AI Fashion Designer

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INTRODUCTION AND OBJECTIVE

DCGAN

- Generating clothing patterns using DCGAN
- DCGAN is a class of CNNs called deep convolution generative adversarial networks, it is an architecture for learning to generate new content.

Mask R-CNN

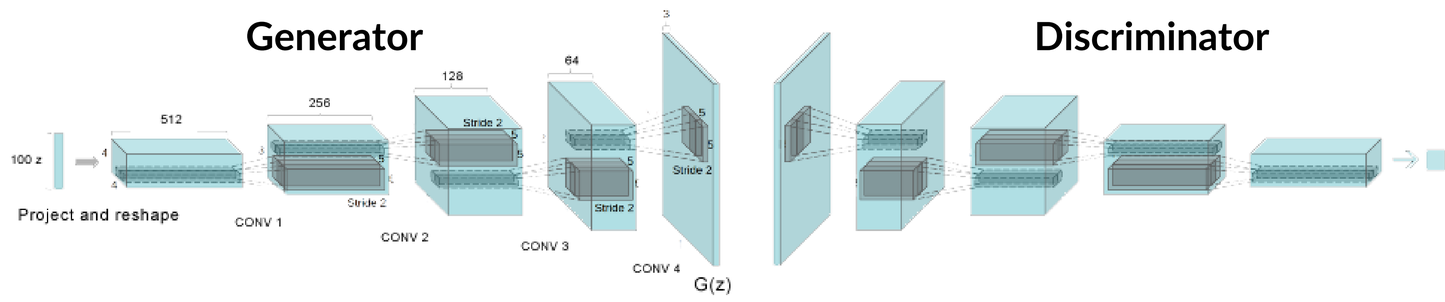
- Object Detection and Segmentation on images and videos using Mask R-CNN.
- Mask R-CNN is a deep neural network aimed to solve instance segmentation problem, it can separate different objects in an image or a video.

Our goal is to achieve fashion design for clothing accessories (tie, handbags) using Artificial Intelligence.

MODEL ARCHITECTURE

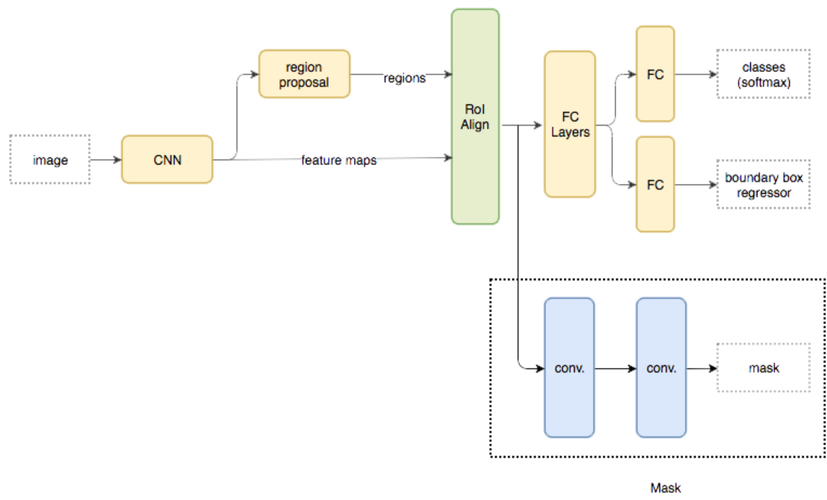
DCGAN

- The Generator: input is a random noise that passes through deconvolution stacks and output an image.
- The Discriminator: takes an image as input, passes through convolution stacks and output a probability of the image being real or not.



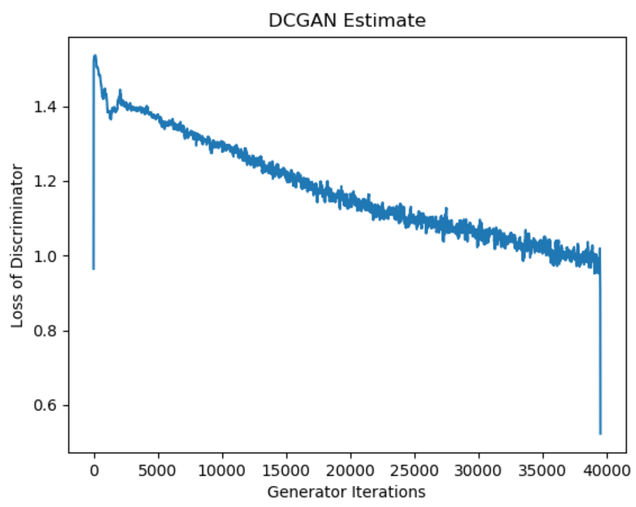
Mask R-CNN

- Mask R-CNN, extends Faster R-CNN by adding a branch for predicting segmentation masks on each Region of Interest (RoI) , in parallel with the existing branch for classification and bounding box regression.
- The mask branch is a small FCN applied to each RoI, predicting a segmentation mask in a pixel-to-pixel manner.

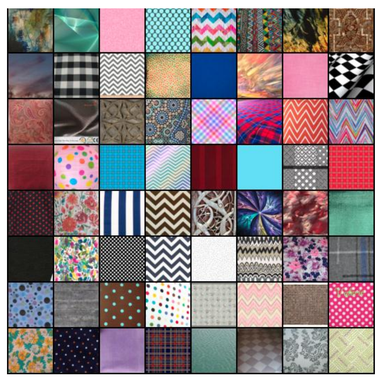


EXPERIMENTS AND RESULTS

Loss of discriminator with generator iterations:

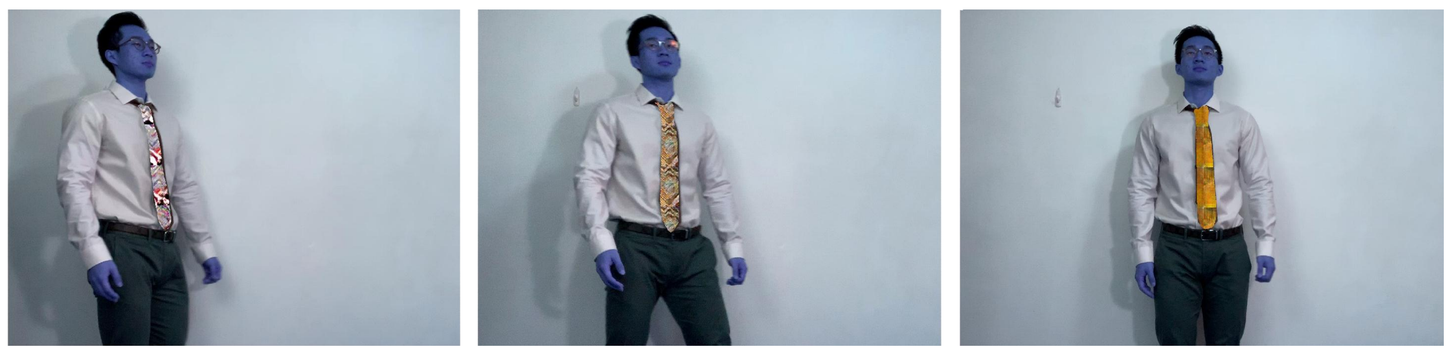


Original images:



Generated images:

Demonstrate generated fashion design on videos:



Demonstrate generated fashion design on image: