

CONTACT INFORMATION

Reno, NV, USA
Mobile: +1-571-294-6583

E-mail: rajat.meh@gmail.com
<https://sites.google.com/site/rajatmeh/>

KEY RESEARCH AREAS

Distributed Computing Systems Performance and Security Management, Energy Aware High Performance Computing Systems, Big Data Systems and Analytics, Cloud Computing Systems.

EDUCATION

Mississippi State University, Mississippi State, MS USA.

Doctor of Philosophy (PhD), Electrical and Computer Engineering, Dec 2013. GPA: 4.0 (4.0 scale)

Dissertation Topic: Model-Based Autonomic Performance Management of Distributed Enterprise Systems and Applications.

Adviser: Prof. Sherif Abdelwahed

Motilal Nehru National Institute of Technology, Allahabad, U.P., India.

Bachelor of Technology (B.Tech.) Computer Science and Engineering, July 2005.

PROFESSIONAL EXPERIENCE

1. **Applied Innovation Center (AIC)**, Desert Research Institute (DRI), Reno, NV.

Postdoctoral Fellow, Cyber Physical Systems

Jul 2014 – Present

- Developing intellectual properties in the areas of cyber physical systems, high performance computing, and data science.
- Working with AIC director, business development and computational lead, and various divisional directors within DRI to establish priorities.
- Identifying innovative research opportunities, developing proposals, managing ongoing projects, and technical mentoring within AIC.
- Designing the architectures for various real-time data analytics and visualization systems for measurements collected from various weather monitoring stations, department of transportation stations, and numerical weather prediction models.
- Integration of apache Hadoop software packages into existing numerical weather prediction system for analyzing large amount of spatial data and generate various data products.
- Developing a generic early warning system from web-based data mining.

2. **Department of Computer Science**, University of Virginia, Charlottesville, VA.

Postdoctoral Research Associate

Jan 2014 – Jul 2014

- Developing an analytical modeling tool that explores the possible combinations of various resilient techniques with respect to improvement in soft error rate of the system for a DARPA funded project.

3. **NSF Center for Cloud and Autonomic Computing**, Mississippi State University, Mississippi State, MS.

Graduate Research Assistant

Aug 2008 – Dec 2013

- Performance Modeling of Distributed Enterprise Multi-Tier Enterprise Systems.
- A Model-Based Framework for Autonomic Performance Management of Cloud Computing Systems.
- Power-Aware Autonomic Approach for High Performance Computing Systems.
- Automated Model-based Security Management of Web Services.

4. **Institute for Software Integrated Systems**, Vanderbilt University, Nashville, TN.

Visiting Research Scholar

May 2011 – Aug 2011

- Developing a self-configurable and fault tolerant distributed monitoring system for a DOE funded project in collaboration with Fermi Lab @ Batavia, IL.

5. **Alcatel-Lucent Wireless R&D Division**, Noida, India

Senior Software Engineer

May 2005 – Jul 2008

- Subject Matter Expert (SME) for my work area: Communication Assistance for Law Enforcement Act

(CALEA).

- Led a team of three engineers that was involved in debugging traffic related issues of live customer networks.
- Primary contact point of Call Processing group for customers that had live installation of Alcatel NGN product A5020.
- Worked as a Module Owner for “Subscriber Profile Manager” across the all global development sites.
- Worked on an integration site in France for 3 months in real network environment for Orange France and Orange UK to support the project till acceptance.

MAJOR SYSTEM DEVELOPMENTS

- **RFDMoN:** A Real-Time and Fault-Tolerant Distributed Monitoring System for monitoring large scientific clusters at Fermi National Laboratory, Batavia, IL.
- **ANCILE:** An analytical modeling tool that explored the possible combinations of various techniques to improve the fault-tolerance as well as energy consumption of the embedded systems for a DARPA sponsored project.
- An automated model-based security management framework for US Army Corps of Engineers, Engineer Research & Development Center (ERDC), Vicksburg, MS.
- Model-Integrated computing toolsets for designing and developing energy efficient, reliable, and secured distributed computing systems.
- Real-time data analytics and visualization systems for weather monitoring stations in Nevada.
- Big data analytics platform for numerical weather prediction system for large scale spatial data analytics.

HARDWARE AND SOFTWARE SKILLS

Operating Systems: Windows, Red Hat Linux, Sun Solaris 8/10, Unix.

Programming Methodologies/Framework: OOP, SOA, REST, MVC, and UML.

Languages: C, C++, Java, Python, UNIX Shell scripts, Java Script, and Ruby.

Database Technologies: MySQL, SQLite, Times Ten, and MS SQL.

Web Service Frameworks: IBM Websphere, Django, and Ruby on Rails.

Big Data Platforms: Hortonworks Data Platform (HDP) and Apache Hadoop Software (Spark, Kafka, Flume, Solr, Pig, Hive, etc).

Big Data Technologies: MapReduce, NoSQL (MongoDB), in-memory analytics, and Predictive Modeling.

Middleware Technologies: Data Distribution Services (DDS) OpenSplice, CORBA, SUN RPC, and MPI.

Tools and Utilities: Scipy Library, Matlab / Simulink and Visual Studio.

Configuration Management: CVS, Clear Case, SVN, and GIT.

Virtualization Technologies: Xen, VMWare vSphere, and VMWare ESX Server.

PUBLICATIONS

List of peer reviewed publications are available at location:

<https://sites.google.com/site/rajatmeh/publications>

REFERRED JOURNAL PUBLICATIONS

- **Mehrotra Rajat** and Abdelwahed Sherif, “A Model Integrated Computing Approach for Designing and Analyzing Autonomic Computing Systems,” Journal of Network and Computer Applications, Elsevier Publications (under review).
- **Mehrotra Rajat**, Banicescu Ioana, Srivastava Srishti, and Abdelwahed Sherif, “Towards an Autonomic Performance Management Approach for a Cloud Broker Environment Using a Decomposition-Coordination Based Methodology,” Special Issue on Future Generation Computer Systems, The International Journal of eScience, vol. 54, Elsevier Publications, Jan 2016.
- **Mehrotra Rajat**, and Abdelwahed Sherif, “Towards Autonomic Performance Management of Large Scale Data Centers using Interaction Balance Principles,” Cluster Computing: The Journal of Networks, Software Tools and Applications, Springer Publishers, pp.1-21, 2014.
- **Dubey Abhishek**, Mehrotra Rajat, Abdelwahed Sherif, and Tantawi Asser. “Performance Modeling of Distributed Multi-Tier Enterprise Systems,” ACM SIGMETRICS Performance Evaluation Review, vol. 37, no. 2, pp.9-11, September, 2009.

BOOK CHAPTERS

- **Mehrotra Rajat**, Banicescu Ioana, Srivastava Srishti, and Abdelwahed Sherif. "A Power-Aware Autonomic Approach for Managing Scientific Applications in a Data Center Environment" in Handbook on Data Centers. Springer Publications, 2015.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Tantawi Asser. "A Power-Aware Modeling and Autonomic Management Framework for Distributed Computing Systems" in Handbook of Energy-Aware and Green Computing, Two Volume Set. Pp. 621 -647. Chapman and Hall/CRC Press Taylor and Francis Group LLC. Dec 2011.

CONFERENCE PUBLICATIONS

- **Mehrotra Rajat**, and Abdelwahed Sherif, "A Component-Based Framework for Autonomic Performance Management in a Distributed Computing Environment," The 11th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA' 2014) pp.493-500, November 10-13, 2014, Doha, Qatar.
- **Mehrotra Rajat**, Srivastava Srishti, Banicescu Ioana, and Abdelwahed Sherif. "An Interaction Balance Based Approach for Autonomic Performance Management in a Cloud Computing Environment," Workshop on Adaptive Resource Management and Scheduling for Cloud Computing, (ARMS-CC), July 15-19, 2014, Paris, France, published in Lecture Notes in Computer Science, vol. 8907, pp 52-70.
- **Mehrotra Rajat**, Abdelwahed Sherif, and Erradi Abdelkarim, "A Distributed Control Approach for Autonomic Performance Management in Cloud Computing Environment," In Proceedings of the 2013 IEEE/ACM 6th International Conference on Utility and Cloud Computing (UCC '13), pp. 269-272, Dresden, Germany, 2013.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Rowland Krisa, "RFDMon: A Real-Time and Fault-Tolerant Distributed System Monitoring Approach." The Eighth International Conference on Autonomic and Autonomous Systems (ICAS-2012), St. Maarten, Netherlands Antilles, 2012.
- Chen Qian, Mehrotra Rajat, Dubey Abhishek, Abdelwahed Sherif, and Rowland Krisa, "On State of The Art in Virtual Machine Security." Proceedings of IEEE South East Conference (SouthEastCon-2012), pp. 1-6, Orlando, FL, 2012.
- **Mehrotra Rajat**, Banicescu Ioana, and Srivastava Srishti, "A Utility Based Power-Aware Autonomic Approach for Running Scientific Applications." 26th IEEE International Parallel and Distributed Processing Symposium Workshops & PhD Forum, pp. 1457-1466, Shanghai, China, 2012.
- Monceaux Weston, Deland E. Evans, Keith N. Rappold, Cary D. Butler, Abdelwahed Sherif, **Mehrotra Rajat**, and Dubey Abhishek, "Implementing Autonomic Computing Methods to Improve Attack Resilience in Web Services." DoD High Performance Computing Modernization Program Users Group Conference, pp.441-445, Portland, OR, June 2011.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Monceaux Weston, "Large Scale Monitoring and Online Analysis in a Distributed Virtualized Environment." IEEE International Conference and Workshop on Engineering of Autonomic and Autonomous Systems, 0:1-9, Las Vegas, NV, 2011.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Tantawi Asser, "Integrated Monitoring and Control for Performance Management of Distributed Enterprise Systems," 18th Annual IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems, pp.424-426, Miami, FL, 2010.

TECHNICAL REPORTS

- **Mehrotra Rajat**, and Abdelwahed Sherif, "Application of Interaction Balance Principle for Optimal Control in the Distributed Web Service Deployment." Technical Report, Mississippi State University, May 2013.
- Jia Rui, **Mehrotra Rajat**, Abdelwahed Sherif, and Erradi Abdelkarim, "An Implementation of a Real-Time Monitoring Framework to Support Fault Management in Distributed Systems." Technical Report, Mississippi State University, May 2012.
- **Mehrotra Rajat**, Dubey Abhishek, and Abdelwahed Sherif, "RFDMon: A Real-Time and Fault-Tolerant Distributed System Monitoring Approach". Technical report for Institute for Software Integrated Systems (ISIS), Vanderbilt University, 2011.
- **Mehrotra Rajat**, Dubey Abhishek., Abdelwahed Sherif, and Tantawi Asser. "Model Identification for Performance Management of Distributed Enterprise Systems." Technical report for Institute for Software Integrated Systems (ISIS), Vanderbilt University, 2010.

OTHER NEWS ARTICLES

- **Mehrotra Rajat**, “Requirements of a Generic Framework for Service Deployment in a Cloud Infrastructure.” The Newsletter of NSF Center for Cloud and Autonomic Computing, Vol. 4, Spring-2012.
- **Mehrotra Rajat**, and Banicescu, Ioana, “A Model-Based Framework for Autonomic Performance Management of Cloud Computing Systems.” The Newsletter of NSF Center for Cloud and Autonomic Computing, Vol. 4, Spring-2012.
- **Mehrotra Rajat**, and Abdelwahed Sherif, “Performance Modeling of Distributed Multi-Tier Enterprise Systems.” The Newsletter of NSF Center for Cloud and Autonomic Computing, Vol. 3, Summer-2011.

POSTERS

- **Mehrotra Rajat**, and Abdelwahed Sherif, “Model-Based Framework for Autonomic Resource Management of Web Service Platforms”, NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Rutgers University, Piscataway, NJ, Spring-2013.
- Srivastava Srishti, **Mehrotra Rajat**, Banicescu Ioana, and Abdelwahed Sherif, “A Model-based Framework for Autonomic Performance Management of Cloud Computing Systems.” 15th SIAM Conference on Parallel Processing for Scientific Computing, Savannah, GA, Feb-2012.
- **Mehrotra Rajat**, Qian Chen, Dubey Abhishek, Abdelwahed Sherif, and Rowland Krisa 2011, “Automated Model-based Security Management of Web Services.” 20th USENIX Security Symposium, San Francisco, CA, 2011.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Tantawi Asser, “Integrated Monitoring and Control for Performance Management of Distributed Enterprise Systems,” 18th IEEE/ACM International Symposium on Modelling, Analysis and Simulation of Computer and Telecommunication Systems, pp.424-426, 2010.
- **Mehrotra Rajat**, Dubey Abhishek, Abdelwahed Sherif, and Tantawi Asser, “Performance Modelling of Distributed Multi-Tier Enterprise Systems.” NSF-CAC (Center for Autonomic Computing) Semi-annual Meeting / Workshop @ Biosphere-2, Arizona, Fall-2011.
- Jia Rui, **Mehrotra Rajat**, Dubey Abhishek, and Abdelwahed Sherif, “Model-based Framework for Autonomic Resource Management of Web Services Platforms.” NSF-CAC (Center for Autonomic Computing) Semi-annual Meeting / Workshop @ Xerox, Dallas, Spring-2011.
- **Mehrotra Rajat**, Dubey Abhishek, and Abdelwahed Sherif, “Model-based Adaptive Performance Control of Cloud Computing Systems.” NSF-CAC (Center for Autonomic Computing) Semi-annual Meeting / Workshop @ Xerox, Dallas, Spring-2011.
- **Mehrotra Rajat**, and Abdelwahed Sherif, “Hierarchical Limited Look-ahead Controller for a Distributed Multi-Tier Enterprise Systems.” NSF-CAC (Center for Autonomic Computing) Semi-annual Meeting / Workshop @ Mississippi State University, Fall-2009.

INVITED TALKS AND PRESENTATIONS

- “Cyber-Infrastructure in Nevada EPSCoR,” NSF Workshop, Las Vegas, NV, Feb 2016.
- “A Component-Based Framework for Autonomic Performance Management in a Distributed Computing Environment,” The 11th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA' 2014) November, 2014, Doha, Qatar.
- “An Interaction Balance Based Approach for Autonomic Performance Management in a Cloud Computing Environment,” Workshop on Adaptive Resource Management and Scheduling for Cloud Computing, (ARMS-CC), (Remote Presentation), July 2014, Paris, France.
- “Model-Based Autonomic Performance Management of Distributed Enterprise Systems and Applications,” invited presentation, Desert Research Institute, Reno, NV, May 2014.
- “A Distributed Control Approach for Autonomic Performance Management in Cloud Computing Environment,” In Proceedings of the 2013 IEEE/ACM 6th International Conference on Utility and Cloud Computing (UCC '13), Dec 2013, Dresden, Germany.
- “Model-Based Autonomic Performance Management of Distributed Enterprise Systems and Applications,” invited presentation, VMWare, Palo Alto, CA, Oct 2013.
- “A Component based Framework for Autonomic Performance Management of Applications Hosted in Distributed Real Time Environment,” invited presentation, Mathworks Inc., Boston, MA, Feb 2013.
- “Model-Based Framework for Autonomic Resource Management of Web Service Platforms”, NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Rutgers University, Piscataway, NJ, Spring-2013.
- “A Utility Based Power-Aware Autonomic Approach for Running Scientific Applications.” 26th IEEE International Parallel and Distributed Processing Symposium Workshops & PhD Forum, Shanghai, China, 2012.
- “RFDMon: A Real-Time and Fault-Tolerant Distributed System Monitoring Approach,” The Eighth International

Conference on Autonomic and Autonomous Systems (ICAS-2012), Saint Martin, Mar 2012.

- “Model-Based Framework for Autonomic Resource Management of Web Service Platforms,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Mississippi State University, Mississippi State, MS, Fall 2012.
- “Performance Modeling of Distributed Multi-Tier Enterprise Systems,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Biosphere-2, Arizona, Fall-2011.
- “A Model-based Framework for Autonomic Performance Management of Cloud Computing Systems,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Biosphere-2, Arizona, Fall-2011.
- “Model-Based Framework for Autonomic Resource Management of Web Service Platforms,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Biosphere-2, Arizona, Fall-2011.
- “Large Scale Monitoring and Online Analysis in a Distributed Virtualized Environment,” IEEE International Conference and Workshop on Engineering of Autonomic and Autonomous Systems (EASe), Las Vegas, NV, April, 2011.
- “Performance Modeling of Distributed Multi-Tier Enterprise Systems,” NSF-CAC (Center for Cloud and Autonomic Computing) Planning Meeting @ Xerox Inc., Dallas, TX Spring-2011.
- “Automated Model-Based Security Management of Web Services,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ Xerox Inc., Dallas, TX Spring-2011.
- “Model-Based Framework for Autonomic Resource Management of Web Service Platforms,” NSF-CAC (Center for Cloud and Autonomic Computing) Semi-annual Meeting / Workshop @ University of Florida, Gainesville, FL, Fall 2010.
- “Performance Modeling of Distributed Multi-Tier Enterprise Systems,” NSF-CAC (Center for Cloud and Autonomic Computing) Planning Meeting @ Mississippi State University, Mississippi State, MS, Fall 2009.
- “Performance Modeling of Distributed Multi-Tier Enterprise Systems,” The Workshop on Mathematical performance Modeling and Analysis (MAMA -2009), Seattle, WA, June 2009.

COLLABORATIONS

Collaborated with various academic and industrial research organizations to perform research and develop novel algorithms, distributed architectures, energy-aware approaches, and software toolsets for advancing their research. These organizations include:

- IBM Thomas J. Watson Research Center, Yorktown Heights, NY.
- Fermi National Laboratory, Batavia, IL.
- US Army Corps of Engineers, Engineer Research & Development Center (ERDC), Vicksburg, MS.
- Institute for Software Integrated Systems, Vanderbilt University, Nashville, TN.
- Dept. of Computer Science, University of Virginia, Charlottesville, VA.
- NSF Center for Cloud and Autonomic Computing, Mississippi State University.
- High Performance Computing Collaboratory (HPC2), Mississippi State University.
- Desert Research Institute, Reno, NV.
- University of Nevada, Reno, NV.
- University of Nevada, Las Vegas, NV.

PROFESSIONAL AFFILIATIONS AND HONOURS

- IEEE, Senior Member (http://www.ieee.org/membership_services/membership/senior/index.html): A special honor for select few of IEEE members for their significant recognition in technical and professional achievement and excellence.
- ACM, Professional Member.
- Member of Cloud and Network Softwarization (CloudNetS) Research group, Oxford Brookes University, Oxford, UK (<http://tech.brookes.ac.uk/CloudNets/members.php>): Group of internationally recognized and accomplished researchers who have interest in solving critical problems of cloud computing and software defined networking.
- Student travel grant to attend and present my ongoing research project in 20th USENIX Security Symposium, 2011 in San Francisco, CA.
- Phi kappa Phi Honor Society (<https://www.phikappaphi.org/>), Member 2009: Only top 10% of the graduate students get invitation to join this.
- IEEE Eta Kappa Nu Honor Society (http://www.ieee.org/education_careers/education/ieee_hkn/index.html), Member 2010: It recognizes academic achievements, indicates leadership potential, both while in school and in

the course of a professional career.

- Featured Researcher in The Newsletter of NSF Center for Autonomic Computing, Vol. 3, Summer-2011.
- President of MSU Cricket Club, Mississippi State University for year 2010-11.
- Vice-President of MSU Cricket Club, Mississippi State University for year 2009-10.
- Kudos Award in Alcatel-Lucent for exceptional performance during year 2006-2007.

JOURNALS AND CONFERENCE REVIEW SERVICES

- Reviewer for Journal of Cluster Computing, Springer Publications.
- Reviewer for IEEE Transactions on Cloud Computing.
- Reviewer for Journal of Earthquake Science, Springer Publications.
- Reviewer for International Journal of Advanced Computer Science and Applications (IJACSA).
- Reviewer for International Journal of Communication Networks and Distributed Systems (IJCNDS).
- Reviewer for International Journal of Computing and Digital Systems (IJCDS).
- Technical Program Committee Member of 2nd IEEE International Conference on Communication Systems, Computing and IT Applications (CSCITA) 2017.
- Technical Program Committee Member of Future Technologies Conference 2016.
- Technical Program Committee Member of IEEE International Conference on Intelligent Systems (Intellisys), London, UK, 2016.
- Technical Program Committee Member of International Conference on Information and Communication Technologies for Disaster Management (ICT-DM), 2016.
- Technical Program Committee Member of International Workshop on Science of Smart City Operations and Platforms Engineering (SCOPE) 2016.
- Technical Program Committee Member of International Conference on Advances in Computing, Communications and Informatics (ICACCI) 2016.
- Technical Program Committee Member of International Conference on Internet Monitoring and Protection (ICIMP) 2016.
- Technical Program Committee Member for International Conference on Autonomic and Autonomous Systems (ICAS), 2016.
- Technical Program Committee Member of IEEE International Workshop on Management Issues in SDN, SDI and NFV (MISSION 2015), London, UK, 2015.
- Technical Program Committee Member of International Conference on Information and Communication Technologies for Disaster Management (ICT-DM), 2015,
- Technical Program Committee Member for International Conference on Autonomic and Autonomous Systems (ICAS), 2015.
- Technical Program Committee Member of IEEE International Workshop on Manageability and Security of Network Function Virtualization and Software Defined Network (MASONs), 2015.
- Technical Program Committee Member of International Conference on Computing in Mechanical Engineering (ICCME), Aug 2015.
- Technical Program Committee Member for International Conference on Autonomic and Autonomous Systems (ICAS), 2014.
- Technical Program Committee Member of ACS/IEEE International Conference on Computer Systems and Applications (AICCSA 2014).
- Technical Program Committee Member for International Conference on Autonomic and Autonomous Systems (ICAS), 2013.
- Session Chair for Theory and Practice of Autonomous Systems at International Conference on Autonomic and Autonomous Systems (ICAS), 2012.
- Reviewer for Jordanian International Electrical and Electronics Engineering Conference, 2013.
- Reviewer for Cluster Computing and the Grid (CCGRID) 2011.
- Reviewer for Jordanian International Electrical and Electronics Engineering Conference, 2011.