

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 and then storing it as a Bag-of-SIFT words, and then classifying it according to k-nearest neighbours.

Projects undertaken

- **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>

- **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, then 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.

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