# Rakshit Gautam

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## EDUCATION

**Indian Institute of Technology Delhi (IIT Delhi), India  (2011 - 2015)**
*Bachelor of Technology in Computer Science and Engineering*
CGPA: B.Tech 8.36/10

## ACHIEVEMENTS

- Secured an **All India Rank** of **115** in IIT-JEE 2011 among 0.5 million students
- Awarded **Summer Research Fellowship** from L3S Research Center, Hannover, Germany (2013)
- Received **Pre-Placement Offer** from Samsung R&D Institute India, Noida (Fall 2014)

## WORK EXPERIENCE

**Samsung R&D Institute India, Noida**                               *(July 2015 - Present)*
- Developing Input Method Editor features for Samsung smartphones
- Have to maintain the stability of module for release of latest binaries

## INDEPENDENT PROJECTS

**Facial Expression Recognition**                               *(Prof. K. K. Biswas)*
*Undergraduate Thesis, IIT Delhi*                               *Spring 2015*
- Developed a real time expression recognition system for a live video input using opencv in C++
- Computed features by use of local binary patterns (LBP), local directional patterns (LDP), LBP in three orthogonal planes (LBP-TOP), LDP-TOP, Volume LBP, Volume LDP, geometrc displacements of points obtained from shape model
- Used SVM with kernels, naive bayes and nearest neighbor classifiers for expression classification

**Functional Connectivity Utility for AFNI**                               *(Prof. Rahul Garg)*
*Department of Computer Science and Engineering, IIT Delhi*                               *Spring 2015*
- Developed a system for computing functional connectivity in AFNI (Automated Functional NeuroImaging program), that displayed the correlation maps of Functional MRI data as overlays
- Developed a GUI that allows the users to choose a region of interest (ROI), method to generate representative time series for ROI and the correlation method to compute correlation

## INTERNSHIPS

**ACM Recsys Challenge: 2013, *Yelp Business Rating Prediction***                               *(Dr. Ernesto Diaz-Aviles)*
*L3S Research Center, Leibniz University, Hannover, Germany*                               *Summer 2013*
- Built models to predict rating that a user would assign to a business
- Applied collaborative filtering techniques like regularized SVD, biased matrix factorization, k-means clustering, linear model for the items, nearest neighbor techniques with cosine and hashing similarities
- Ensembled independent models to achieve an increment of 3% RMSE over the global user mean baseline

**Driverless Vehicle: *Mahindra, Spark the Rise Challenge***
*Automotive Research Team: Cube26 Pvt. Ltd., New Delhi*                               *Winter 2014*
- Developed packages for classification of pedestrians, bicycles and cars from live street image data, on Robotics Operating System (ROS) framework
- Computed classifiers with SVM-Light using Histogram of Oriented Gradient (HOG) features

**Power Test Automation and Analysis**
*Samsung R&D Institute India, Noida*                               *Summer 2014*
- Developed an android application (*Sysresource*) that provides real time system load statistics
- Used Monkey Runner and Android View Client to automate power tests used for mobile testing
- Automated the process of detecting power consumption related defects in Samsung smartphones

## ACADEMIC PROJECTS

**Functional MRI data analysis**                                              *Fall 2014*
- Studied activation maps from Functional MRI data
- Used FSL to preprocess the data and visualise the maps
- Created the maps by modelling FMRI signals as Generalized Linear Model in R

**Image Morphing**                                                            *Fall 2014*
- Developed a matlab program to perform image morphing through line warping and point warping
- User had to choose equivalent points or lines in the initial and final images

**Study of Classifiers**                                                      *Fall 2014*
- Implemented SVMs, Neural Networks, Naive Bayes, K-means, Decision trees, Linear regression, Logistic regression and Gaussian discriminant analysis for different problems

**BlackJack**                                                                 *Spring 2014*
- Modelled the game of BlackJack as a Markov Decision Process in C++
- Computed the optimal strategy chart on the basis of player's cards and dealer's up card

**AI-based Solver for Connect-K game**                                        *Spring 2014*
- Built a bot in C++ for a generalization of the Connect Four game on any board size
- Implemented MCT algorithm and Minimax algorithm with alpha-beta pruning and novel heuristics

**File System Implementation**                                                *Spring 2014*
- Implemented argument passing and system calls in User Programs; Buffer cache, subdirectories and extensible files in a file-system on a skeletal C code of PintOS

**Computer Networks**                                                         *Fall 2013*
- Implemented a file transfer system using socket programming in python
- Implemented Learning Switch and RIP routing algorithms in python
- Studied the TCP reno protocol using NS-2 simulator for various topographies and bandwidths

**Music Website Database Management**                                         *Spring 2013*
- Designed and implemented a dynamic database for music website
- Designed the music website allowing users to choose music based on likes, albums, genre, artists, moods and create customised playlists

**Interpreter and Compiler for Functional Languages**                        *Spring 2013*
- Built a Prolog interpreter (along with lexer and parser) in OCaml
- Implemented an abstract compiler for a toy functional language in Prolog

**Social Network Analysis**                                                   *Fall 2012*
- Analysed a hypothetical social media database. Made an interactive dashboard showing the data flows and clusters through mashups. Also conducted some hypothesis test

**Processor Simulation**                                                      *Fall 2012*
- Designed a 5 stage inorder pipeline, tournament branch predictor and 3 level cache for processing the instructions in Java. Calculated the miss rates, accuracy and cycles.

## EXTRA-CURRICULARS

**Right to Education :** *Akshayshruti Foundation (Kota, Rajasthan)*
- Motivated parents for educating their children under 'Education, a Human Right' campaign
- Prepared posters and gave presentations on the need for education the youth

**Inter Hostel Events** *IIT Delhi*
- Was a part of Inter Hostel Street Play Team ('11), Inter Hostel Hockey Team ('12) and Inter Hostel Cricket Team ('13-'14)