Bio-sketch of Manish Parashar, Ph.D.

Computer Scientist and Electrical Engineer, AAAS Fellow, ACM Fellow, IEEE Fellow
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(*Full CV available at: http://manishparashar.org/content/parashar-vita.pdf*)

Present Positions

Chief Artificial Intelligence (AI) Officer, University of Utah

Director & Chair in Computational Science and Engineering, Scientific Computing and Imaging (SCI) Institute, University of Utah

Presidential Professor, School of Computing, University of Utah

Lead, One-Utah Responsible Artificial Intelligence Initiative

Faculty Co-Director, Data Science & Ethics of Technology Initiative (DATASET), One-Utah Data Science Hub, University of Utah

Visiting Professor, Department of Computer Science, Rutgers University

Chair, IEEE Community on High-Performance Computing (TCHPC)

Member, Computing Research Association's Computing Community Consortium (CCC) Council

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

Past Appointments

Consultant	WH Office of Science and Technology Policy	2023 – 2024
Office Director	CISE/OAC, US National Science Foundation	2018 – 2023
Visiting Professor	University of Derby, UK	2012 – 2021
Asst. Dir., Strategic Comp.	WH Office of Science and Technology Policy	2020 – 2020
Distinguished Professor	Rutgers University	2015 – 2020
Founding Director	Rutgers Discovery Informatics Institute (RDI^2)	2012 – 2020
Faculty Member	Rutgers Cancer Institute of New Jersey	2014 – 2020
Associate Director	Center for Information Assurance, Rutgers	2008 – 2017
Joint Faculty	Oak Ridge National Laboratory	2015 – 2017
Co-Director	Cloud & Autonomic Computing Center, Rutgers	2008 – 2017
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 has focused on translational computer science with a specific emphasis on computational and data-enabled science and engineering and has addressed key conceptual, technological, and educational challenges. 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 critical to advancing our understanding of important natural, built, and human 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 systems 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 disseminating open-source software as well as constructing and operating production

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 (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 collaborations with leading national and international research groups at universities, national laboratories, and industry.

Selected Awards, Honors and Recognitions

Competitive Awards: Computing Research Association (CRA) Distinguished Service Award (2024); IEEE Computer Society Sidney Fernbach Award (2023), HPDC Achievement Award (2023), Cloud Challenge Award (UCC 2015); R&D 100 Award (2013); IEEE SCALE Challenge (2011); IBM Faculty Award (2008 & 2010); Tewkesbury Fellowship, Univ. of Melbourne, Australia, (2006); Enrico Fermi Award, Argonne National Laboratory (1996); Best Paper/Most cited Paper Awards (SC'92, '01, Australian Computer Society (2006), Grid'09, Advanced Engineering Informatics Journal, Elsevier Publishers (2005 – 2010), CAC'13, SOSE'16, ESPM2@SC'16, AAAI'20)

Honors from Professional Societies: ACM Fellow (2020); AAAS Fellow (2012); IEEE Fellow (2011); IEEE T&C Distinguished Leadership Award (2021); IEEE Computer Society Golden Core (2016); IEEE Meritorious Service Certificate (2016); TCSC Outstanding Leadership Awards (2008, 2009, 2010, 2011, 2012, 2013); IEEE TCPP Outstanding Service Award (2009, 2010, 2011, 2017, 2019); IEEE Distinguished Visitors Program (DVP) (2004 – 2006).

University Awards and Recognitions: Peter D. Cherasia Faculty Scholar Award (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).

Leadership

National/State: I recently served as a Consultant at the White House Office of Science and Technology Policy (OSTP) as part of the National Artificial Intelligence Initiative Office (NAIIO), coordinating the implementation and deployment of the multi-agency pilot of the National Artificial Intelligence Research Resource (NAIRR). In May 20203, I completed a 5+ year IPA as Office Director for the Office of Advanced Cyberinfrastructure (OAC) at the US National Science Foundation (NSF), where I manage an approximately $225 Million budget and am overseeing NSF's investments in the exploration development, acquisition, and provisioning of state-of-the-art national cyberinfrastructure resources, tools, services, and expertise essential to the advancement and transformation of all of science and engineering. As Office Director, I have developed NSF's strategic vision for a National Cyberinfrastructure Ecosystem for 21st Century Science and Engineering that responds to rapidly changing application and technology landscapes and blueprints for NSF's key cyberinfrastructure investments over the next decade. I also co-lead several of NSF's key initiatives, including Harnessing the Data Revolution (HDR) and Public Access. I served as co-chair, in coordination with the US White House Office of Science and Technology Policy (OSTP), of the National Artificial Intelligence Research Resource (NAIRR) Task Force, the National Science and Technology Council (NSTC) Subcommittee on the Future Advanced Computing Ecosystem (FACE) and was part of the leadership of the COVID 19 HPC Consortium, a unique public-private partnership that brought together government, industry, and academic leaders to provide computing resources in support of COVID-19 research. I also served as Assistant Director for Strategic Computing at the White House OSTP, where I led all-of-government strategic planning for the Nation's Future Advanced Computing Ecosystem and the development of the report *"Pioneering the Future Advanced Computing Ecosystem: A Strategic Plan"* and the establishment of the NSTC FACE Subcommittee. At OSTP I also led the formulation of the National Strategic Computing Reserve (NSCR) concept and its development and the resulting Request for Information and blueprint. I was the NSF representative for the US National Strategic Computing activities led by the White House Office of Science and Technology Policy (OSTP) and served as co-chair of the Fast-Track Action Committee (FTAC) that developed the report titled "*National Strategic Computing Update: Pioneering the Future of Computing."* Before joining NSF, I led the design, development, deployment, and Operations and Maintenance of the Cyberinfrastructure for the Ocean Observatories Initiative (OOI) NSF Large Facility. I also co-led the Discovery Science Spoke of the NSF Northeast Big Data Hub.

I have served as 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 *Software Infrastructure for Sustained Innovation (SI^2)* and *NSF Fellowships for Transformative Computational Science using Cyberinfrastructure (CI TraCS)* and co-led the creation of the *Computing in the Cloud (CIC)* program. I also worked on establishing international partnerships as part of the SI^2 program with UK and China, both of which resulted in joint calls in 2012 and beyond.

Within New Jersey, I was instrumental in the founding of 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 the creation of legislation 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.

Community: I am the Founding Chair of the IEEE Computer Society Community on High-Performance Computing (TCHPC). I am also a member of the Computing Research Association's Computing Community Consortium (CCC) Council. I served as the Chair of the IEEE Computer Society Committee on Open Science and Reproducibility, Editor-in-Chief of the IEEE Transactions on Parallel and Distributed Systems (TPDS) since 2018, Associate Editor-in-Chief of the IEEE Transactions on Parallel and Distributed Systems (TPDS) 2014-2017 and Chair of the Steering Committee of the IEEE Cloud Computing Magazine (2013), and have leadership roles 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, 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) and co-founded the IEEE/ACM International Conference on Autonomic Computing (ICAC) (now International Conference on Autonomic Computing and Self-Organizing Systems (ACSOS)). I serve as co-editor of the Case Studies in Translational Computer Science Department and previously served as co-editor of the Data* Track of the IEEE CiSE magazine. I 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 and workshops (including over 40 as general chair and over 50 as program chair/vice chair). I have also served on the program committees over 300 international conferences and workshops. I had a visiting faculty appointment at the University of Derby, UK and have served on advisory/evaluation committees for international research organizations and projects.

University: I am currently leading the Scientific Computing and Imaging (SCI) Institute, a university-wide multidisciplinary institute with mission to transform science and society through translational research and innovation in computer, computational and data sciences. I also lead the One-Utah Responsible Artificial Intelligence Initiative, a $100 Million University of Utah initiative aimed at harnessing translational AI to achieve societal good while protecting privacy, civil rights and civil liberties, and promoting fairness, accountability, transparency, and equity. I am Faculty Co-Director of the Data Science & Ethics of Technology Initiative (DATASET), that is part of the One-Utah Data Science Hub, which is develop an overarching data-science strategy for the University of Utah. I also serve on various committees and advisory boards at the university. At 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 acquired funding for and 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) at deployment. 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 founded the *Rutgers Discovery Informatics Institute (RDI^2)* 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 department, school and university committees.

Publications, Presentations & Products

I have co-authored over 400 technical papers (largely in rigorously refereed venues) in leading journals and international conference and workshop proceedings. I have also edited multiple books, conference proceedings and journal special issues. My research has 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 over 70 keynotes 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 2 provisional patents. My publications are listed at https://scholar.google.com/citations?user=BGNzBsUAAAAJ&hl=en.

I have developed and deployed several software systems that are being used for scientists and engineering in academia and industry. These include *SciDX*, a scalable platform of composable and customizable data services supporting data discovery, data staging, data streaming and in-situ data processing, *DataSpaces* (2013 R&D 100 award winner), for extreme scale in-situ coupled workflows, *DART* for high-throughput, low latency data streaming, *Fenix* for online failure recovery, *R-Pulsar* programming framework for data-driven edge-cloud integration, *CometCloud* for enabling dynamic software defined infrastructure across federated infrastructure, *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 $70 Million. This includes funding as part of leading US Department of Energy (DOE) programs and projects such as grants from the Exascale Computing Program (ECP), the ExaCT Combustion Exascale Co-design Center, the RAPIDS and SDAV SciDAC Institutes and the EPSI SciDAC Fusion Simulation Project, CI O&M for the OOI NSF Large Facility 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.

Teaching and Mentoring

I am a member of the Computer Science faculty at Rutgers University since July 2014. I was a member of the Electrical and Computer Engineering faculty at Rutgers University between July 1997 and June 2014 and am a member of the graduate faculty of the Department of Computer Science since April 2009. I have graduated 25 Ph.D. and over 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 49 Ph.D. committees (including committees at other national and international universities) and 73 M.S. committees. I typically supervise a multidisciplinary research team 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 and as part of the broader community.