Computer Vision Food Classifier

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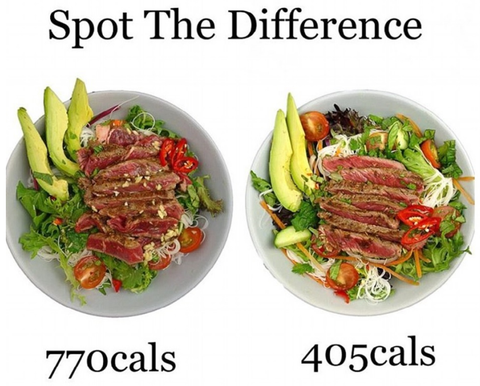
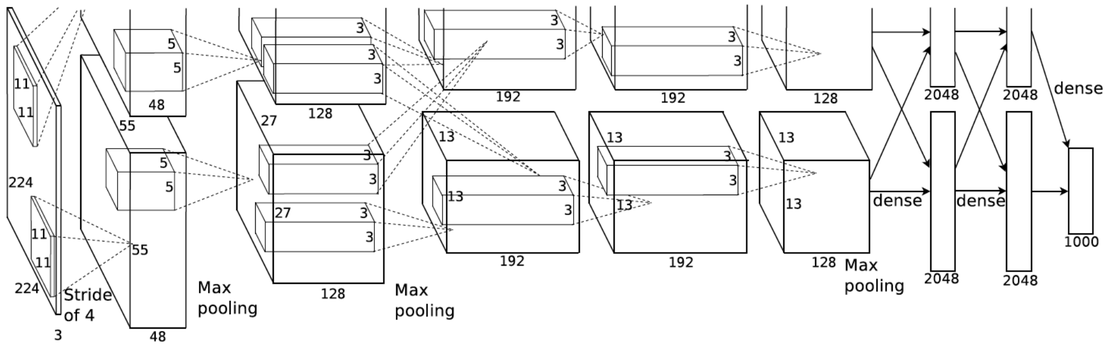
Food Classification

Every day people are faced with the necessity to classify different food products e.g. due to health conditions they need to eliminate particular products/ingredients from their diets.

Nowadays, more and more individuals lead healthy lifestyle and would like to follow dietary plans that include or exclude certain food in order to gain muscles or burn fat. As a result, it is vital that the person gets an accurate representation of the food in front of them which is sometimes very complicated without modern technologies.



Convolutional Neural Networks



Fortunately, in our fast-developing digital era we can use state-of-the-art technologies to help us solve day to day problems, and food classification is no exception. By employing Convolutional Neural Networks architectures, we are able to recognise and classify different types of food. Then, based on the recognised products, we can obtain nutritional information as well as the energy value from these foods.

As the current project could be used as a base for mobile application, two different types of CNN such as Inception v3 and MobileNet v2 were trained and tuned.

By using TensorFlow Lite in tandem with MobileNet v2 we are going to implement trained model in form of a mobile app.

Multi Class Object Segmentation

Food101 dataset was used to form a 32 class dataset of the most popular dishes in the UK. Due to its single class nature, sliding window algorithm was implemented for the multi-dishes images in order to detect different food classes on a plate.

After some research, the best set of sliding window parameters such as window size and stride, were established to accurately provide list of food types on a plate.

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