**Setup and load part.**

1. Tensorflow and tensorflow gpu are going to be used as part of the deep learning pipeline itself.
2. So, we are going to use the keras sequential api, which is nothing but simply, arranging the keras layer in a sequential order

**Remove Dodgy images**

1. Data\_dir = ‘data’, we have created a variable to hold the data(the images particularly) the reason for this is we are going to loop into it.
2. Os.listdir(os.path.join(data\_dir,’happy’) this will allow us to loop through all the images in that happy folder.
3. Imread allows you to open images using opencv as a numpy array. So image.shape comes out like 3744,5616,3 which means, 3744 pixels high, 5616 pixels wide and its got 3 channels means it’s a colored image.
4. Tf.data.dataset?? gives you the documentation.

**Preprocessing Data**

1. Whenever you are building a deep learning model, ideally you want the values to be as small as possible , this is going to help you optimize a ton faster. Hence we have divided the batch[0] values by 255. That is going to give values between 0 and 1 now.

**Deep Learning Model**

1. There are two specific models in tensorflow keras or model building api. First is Sequential (this is used if you have one data input and one data output and the model sort of just flows from top to bottom) Second is Functional( used when you have multiple inputs and multiple outputs.)
2. Conv2D(16,(3,3),1,activation='relu',input\_shape=(256,256,3)

16 filters, which basically scans over an image and tries to condense or extract the relevant information inside of that image to make an output classification, next filters going to be 3 by 3 pixels in size. Next, it will move 1 pixel each time next, we are taking the output of the previous layer and pass it to the function called relu which converts any negative value to 0 and positive remains as it is.

Similarly, the sigmoid takes the output of the previous level and converts it to a range

1. Metrics = ‘accuracy’ means the matrix that we want to track is.
2. If validation loss sort of rising, this means model may be overfitting

**Save the model**

1. H5 is basically a serialization.