AI Skunkworks Project

DeepFakes (a.k.a TastyFake)

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Expected Start Date: 21st March 2019

Expected Project Duration: 3 months (For Spring 2019 students who need to submit a project, the deadline for tasks will be course project deadline)

Abstract

DeepFakes aims to study generative models in machine learning and deep learning techniques which could be applied to these generative models to achieve "believable" and "real-looking" fake images of various objects. The project is inspired by the recent success of generative adversarial algorithms (GANs) in generating life-like celebrity faces in its application in Progressive GANs and Style-based GANs. The project aims to study these techniques, understand their functioning, experiment with its structure, test the algorithms flexibility and apply our learnings to create our own generative models which can produce life-like fakes for a broader range of objects.

The project then also aims to create a predictive model that would predict the number of likes a fake image can get, if posted on Instagram.

Deliverables

1) Choose an object to work upon and get it approved. Your object can be a shoe, cat, dog etc but not food or human faces.
2) Collect images on that object and create a dataset
3) Study recent papers on GANs such as progressive GANs and style based GANs
4) Imitate their work on low resolution
5) Apply what to learned to create a GAN for your dataset and apply it to get good results on low resolution
6) Improve the network and the resolution of the output unless output resolution is as good as input resolution
7) Create a predictive model to predict the number of likes your output images can get, if posted on Instagram

Prerequisites

1. Have working knowledge of CNN (Convolutional neural network)
2. Willing to read and learn from medium level research paper
3. Past experience of training and implementing at least 1 neural network in any domain

Milestones

No	Tasks	Due Date
1	Choose an object	3-21-2019
2	Gather at least 1000 images	3-23-2019
3	Study latest papers, their code and discuss them a) Study papers b) Study codes c) Study paper and codes again, try to run the given code	3-26-19 3-29-19 4-2-19
4	Run the given code	4-5-19
5	Debug and run the code on your own dataset	4-9-19
6	Improve architecture to get good results on low resolution at least	4-16-19
7	Improve the architecture to produce high resolution results	4-23-19