

Abhik Lahiri

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EDUCATION

Stanford University, CA

2010 – present

- Master's in Computer Science

GPA – 4.0

Coursework: Machine Learning, Social and Information Network Analysis, Structured Probabilistic Models, Convex Optimization I, Research Project in AI

Birla Institute of Technology and Science, Pilani – Goa Campus, India

2006 – 2010

- B.E.(Hons.) Computer Science
- Department Rank - 7/121

CGPA – 9.33/10.00

Important Coursework: Computer Programming I, Computer Programming II, Data Structure and Algorithms, Operating Systems, Computer Networks, Database Systems, Discrete Mathematics, Digital Electronics and Computer Organization, Advanced Computer Organization, Artificial Intelligence, Artificial Neural Networks, Parallel Computing, Mathematics I, Mathematics II, Mathematics III, Probability and Statistics.

Teaching Experience: TA for 'Discrete Structures for Computer Scientists', 'Artificial Intelligence'.

Delhi Public School, Ahmedabad, India

2004 - 2006

- Central Board of Secondary Education (CBSE), New Delhi

85.8%

Delhi Public School, Ahmedabad, India

2004

- Central Board of Secondary Education (CBSE), New Delhi

90.6%

SKILL SET

Programming Languages: C, C++, C#, Java, LISP, MATLAB, Bash Shell Scripting, Assembly Language (i386), SQL, OpenMP and MPI Parallel Programming.

Platforms: Linux, Windows, Sun Solaris.

Hardware Description Language: Verilog, VHDL.

PROJECTS AND RESEARCH WORK

Stanford University, California, US

Graduate Research Assistant, Radiology Department, Stanford

“Using Context to find Center-Piece Subgraph on Directed Multigraph for Biomedical Literature”

Oct, 2010-Present

Advisor: Prof. Daniel Rubin

- Researched and developed methods to extract semantic triples from radiology reports, to construct an RDF graph from the text in the literature.
- Performed Center-Piece Subgraph on this huge RDF graph and included the concept of *Context* in the analysis to produce more pertinent results.

- **Graduate Projects**

Parallelization and Optimization of Convolution Neural Networks

Jan, 2011 - Present

Advisors: Prof. Andrew Ng, Quoc Le, Jiquan Ngiam

- Implementing and parallelizing the Convolution Neural Network for learning features and classifying images in very large image datasets (e.g. complex NORB, simple NORB).
- Benchmarking and calculating the speed-ups of various approaches to optimize the cost function (SGD, serial LBFGS – batch and minibatch, parallel LBFGS – batch and minibatch).

“Distributed Deep Learning”

Advisor: Prof. Andrew Ng

Oct – Dec, 2010

- Implemented the Sparse Autoencoder algorithm for automatic feature learning (edge detection) in images and parallelized it.
- Benchmarked the algorithm for a variety of languages (C++, MATLAB, Python), implemented it in Python (using the NumPy and SciPy libraries) and calculated speedups on a cluster by varying parameters.

Hewlett Packard Labs(HP Labs), Bangalore, India

- **Research Trainee**

"Group Recommendations using Joint Profiling"

Jan – Jun, 2010

Managers: Dr. Yogesh Sankarasubramaniam, Dr. Krishnan Ramanathan

- Researched and designed the Group Recommendations system for the Personalized Video System developed at HP Labs, Bangalore. Implemented the code in C#.
- Project involved:
 - 1) Creation of joint user profile from the single user profiles of the users of the group. This involves carefully modelling the semantic relationships between the “user interests” (key phrases) in each user's profile, and generating a joint profile that consists of “user interests” that are semantically(or conceptually) closest to interests that have been rated highly by the group.
 - 2) Utilizing the “user interests” in the generated joint profile for recommending content (eg. videos) for a group recommendation system on a shared device.
 - 3) Integrating UService, the Face Recognition Application with the system to enable automatic User Identification of the members of the group.
- **Published as an HP Labs TechReport in 2010.**

Tata Institute of Fundamental Research, Mumbai (TIFR, Mumbai), India

- **Visiting Research Student**

Text Summarization of Google Search Results using Spectral Clustering and Page Rank **May-July 2009**

Advisors: Prof. Vivek S. Borkar, Dr. Onkar Dabeer

- Researched, designed and implemented the Text Summarization algorithm. Implemented the code in C++
- Studied Markov Chains, the stationary distribution of a Markov Chain and the concept of Page Rank.
- Studied Spectral Clustering of a Markov Chain.
- Performed Text Summarization of the top few Google search results of a search query using Spectral Clustering and Page Rank of a Markov Chain.
- Code tested successfully for a variety of search queries.

Central Electronics Engineering Research Institute, Pilani (CEERI, Pilani)

- **Summer Intern**

Building a Wall Climbing Robot

May-July 2008

Advisor: Dr. H.D. Sharma

- Created and designed a Wall Climbing Robot using PROE
- Programming robot functions using Philips LPC2378 – an ARM7TDMI-S based high performance 32-bit RISC microcontroller. Implemented the code in C.
- Simulation of the robot program using Keil uVision3
- Stress test of mechanical design of robot.
- Tested final physical prototype of robot.

Birla Institute of Technology and Science, Pilani Goa Campus, India

- **Undergraduate Projects**

Personalization of Google Search Results using search inclination of user

(7th semester, Aug – Dec 2009)

Advisor: Mr. Mangesh Bedekar

- Keywords for search queries found using summarization of text of Google search results. These were used to find the sets to which these queries belong using Google sets.
- Using set information for all search queries of a user for a period of time (say a week), search inclination of user during the period was found.
- Search inclination used to verify the trends or events in a particular community. It was also used to enhance the search queries belonging to a particular class.
- Summarization of the text of top few search results displayed in realtime in browser.

Setup of Beowulf Cluster and Implementaion of Various Parallel Algorithms

(6th semester, Jan-May 2009)

Advisor: Prof. Bharat Deshpande

- Built a 4 node High Performance Beowulf Cluster on OpenSuse 11.1 platform.
- Parallel Algoritihms for Matrix Multiplication and Parallel DNA Sequence Alignment were tested and executed successfully.
- Message Passing Interface used: MPICH2.

Developing a Natural Language Processor for the Bash Shell

(5th semester, Aug-Dec 2008)

Advisor: Mr. Ramprasad Joshi

- Implemented a Natural Language Processor for the Bash Shell in C++.
- Chart Parsing Algoritihm used for Natural Language Processing.
- Various parts of speech (like verb, subject and object) used to construct the appropriate Bash command.
- Code tested successfully.

EXTRACURRICULAR ACTIVITIES

- Senior Member of the **Dramatics Club** of BITS-Pilani, Goa Campus. Participated in many inter-college drama competitions and won prizes for my college.

- Core Member of the **Department of Photography** of BITS-Pilani, Goa Campus. As a member, participated in the coverage of many college festivals and was also involved in short film projects.
- Founding Member of the **Robotics Club** at the Goa Campus.