Project report - week 4, 5

June 22, 2020

1 Introduction

1.1 Autoencoder

An autoencoder is a neural network trained to encode and then decode data. In this case the autoencoder was meant to handle image data. The network consist of two parts, the encoder, responsible - as the name says - for encoding the data, and decoder recovering original image. Encoder was built using three dense layers with decreasing neuron count - 1024, 128, 2. Decoder was reversed with dense layers of increasing sizes - 128, 1024, 49152(original size). Network was trained using original images as target.

1.2 Encoder

After training, the encoder part of network was used to encode images into 2 values. While reduction accounted for large data loss, it allowed for comparison between all of the images relatively quickly by measuring their geometric distance.

2 Results

Figure 1: Randomly selected images before and after autoencoding. The only remaining information is color and basic shape (in better cases).

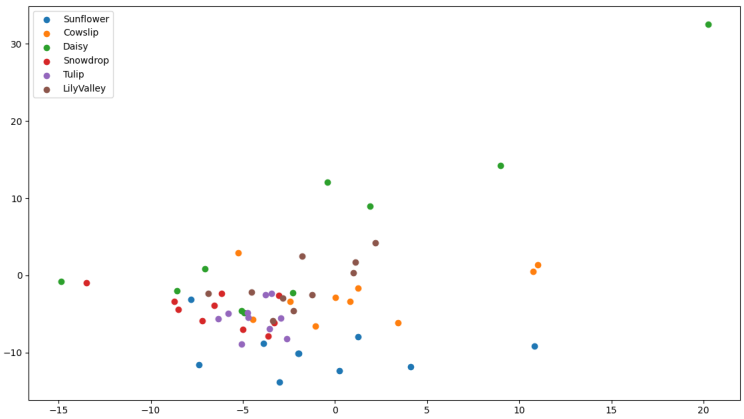

Figure 2: Results of plotting encoded images in two dimensions. While overlapping, it's possible to distinguish different groups. Only few samples of selected flowers were included for readability.