Aseem Raj Baranwal

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Educational Background

Examination	Institution	Year	CPI / %
Undergraduate	IIT Jodhpur	2014*	8.55
Intermediate C.B.S.E.	Delhi Public School Ghaziabad	2012	94.0
Matriculation I.C.S.E.	St. Mary's Convent School	2010	93.2

(*- expected to be completed in 2016)

Projects and Experience

Research Work (Graph Algorithm):   Dr. Dinabandhu [May 2014]
- Devised a linear time algorithm for computing a minimum distance total k-dominating set in interval graphs.
- A research paper submitted to Discrete and Applied Mathematics Journal is under publication process.

Train Traffic Simulator (In Python):   Dr. Gaurav Harit [Sept 2014]
- Implemented scheduling algorithm to schedule the arrival and departure of trains on the available platforms.
- The scheduler also takes into account the priority order of the trains and assigning of platforms is done accordingly.
- Changing time elapse rate and current simulation time enabled.
- MongoDB Database used for storing the schedule of trains.
- Github URL: http://github.com/aseemraj/tkintertrain

Software Requirements Specification of a Railway Scheduler: Dr. Gaurav Harit [Sept 2014]
- Covered non-functional, interface and functional requirements (via use cases) and safety conditions of a Railway Scheduler and Simulator used for monitoring trains entering and leaving a railway station.

Carrom Board (In Python):   Dr. Gaurav Harit [Aug 2014]
- Implemented the physics, geometry and the dynamics involved in the carrom game.
- Law of conservation of energy and momentum conservation taken into account.
- Github URL: http://github.com/aseemraj/carrom

Library Management System (In C++):   Dr. Ramana [Sept 2013]
- Implemented a fully functional Library Management System with features involving issue, re-issue and return of documents and penalty count on late submission.
- Used splay trees to reduce the time complexity for most recently accessed documents in the library database.
- Support for all types of queries about books and issuers.

Code Judge (Node.js and Python-Django):   [July 2014]
- Developed an IO bound code judging application in the master-slave fashion.
- Implemented job scheduling for load balancing on the slaves by the master server.
- MySQL Database used to store the submitted codes by users.
- The judge is scalable and can be modified into an API.
- Github URL: http://github.com/aseemraj/judge-v2

Web Chat Application (In Node.js):   [June 2014]
- Used Express.js and Socket.io libraries.
- Facilities include online user list, geolocation and room creation.
- Used sockets for communicating between chat clients and server asynchronously.
- Github URL: http://github.com/aseemraj/nodechat

Achievements

2014   National rank **15** in **Microsoft Hackcon** (Hacking competition) conducted by Microsoft Corporation.

2013   Qualified for **ACM ICPC 2013 Asia Regionals** at IIT Kharagpur.

2013   Awarded **1st rank** in **Data Structures and Algorithms** course in a class of 146 students.

2012   Among top **0.5 %** students in **JEE** (700,000 appearing).

2012   Among top **0.07 %** students in **AIEEE** (1,100,000 appearing).

Skills and Expertise

- Good knowledge of various data structures and algorithms including greedy technique, divide and conquer technique, dynamic programming, approximation algorithms and randomized algorithms.
- **Programming Languages:**

Significant experience with	Python, C, C++, JavaScript, PHP, LaTeX
Familiarity with	Java, Ruby

- **Specific Tools and Technologies:**

Client side	AJAX, jQuery, Backbone.js
Server side	LAMP, WebSockets, Google App Engine (Python SDK)
MVC Frameworks	Python-Django (proficient), Ruby-Rails (familiar)
Databases	MySQL, MongoDB (certified), Redis.io
Platforms	Node.js, Visual Studio, Octave
Version Control	Git, Mercurial

Courses Undertaken:

- Programming and Data Structures
- Algorithms
- Discrete Mathematics
- Theory of Computation
- Computer Organization
- Game Theory
- Machine Learning (Coursera)
- MongoDB for developers (MongoDB University)
- Software Engineering
- Probability and Statistics

Other Activities

- **Open Source:** Submitted a patch to Mozilla Firefox in the Mozilla Codesprint held in August 2014.
- **Conferences and Workshops:**
    - KDE Conf. and Meetup 2014: Workshop on Open Source contribution and hands-on session on Qt by developers from the Qt and KDE community.
    - JS Conf. at IHC New Delhi: Attended talks on ECMAScript, MongoDB and Angular.js.
- **Coordinator, Programming Club IIT Jodhpur:** Amplified the interests of a community of young minds in programming and carried out the working of the club, including budgets and all activities.