Sumit Singh

Contact

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Education

Year	Degree	Institution (Board)	CGPA/%
2012	Masters (CSE)	Indian Institute of Technology, Kanpur	9.0/10.0
2010	B.E. (CSE)	Birla Institute of Technology, Mesra	7.53/10.0
2006	12th	City Montessori School, Lucknow(ISC)	84.6

Current Work

Software Developer on Android Platform - Directi
Time: Feb 14 onwards.
Product: voip client.

- worked in Java, JNI, C, XML with emphasis on good code design.
- developed initial prototype alone.
- working in a team of 2.
- use continuous build system and analytics.
- switched from IntelliJ + Ant to Android Studio + Gradle.

Software Developer on Android Platform - Directi
Time: Sep 13 - Jan 14.
Product: talk.to (chatting client).

- Languages: Java, XML, (occasional Python scripts).
- Tools: Ant, Android Perfomance tools (e.g. monitor), Java profiler (YJP).
- Test: Unit testing(junit) and functional testing (android specific).

Repositories at https://github.com/ssumit/

- jSSL - tranpost agnostic SSL convenience library.
- jSession - towards transport agnostic session maintainance.
- droidMedia, notifications - android library.

Training project at Directi
Time: Jul 13 - Sep 13. Product: similar to twitter - web client and server.

- Languages: Java, Javascript.
- Build Tool: Maven.
- Database: PostgreSQL, Redis.
- Other: Java Spring MVC framework, Apache http server.

Selected Research Work

Sumit Singh and Shashank K Mehta, *"An Improved Approximation ratio for Prize Collecting Steiner Forest Problem in Node Weighted Planar Graphs"*, part of M.Tech thesis.

Pawan Aurora, Sumit Singh and Shashank K Mehta, *"Partial Dergree Bounded Edge Packing Problem with Arbitary bounds"*, Proceedings of FAW-AAIM, Lecture Notes in Computer Science, vol 7924, pp 24-35, 2013.

Sumit Singh, *"A Local Approach for Identifying Clusters in Networks."*, arxiv:1203.4685, 2012.

Sumit Singh and Ayushi Garg, *"Towards The Adaptive Questionnaire Generation Using Soft Computing"*, Proceedings of NaBIC, pp 806-811, 2009.

M. Tech Thesis

The thesis was in the area of approximation algorithms under the guidance of Prof. Shashank K Mehta. We mostly worked on upper bounds for mainly graph based problems. We were able to improve the state of the art in the two of the three problems that we looked at (at the time of thesis defence).

Key Academic Projects

Prestige Evaluation and Finding Group Structure in Networks:

- This work was started as a part of the Department of Science and Technology sponsored project and involved implementing various graph algorithms and heuristics.
- The overall aim of the project was to monitor web-based user forums/channels and identify the communities in any social network.
- We were able to identify the hierarchical community structures which further lead to discover prestige of each member.
- The work was extended to find the overlapping communities which real world do exhibit.
- The size of datasets consisted of around 30 million nodes.

Path Profiling Problem:

- We worked on a variant of path profiling problem which is a standard problem in the area of compilers.
- We came up with some heuristics.

Autonomous Pseudo-vision Path Detector System:

- We built a smart robot which could identify object boundaries and could itself find out the path to the destination.
- It also identified objects based on their feature set which could then be used as future destination.
- My major contributions included implementing image-processing algorithms and decision-making algorithms.

CUDA-Based High Performance Computing:

- It included implementation of parallel algorithms on CUDA to compare large images and calculate histogram (as part of course work).
- The results obtained using CUDA were compared with the results obtained on multi-processor systems using MPI.

Academic Positions of Responsibility

Teaching Assistant for Algorithms II (Jan 12 - May 12).
Teaching Assistant for Randomized Algorithms (July 11 - Dec 11).
Teaching Assistant for C Programming Lab (July 10 - May 11).

Technical Skills

Programming Languages: C, Java, Python(learning).
Library/software: MPI, MATLAB.
Architecture: CUDA.
Databases : Relational - SQL, KeyValue - Redis.

Conference/ Schools Attended

Summer School on Distributed Algorithms, Systems and Programming, conducted by Microsoft Research and IISC, Bangalore in 2012.
Attended a short course on software architecture by Prof. Philip Dugerdil in 2012.
NaBiC 2009 - conference on soft computing.
ICMCM 2009 - conference on mathematical models.

Interest & Hobbies

playing snooker and basketball.
listening music.