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 - 7.36/10
Research Interests: *Machine Learning, Data Mining, Computer Vision, Robotics*

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

Engineer at Samsung R&D Institute India, Noida *(July 2015 - Present)*

- **Role :** Development of features and fixing of bugs in Input Method Editor module for Android OS upgrades in latest Samsung smartphones. Working on direct pen input in Samsung Galaxy Note series and Samsung keyboard.

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

INDEPENDENT PROJECTS

Facial Expression Recognition *(Prof. K. K. Biswas)*
Undergraduate Thesis, IIT Delhi *Fall 2014*

- 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), geometric 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); a method to generate representative time series for ROI; a method to compute correlation and signals to be regressed out

ACADEMIC PROJECTS

Study of Activation Maps *Spring 2015*

- Created activation maps by modelling Functional MRI signals as Generalized Linear Model in R
- Used FSL to preprocess the Functional MRI data and visualise the maps

Image Morphing *Fall 2014*

- Developed a matlab program to perform image morphing through line warping and point warping
- User was allowed 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 various 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 a UCT 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. Further tested hypothesis to glean statistical insights into data

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)* *Summer 2015*

- Motivated parents for educating their children under 'Education - a Human Right' campaign
- Prepared posters and gave presentations on the need for educating 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)