

Akshit Tyagi

Junior Undergrad Electrical Engineering
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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.- Dec. 2015
 - Worked on Deep Learning Algorithms involving implementation and optimization of Convolution Neural Network algorithms to optimize image search and object detection for an e-commerce website. It included working on machine learning algorithms to extract features from images, storing it as a Bag-of-SIFT words and classifying it according to k-nearest neighbours.

Projects undertaken

- **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.
 - OpenCV was used 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.
- **Automated Renting and Vending Machine** IIT Delhi
Design Innovation Summer Award (DISA) under Prof. M. Balakrishnan May-July 2015
 - Prototyped a product which can rent out umbrellas and accept them back. Implemented image processing for detecting the change(s) in the umbrella before it was vended out. This enabled us to build a verification system to detect if any damage has been done to the product.
- **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
Deep Learning*	Artificial Intelligence*	

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

Designing and Programming Skills

Extensive	C/C++, JAVA, MATLAB, BASH(UNIX SHELL), PYTHON
Intermediate	JAVASCRIPT, XML, ANDROID STUDIO
Basic	CSS, HTML5, MATHEMATICA