

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

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)

- Involved in development of 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, geometric displacements of points obtained from shape model
- Used classifiers like SVM with kernels, naive bayes, nearest neighbour 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
- User could choose to regress out noise signals from data

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 the independent models to achieve an improvement 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 provided real time system load statistics
- Used Monkey Runner and Android View Client to automate power tests used for mobile testing
- Completely automated the process of defect detection in samsung smartphones

ACADEMIC PROJECTS

Activation Patterns from Functional MRI data

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 in Matlab

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 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
- 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 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 tests

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.

Other Tasks

- Implemented FIFO buffer on FPGA board using VHDL
- Crawled twitter timelines of followers for a set of users using Twitter4J library in Java
- Computed hit rates and average reciprocal hit rates using leave 5 out approach

EXTRA-CURRICULARS**Right to Education :** *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)