

RISHABH MEHROTRA

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Objective

I am a 4th year student at Birla Institute of Technology & Science (BITS), Pilani pursuing MSc.(Hons.) Mathematics and BE(Hons.) Computer Science. My interests include Machine Learning and its application to Language and Vision. I am looking forward to spend my summer doing valuable research in my field of interest.

Publications

R.Mehrotra, S.A. Haider, **Corporate News Classification and Valence Prediction: A Supervised Approach** In Proceedings of **49th ACL HLT 2011** Workshop on Computational Approaches to Subjectivity and Sentiment Analysis ([WASSA 2.011](#)), Portland, Oregon, USA.

R.Mehrotra, R.Agrawal, SA Haider **Adaptive Dictionary Learning for Sentiment Classification & Domain Adaptation** In *Proceedings of 16th Conference on Technologies and Applications of Artificial Intelligence: (TAAI 2011)*, Taiwan.

R.Mehrotra, A.S.Mandal, R.Agrawal **Neural Self-Organization based Rectilinear Steiner Minimal Tree Generation in 3D for VLSI/ULSI Interconnections** In *5th European Modelling Symposium on Mathematical Modelling and Computer Simulation: (EMS 2011)*, Spain.

Research Experience

- **Research Assistant** (06/2011-present)
(Remote Intern) Prof. G Attardi, Dept. Of Informatics, University of Pisa, Italy.
Worked on integrating **Stacked Autoencoders** with the sentiment classification module of the news recommendation system.
- **Project Assistant** (06/2011-07/2011)
Mentored by Dr.M. Chaudhary, Microsoft Research India.
Worked on the project **Unsupervised Function Word detection in Unknown Language** as part of 3rd Advanced Summer School in NLP (IASNLP 2011). We used various statistical techniques to come up with a set of function words in any new unknown language and compared our results with the standard gold set.
- **Research Assistant** (01/2011-05/2011)
Dr. AS Mandal, Scientist F, Head, Cognition & Perception Lab, Central Electronics Engineering Research Institute ([CEERI](#)), Pilani.
A neural self organization based method with linear complexity and linear memory requirements was developed for generating **Steiner Minimal Tree** in 3D space, both rectilinear and Euclidean.

Resulting paper accepted at EMS 2011.

[\[Snapshot1\]](#) [\[Snapshot2\]](#)

- **Project Assistant** (05/2010-07/2010)

Dr. KE Ravikumar, PhD NaturalLanguage Processing, NLP Division, [InsideView Technologies](#).

My work involved extracting news article using NUTCH crawler and then applying text processing to dynamically extract Organization and executives names from the news article.

Summer Schools Attended

- Secured scholarship to attend **Machine Learning Summer School** ([MLSS 2011](#)) at NUS, Singapore.
- Attended Advanced Summer School on NLP ([IASNLP 2011](#)) at IIIT Hyderabad on full scholarship.

Major Projects

1. L2H: Image Reconstruction

[Ongoing]

This project involves development of a framework which accepts low resolution images and outputs high resolution images with enhanced image quality. The project involves implementation of the algorithm proposed by Glasner et al(2009):**Super-Resolution From a Single Image**. The method attempts to recover at each pixel its best possible resolution increase based on its patch redundancy within and across scales.

2. Omniscient Bot

[\[Project Homepage\]](#) [Jan-Mar'11] **1st Prize**, Project Presentation(Communications & Networks), [APOGEE 2011](#).

Leveraging the concept of Cloud Robotics , this project is aimed at constructing a bot completely controlled by a hand-held Android device. Equipped with features such as: Self Navigation, Speech & Gesture Controls, the bot provides quick access to the web via speech interface. The bot sends images of persons it meets to a remote PC where face extraction and emotion recognition is performed and appropriate action is taken.

3. Facial Emotion Recognition

Under Dr. AS Mandal, Head, Perception & Cognition Lab, CEERI, Pilani] [Aug-Dec'10]

The project involved face detection using Viola Jones face extraction algorithm followed by feature extraction using Gabor filters and subsequent training using SVMs. Training was done on a dataset consisting of Indian faces (the dataset was built at CEERI). [\[Snapshot\]](#)

4. BlueBuddy: P2P Social Networking

1st Prize Cyberfiesta'11, National Level Open Software Competition [Jan-May'10]

A mobile application to promote social networking between the users using Bluetooth. An ad-hoc mobile social network is created using P2P communication. Used the concept of UUID generation and toggling of device between master and slave configuration to enable exchange of information between every pair of devices.

5. Swarm Based Infrastructure Planning

2nd Prize Project Presentation (Mathematical Modelling) [APOGEE 2011](#) [Jan-May'11]

Implemented agent-based modeling in Netlogo environment (java based), taking into consideration human psychology to model individual and collective behavior.

6. Hand Gesture Controlled Arm

[Self-Motivated] [Aug-Dec'09]

Involved hand segmentation and finger-tip detection(without the use of color markers) using a webcam based on image-processing algorithms and interfacing the computer with a 5-degree robotic arm. The robotic arm was subsequently controlled by motion hand gestures of the user. [[Snapshot1](#)] [[Snapshot2](#)]

7. News extraction , Corporate News classification and Company-News pairing.

(Under Dr. Ravi Kumar, PhD Natural Language Processing, InsideView, India.)

Project Description: News articles were extracted using NUTCH crawler, followed by processing of news articles using Natural Language Processing techniques (Part Of Speech Tagger, Named Entity Recognition, etc). The features extracted were used to train the classifier using Support Vector Machine (SVM).

Relevant Courses:

Computer Science: Machine Learning, Data Mining, Advanced Algorithms and Complexity, Data Structures & Algorithms, Operating Systems, Theory of Computation, Artificial Intelligence, Image Processing, Discrete Structures, Data Processing, Object Oriented Programming*.

Mathematics: Optimization, Probability & Statistics, Introduction to Topology, Elementary Real Analysis, Algebra, Measure & Integration, Operations Research.

Major Achievements

- Awarded scholarship to attend **Machine Learning Summer School (MLSS 2011)** at NUS, Singapore.
- Awarded **APAN Fellowship**: Full scholarship to attend 32nd Asia Pacific Advanced Networks ([APAN 32](#)).
- Awarded full scholarship to attend **3rd Advanced Summer School on NLP (IASNLP 2011)** at IIIT Hyderabad.
- **1st Prize**, ACM ICL coding competition, APOGEE 2010(national level technical festival).
- **Gold Medal**, CyberFiesta (software development competition), APOGEE 2010 for BlueBuddy software.
- **Silver Medal**, Project Presentation at APOGEE 2011 for InfoMiner.
- **Silver Medal**, Project Presentation at APOGEE 2011 for Swarm Based Infrastructure Planner.
- **Finalist**(top 10 in India), SOFTkriti- Open Software contest, Techkriti'11, IIT Kanpur.
- **AIR 2** in ISC Class 12th Board Examinations: ISC 2007.
- **AIR 11**: National Cyber Olympiad.