National Institute of Technology Karnataka, Surathkal
Department of Computer Science and Engineering
Mini project proposal submission (Computer Graphics)
Class: VI Sem. BTech CSE (Jan.-Apr.2018)

Roll No. in the class	Inst. Reg. No.	Name	Mail Id.	Phone No.	CGPA and Role (Leader/Member)
15CO247	157033	Somnath Sarkar	somnath.k.sarkar@gmail.com	8879523822	8.29 Leader
15CO254	156233	Menezes Elvis Edward	menezeselvis7@gmail.com	9901914014	9.14 Member
15CO130	157036	Mehul Sharma	mehul.sharma213@gmail.com	7888840218	5.67 Member

Date: 4-1-2018

Title: Face Generation with Generative Adversarial Networks

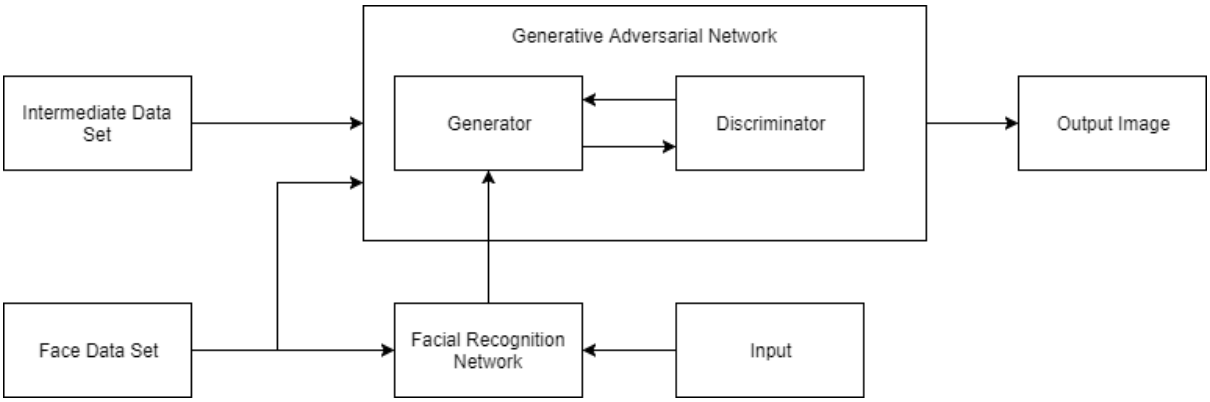
Abstract (100 words- Typed, Flow diagram, Block diagram etc..):

Generative Adversarial Networks are a recently developed structure for neural networks. In a GAN we make use of two competing neural networks. One model, the generator, is tasked with creating new images, whereas the other one, the discriminator, attempts to identify these new images. The two networks are trained at the same time. The generator learns to produce more realistic images, attempting to create an image classified as “real” by the discriminator. The discriminator improves it's ability to detect generated images. The competition between the two models results in a generator that can produce realistic images.

Given a data set of human faces we intend to develop a generative adversarial network that can create similar images.

In order to create such a model, we will first be training the GAN on a smaller data set like the MNIST handwritten digits images. After the weights in the network have been initialized in this manner, we will finish by training on the images of human faces.

Once we have obtained a satisfactory model, we intend to improve on the functionality by offering some level of customization on the output images offered. By default, we have little say on the details of an image outputted by a GAN. This would involve the creation of another neural network to pick up on features of the people in the data set. This information would be passed onto the generative half of the GAN.



Inputs:

For initial training, we are planning on using well-known data sets like MNIST and CIFAR-10 to initialize weights of the GAN. We are using the public Facial Recognition data set “Labeled Faces in the Wild” for training the network to generate images of human faces.

The LFW data set offers a good number of identifying characteristics about the faces contained in each picture such as race, sex, age, hair, etc. We plan on training an additional neural net to identify these characteristics using the labels provided. Now a user may be able to specify particular features of a face and obtain a close match.

Outputs:

The final model once trained may be saved and reused easily. The output provided by the models would be pictures generated as per the parameters specified.

Performance measurement criteria (Milestones and dates):

Data Preperation – January 8th

Intermediate Training of GANs – January 14th

Training on Face Set – January 21st

Training facial recognition network – January 28th

Implementing custom face specification – Feb 5th