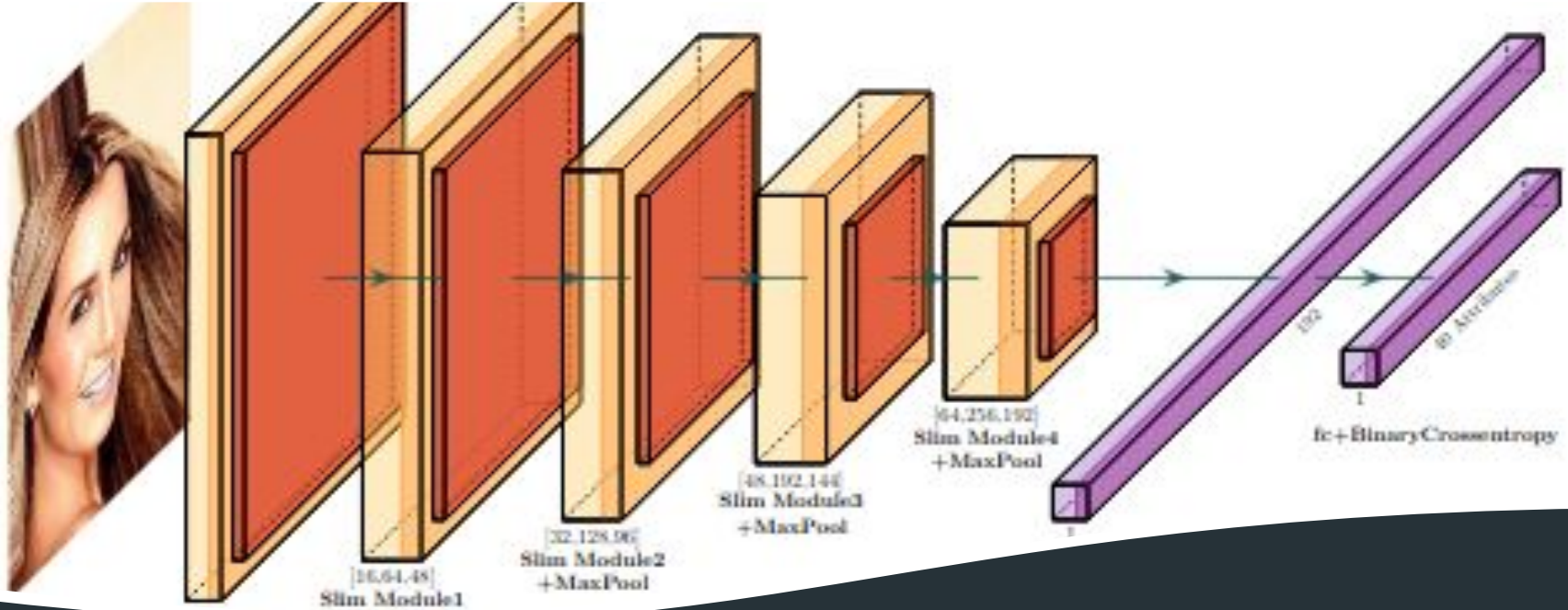
In this project I try this approach with Slim-CNN model.
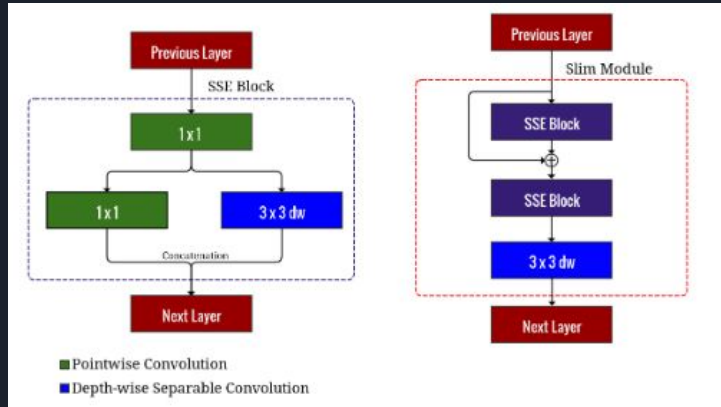
https://arxiv.org/abs/1907.02157
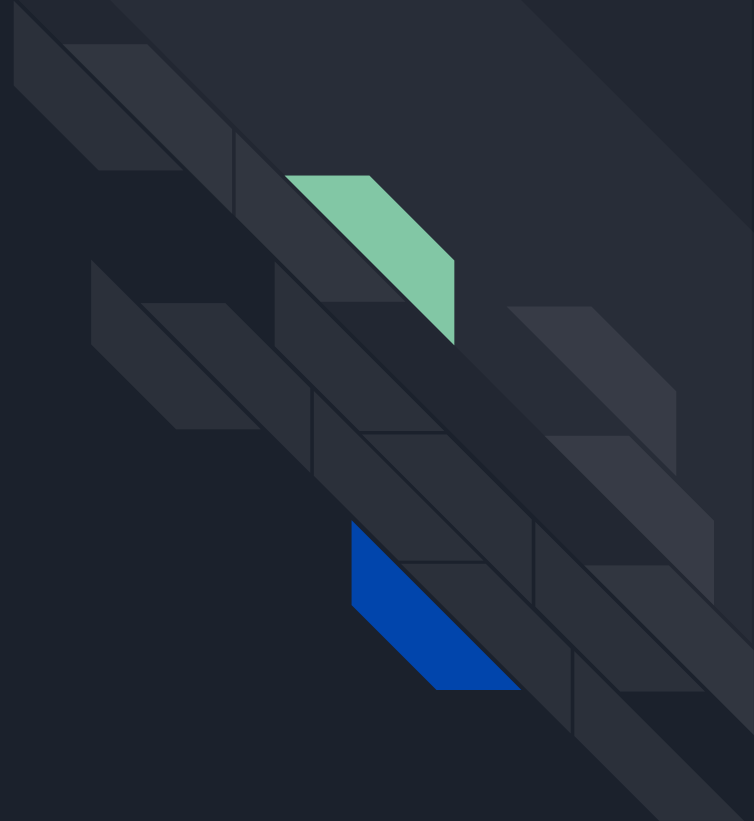
Why I am using Slim-CNN?

Depend on my literature review for face attribute analysis with deep learning , I found clear explanation for model implementation on Slim-CNN paper. It's also giving high accuracy with small model and it provides to me work on google colab free.

[16,64,48]
Slim Module1

[32,128,96]
Slim Module2
+MaxPool

[48,192,144]
Slim Module3
+MaxPool

[64,256,192]
Slim Module4
+MaxPool

fc+BinaryCrossentropy

# Slim-Cnn Architecture

The slim module architectures

I used Google Colab Free version, the model parameters are coming from paper.

First of all I implement the slim-cnn model depend on this paper. Then I train the model with Celeba dataset(public dataset). I catch %91 train accuracy which is same result on slim-cnn paper.

The Celeb-a dataset is only giving celeb's face attribute is it exist or not. My aim is finding similar faces for users who using Makeup application(This is the implemented from other team mates.)

- I found Siamese Network for that.
- I need a lot of face pair data for this model type.
- I found Casia-WebFace dataset. This data is a bit messy. I reorganize it and I took random 79,000 image pairs.

The siamese network architecture
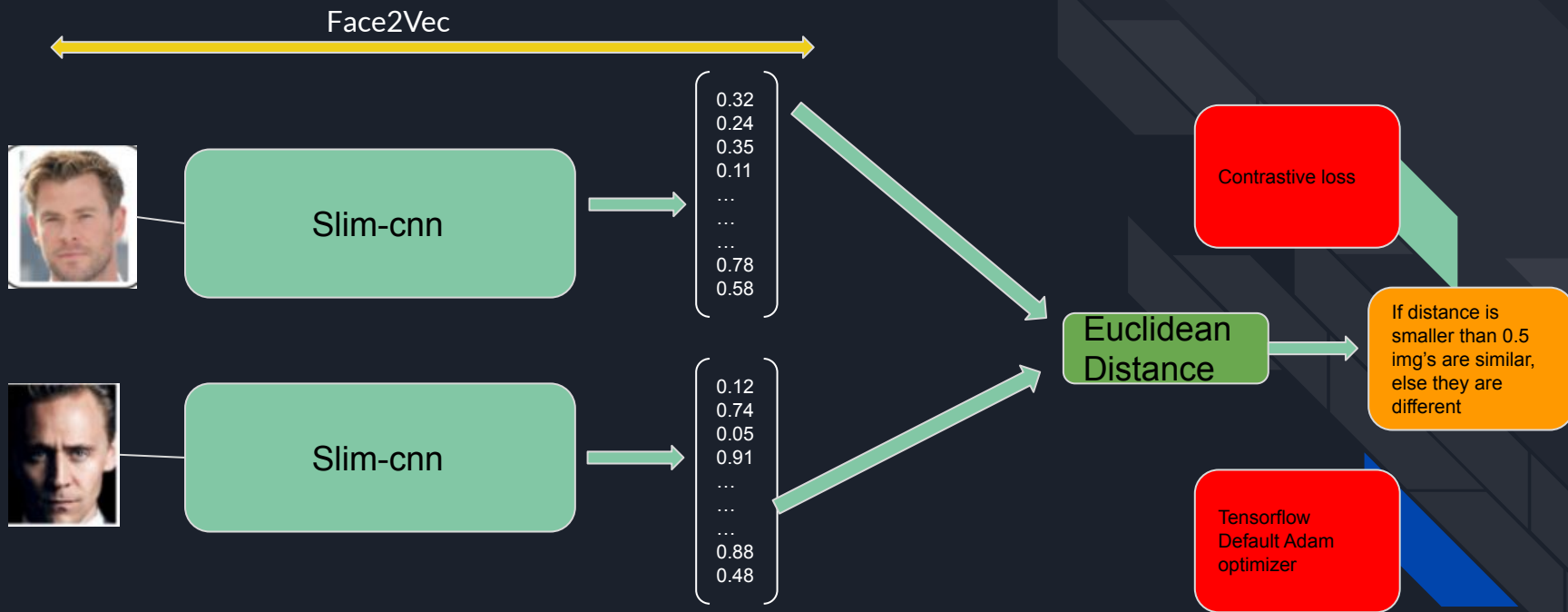
Training and Testing

- First of all, I try to pretrained slim-cnn model with CASIA-WebFace dataset. The test results are very low.

- Then I unfreeze the top layers and train %80 of CASIA-WebFace dataset. The results are still low.

- Finally I unfreeze all model and train %80 of CASIA-WebFace dataset. After more than 24 hours training I get %99 training accuracy, %95 validation accuracy and %94 test accuracy.

Final Results

Depend on your requirements the model can be used on different area. I made couple of demo

Depend on my one photo, the model is recognize me.

Final Results

You can also rank the images
depend on similarities