International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 01 | January - 2023 Impact Factor: 7.185 ISSN: 2582-3930

Face Generation Using General Adversial Networks

Rishitha , Chandana Reddy, Ashritha

Department of ECM, Sreenidhi Institute of Science and Technology

ABSTRACT

Face generation is a difficult task with numerous uses in security (for example, creating portraits from descriptions), styling, and entertainment. In this study, we investigate generating faces conditioned on identification using modifications to generative adversarial networks (GANs). In the realm of artificial intelligence, deep learning has had significant success, and several deep learning models have been created. One of the deep learning models, Generative Adversarial Networks (GAN), which was proposed based on zero-sum game theory and has become a new research hotspot. The importance of the GAN model variation is to provide more accurate and realistic data by using unsupervised learning to obtain the data distribution. Due to their vast potential for use in areas including language processing, video processing, and image and vision computing, GANs are currently the subject of extensive research. This project introduces the history of the GAN, theoretical models, and extensional variants of GANs, where the variants can either modify the fundamental structures of the original GAN or further optimise it. The typical uses of GANs are then described. Finally, a summary of the current GAN issues and a description of the models' upcoming work are provided.

INTRODUCTION

Generative adversarial networks, or GANs, are a subset of deep learning. The neural network is strong and uses unsupervised learning. It has two competing neural network models that can assess, capture, and copy variances found in datasets. techniques that generate samples from high-dimensional data distributions, such photographs. Generator and discriminator networks together make up the GAN. The distribution of the sample images produced by the generator should, in theory, be impossible to differentiate from the training samples. once the generator has been made, the discriminator's loss function is discarded. Two neural networks, Generator and Discriminator, compete with one another throughout the training phase. These two neural networks compete with one another to provide predictions that are more accurate.
While Pixel CNN and other autoregressive models create clear images, evaluation takes a long time. It is difficult to generate high resolution images since a higher resolution makes it simpler to distinguish the generated images from the training photos.

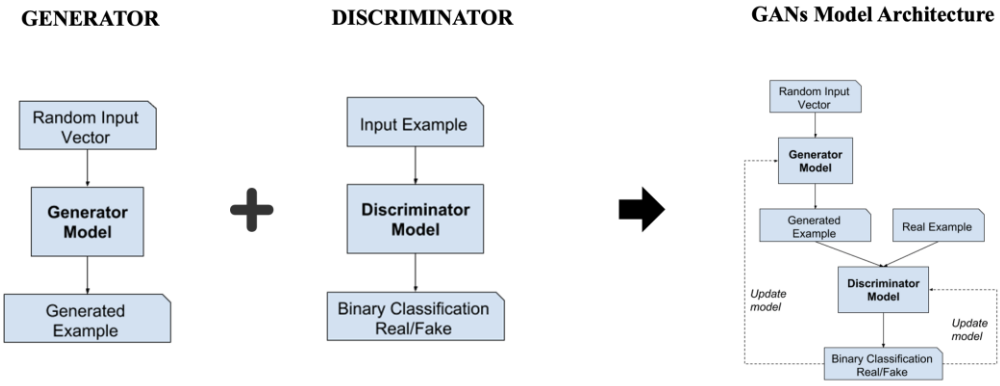
Existing Methodology:

Deep Convolutional Generative Adversarial Networks(DCGAN) :

Deep Convolutional Generative Adversarial Networks (DCGANs), a subclass of CNNs with specific architectural restrictions, show they are a strong choice for unsupervised learning. We provide convincing proof that our deep convolutional adversarial pair learns a hierarchy of representations from object pieces to scenes in both the generator and discriminator through training on multiple picture datasets. We also apply the learnt characteristics to brand-new tasks to show how useful they are for generalising image representations. Two sub-models make up the GAN model architecture: a generator model for creating new

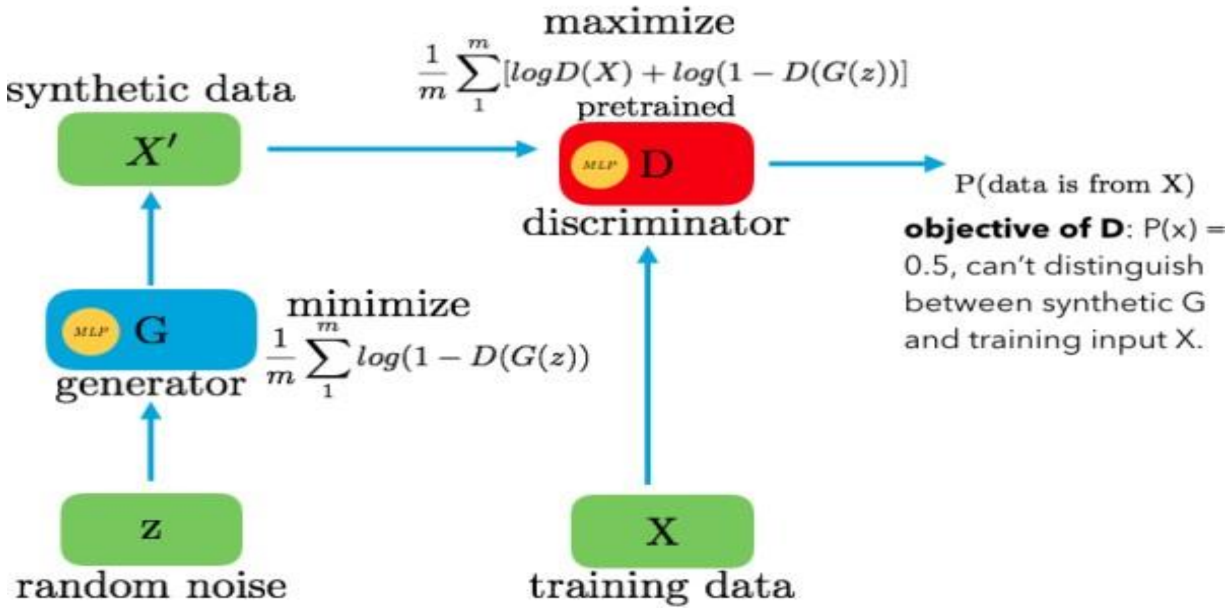
International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 01 | January - 2023 Impact Factor: 7.185 ISSN: 2582-3930

instances and a discriminator model for determining whether generated examples are genuine examples from the domain or fraudulent examples created by the generator model.



Proposed Methodology:

The proposed model was developed using python and libraries like Matplotlib, Numpy, Tensorflow ,Keras ,Tqdm, Os, shutil, etc.



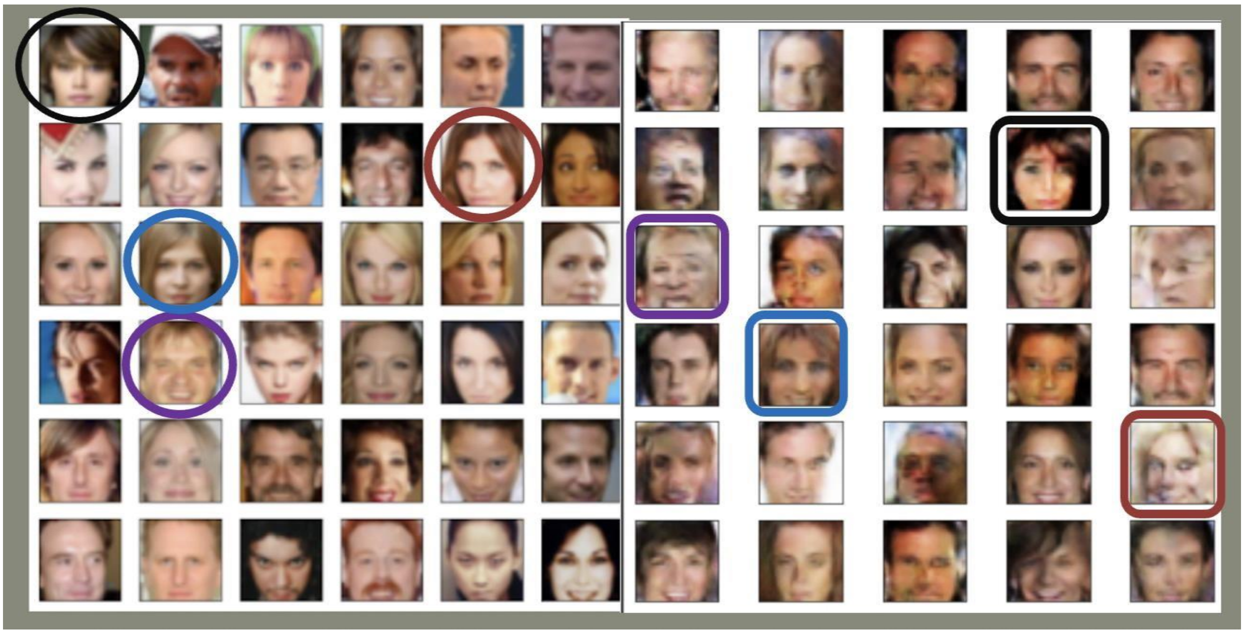
KERAS: TensorFlow, the software used to create machine learning models, and Python's Keras are tightly linked neural network Application Programming Interfaces (APIs). A neural network can be easily defined using Keras models, and TensorFlow will then construct the network for you.

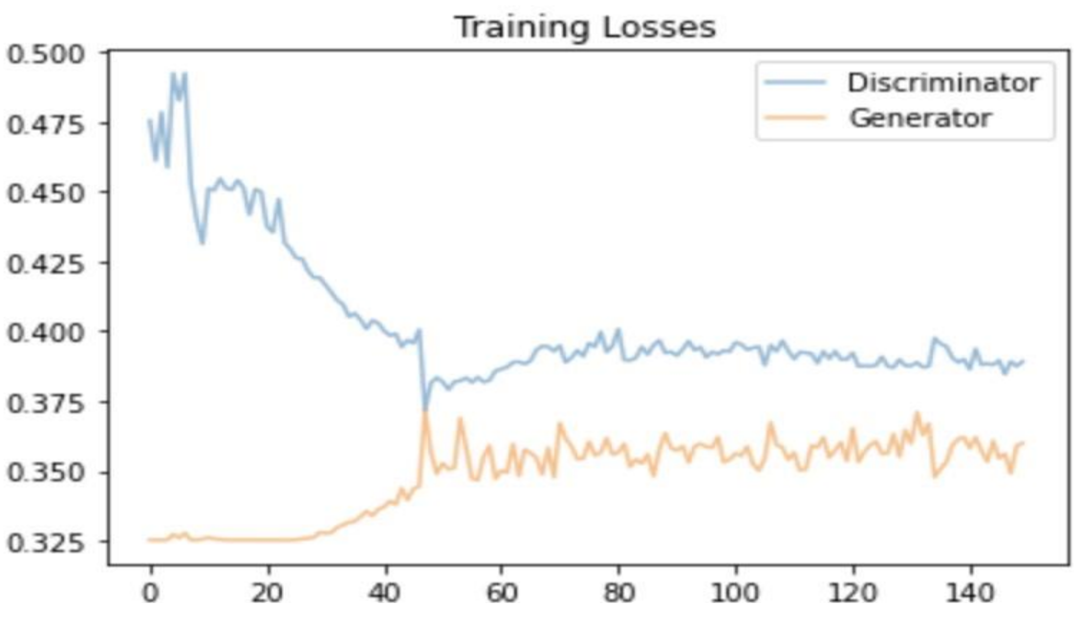
MATPLOTLIB: Matplotlib is an excellent Python visualisation package for 2D array displays. To handle the larger SciPy stack, a multi-platform data visualisation toolkit called Matplotlib was developed and is based on NumPy arrays. John Hunter introduced it for the first time in 2002.

International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 01 | January - 2023 Impact Factor: 7.185 ISSN: 2582-3930

RESULTS

Both the generator and the discriminator have accuracy levels around 50%. At first sight, the generator's output appeared to be accurate data, but closer examination revealed that it was not. It will compel the generator to produce better samples by boosting the discriminator's power.





CONCLUSION

The future of artificial intelligence is unsupervised learning, and we are headed there. In general, generative models and GANs are both fascinating and confusing. They represent an additional step toward a society where artificial intelligence is increasingly important. There are a tonne of uses for GANs. A model must learn both the face embeddings for each unique identity as well as the general data distribution for face images in order to perform the complicated task of face generation conditioned on identity. In this project, we have shown that well-designed conditional GANs (CGANs) can achieve excellent results on this extremely challenging problem. These CGANs can be trained so that a conditional and the noise vector (z) together encode a face embedding when given high-quality input data. This work will be expanded in two ways: I by enhancing image generation quality, and (ii) by supporting a very large number of identities.

REFERENCES

[1] Suzuki S. and Abe, K, Topological structural analysis of digitized binary images by border following, Published by Elsevier Inc., 1985

[2] Boyle, R., and Thomas, “Computer vision: A first course”, Published by Blackwell Scientific Publications, UK. 1988

[3] Pavlovic. V., Sharma R., & Huang, T.S. “Visual elucidation of hand gestures for HCI”: Areview.” IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI

[4] G. Bebis, D. Egbert, M. Shah. Ta,Review of computer vision education , IEEE Transactions on Education,2003

[5] Trong-Nguyen Nguyen, Huu-Hung Huynh, Jean Meunier, “Static gesture recognizer bytraining an artificial neural network”. Journal of Image and Graph, 1(1):34–38, 2013

[6] K. Sivamani, R. Seetharaman and D. Nedumaran, ”Design and Implementation of Gesture Recognition and Writing Text Virtually Using Finger”, Published in Third International Conference on Inventive Systems and Control (ICISC) 2019

[7] Abeer Alnuaim et al,”Visual elucidation of hand gestures for HCI”, eCreative CommonsAttribution License,,2022