

Capstone 3 Project Ideas

The main theme of projects I wanted to pursue for my final capstone in Springboard were ideas which involved some form of image recognition. Since I've had done a lot of work with tabular dataset, I wanted to delve into something different.

When it comes to image recognition, I wanted to base my dataset of being able to use Convolution Neural Networks (CNN) as I believe understanding and having experience with CNN is crucial in modern machine learning which involves images. CNN's is amazing when it comes to learning appropriate features by themselves. As feature selection is vital to any image pattern recognition, and this is CNN greatest strength.

The first dataset of interest is a 49K images of different species of birds. The goal here is to correctly classify 315 different species. All the images seem to be in high resolution with 50% or more of the image being the bird itself, furthermore the dataset seems to be cleaned of any duplicates. The training set seems to be unbalanced as there are varying number of images for each species whereas there are an equal number of images per specie for the test and validation set. This is probably the ideal dataset to build my final project on as it is highly usable and ready set for a multi-layer CNN model.

Here is the link: <https://www.kaggle.com/gpiosenka/100-bird-species>

The second dataset is an IEEE competition to find the best sleep position estimation. The dataset consists of around 9k images of IR and RGB human sleep positions, technically 4.5K as they are the same image but in IR and RGB. This dataset is probably the most challenging as feature extraction would be difficult.

Here is the link: <https://www.kaggle.com/awsaf49/ieee-vip-cup-2021-train-val-dataset>

The final dataset is the largest of the bunch consisting of 250K images of humans with face mask, the goal is to identify 4 different classifications, they are no face mask, mask but does not cover nose and mouth, mask covers only mouth, and mask fully on. With recent pandemic and regulations requiring to fully cover face with a mask it would be interesting to see what a machine learning algorithm can do to detect how people are wearing their mask.

Here is the link: <https://www.kaggle.com/tapakah68/medical-masks-part1?select=images>