Sai Charan, Koduru

Autodidactic polyglot, hacker, thinker and researcher.

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Experience

- Software Engineer, Microsoft. Oct 2015 – present
- Research Assitant, University of California, Riverside. Mar 2011 – Sep 2015
- Researcher (Intern), Microsoft. Jun 2014 – Sep 2014
- Researcher (Intern), Microsoft. Jun 2013 – Sep 2013
- Senior Software Engineer, Yahoo! Inc. Jul 2010 – Feb 2011
- R&D Software Engineer, Nokia. Apr 2008 – Jun 2010

Interests

- Compiler/language support for Parallel, Multi-core, Distributed, GPU programming; performance tuning, run-time monitoring & tuning of parallel systems. Size Oblivious Programming. Distributed Software Speculation. Dynamic programming languages & Cryptography.

Education

- Ph.D., Computer Science, University of California, Riverside. *Advisor:* Dr. Rajiv Gupta. Mar '11 – Sep '15
- M.Tech., Computer Science, *Summa Cum Laude*, Sri Sathya Sai University, India. 2008
- M.Sc., Math & Computer Science, *Summa Cum Laude*, Sri Sathya Sai University, India. 2006
- B.Sc.(Honors), Math, *Summa Cum Laude*, Sri Sathya Sai Institute of Higher Learning, India. 2004

Publications

- *Size Oblivious Programming with Infinimem*, Sai Charan Koduru, Iulian Neamtiu, Rajiv Gupta, The 28^{th} Intl Workshop on Languages and Compilers for Parallel Computing (LCPC 2015), 09-11 September 2015.
- *Optimizing Caching DSM for Distributed Software Speculation*, Sai Charan Koduru, Keval Vora, Rajiv Gupta, IEEE International Conference on Cluster Computing 2015 (Cluster 2015) 08-11 September 2015.
- *ASPIRE: Exploiting Asynchronous Parallelism in Iterative Algorithms using a Relaxed Consistency based DSM*, Keval Vora, Sai Charan Koduru, Rajiv Gupta, ACM SIGPLAN International Conference on Object Oriented Programming Systems, Languages and Applications (OOPSLA 2014) 20-24 October 2014.
- *ABC^2: Adaptively Balancing Computation & Communication in a DSM cluster of Multicores for Irregular Applications*, Sai Charan Koduru, Keval Vora, Rajiv Gupta, IPDPSW, High-Level Parallel Programming Models and Supportive Environments (HIPS 2014). 19^{th} May '14
- *Programming Large Dynamic Data Structures on a DSM Cluster of Multicores*, Sai Charan Koduru, Min Feng, Rajiv Gupta, 7th International Conference on PGAS Programming Models (PGAS 2013). 3^{rd} – 4^{th} Oct '13
- *An Empirical Analysis of the Bug-fixing Process in Open Source Android Apps*, Pamela Bhattacharya, Liudmila Ulanova, Iulian Neamtiu, and Sai Charan Koduru, 17th European Conference on Software Maintenance and Reengineering (CSMR 2013). March 5^{th} – 8^{th} 2013
- *N-Dimensional Baker Maps for Chaos Based Image Encryption*, Sai Charan & V. Chandrasekaran, Proceedings of IEEE ICETiC 2009, pp 31-34 (Oral track). January 8^{th} – 10^{th} 2009
- *Random-Walk based Baker maps for Chaos Based Image Encryption*, Sai Charan & V. Chandrasekaran, IPCV 2008 Monte Carlo Resort, Las Vegas, Nevada, USA. IPCV 2008). July 14^{th} – 17^{th} 2008
- *Integrated Confusion-Diffusion Mechanisms for Chaos Based Image Encryption*, Sai Charan & V. Chandrasekaran, IEEE CIT 2008, Sydney, Australia (IEEE CIT 2008). July 8^{th} – 11^{th} 2008
- *A Block DCT Based Optical Character Recognition System*, Sai Charan & G.V. Prabhakar Rao, Poster Presented at International Conference: NexGen IT for Societal Advancement & Integration, Prashanthi Nilayam, India. July 15^{th} – 17^{th} 2006
- Invited article for Nokia internal blog: 'WrechScience', on development tools and practices.

Technical Skills

- *Languages* – C, OOP with C++, JavaScript, HTML, Perl, Python, UML. Working knowledge in Matlab, Lisp, and Linux shell scripting. Familiar with Qt Application framework.
- *Toolkits* – Git, emacs, Eclipse, Apache Web Server, MySQL & jQuery.
- *Agile Development* – Worked with Scrum methodologies since April 2008. Brief stint as Scrum Master.

Projects

Graduate & Doctoral

- Enhanced Speculation for Distributed Parallel Computing on the Cluster. Fall '14 – Winter '15
- BigData processing on single commodity machines. Spring '14 – Spring '15
- Language Support for Applications with Very Large Data Sets. Winter '14 – Spring '14
- Automatic Adaptive Balance of Computation & Communication. Winter '13 – Spring '13
- Distributed Shared Memory for Large Dynamic Data Structures. Summer '12 – Fall '12
- Automated run-time resource optimization for multi-core systems. Summer – Winter '11
- Investigation of Packet Size Distributions during busy periods using network traces. Fall '11
- An Empirical Study on Bug Categorization in Android Applications. Spring '11
- Mult-Dimensional Baker Maps for Chaos based Image Encryption (M.Tech. thesis). Summer '07 - Fall '08
- Block DCT based Optical Character Recognition *for Telugu script* (M.Sc. thesis). Winter '06

Garage

- *LLVM frontend* for the open-source V8 JS engine: supervised M.Tech.(CS) thesis for SSSU students.
- *Gitweb* side-by-side diff in JS (default ships only with Unified diff).
- *Nokia Voice Messaging* Pioneering contributer to Nokia Voice Messaging platform PoC – now approved to become a Nokia platform for emerging markets.
- SaveURI Firefox extension – for Firefox 2.0+ (link on addons.mozilla.org); more at Github & Gists.
- *RateMyProfilePic:* Simple facebook application (running on AWS) to rate/vote profile pictures.
- *OAuth* Implemented an OAuth library in Python from RFC (for fun & learning).

Yahoo! Inc.

- *Yahoo! Store* – Customer personalization & social features for the Award winning Yahoo! Store.
- *RTML Compiler* – Extended the RTML compiler to support multi-image directive for store fronts.
- *Yahoo! Store Paranoid* – Yahoo! Store SPOC for security, audit & PCI review.
- *PCI Compliance* – Enhancements & technical audit for new feature PCI compliance & payment security.

Nokia

- *Low Disk Space Notifier* – Design and development of Low Disk Space service provider middleware module for Nokia's Client Platform for Qt/S60.
- *Device Search* – Cross-platform search engine based on CLucene, ported to the Symbian platform with total ownership of harvester plugins. Designed, implemented, productized & maintained the Qt/C++ engine. Automated the testing & performance benchmarking of the engine via Perl/Python scripts. My role was a developer cum tech-lead.
- *Client Platform Service Framework* – Re-design and development of phone widget installer's registry.
- *Ovi Settings* – Designed and implemented subsets of the Ovi Settings application on S60 in C++. Complete responsibility for designing the subsystems. Ovi Settings is a control panel for customizing Ovi web preferences from the mobile.
- *Nokia Account Client Enabler Security Module* – Complete ownership for design and development of security framework for Nokia's SSO Qt enabler for Windows (ships with Nokia Ovi Suite 2.0+).
- *NoA SSO Qt Enabler* – Designed, implemented and managed a team for a cross-platform test suite.
- *Ovi Setup Prototype* – Co-created and maintained a rapid prototyping framework in JavaScript which enabled easy prototyping of any UI screens. In the process we contributed functionality to Nokia's WRT Toolkit.

Honors & Awards

- ***Best Student Paper Award*** at the 28th International Workshop on Languages and Compilers for Parallel Computing (LCPC), Raleigh, NC. Sep 2015
- *UCR Graduate Student Association Travel Grant* to present our research at the LCPC Conference. Sep 2015
- *Selected for NSF Sponsored Student Travel Grant* to the IEEE CLUSTER Conference. Sep 2015
- *UCR Graduate Student Association Travel Grant* to present our research at HIPS IPDPS. May 2014
- *Earle C. Anthony Graduate Travel Award* to present our research at HIPS IPDPS. May 2014
- *CGO 2013 Travel Grant* to present our research at the 2013 International Symposium on Code Generation & Optimization (CGO) workshop, COSMIC at Shenzhen, China. Feb 2013
- *Dean's Distinguished Fellowship* for PhD at the University of California, Riverside. 2011
- *Youngest* Member, Nokia Technical Committee – an elite body chaired by the Director of Technology, Nokia Bangalore, responsible for reviewing emerging technologies and their relevance to Nokia; early prototyping of pertinent technologies and recommending their adoption in products.
- Nokia Kudos awards for independent research and curcial shipping of Nokia's SSO project. Mar 2010
- Nokia Kudos awards for turbo boosting the performance of Device Search project. Dec 2009
- President of India, Dr. A. P. J. Abdul Kalam *Gold Medal* for excellence in M.Tech (CS). Nov 2008
- Sri R.V. Janakiramaiah *Gold Medal* for excellence in M.Sc. (Math with specialization in CS). Nov 2006
- Justice P.N. Bhagawati *Gold Medal* for excellence in the B.Sc. Honors (Mathematics). Nov 2004

Service

- *Research Mentoring* Supervised M.Tech.(CS) students' research projects and course work at my *Alma Mater*.
- *System & Network Administration* Four years experience as lead system & network administrator for Windows and Linux systems & student webmaster, DMACS (Department of Mathematics & Computer Science), SSSU. Designed & implemented Active Directory Services on Windows Server 2003 for DMACS, SSSU.
- *Dev Forum* Organized bi-monthly Dev Forum at Nokia to discuss and solve interesting problems/issues.
- *Communications Team Lead* Student team lead for the wireless communications group for Grama Seva (Rural Development) activities of University.
- *Reviewer/External Reviewer* IET, Signal Processing (cryptography track), Elsevier's ParCo, IPDPS 2014, IEEE MICRO 2012, PLDI 2014, IPDPS 2013, ICSME 2014, CCGrid 2015, CASES 2011, 2014, SAMOS 2014, RTSCA 2013, LCTES 2013, ICPADS 2013, 2014, 2015, RV 2011, APLAS 2011.

Professional Memberships

- Member, *Association for Computing Machinery* (ACM).
- Member, *Institute of Electrical and Electronics Enginners* (IEEE).

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