BINA RAMAMURTHY

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PROFESSIONAL PREPARATION

SUNY at Buffalo, New York	Electrical Engineering	Ph.D., 1997
Wichita State University, Kansas	Computer Science	M.S., 1984
University of Madras, India	Computer Engineering	M.E., 1982
University of Madras, India	Electronics Engineering	B.E.(Honors), 1979

APPOINTMENTS

2009–	Research Associate Professor, Dept. of Computer Science and Engineering
2006–	Teaching Associate Professor, Dept. of Computer Science and Engineering, University at Buffalo
1997–06	Research Assistant Professor, Dept. of Computer Science and Engineering, University at Buffalo
1986–97	Lecturer, Department of Computer Science, University at Buffalo
1984–86	Lecturer, Department of Computer Science and Math, SUNY at Brockport, New York

RELEVANT EXPERTISE

- Competent in Data-intensive computing that deals with acquisition, efficient storage, intelligent analysis of Big data and knowledge discovery from it.

- Highly proficient in web-services based system design and development, cloud deployment of applications, and big-data algorithms (mapreduce) and storage.

- Principal investigator on a successful multi-disciplinary (CSE and BIO) project supported by NSF-OCI-CITEAM program. The interactive evolutionary biology tool designed for this project has been deployed on the cloud and has been used by many schools.

- Principal investigator on a NSF-supported data-intensive computing project and the director of SUNY-approved certificate program in Data-intensive computing.

- Author of book chapter titled: *Securing Business IT in the Cloud* in the book Security, Trust, and Regulatory Aspects of Cloud Computing in Business Environments, IGI Global, 2013.

- Excellent track record of working well with multi-disciplinary and multi-institutional teams.

HIGHLIGHTS for AY 2012-2013

1. Co-PI on CACI Army grant collaborative with Industrial Engineering and CUBRC.

2. Co-PI on a new IITG grant, one of the four from SUNY central: Collaborative with SUNY Albany and many other SUNY schools. This is a repeat award.

3. Involved in UB overseas collaboration with Amrita University teaching courses for MS in Automotive Embedded Systems.

4. Published a book chapter: *Securing Business IT in the Cloud* in the book Security, Trust, Regulatory Aspects of Cloud Computing in Business Environments, IGI Global, Hershey, PA, 2013.

5. Directed and managed the porting of the NSF supported Evolutionary Biology tool to mobile platforms: Android as well as IOS (ipad/iphone).

6. Served on two NSF Biological Sciences proposal review panels.

NSF GRANTS AWARDED

1. NSF OCI CI-TEAM: A Cloud-enabled Evolutionary Genetics Learning Tool for Engaging the Net-Savvy Generation.This is in collaboration with Dr. Jessica Poulin and Dr. Katharina Dittmar De la Cruz of Biological Sciences department, approx. $250K, (9/2010–8/2012). Under extension till 2013.

2. NSF DUE CCLI: Phase II:A Comprehensive Framework for Timely Introduction of Emerging Data-Intensive Computing to STEM Audiences, PI and Director of TIDE. Co-PI Dr. Vipin Chaudhary and Dr. John van Benschoten. approx. $250K, (9/2009–8/2012).This is a Phase II of the NSF Grid computing grant in item 4 below. Under extension till 2014.

3. NSF DUE CCLI: Collaborative: NEXOS: A next Generation Operating Systems Curriculum and an Innovative Support Environment, PI. Lead in this Phase I - Course, Curriculum Laboratory Improvement (CCLI) grant; the collaboration is with Dr. Dennis Brylow of Marquette University, Milwaukee, Wisconsin, approx. $75K each, (6/2008–4/2010).

4. NSF CCLI A&I: Collaborative: A Multi-tier Model for Adaptation of Grid Technology into CS-based Undergraduate Curriculum, lead PI, collaborative with SUNY Geneseo, approx. $150K.for UB (7/2004–6/2007).

5. NSF CRCNS US-German Collaboration: Somatic Na Channels and Spike Precision.Collaborative with Biological Sciences Dept.,CoPI with Matthew-Xu Friedman,(2012-2017).

OTHER GRANTS

1. Data Fusion Algorithms for A2SF (Active Army Strength Forecaster), Sponsor CACI, (**2013**): Co-PI with Industrial Engineering

2. SUNY Innovative Instructional Technology Grants (IITG):

   (a) Co-PI: SUNY Games II, with SUNY Albany,($60K), **2013-2014** (new).
   (b) Co-PI: SUNY Colaboratory on Immersive Virtual Learning Environments for STEM Learning, with SUNY Albany.($60K), 2012-2013.
   (c) Co-PI: Development and Assessment of Mobile Device Instruction in STEM Education at K-21 Level with Biology Dept.($10K), 2012-1013.

3. NSF OCI travel grant for paper presentation at the inaugural XSEDE conference, Chicago, IL, July **2012**. approx $2K.

4. NCWIT (National Center for Women & Information Technology) travel grant for attending Computing Education in 21st Century (CE21) at New Orleans, LA, Jan 2011, Approx. $1K.

5. American Association of Advancement in Sciences (AAAS) conference grant for NSF CCLI PIs, by invitation only. Washington DC, approx. $1K, Jan. 26-28, 2011, **Jan 23-25, 2013**.

6. NSF Transforming Undergraduate Education Phase 2 proposal preparation training (TREP2), team leader for the one of the 8 teams selected. El Paso, Texas, approx. $1K. Aug. 17-18, 2010.

7. Amazon.com Amazon Cloud Services for educational use, approximately $10000 worth of resources, 2010-2011, **Approx. $16K for 2012-2013.**

8. Microsoft Azure Cloud Computing resources grant worth $3500, 2010-2012.

9. NSF-CRA (Computing Research Association) grant (invited) for attending Hadoop Data-Intensive computing conference, March 2008, San Jose, CA.Approx.$1K.

10. Educational Technology Center at SUNY Buffalo, ViGOR: Visual Grid Tutorial for Learning Grid Technology Concepts, approx. $6K. (8/2005–5/2006).

11. TCIE (The Center for Industrial Excellence): IQuote: Health Insurance Renewal Comparison Software, for Walsh Group Inc. approx. $20K; (8/2004–5/2005).

SIGNIFICANT PUBLICATIONS

1. B. Ramamurthy.*Securing Business IT in the Cloud* in the book Security, Trust, Regulatory Aspects of Cloud Computing in Business Environments, Edited by S. Srinivasan, IGI Global, Hershey, PA, **2013**.

2. B. Ramamurthy, J. Poulin, K. Dittmar. Cloud-enabling Biological Simulations for Scalable and Sustainable Access: An Experience Report. Presented at XSEDE (Extreme Science and Engineering Discovery Environment) inaugural conference, Chicago, IL, July **2012**.

3. B. Ramamurthy, J. Poulin, and K. Dittmar. Cloud-enabling Scientific Tools and Computational Methods for Invigorating STEM Learning and Research, The Journal of Computational Science Education (JOCSE), A Shodor publication, Volume 3, Issue 1, pp.28-33, **2012**.

4. K. Madurai and B. Ramamurthy. Map-Reduce Programming Model and Hadoop Distributed File System for Use in Undergraduate Curriculum, tutorial presented at Consortium for Computer Sciences - Northeast Region (CCSCNE 2009), Plattsburgh, NY, Journal of Computer Sciences in Colleges, Vol.24, Issue 6, pp.84-86, June 2009.

5. B. Ramamurthy. Cloud: The Next Generation Computer". Invited plenary at International Conference on Advances and Emerging Trends in Computing (ICAET 2010),Chennai, India, June 24, 2010. http://www.cse.buffalo.edu/faculty/bina/TheCloudJune24.pdf

6. D. Patrone and B. Ramamurthy. Toward Dynamic Application Protocols in Heterogeneous Distributed Computing Systems, GMU-AFCEA Symposium: Critical Issues in C4I. Lansdowne, VA, May 19-20, 2009.

7. D. Brylow and B. Ramamurthy. NEXOS: Next generation embedded operating systems laboratory, ACM SIGBED Review (Special Interest Group on Embedded Systems)), Vol. 6, Issue 1, article 7, pp.18-28, January 2009.

8. D. Patrone and B. Ramamurthy. Sharing Application Logic Across Programming Language Boundaries, The 20th International Conference on Software Engineering and Knowledge Engineering (SEKE 2008),pp.227-231, July 1-3,San Francisco, CA, 2008.

9. B. Ramamurthy. GridFoRCE: A Comprehensive Resource Kit for Teaching Grid Computing, IEEE Transactions on Education, special issue on Grid Computing, pp.10-16, Feb.2007.

10. A. Kumar, R. Shumba, B. Ramamurthy, and L. DAntonio. Emerging Areas in Computer Science Education, SIGCSE 2005, pp.453-454, St. Louis, Missouri, Feb., 2005.

11. B. Ramamurthy. GridForce: A Comprehensive Model for Improving Technical Preparedness of our Workforce for the Grid, presented at grid.edu workshop, IEEE/ACM CCGrid2004 International Conference, pp.168-173,Chicago, IL, April 19-22, 2004.

12. B. Ramamurthy, S.J. Upadhyaya and B. Bhargava. Design and analysis of a hardware-assisted checkpointing and recovery scheme for distributed applications, *IEEE Transactions on Knowledge and Data Engineering*, Vol.12, No. 2, pp.174-186, April 2000.

13. B. Ramamurthy, S.J. Upadhyaya and R.K. Iyer.An object-oriented testbed for the evaluation of checkpointing and recovery systems, *IEEE Int. Symposium on Fault Tolerant Computing (FTCS-27)*, Seattle, WA, pp. 194-203, June 1997.

14. S. J. Upadhyaya and B. Ramamurthy.Concurrent Process Monitoring With No Reference Signatures, *IEEE Transactions on Computers*, Vol.43, no.4, pp.475-480, April 1994.

15. A. Agarawal and B. Ramamurthy. MOPS: A Modified Priority Scheduler for Improving Performance in a Hadoop Cluster, poster presented at 2009 IEEE International Conference on Cluster Computing and Workshops, New Orleans, Louisiana, August 31-September 4, 2009.

16. M. Faramawi, D.P. Shah, B. Jayaraman, and B. Ramamurthy. A Constraint-Based Framework for Effective use of Service Level Agreements in Web Services. Grad. Conference, University at Buffalo, 2007.

17. P. Gopalam, B. Ramamurthy and A. Cartwright. Java Enabled Opto-Electronic Learning Tools and a Supporting Framework, Proceedings of the American Society for Engineering Education (ASEE) Annual Conference, Albuquerque, NM, 2001.

CURRENT PROJECTS

Infrastructure for Biological Informatics: This research deals with new approaches to the analysis and dissemination of biological knowledge for the benefit of the scientific community and the STEM (K-21) students and is carried out in collaboration with Biological Sciences department at UB. Specific interest in the development of tools and resources that have the potential to advance and transform, research and education in bioinformatics. Developed a cloud-based evolutionary genetics tool that is used by 1200 freshmen in the Biological Sciences department at UB. This project is funded by the NSF Office of the Cyber Infrastructure: NSF-OCI-CITEAM-1041280. **An outcome of this project is a cloud-deployed tool Pop!World (`http://popworld2.appspot.com/`) that has been copyrighted: UB STOR-6761.**

Data-intensive Computing Certificate: Data-intensive computing deals with computational methods and architectures to analyze and discover intelligence in huge volumes of data generated in many application domains. This undergraduate-level certificate program addresses the increasing need for workforce that is competent in data-intensive computing and other closely related technologies such as parallel computing, and cloud computing. This program is partially supported by NSF grant DUE-CCLI-0920335.**This certificate program has been approved by SUNY, listed in UB undergraduate catalog and actively pursued by many students.**

PRESS COVERAGE OF RESEARCH

Dr.Ramamurthy was directly interviewed for the following press releases:

1. Catch a cloud by Stephen Watson, The Buffalo News Special feature on Cloud Computing, Nov. 11, 2011.Syndicated to national media.

2. With Cloud Computing, the Mathematics of Evolution May Get Easier to Learn in College...and Easier to Teach in High School , by Ellen Goldbaum, http://www.buffalo.edu/news/12197, Jan 24, 2011, also on ACM Tech News, Jan 24, 2011.

3. Biology Professors use Cloud Computing to Reach Students, The Chronicle of Higher Education, by Tushar Rae, Jan 28, 2011.

4. Taking a Highly Visual Look at the Mathematics of Evolution, Scientific Computing: Information Technology for Science,Jan. 26, 2011.

PROFESSIONAL SERVICES

1. Panelist for NSF proposal review in the areas of (i) Biological Information Integration and Informatics CAREER panel (2010), (ii) Advances in Biological Informatics (ABI)(2010-**2012**), (iii) Information systems and integration (2009, **2012**); Also served as chair panelist for panels in CCLI A&I program (2004-2009).

2. Invited panelist at National Association of Black Engineers (NSBE) at UB: 2009, 2010.

3. Conference Activities: Program Committee member for Cloud Computing area, ACT 2013, Program Committee member of SPLASH workshop on *Developing Competency in Parallelism: Techniques for Education and Training*, Oct 2012.Program committee member for CCGrid 2005 (IEEE International Symposium on Cluster Computing and the Grid), and ADCOM 2005 (International Conference on Advanced Computing and Communications).Conference committee member for Special Interest Group in Computer Science Education (SIGCSE) 2007. Session Chair of technical paper session on Computer Games in the Curriculum at SIGCSE 2006, and the technical paper session on Computer Networking SIGCSE 2005.

OUTREACH

1. **Global**

   (a) Currently involved in developing curriculum for a Masters degree in Embedded Systems to be offered by University at Buffalo and Amritha University, India

   (b) B. Ramamurthy. Cloud:The Next Generation Computer, invited plenary talk at International Conference on Advances and Emerging Trends in Computing Technologies (ICAET) Chennai, India, Jun.21-26, 2010.See: http://www.cse.buffalo.edu/faculty/bina/TheCloudJune24.pdf

   (c) B. Ramamurthy. Emerging trends in Service-enabled Enterprises. Invited talk at SASTRA University, a TIFAC CORE(Technology Information, Forecasting and Assessment Council of India Center of Relevance and Excellence), Thanjavur, India, July 16, 2008.

2. **National**

   (a) B. Ramamurthy.Panelist. Visual Environments for STEM Learning: Experiences and Opportunities, SUNY Learning Network Summit, Feb 27- Mar 1, **2013**, Syracuse, NY.

   (b) B. Ramamurthy. Adopting Big-data Computing Across Undergraduate Curriculum. Invited talk to Minnesota State Colleges and Universities (MNSCU), at Metropolitan State University, St.Paul, MN, October 19, **2012**.

   (c) Represented University at Buffalo at the Bloomberg University Day, August 2010, 2011, **2012**.

   (d) B. Ramamurthy. A Roadmap to Migrating Computing Infrastructures to the Cloud, invited talk to be presented to the Rochester Public Library System employees, Monroe County, Rochester, NY, Dec.2, 2010.

   (e) B. Ramamurthy, Invited NSF Showcase of funded projects at SIGCSE 2004, 2005, 2009, 2011 and at AAAS conferences 2011, **2013**.

3. **Local**

   (a) Buffalo Start-up Weekend **coach**; invited by the organizers (**Nov 2012, March 2013, Oct. 2013**)

   (b) Mentor and supporter of STEM education at Gaskill Middle School; present demos and activities. Effort supported by a grant from Northrop-Grumman.Awarded Community Partner recognition by Niagara Falls school District, 2011.

   (c) B. Ramamurthy. Data-intensive Computing on the Cloud. Invited discussion in Celebration of Computer Science Education week at Erie Community College, Dec 5, 2011.

   (d) B. Ramamurthy. Cloud Computing: Benefits and Limitations, invited presentation and project discussion at Calspan-University of Buffalo Research Center (CUBRC), Nov.4, 2010.

   (e) University Service: Mentor for honors students and (K-12) minority high school students participating in CSTEP (Collegiate Science and Technology Program), LSAMP (Louis Stokes Alliance for Minority Participation) and BEAM (Buffalo Engineering Awareness for Minority) program for the past 10 years.

COURSES TAUGHT

Have been teaching courses at all levels from introductory to graduate courses in multiple disciplines: Computer Science (CSE) and Engineering and Applied Sciences (EAS) and Industrial Engineering (IE). Currently involved in undergraduate curriculum development in **Math department**. Here is a representative list:

Semester	Course	Special Features
Fall 2011	CSE487: Operating Systems	Nachos Syscall API, Unix C++, OO, UML
	CSE 321: Embedded and Realtime Systems	Embedded Linux and device drivers
Spring 2012	CSE 241: Digital Systems	Verilog Synthesis
	CSE 341: Computer Organization	Data Path Design and Verilog
Fall 2012	CSE 113: Introduction to CSE non-majors	Visual Java
	CSE 321: Embedded and Realtime Systems	Embedded Linux and device drivers
Spring 2013	CSE487: Data-intensive Computing	Hadoop and MapReduce
	CSE 113: Introduction to CSE non-majors	Visual Java
	CSE 111: Great Ideas in CSE	HTML5 and JavaScript

COURSES CREATED/REVISED

1. CSE 524: Realime and Embedded Systems.Designed a special course for the International Graduate Program in Embedded Systems.

2. Introduced Distributed Systems curriculum into the CSE program: Created two new courses CSE486/586 Distributed Systems and CSE4/587 Information Structures; Supported by NSF DUE CCLI grant 2004-2007.

3. Co-created a new course CSE321: Embedded and Real-time Systems to satisfy the major program revisions approved for BS in CS and CEN degrees. This course was supported by National Science Foundation Grant from the division of undergraduate education NSF-DUE-0737243 (2008-2010).

4. Created two new courses for a multi-disciplinary graduate program in Industrial Engineering: CSE507 and IE 565.

AWARDS AND HONORS

1. CSTEP Research Mentor Award, presented at annual dinner for graduating CSTEP mentees, 2008.

2. Award of Appreciation presented by SUNY AMP, at Seventh Bi-Annual Statewide Graduate School Awareness Conference (for minorities), October 9, 2004. Participated in an invited forum/ panel on technology and presented a talk titled " Technology Culture".

3. Certificate of Recognition presented by Career Services Division of Student Affairs at University at Buffalo for being a positive influence on the students who graduated in 2003, as evidenced in a survey filled by students.

PROFESSIONAL AFFILIATIONS

1. Member, Institute of Electrical and Electronics Engineers (IEEE) Computer Society, USA.

2. Member, Association of Computing Machinery (ACM), USA.