Rakshit Gautam
B.Tech
Computer Science and Engineering
Indian Institute of Technology, Delhi

Male
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Examination	Degree/Board	Institute	Year	CGPA/%
Graduation	B.Tech	Indian Institute of Technology, Delhi	2015	7.36/10
Intermediate/+2	CBSE	Modern Sr. Sec. School, Kota, Rajasthan	2011	86.8
Matriculation	CBSE	Modern Sr. Sec. School, Kota, Rajasthan	2009	92.8

SCHOLASTIC ACHIEVEMENTS

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

INTERNSHIPS

Driverless Vehicle: Mahindra, Spark the Rise Challenge
Automotive Research Team: Cube26, New Delhi *Winter 2014*

- Computed Histogram of Oriented Gradient (HOG) features and used SVM-Light to create models for classification of pedestrians, cars and bicycles
- Integrated the models generated with Robotics Operating System (ROS)

Power Test Automation and Analysis
Samsung R&D Institute India, Noida *Summer 2014*

- Used Monkey Runner and Android View Client to automate power tests used for mobile testing
- Built an android application (*Sysresource*) that could take logs of parameters like CPU, GPU, DDR frequencies, battery temperature, thermistor temperature, LCD brightness at an adjustable frequency. A floating widget was used to display these parameter values
- Created a python application using PyQt and GNUPlot to generate plots of these parameters

ACM Recsys Challenge: 2013 (Yelp Business Rating Prediction) (Dr. Ernesto Diaz-Aviles)
L3S Research Center, 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, KNN techniques with cosine and hashing similarities
- Ensembled the independent models to achieve an improvement of 3% RMSE over the baseline

RESEARCH PROJECTS

Bachelor's Thesis: Facial Expression Recognition (Prof. K. K. Biswas)
Department of Computer Science and Engineering, IIT Delhi *Spring 2015*

- Extracted face images from Cohn Kanade and FEED datasets ; tried weber normalization and geometric normalization before feature extraction from face images
- Extracted local binary pattern features, local directional pattern features, geometric displacement features from static images/image sequences
- Used classifiers like SVM with kernels, naive bayes, nearest neighbour for expression classification

Functional Connectivity Toolbar for AFNI (Prof. Rahul Garg)
Department of Computer Science and Engineering, IIT Delhi *Spring 2015*

- Created a toolbar for computing functional connectivity for AFNI (Analysis of Functional NeuroImages). Users were given options to choose region of interest (ROI), method to generate representative time series for ROI and the correlation method to compute correlation

KEY COURSE PROJECTS

- *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. 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 C++ player for a generalization of the Connect Four game on any board size using novel heuristics in Minimax and Monte Carlo algorithms
- *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
- *Computer Networks* (Fall 2013)
  - Implemented Learning Switch and RIP routing algorithms in python
  - Studied the TCP reno protocol using NS-2 simulator for various topographies and badwidths
  - Made changes to a linux network driver (e1000e) to blacklist a set of IP's and control the dynamic conservation approach based on the intrusion ratio
- *Music Website Database Management* (Spring 2013)
  - Designed a music website with a dynamic backend created using Postgresql
  - User could choose items 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
- *Data Visualization and Analysis* (Fall 2012)
  - Indian Lok Sabha Analysis - Analysed the state of Indian Lok Sabha through plots
  - Social Network Analysis - Analysed a hypothetical social media database. Made an interactive dashboard showing the data flows and clusters through mashups. Hypothesis tests were conducted
- *Processor Simulation* (Fall 2012) Designed a 5 stage inorder pipeline, tournament branch predictor and 3 level cache for processing the instructions. Calculated the miss rates, accuracy and cycles.

TECHNICAL SKILLS

- *Programming Languages* - C, C++, Python (with PyQt, MonkeyRunner, AndroidViewClient toolkit), Java (with Twitter4j, JDBC, ADT toolkit), Javascript, PHP, VHDL, OCaml, ARM ISA-32 (Assembly Language)
- *Softwares* - Matlab, Octave, Neuroimaging Softwares (FSL, AFNI)

EXTRA-CURRICULAR ACTIVITIES

- **Child Labour and Right to Education linked programmes:** *AkshayShruti Foundation (Kota, Rajasthan)* Motivated parents in slum areas for educating their children under 'Education- a Human Right campaign' ; Managed necessary infrastructure needed to run the campaign
- **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)