

Akshit Tyagi

Junior Undergrad Electrical Engineering
Indian Institute of Technology, Delhi

Ph. No: +918527505197

akshit.ee114@ee.iitd.ac.in

akshitt795@gmail.com

akshittyagi.github.io

Education

- **Indian Institute of Technology, Delhi** New Delhi, India
B.Tech. in Electrical Engineering, CGPA: 9.293 2014 - 2018 (expected)
- **Delhi Public School, R.K. Puram, Std. XII** New Delhi, India
Graduated with a 97.0 aggregate percentage Graduated in 2014
- **Delhi Public School, R.K. Puram, Std. X** New Delhi, India
CGPA: 10.0 Graduated in 2012

Work Experience

- **Summer Engineering Intern** NVIDIA, Bengaluru, India
CPU Verification and Testing Team May - July 2016
 - Worked on handling undefined opcodes for an architectural simulator. This involved handling instruction level access for the CPU and the execution of exception return.
 - QEMU was used to emulate an ARM environment for CPU architectural testing. This was used to compare native performance with the simulator and improve upon the perf-per-watt characteristics.
- **Winter Software Engineering Intern** Dealsnprice.com, Gurgaon, India
Deep Learning and Image Search Team Nov. '15 - Jan. '16
 - Worked on Deep Learning framework's(Caffe) integration with ROS for deploying image search using object detection for e-commerce applications. This used implementation and optimization of ConvNet algorithms to optimize feature extraction and use it to find embeddings for k-Nearest Neighbour recommendations.
 - SIFT features were also used to make sure scale invariance and hence made the embeddings more useful for k-NN algorithms. This will now be deployed on an Android application for production.

Projects undertaken

- **Siamese Net for Learning Pose Invariance** Deep Learning(Course), IIT Delhi
Course Assignment Aug. - Sep. 2016
 - Modelled a siamese network from a composition of two AlexNets, to learn pose invariance in images of models for online shopping applications.
 - The embeddings learnt from the training data were fed into ANNOY(GitHub: github.com/spotify/annoy) for giving the top-10 recommendations.
 - Caffe was used for defining, training and extracting the embeddings learnt. This implementation could be extended to automated recommender systems, to better the quality of the same.

- Background Detection in a Video Stream** Machine Learning(Course), IIT Delhi
Course Assignment February 2016
 - Developed a program that could detect Background and Foreground pixels using the Background Subtraction technique (using Gaussian Mixture Models).
 - Each pixel(three channel) was modeled as mixture of Gaussians, the Gaussian(s) with the minimum variance were chosen to describe a background pixel.
 - Used OpenCV to process the video file as a sequence of Image Matrices, and create two separate output files containing the Background and Foreground video streams.
- Facial Recognition using Fisher and Eigen faces** Machine Learning(Course), IIT Delhi
Course Assignment April 2016
 - Worked on implementing a facial recognition applet that uses Fisher's Linear Discriminant method to train and classify faces from a training set.
 - The program maximized the between-class-scatter(photos of different people) and minimized the within-class-scatter(different photos of the same person).
 - The trained model could then discriminate between different faces under variable lighting and facial expression.
- A Small Search Engine using Inverted Page Index** Data Structures(Course), IIT Delhi
Course Assignment October 2015
 - Made a small Search Engine that can return a list of most relevant queries for word(s)(phrases,and,or statements can be handled) using HashTable lookup in an InvertedIndex for a set of pages. The data storage included implementation of AVL Trees for faster lookups for phrase queries. Code can be found at <https://github.com/akshittyagi/SmallSearchEngine>

Awards, Grants & Honours

Design & Innovation Summer Award(DISA)	IIT DELHI,2015
Institute Award for being a student in the top 7% in the first year	IIT DELHI,2014-2015
National Talent Search Examination 2010	NCERT, JULY 2010
KVPY Fellowship 2012-13	DST,2013
Indian National Chemistry Olympiad 2014, Top 50	HBCSE,FEBRUARY 2014
Junior Science Talent Search Examination 2011, 2 nd Position	GOVT. OF DELHI,JULY 2011

Relevant Courses Taken

Communication Engineering*	Digital Logic and Circuits	Machine Learning
Data Structure and Algorithms	Course in Analysis of Algorithms in Java	Electromagnetics
Probability and Stochastic Processes	Linear Algebra and Differential Equations	Calculus
Computer Architecture*	Artificial Intelligence*	Deep Learning*

*Courses to be completed in the Fall Semester of 2016-17

Designing and Programming Skills

Extensive	C/C++, JAVA, PYTHON, MATLAB, BASH(UNIX SHELL)
Intermediate	CAFFE, JAVASCRIPT, ANDROID STUDIO
Basic	TENSORFLOW, CSS , MATHEMATICA