Department of Electrical and Computer Engineering
North South University

Senior Design Project

Photo-To-Cartoon Translation with Generative Adversarial Network

Md.Istiaque Ahmed ID # 1812420042
Kazi Md. Ifthekhar Uddin ID # 1811019042
Md. Rakibul Hasan ID # 1811194042

Faculty Advisor

Riasat Khan
Assistant Professor

ECE Department

Declaration

This is to declare that no part of this report or the project has been previously submitted elsewhere for the fulfillment of any other degree or program. Proper acknowledgement has been provided for any material that has been taken from previously published sources in the bibliography section of this report.

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Md.Istiaque Ahmed
ECE Department
North South University, Bangladesh

.....

Kazi Md. Ifthekhar Uddin
ECE Department
North South University, Bangladesh

.....

Md. Rakibul Hasan
ECE Department
North South University, Bangladesh

Approval

The Senior Design Project entitled "**Photo-To-Cartoon Translation with Generative Adversarial Network**" by Md.Istiaque Ahmed (ID#1812420042), Kazi Md.Ifthekhar Uddin (ID#1811019042) and Md. Rakibul Hasan (ID#1811194042) has been accepted as satisfactory and approved for partial fulfillment of the requirement of BS in CSE degree program in December 2022.

Supervisor's Signature

Riasat Khan
Assistant Professor
Department of Electrical and Computer Engineering North South University
Dhaka, Bangladesh.

Department Chair's Signature

Dr. Rajesh Palit
Professor
Department of Electrical and Computer Engineering North South University
Dhaka, Bangladesh.

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Abstract

Abstract—Cartoons are a popular form of art in our daily lives, and the ability to automatically create cartoon graphics from photos is highly desired. Cartoon images have a more vibrant and lively appearance than traditional naive pictures. This study aims to explain the process of translating real-world photos into cartoon-like images. While converting photos to cartoons, there were a few difficulties, including fine hair edges, mismatched colors, and texture concerns. Conversion of photos to cartoon style images has been performed using generative adversarial networks (GAN). Various neural network-based GAN networks, DCGAN, CycleGAN and AnimeGan has been applied in this work for cartoon conversion. Among them CycleGAN performs better to transform actual photographs into colorful, eye-catching cartoons. This project's approach is based on learning-based methodologies, which have lately gained popularity for stylizing images in artistic forms like painting. The results may be used to quickly convert real-world photographs to high-quality cartoon graphics. This project provides a web API that contains training weights derived from the models outlined below. We created a web app based on that API that converts realworld images into high-quality cartoon graphics for various cartoon styles. In these experiments, it outperforms state-of-the-art approaches to producing high-quality cartoon graphics from real-world photos. Numerical results show that, the CycleGAN approach has the lowest training time per epoch and requires the minimum number of trainable parameters.

Keywords—AnimeGAN, CycleGAN, Deep Convolutional GAN, Generative Adversarial network, Style-Transfer.