

Assignment 3 - Part 3

Overfeat Deep Convolution Neural Network

Prerequisites:

To run the convolutional neural network please download the overfeat directory into the project folder. Also download the weights for the neural network before starting working with the project/report.

The Overfeat module works with 231X231 Images. Hence we have resized the images to 231X231, before passing it to the overfeat dnn.

The overfeat takes one picture and dumps its <layer> feature into a text file which we then use to train a svm.

We used the layer 21 (1000 features). This provided the best results.
175/250 = 70% Accuracy

The confusion matrix:

Confusion matrix:

	ha	ch	ch	sc	mu	pu	po	sp	fr	pa	br	sa	ku	wa	ba	sa	ta	ja	pi	ho	su	cr	br	la	ti
hamburger	8.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
churro	0	7.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1
chickennugget	0	0	6.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0
scone	0	0	0	7.	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
muffin	2	0	1	1	4.	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
pudding	0	0	0	0	0	10.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
popcorn	0	0	0	0	0	0	9.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
spaghetti	0	0	0	0	0	0	0	8.	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
frenchfries	0	0	1	0	0	0	0	0	9.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
paella	0	0	0	0	0	0	0	1	0	6.	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0
brownie	0	1	0	0	0	0	0	0	0	0	8.	0	0	0	0	0	0	1	0	0	0	0	0	0	0
salad	0	0	0	0	0	0	0	0	0	0	0	9.	0	0	0	0	1	0	0	0	0	0	0	0	0
kungpaochicken	0	1	0	0	0	0	1	0	0	0	0	0	7.	0	0	0	0	1	0	0	0	0	0	0	0
waffle	1	0	1	0	0	0	0	0	0	0	0	0	0	7.	0	0	0	0	0	0	0	0	0	0	1
bagel	0	1	0	0	1	0	0	0	0	0	0	0	0	0	5.	0	0	0	1	0	0	0	2	0	0
salmon	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.	0	0	0	0	0	0	1	1	0
taco	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	6.	0	0	0	0	0	0	0	0
jambalaya	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	1	0	6.	0	0	0	0	0	0	0
pizza	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	7.	0	0	0	0	1	0
hotdog	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	7.	0	0	0	0	0
sushi	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	6.	0	1	0	0
croissant	0	3	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5.	0	0	0
bread	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7.	0	1
lasagna	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	6.	0
tiramisu	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8.

Classifier accuracy: 175 of 250 = 70% (versus random guessing accuracy of 4%)

The SVM training was also very fast. Only the processing and dumping feature of values is pretty slow

Training = Around 40 minutes

Testing = Around 10 minutes