**PARUL AGARWAL**

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| **Education** |

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| **Degree / Certificate** | **Institution** | **Year** | **CPI / Percentage** |
| M.Tech. (Dual Degree) | Indian Institute of Technology, Kanpur,India | 2013\* | 9.6/10.0\*\* (3.84/4.00) |
| B.Tech. (Dual Degree) | Indian Institute of Technology, Kanpur,India | 20  2013\* | 8.9/ 10.0\*\* (3.56 / 4.00) |
| Class 12 : CBSE Board | Kalka Public School, New Delhi,India | 2007 | 88.8% |
| Class 10 : ICSE Board | Christu Jyoti Convent School, Baghpat, UP,India | 2005 | 92.8% |

\*expected year of graduation \*\*after completion of 8th semester

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| **Awards And Scholarships** |

* Received **Google India Anita Borg Memorial Scholarship Award 2012**, awarded to 11 students all over India
* Awarded scholarship to attend **MSR India 2012 Summer School** on Distributed Algorithms, Systems, and Programming
* Awarded scholarship to attend **South Asia Workshop on Research Frontiers** organised by National University of Singapore
* Selected among the 50 students from IIT Kanpur, CalTech, Rice University and École Centrale Paris in the **SURGE Programme** (Summer Undergraduate Research Grant for Excellence) for May - July 2010
* Selected among the 60 students across India in **IPTSE Winter School 2010** organised by Carnegie Mellon University at IIITH and awarded **2nd** **Best Project Award**
* Awarded **Best Poster Presentation Award** among 300 students in Eureka, the paper presentation contest of Techkriti 2011, the annual inter-collegiate technical festival of IITK

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| **Internships / Work Experience** |

**User-defined Datacube Generation Service**(Amazon,Hyderabad, May 2012 – present) (Java, Sql)

Mentors: Shravan Chakamura, Amazon, Hyderabad

* Designed and implemented a user interface to create/edit/view datacube generation metadata for dynamic datacubes
* Implemented a multipart upload of the extract files on S3 and workflow for the complete datacube generation process

**HPC: Graph 500 on IBM’s Supercomputer Blue Gene/P** (IBM-IRL, May 2011 – July 2011) (OMP, MPI, C++)

Mentors: [Dr. Yogish Sabharwal](https://researcher.ibm.com/researcher/view.php?person=in-ysabharwal), [Anamitra Roy Choudhury](https://researcher.ibm.com/researcher/view.php?person=in-anamchou) and [Anshul Mittal](https://researcher.ibm.com/researcher/view.php?person=in-mittal.anshul) , IBM India Research Labs, New Delhi

* Analysis of Graph 500 Benchmark 1 (“Search”) on IBM’s Blue Gene Supercomputer Watson4P
* Implemented and optimized BFS search on a large random graph of size 238 vertices, with average degree of 16
* The work was tested on 32K nodes of supercomputer and was submitted to Graph 500 list of **November 2011 submission**

**Machine Learning: Emotion Recognition from Speech** (CMU IPTSE Winter School, Dec 2010) (SVMs, AdaBoost, Matlab, Python)

Mentors: [Dr. Bhiksha Raj](http://www.cs.cmu.edu/~bhiksha/), Carnegie Mellon University and [Dr. Kishore S. Prahallad](http://sites.google.com/site/kishoreprahallad/), IIITH India

* Involved extraction of new features from a given sample speech file, classification by machine learning using binary classifiers and selection of best features for various emotion pairs
* Introduced a new classification by integrating SVMs and AdaBoost
* Won **2nd Best Research Project Award** and paper accepted for poster presentation in **Grace Hopper Celebration 2011**

**Data Mining and Bio-informatics** (SURGE Summer Internship, May 2010 - July 2010) (MySql, Java, Python, Graphviz)

Mentors: Dr. Harish Karnick, [Dr. Arnab Bhattacharya,](http://www.cse.iitk.ac.in/users/arnabb/) CSE IITK and [Dr. Amitabha Bandyopadhyay](http://www.iitk.ac.in/bsbe/Amitabha.html), BSBE IITK

* Designed and implemented an algorithm that built tissue specific metabolic networks, gene-regulatory network and find the relation between various genes from them
* Analyzed and predicted transcription factor binding sites on DNA sequences using **p-match algorithm**
* Predicted enhancer sites on DNA sequences and validated them with co-regulated genes

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| **Accepted Posters and Papers** |

* **Grace Hopper Celebration 2012:**
  1. Work on “Building tissue-specific metabolic network and gene network” accepted for ACM Student Research Competition
  2. Work on “Emotion detection from audio and video” accepted for ACM Student Research Competition
  3. Work on “Question Classification” accepted in General Poster Presentation Track
* **Grace Hopper Celebration 2011:** Work on “Emotion Detection from Speech using Adaboost and SVMs” accepted in General Poster Presentation Track
* **SURGE 2010:** Paper presented in SURGE 2010 on “Predicting tissue specific metabolic networks and building gene-regulatory networks”

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| **Academic Achievements** |

* Achieved an **All India Rank 408 (AIR)** in **IIT-JEE’08** in which more than 320,000 students appeared **(percentile 99.99)**,
* Secured **448th Rank** inAIEEE’07 in which nearly 750,000 students appeared **(percentile 99.99)**. Scored the **highest amongst female students** in Delhi
* Secured **All India Rank 132** in National Level Science Talent Search Examination-2007 ,Unified Council
* Qualified FIITJEE Talent Search Examination 2006(**AIR 283**) and 2007(**AIR 236**) organized at national level

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| **Technical Skills** | |
| **Programming Languages** | C, C++, Java, Python, Prolog, Oz |
| **Web Developments** | PHP, HTML, JavaScript, MySQL, CSS |
| **Tools** | LaTeX, Lex, Yacc, Make, Shell, Eclipse, Matlab, GNU Octave |

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| **Course Projects** |

**Indexing and Searching: Space Constrained Approximate String Search** (Jan 2012- April 2012) (coding in Java)

* Proposed and implemented a **novel method** of reducing the size of inverted list index structure by discarding lists and combining lists based on certain parameters
* Experiments done on actress names from IMDB site showed that an **accuracy of 98%** was retained with improved query processing time when there was **reduction in 30%** of inverted list index structure

**Compilers: Escape Analysis in Java** (Jan 2012- April 2012) (coding in Java, Soot framework)

* Implemented a **novel algorithm** for static escape analysis in Java using Soot framework
* Escaping objects were recognised and freed from heap using the *free* statement of FReg JFreeVM

**Game Theory: Voting System in India** (Jan 2012 – April 2012)

* Modelled Indian voting system, government elections at the constituency level and parliament level
* Was able to formulate it as a game with a 2\*2 matrix at parliament level where the players consist of small and big parties

**Machine Learning: Question Classification** (Aug 2011 – Nov 2011) (Winnow, Perceptron, NB, MaxEnt, SVMs)

* Worked on features like bag-of-words, higher order language features like POS tags, chunk tags and Named-entity Relations
* Analysed and compared the results of above 5 classifiers with SVMs giving the best result of 87.2%

**Machine Learning: Emotion Recognition from Audio and Video** (Aug 2011 – Nov 2011) (SVMs, AdaBoost, Matlab, Python)

* Analysis of video sequences which combines facial expressions observed visually with acoustic features to automatically recognize five universal emotion classes: Anger, Disgust, Happiness, Sadness and Surprise
* Combined the two modalities at feature and score level to compare the respective joint emotion recognition rates
* Paper accepted for **ACM Student Research Competition** in Grace Hopper Celebration 2012

**Compiler Techniques: Compiler for C++** (Feb 2011 – April 2011)

* Designed a **partially fledged compiler** for source language C++, target language as mips and implementation in python
* Implemented features like basic types, arrays, pointers, functions (recursive, function overloading), literals and control structures. Generated 3-address code. Project was nominated for the **Best Project Award** among 16 other projects

**Database Systems: Automated Attendance Management System** (2011 – April 2011) (MySql ,Xampp)

* Designed and implemented an automated attendance management system optimized for 3CNF
* Implemented **convenient viewing** of attendance and timetable, viewing students above threshold attendance, giving attendance, ensuring security (**no proxy** attendance) and rescheduling classes by the instructor, maintaining sessions

**Operating Systems: Simulation and analysis of various features of OS** (Aug 2010 – Nov 2010) (coding in Java)

* Simulated and analyzed different **system calls** and scheduling algorithms using operating system simulator-NACHOS
* Implemented and analyzed performance of different **mutual exclusion algorithms**
* Simulated and evaluated page replacement algorithms for memory management and a fully associative TLB

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| **Extra Curricular Activities/Interests** |

* **Robotics Club,** IIT Kanpur
  + **Secretary** for academic year 2009-2010
  + Made an autonomous line following robot in Summer Camp’09 organized by Science and Technology Council, IITK
  + Participated and guided students in robotics events and grabbed consolation **prize** for coding an autonomous robot
* **Institute Basketball Team,** Games and Sports Council, IIT Kanpur
  + Team member, Girls Basketball Team since 2008
  + Event Coordinator, Women’s Basketball Udghosh’10, the Annual Sports Festival of IITK
  + Won **Bronze Medal** in Inter-IIT Sports Meet’09 and **Bronze Medal** in Women’s Basketball Udghosh’10