Bio-sketch of Manish Parashar, Ph.D.

Computer Scientist and Electrical Engineer, AAAS Fellow, IEEE Fellow, ACM Distinguished Scientist
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Education Profile

Bombay University	Electronics & Telecommunications	B.E., 1988
Syracuse University	Computer Engineering	M.S., 1994
Syracuse University	Computer Engineering	Ph.D., 1994
University of Texas at Austin	Computer Sciences	Post-doc, 1994-1995

Appointments

Office Director	OAC, US National Science Foundation	2018 – Present
Distinguished Professor	Rutgers University	2015 – Present
Director	Rutgers Discovery Informatics Institute (RDI^2)	2012 – Present
Co-Director	Cloud & Autonomic Computing Center, Rutgers	2008 – Present
Faculty Member	Rutgers Cancer Institute of New Jersey	2014 – Present
Joint Faculty	Oak Ridge National Laboratory	2015 – Present
Visiting Professor,	University of Derby, UK	2012 – Present
Associate Director	Center for Information Assurance, Rutgers	2008 – Present
Assoc. Vice President	Rutgers Office of Adv. Research Computing	2014 – 2016
Professor I	Rutgers University	2005 – 2015
Program Director	OCI, US National Science Foundation	2009 – 2011
Associate Professor	Rutgers University	2002 – 2005
Assistant Professor	Rutgers University	1997 – 2002
Adj. Assistant Professor	University of Texas at Austin	1996 – 1997
Research Associate	CSM/ICES, University of Texas at Austin	1995 – 2005

Research Overview

My academic career is focused in the area of computational and data-enabled science and engineering and addresses key conceptual, technological and educational challenges that are critical to realizing its potential. My research is in the broad area of high performance parallel and distributed computing and investigates conceptual models, programming abstractions, and implementation architectures that can enable new insights through very large-scale computations and big data in a range of domains that are critical to advancing our understanding of important natural, engineered and social systems. My contributions include innovations in data structures and algorithms, programming abstractions and systems, and systems for runtime management and optimization. Furthermore, the development and deployment of software system that encapsulate these research innovations and can be used by scientists and engineers in academia and industry, has been an integral part of my research. This includes constructing and operating the cyberinfrastructure for large science facilities such as the NSF Ocean Observatories Initiative (OOI). My research has had direct and significant impact on a range of domains (such as, for example, subsurface/seismic modeling, plasma physics and fusion, hydrology, compressible turbulence and computational fluid dynamics, bio-/medical informatics, oceanography, numerical relativity/astrophysics, plasma physics, and business intelligence) as evidenced by my publications. I have close collaborations with leading research groups (at universities, national laboratories, and industry).

Selected Awards, Honors and Recognition

Competitive Awards:

- Winner, 2015 Cloud Challenge Award (Category 2), 8th IEEE/ACM International Conference on Utility and Cloud Computing, St. Raphael Resort, Limassol, Cyprus, December 2015.
- 2013 R&D 100 Award for "ADIOS: Adaptable I/O System for Big Data (Information Technologies)" (with Oak Ridge National Laboratory and Georgia Institute of Technology)
- Google App Engine Education Award for Cloud Computing for Scientific Applications (2013)
- IBM Faculty Award (2008 and 2010)

- Tewkesbury Fellowship, University of Melbourne, Australia, (2006)
- NSF CAREER Award (1999)
- Enrico Fermi Award, Argonne National Laboratory (1996)
- Distinguished Fellowships from the Texas Institute for Computational and Applied Mathematics, University of Texas at Austin in 1999, 2000 and 2001
- Winner of the 4th IEEE International Scalable Computing Challenge (SCALE 2011, May 2011)
- Best paper award at leading IEEE/ACM conferences (SC'92,'01, Grid'09, CAC'13, SOSE'16, *ESPM2@SC'16*).
- Best published paper in 2006 by the Australian Computer Society (ACS).
- Top sited article in the Advanced Engineering Informatics Journal, Elsevier Publishers during 2005 – 2010

Honors from Professional Societies:

- Elected to IEEE Computer Society's Golden Core, 2017
- Founding Chair, IEEE Technical Consortium on High-Performance Computing, 2016
- IEEE Meritorious Service Certificate, 2016
- Elevated to ACM Distinguished Scientist, Association of Computing Machinery, 2014
- Elected AAAS Fellow for ***distinguished contributions to high-performance parallel and distributed computing and its application to the advancement of computational science and engineering*** in 2012
- Elevated to IEEE Fellow by the IEEE Computer Society for ***contributions to parallel and distributed computing*** in 2011
- Outstanding Leadership Awards form the IEEE Technical Committee on Scalable Computing (TCSC) in 2008, 2009, 2010, 2011, 2012, and 2013.
- Outstanding Service Awards from the IEEE Technical Committee on Parallel Processing (TCPP) in 2009, 2010, 2011 and 2017.
- Member of the IEEE Distinguished Visitors Program (DVP) during 2004 – 2006

Awards and Recognition within Rutgers:

- Peter D. Cherasia Faculty Scholar Award, School of Engineering (2014 – 2017)
- Rutgers University Board of Trustees Award for Excellence in Research (2004 – 2005)
- Research Outreach and Recognition (2011) & Excellence in Ph.D. Mentoring Award (2012) from the Dept. of Electrical and Computer Engineering

Publications, Presentations & Products

I have co-authored over 350 technical papers including rigorously refereed papers in leading journals and international conference and workshop proceedings. I have also has edited multiple books, conference proceedings and journal special issues. My research has also been published in invited journal/conference/workshop papers and book chapters, and I have given a large number of invited presentations at various national and international venues, including keynote and distinguished lectures. I have participated actively in the IEEE Distinguished Visitor Program (DVP) and have presented tutorials in the area of parallel and distributed computing and computation based on my research. My research has led to 1 patent and 1 provisional patent.

I have developed and deployed several software systems that are being used for scientists and engineering in academia and industry. These include *CometCloud* for enabling dynamic software defined infrastructure across federated infrastructure, *DataSpaces* (*2013 R&D 100 award winner*), for extreme scale coupled workflows, DART for high-throughput, low latency data extraction and streaming, *Fenix* for online failure recovery on extreme scale systems, *AutoMate*/*Accord*/*Meteor* to support autonomics, and *GrACE*/*DAGH* and *MACE*/*Seine* for very large scale, dynamically adaptive and coupled simulations.

Funding Profile

I have been part of over 100 funded grants (including over 70 federal grants) totaling over US $50 Million. This includes funding as part of leading US Department of Energy (DOE) programs and projects such as multiple grants from the Exascale Computing Program (ECP), the ExaCT Combustion Exascale Co-design Center, the SDAV SciDAC Institute and the EPSI SciDAC Fusion Simulation Project, CI O&M for the OOI NSF MERFC project, a $10 Million grant from the New Jersey State, and multiple industry grants including a US $3.3 Million in-kind donation from IBM. My overall funding profile also includes grants from highly prestigious and

highly competitive programs such as the US NSF CAREER, KDI (2 grants), ITR (3 grants), and CDI programs, and the US DOE ASCI, SciDAC and Exascale Co-design and Exascale Computing programs.

Leadership

National: I am currently serving as Office Director for the Office of Advanced Cyberinfrastructure (OAC) at the US National Science Foundation, where is I am overseeing NSF's investments in the exploration development, acquisition and provision of state-of-the-art cyberinfrastructure resources, tools and services essential to the advancement and transformation of science and engineering. I also lead Cyberinfrastructure Operation and Maintenance for the Ocean Observatories Initiative (OOI) NSF MREFC Project (currently delegated due to my NSF IPA). I am also co-leading the Discovery Science Spoke of the NSF Northeast Big Data Hub. I was Program Director in the Office of Cyberinfrastructure at the US National Science Foundation between 2009 and 2011, where I focused on computational and data-enabled science and engineering research and education, software sustainability, cloud and data intensive computing research programs, and managed an approximately $150 Million research portfolio. I was responsible for establishing a number of new programs including the *Software Infrastructure for Sustained Innovation (SI²)* and the *NSF Fellowships for Transformative Computational Science using Cyberinfrastructure (CI TraCS)* program and was part of the team the established the *Computing in the Cloud (CIC)* program. I also worked on establishing international partnerships as part of the SI² program with UK and China, both of which have resulted in joint calls in 2012 and beyond. Within New Jersey, I was instrumental in the founding of (and am current coordinating) the *New Jersey Big Data Alliance*, which brings together academic institutions, government organizations and industry across the state to address Big Data challenges and seize Big Data opportunities. I also led legislations aimed at statewide strategic planning in Big Data and Advanced Cyberinfrastructure, which were passed by the Senate and Assembly and signed by the Governor in August 2014.

International: Within the broader research community, I am the Founding Chair of the IEEE Computer Society Technical Consortium on High Performance Computing (TCHPC), Editor-in-Chief of the IEEE Transactions on Parallel and Distributed Systems (TPDS), Associate Editor-in-Chief of the IEEE Transactions on Parallel and Distributed Systems (TPDS) since 2014, Chair of the Steering Committee of the IEEE Cloud Computing Magazine and have a leadership role in various professional societies. Specifically, I am a member of Executive Committee for the IEEE Computer Society Technical Committee on Parallel Processing (TCPP) since 2003 and was responsible for Student Awards between 2003 and 2016. I served as member of Advisory Board and Chair of the Awards Committee of the IEEE Computer Society Technical Committee on Scalable Computing (TCSC) between 2007 and 2016 and was Vice Chair of TCSC between 2007 and 2011. I also established the IEEE TCHPC Award for Excellence for Early Career Researchers in High Performance Computing, the IEEE TCSC award for Excellence in Scalable Computing, TCSC Young Achievers in Scalable Computing/Early Career Award of Excellence and Scale Computing, and the TCSC Scale Challenge. I have served on IEEE Fellows Committees (2011, 2012, 2013, 2014, 2015, 2016, 2017), chaired the ACM IEEE-CS George Michael Memorial HPC Fellowship in 2016 committee, and have served on various other society awards committees. I served as Co-Editor-in-Chief of the ACM Transactions on Autonomous and Adaptive Systems (TAAS) (2011-2017), co-founded the IEEE/ACM (now USENIX) International Conference on Autonomic Computing (ICAC). I am co-editor of the Data* Track of the IEEE CiSE magazine, am a member of the editorial board of 21 international journals (including ACM Computing Surveys, IEEE-TCC, IEEE-TSC, IEEE CiSE, IEEE IoT-J, and CCPE), member of the steering committees of 10 conferences (including SC'XY, HPDC, CCGrid, HiPC) and have served in a leadership role in the organizing committees of a large number of international conferences (including 33 as general chair and 46 as program chair/vice chair) and workshops. I have also served on the program committees over 300 international conferences and workshops.

Rutgers University: I co-founded the *Office of Advanced Research Computing (OARC)* and co-led it between 2015-2016 as the interim Associate Vice President for Research Computing. I deployed Caliburn, the largest Supercomputer in NJ, at Rutgers, ranked #2 among Big Ten Universities and #8 among US Academic Institutions (June 2016 Top500 List), June 2016. I also led strategic planning activities for Advanced Research Cyberinfrastructure across Rutgers, am co-chairing the Big Data Working Group of the Rutgers Biomedical and Health Science Strategic Planning Committee and am a member of the Rutgers University Strategic Planning Committee. I also founded the *Rutgers Discovery Informatics Institute (RDI²)* and

established an NSF Industry-University Collaborative Research Center (IUCRC), in partnership with University of Florida and University of Arizona, focused on *Cloud and Autonomic Computing (CAC)*. This center has since expanded to include Mississippi State University and will include Indiana University, University of Chicago and Texas Tech University. I was part of the founding team and am Associate Director of the *Rutgers Center for Information Assurance (RUCIA)*. I am part of various committees at the department, school and university level.

Teaching and Mentoring

I am a member of the Computer Science faculty at Rutgers University since July 2014. I was a faculty of Electrical and Computer Engineering faculty at Rutgers University between July 1997 and June 2014 and a member of the graduate faculty of the Department of Computer Science since April 2009. I have graduated 20 Ph.D. and 50 M.S. students (with thesis), mentored postdocs, research faculty, postdocs, Fulbright Scholars and visiting researchers, and have supervised numerous research projects and graduate and undergraduate independent studies. I have served on 43 Ph.D. committees (including committees at other national and international universities) and 73 M.S. committees. I typically supervise a multidisciplinary research team composed of research faculty, postdoctoral fellows, Ph.D., Masters and Undergraduate students, and regularly mentor high-school students as part of the Governors School program at Rutgers. I have also been actively involved in curriculum development at Rutgers in the area of parallel and distributed computing and am part of the NSF/IEEE-TCPP Curriculum Initiative on Parallel and Distributed Computing.