Watch the lecture [here](https://www.youtube.com/watch?v=ghEmQSxT6tw&t=987s) and describe the following and each one’s function in a CNN with at least 3 full sentences each:

1.Filter

A filter in a CNN is an array that slides across the image, checking each pixel and its surroundings to see how well they match the filter. The result is a usually slightly smaller image that has been convoluted slightly and has one color channel for each filter that was applied to it. Usually, it has a large number of color channels due to the large number of filters.

2.Feature

A feature is a pattern in an image that can be used to sort it into one of the classification groups. A good feature is one that only appears in one classification group and appears frequently in that group. Features are frequent throughout an image.

3.Feature Map

A feature map is a map of all the features in an image. In CNNs, a feature map is a map of each feature defined by each filter and how well it was detected in each pixel. This means that a feature map is an output of a convolutional layer.

4.Pooling

Pooling is a technique used to reduce the size of the image in order to make it less complex for the next layer. Usually, groups of pixels are downscaled using either the maximum values or average values in the group. Downscaling is when an image size is reduced using the aforementioned methods.