## MINI PROJECT REPORT

**ON**

**GENERATING FACES AND SURREAL ART**

**Submitted in partial fulfilment for the completion of**

**BE-VI Semester**

**IN**

**INFORMATION TECHNOLOGY**

**BY**

**VSVS Varma (160116737117)**

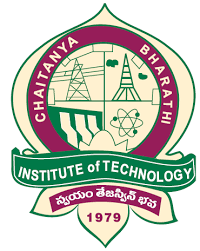
**V Venkat Teja (160116737118)**

**Under the guidance of**

**Ms. M.Trupthi**

**Assistant Professor,**

**Dept. of IT, CBIT.**

****

**DEPARTMENT OF INFORMATION TECHNOLOGY**

**CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A)**

**(Affiliated to Osmania University; Accredited by NBA(AICTE) and NAAC(UGC), ISO Certified 9001:2015)**

**GANDIPET, HYDERABAD – 500 075**

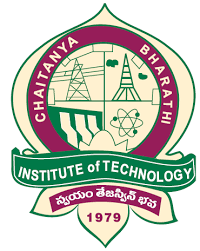
**Website:** [**www.cbit.ac.in**](http://www.cbit.ac.in)

**2018-2019**

**CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY (A)**

DEPARTMENT OF INFORMATION TECHNOLOGY

**GANDIPET, HYDERABAD – 500 075**

****

**CERTIFICATE**

This isto certify that the project work entitled “**Generating Faces and Surreal Art**” submitted to **CHAITANYA BHARATHI INSTITUTE OF TECHNOLOGY,** in partial fulfilment of the requirements for the award of the completion of 6th semester of B.E in Information Technology, during the academic year 2018-2019, is a record of original work done by **VSVS Varma(160116737117), V Venkat Teja (160116737118)** during the period of study in Department of IT, CBIT, HYDERABAD, under our supervision and guidance.

**Project Guide**  **Head of the Department**

**Ms. M.Trupthi Dr. Suresh Pabboju**

Asst. Professor, Dept. of IT, Professor, Dept. of IT,

CBIT, Hyderabad. CBIT, Hyderabad.

**ACKNOWLEDGEMENT**

We take this opportunity to remember and acknowledge the cooperation, good will and support both moral and technical extended by several individuals out of which this project evolved. We shall always cherish my associate on with them.

We have immense pleasure in expressing my thanks and deep sense of gratitude to my project guide **Mrs. M. Trupthi,** Assistant Professor, for the guidance and help throughout the development of this project work by providing us with required information.

We express our profound gratitude to **Dr. Suresh Pabboju, Head of Department, Department of Information Technology** for his support and encouragement in completing our project. We would like to thank for his encouragement and valuable guidance in bringing to this dissertation.

We’re also thankful to **Dr. P. Ravinder Reddy, Principal** of our **CBIT**, for his continuous help and support during the project development.

A lot thanks to other faculty members of the department who gave their valuable suggestions at different stages of our project.

We are very much thankful to my parents who helped me with utmost friendliness and warmth always. They kept our spirit flying high and persistently encouraged us to undertake and complete this project.

**VSVS Varma,**

**(160116737117)**

**V Venkat Teja**

**(160116737118)**

**Abstract**

Ever wondered how a character of a story book or a novel looks like or ever dreamt about your partner’s face? We humans can do that very easily because of the wonders of our brain and cognitive skills. What if a program can do it? we have advanced so much in the field of computer science that we can now make our machines think and imagine things that we never could have. General Adversarial Network (GAN) can generate images that never exist before based on the real world data. GANs were initially introduced by Ian Goodfellow et. al. in a 2014 research paper. Before the invention of GANs the field of Deep learning was relatively successful in Discriminative models Compared to the Generative models.

GAN usually contains two neural networks a generator and a discriminator which play a role of adversaries where both the networks compete with each other in order to improve their own accuracy. The role of the Discriminator is to differentiate between the real images from the data set and the images generated by the generator and the role of generator is to generate the images that can fool the discriminator .when these two models keep on competing with each other the generator ends up generating the images that cannot be distinguished by the discriminator .GANs need a large amount of computation power and time in order to reach the level where it can generate images that do not exist in real world .GANs can be used to create deep fakes, art and even video clips. with the proper processing power the possibilities of GANs are limitless.

Since GANs can generate almost anything based on the data fed into the model,it is proposed that a GAN can be created that can generate surreal art or animated faces.Animated faces that are generated by the GAN can be used in the media industry to create content for kids like comic books and cartoons whereas Surreal art that is generated can be used to get a different perspective of the world just like the art helps us.

Almost for any machine learning or deep learning model Data plays a crucial role and for this project the following datasets will be used:

* **CelebA Dataset**: Contains data of over 87,000 images of celebrities which can be used for testing the accuracy of the model built.
* **Surreal Art Dataset:** Contains data of different surreal art created by various artists which can be used to generate a new painting.

After the model is trained on the data the model can be evaluated by comparing the output of the generator with the dataset that was used to train the model.we can say that the model is successful if the model is able to generate an image which does not exist in the dataset**.**

**Libraries and Tools Required:**

* **TensorFlow**: Google’s Machine learning library which can be used for creating the deep neural networks.
* **Pytorch**: Deep Learning library created by Facebook that can be used for creating the deep neural networks.
* **Pillow:** Python image library which is used for preprocessing images and converting them into numpy arrays.
* **Jupyter Notebook/Jupyter Lab:** IDE on which the model can be coded and tested.
* **Google Colab:** since GANs require high processing power the model can be run on the google colab platform which provides Nvidia tesla k80 for running the model.

**LIST OF FIGURES**

**FIG 2.1: -** Pandas

**FIG 2.2: -** Numpy

**FIG 2.3: -** Mathplotlib

**FIG 3.1: -** Training Process

**FIG 3.2: -** Generating Images

**FIG 4.1: -** Sublime Text 3

**FIG 4.2: -** Jupyter Notebook

**FIG 4.3.: -** Google Colaboratory

**FIG 4.1: -** GAN Architecture

**FIG 6.1: -** Generated Images at Epoch 3

**FIG 6.2: -** Generated Images at Epoch 5

**FIG 6.3: -** Generated Images at Epoch 7

**FIG 6.4: -** Generated Images at Epoch 9

**FIG 6.5: -** Generated Images

**FIG 6.6: -** Generated Art

**LIST OF TABLES**

**TABLE 3.1: -** Hardware and Software Requirements