Viterbi Internship - Progress Diary

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Contents

1 Daily Progress

1.1 Week 15 May to 21 May

1.1.1 15 May : Monday

Accomplished :

- Read the paper Face Recog using deep multi pose representation halfway through.
- Watched and implemented tensorflow tutorials by Marvon Zhou till Lec15.

1.1.2 16 May : Tuesday

Target :

- Complete the Face Recog using deep multi pose representation.
- Watch NN course and complete till week 10 (curr status at week 6).
- Read Do We really need million faces.

Accomplished:

- Completed reading teh Face Recog using deep multi pose representation
- Started reading Do We really need million faces [upto page 4]

1.1.3 17 May : Wednesday

Target :

- Complete Do We really need million faces
- Complete the other two papers as well : A multi scale cascade fully convolutional network face detector, regressing parameters for 3DMM
- Finish upto week 10

Accomplished :

- Complted two papers : Do we really need million faces, and multi scale cascade fcn face detector, and started regressing parameters for 3DMM

1.1.4 18 May : Thursday

Target :

- Complete regressing 3DMM parameters
- Complete till week 10 from NN
- Also try to do the course CS231n Stanford : CNN for Visual Recognition.

Accomplished :

- Slight part of regressing 3DMM parameters is left, but will leaving it as is.
- Downloaded the new papers, and had a brief overview regarding that.

1.1.5 19 May : Friday

Target :

- Read all the 4 papers regarding MediFor.
- Complete till week 10 from NN
- Also see CS231n Stanford course.

Accomplished :

- Got a new Problem Statement : Given an image, need to develop a score map which can say wheather or not this image was taken in that location or not.
- Downloaded places365, need to start working with it.

1.1.6 20 May : Saturday

No work done.

1.1.7 21 May : Sunday

No work done.

1.2 Week 22 May to 28 May

1.2.1 22 May : Monday

Target:

- Read im2gps paper, unsupervised visual representation learning by context prediction.
- Get places365 running nicely, and try to replicate the results.
- Complete till week 10 of NN course.
- Understand the problem statement once again.
- Get a hang of Caffe.

Accomplished:

- Read im2gps paper. Mildly interesting, mostly experiments. Didn't really explain well what it wanted to show.
- Read the unsupervised Visual representation learning by context prediction.
- Did the lec6e finally, and started lec7 of NN course.

1.2.2 23 May : Tuesday

Target:

- Get hang of how to use Caffe.
- Get Places-CNN working.

Accomplished:

- Got a good hang of caffe. Tried 3 hands on examples.
- The places365 website was down for some, reason, couldn't really do anything on that.
- Read first 3 lectures of CS231n. Tried few hands on examples.

1.2.3 24 May : Wednesday

Target:

- Get Places-CNN working on laptop. Train if required. See github for reference (site is also up).

Accomplished:

- Reality is harsher. It takes a lot of time to extract the relevant folders. Damn only if there was any way to make this process a bit more faster.
- Not feasible to train on the whole Places dataset. Will take enormous amount of time. More beneficial to use that time for testing purposes.
- Finally set up the PC here for caffe. Took a lot less time than it did on my computer.
- Tried the flickr_finetuning tutorial. The results as seen on Thursday were extremely bad. I have posted on caffe-users, but the community is not very responsive for some reason. Not exactly sure where the problem is. But still got a hang of fine tuning at least.
- Caffe documentation is seriously bad. Need some good tutorials for this. But still got a decent hang of caffe now. Need to start with the medifor dataset at the earliest.
- Seems like did a lot of not-so-really-useful-things today.

1.2.4 25 May : Thursday

Target :

- Try to get Places-CNN testing running some or the other way. Get a hold of the MediFor dataset. It will perhaps take time to preprocess.
- See CS231n for reference in the mean time, may get some useful ideas.

Accomplished :

- Damn, there seems to be some caution that needs to be taken care for External hard-disk. Note to self : in the future, if you are trying to untar, donot use the direct archive method. The problem isn't exactly keep on storing (writing) the data. In fact, if there is some trouble in the process of untaring, there is practically nothing one can do. I had to remove the Hard-disk from the PC. But then it threw the error that the disk is corrupted. My guess is that, while untaring, it still wanted to write some data, which it was not able to do so. I had to go windows and run chkdsk (probably short for check disk), most likely because it is an ntfs partition. At the very least, chkdsk solved the problem pretty quickly. Now trying to unzip using winRAR, and at the very least it shows ETA. For about 4.4GB test data set of the Places365 dataset, it is taking about 4 hours. Lets see how it goes.
- I am an idiot. I was trying to untar it on the hard disk. Untaring it on the SDD was like 1min or so. I seriously wasted the whole morning.
- I am once again reminded of the need to read the documentation. Read the complete caffe documentation, now I feel like I can do something.

1.2.5 26 May : Friday

Target :

- I think, I should go step by step. First I will try to read the existing caffe model, and try to run that on the places365 dataset. I should try to see the test results, and see if it is meeting the expected benchmarks.
- Parallely I will try to create some dataset related to the localization. Let's see how it goes from there on.

Accomplished :

- Got places365 to get working.
- Started reading the readme file of the Nimble 2016 project.

1.2.6 27 May : Saturday

No work done.

1.2.7 28 May : Sunday

No work done.

1.3 Week 3 : 29 May to June 4

1.3.1 29 May : Monday

Target :

- Get a hang of TensorFlow which would likely be used in the project subsequently.
- Watch NN video lectures side by side when running the code so as to fully utilize the time.
- Try to parse everything from the Nimble Challenge Dataset, and try to use Places365 model on it.
- Manually try to evaluate the results.

Notes to self :

- I need to work on the Nimble dataset. Professor suggested that my task would be on, weather the two images are the same.
- To achive that, one of the ideas would be to take a direct inner product between the feature vectors. I also need to think, weather to directly take the softmax probabilities or take the direct values from the previous layer, hoping that it would have captured some or the other thing relating to the semantics of the scene in question.
- Another thing I would need to work on is the image geolocalization.
- For both of these tasks, I would need to know which are the discriminative features, and which are not. For example, even though there are trees in both the images, but they may not be of the same tree. In fact, they may be completely different scenery. Need to clarify as to how to categorize them.
- For the image geolocalization problem, it is more crucial to know what the discriminative features are.
- I have decided to work primarily on caffe, and in case, I am not able to figure out what to do I shall shift to TensorFlow. As such I should be proficient in both TensorFlow as well as Caffe. In Caffe, the coding is mainly in the protobuff file, and mostly not much pains should occur.
- For prototyping, I think it would be advisable to work with AlexNet, but I should also try the ResNet once, to see how much memory it is occupying and all.

Accomplished :

- Parsed everything from Nimble dataset, and places365 model works on it. But the metric and results are very confouding.

1.3.2 30 May : Tuesday

Target :

- Try to interpret the results on Nimble Dataset.
- Try as many metrics as possible, and try to submit it to prof by the end of the day. Some metrics to try upon : SSD, SAD, NCC, census transform with hamming distance (the intuition behind this : assigning probabilities is like cardinal, but we might need ordinal, in the sense we as humans do not really assign probabilities, we rather give rankings : remember economics, but again this may not exactly correspond to the feature vectors, rather these may be for the final softmax probabilites)??.
- Try to understand (read papers) about convolutional neural nets, especially fully convolutional nets (FCN).

Notes to self:

- Output a csv file, containing the correlation found between the two images, : infact, not only correlation, give everything, if possible in dict form only (maybe useful later).
- For this, first try to use the multiprocessing thig, because even with different bash programs, I am not very sure, if they will be able to write to the same file. Try and confirm that the multiprocessing thing is working properly, only then proceed.

2 Weekly Progress

2.1 Week 1

Accomplished:

- Read 4 papers on Face Recog, but then the project was itself scraped, and I was given a new project.
- Read 2 papers (2nd paper near to completion) on Friday.
- Understood the new project on MediFor, but that might be slightly changed in the near future.

2.2 Week 2

Target :

- Try to complete the NN course (all weeks[16]).
- Read papers on the image geolocalization topic.
- Try to replicate the Places-CNN paper results at the earliest.

Accomplished :

- Didn't really have the time for doing the NN course. Gonna postpone it to next week.
- Read the 4 papers on geolocalization topic.
- Replicated the Places-CNN papers, mainly the alexnet.
- Got a very good hang of Caffe. I think I am ready to fine tune my own dataset.
- Also did a few things on multiprocessing, but bash script seems easier.

2.3 Week 3

Target :

- The firt target would be to get a target. Define the problem clearly. More or less, I am gonna work on the Nimble Challenge dataset. I need to try to use and evaluate the results of Places-CNN on the Nimble Dataset. For this I would basically need to parse all the information as a first step.
- Try to complete NN course (all weeks[16]) this time without fail.
- Also keep on reading some or the papers on the topic Image Geolocalization. Include visionbib and arxiv.