

Nipun Arora

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EDUCATION

Columbia University, Graduate School of Arts and Sciences
Ph.D. Candidate in Computer Science

New York, NY
Expected December 2013

Columbia University, Fu Foundation School of Engineering and Applied Science New York, NY
MS in Computer Science
May 2009

USIT, GGS Indraprastha University
B.Tech in Information Technology

New Delhi, India
August 2007

IIT(Indian Institute of Technology), Delhi
Research Student, CIM Lab

New Delhi, India
Summer, Winter 05 & 06

RELEVANT COURSEWORK

Operating Systems, Programming and Problem Solving, Programming Languages and Translators, Advanced Database Systems, Web Enhanced Information Management, Analysis of Algorithms, Biometrics, Natural Language Processing, Artificial Intelligence, Computer Architecture, Operating Systems, Probability and Statistics

EXPERIENCE

NEC Research Labs

Research Assistant Intern

Princeton, NJ
June 2011 - Sept 2011

- Extending previously built record-replay tool to a distributed system environment. We have added support for tcp and udp socket communication

NEC Research Labs

Research Assistant Intern

Princeton, NJ
Jan 2010 - Sept 2010

- Using Binary instrumentation tools such as PIN for Execution sketching to build a robust infrastructure for tracing multi-threaded programs, on multicore machines for record and replay.

Columbia University

Research Assistant, Lab of Prof. Gail Kaiser

New York, NY
Spring 2009 - current

- Projects associated with the lab- COMPASS, research in Multi-core Software Engineering, Binary/Run-time instrumentation, static and dynamic program analysis, Recommender Systems. and system administration/mentoring research students for Programming Systems Laboratory, Dept of Computer Science

McKinsey & Co.

Business Analyst

New York, NY
Jun - Aug 2008

- Integrated Junit & Code Coverage(Emma) in the testing framework using Ant Scripts & Cruise Control
- Product Owner Proxy for Scrum roll-out team (Agile s/w Development) in McKinsey App-Dev
- Designed architecture & a proof of concept of a trend analysis tool capable of showing 4 dimensional data utilizing motion. This project was recommended for all McKinsey offices, by the McKinsey Firm Technology Committee

R&D Dept Instituto De Soldadura Igualdade

IT Consultant

Lisbon, Portugal
Jan - May 2007

- Designed a prototype for a Decision Support Tool with an interactive interface for Natural Gas + Hydrogen combine fuel being tested for use in pipelines all over Europe. The tool was designed in Visual Basic.Net

Teaching Assistant, Columbia University

- Advanced Software Engineering COMS 4156 Fall 2009 & 2010
- Databases COMS 4111 Fall 2008
- Data Structures and Algorithms COMS 3134 Fall 2008

AWARDS

- Awarded J.K. Memorial Award for best student of the year, for overall excellence in academics and extra-curriculars by IEEE Delhi Section (2005-2007)
- Awarded MS Graduate Research Assistant Scholarship and full tuition fee-waiver, Columbia University (Spring 2009)

PUBLICATIONS

M.Ganai, N.Arora, C.Wang, A.Gupta, G.Balakrishnan *BEST: A Symbolic Testing Tool for Predicting Multi-threaded Program Failures*, IEEE/ACM International Conference on Automated Software Engineering 2011(accepted)

N.Arora, J.Bell, M.Kim, G.Kaiser *POWER: Parallel Optimization with Binary Rewriting* CuCS Tech Report Jan 2011

S.Sheth, N.Arora, C.Murphy, G.Kaiser *The weHelp Reference Architecture for Community-Driven Recommender Systems* (Short Position Paper) Proceedings of the Second International Workshop on Recommendation Systems for Software Engineering (RSSE), Cape Town, South Africa, May 2010

S. Sheth, N. Arora, C. Murphy, G. Kaiser *weHelp: A Reference Architecture for Social Recommender Systems*. Proceedings of the 3rd International Workshop on Social Software Engineering(SSE), Paderborn, Germany, February 2010

S. Sethumadhavan, N. Arora, R. Ganapathi, J. Demme, G. Kaiser *COMPASS: COMMunity Driven Parallelization Advisor for Sequential Software* International Workshop for Multi-Core Software Engineering (IWMSE), Vancouver, Canada, May 2009

N. Arora, R. Ganapathi, J. Demme, S. Sethumadhavan, G. Kaiser *COMPASS: COMMunity Driven Parallelization Advisor for Sequential Software*. (Poster),Architectural Support for Programming Languages and Operating Systems (ASPLOS) Washington DC, USA 2009

PROJECTS

- **Google Android Kernel Development** Part of Operating Systems Courseworks, developed system calls to monitor device orientation, new scheduling policies to give priority to viewed applications, geo-tagging file system, and memory management policies. Also wrote test cases for the same.
- **COMPASS(COMMunity Driven Parallelization Advisor for Sequential Software)** A novel way to parallelize sequential code using the wisdom of crowds model for gaining knowledge from experience of expert parallel programmers. Most work was done in compiler transformation and analysis using LLVM, and run-time analysis using rtdsc counters, GNU & PIN instrumentation tools (Sept 08-Current)(Columbia University)
- **LANCOM (Language for Configuration and Management of Routers)** A language which gives the network administrator a single platform to configure routers of different vendor specification(vendor specification is given in an XML format). The language was developed using Java and ANTLR (Jan-May 08)(Columbia University)
- Implemented an **AJAX based map**(functionally similar to google maps) with region specific RSS news feed, zoom-in/ zoom-out functionalities, and panning.(Jan- May 08)(Columbia University)
- **Advanced Databases: Data Mining, Query Optimization, OODBMS:** Implemented Rocchio's algorithm to gather relevance feedback using query expansion, Designed a webpage displaying UN demographics using OODBMS concepts, Mined a database for association rules, displayed results using OLAP reports (Jan- May 08)(Columbia University)
- **Genetic Algorithms in comparison to Simulated Annealing and Tabu Search applied to job scheduling process**(optimizing resources for creating products). Evaluated algorithm efficiency in terms of the no. of iteration taken by each algorithm, taking timespan of the item as the fitness function (June-Sept 06)(IIT Delhi)

TECHNICAL SKILLS

Operating Systems	Linux, Unix, Windows, Cygwin
Programming	C/C++, Java, ANTLR, ANT scripting, MATLAB, perl, C#, \LaTeX
Web Technologies	HTML, XML, JSP, Servlets, .NET
Tools	Eclipse, IBM RAD, WebSphere, LLVM, PIN instrumentation tool
Database Systems	Oracle (SQL, PL/SQL), MySQL, Microsoft SQL Server

EXTRA CURRICULAR ACTIVITIES

- President, IEEE Student Chapter Indraprastha University(2006-2007)
- Director Logistics, IEEE Delhi Region, India(2006-2007)
- Secretary, IEEE, Student Chapter, Indraprastha University (2005-2006)
- Member, Editorial Board, Indraprastha University, University Magazine (2006-2007)