

PADMA RAGHAVAN
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Vice Provost for Research
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Education

12/91 Ph.D. Computer Science, Penn State, University Park, PA
8/87 M.S. Computer Science, Penn State, University Park, PA
7/85 B.Tech. (Honors), Computer Science and Engineering, Indian Institute of Technology, Kharagpur, India

Employment

2/16 - Inaugural Vice Provost for Research, Vanderbilt University
2/16 - Professor of Computer Science and Computer Engineering, Vanderbilt University
10/13 -1/16 Associate Vice President for Research, Pennsylvania State University
7/07- 1/16 Founding Director, [Institute for CyberScience](#), The Pennsylvania State University
3/12- 1/16 Distinguished Professor, Department of Computer Science and Engineering, The Pennsylvania State University; Professor, 7/05–3/12; Associate Professor, 8/00–7/05
8/00-3/01 Associate Professor, Department of Computer Science, the University of Tennessee; Assistant Professor, 8/94–7/00
3/99-7/04 Consultant, Sandia National Laboratory
8/95-7/00 Research Scientist, Oak Ridge National Laboratory
8/91-7/94 Post-Doctoral Research Associate, National Center for Supercomputing Applications, University of Illinois

Research Interests

- Computational Data Science: parallel matrix and graph algorithms for predictive computational modeling and data analytics
- High Performance Computing (supercomputing): energy-efficient, scalable and resilient design and implementation
- Over 50 M.S. and Ph.D. theses supervised with co-authoring of 108 refereed publications, 5 book-chapters and an edited volume with M. Heroux and H.D. Simon on “Parallel Processing for Scientific Computing” through the SIAM book series on Software, Tools, and Environments, supported by DARPA, DoD, DoE, NIH, NSF, industry and university sponsors.

Honors and Awards

- Fellow of the IEEE, for contributions to robust scalable sparse solvers and energy-efficient parallel scientific computing, 2013.

- Best Poster, IEEE/ACM Supercomputing 2010, *Impact of Soft Errors on Sparse Linear Solvers*, S. Srinivasmurthy, M. Shantharam, P. Raghavan and M. Kandemir, 2010.
- Best Paper, Software Track, 22nd IEEE/ACM International Parallel and Distributed Symposium, *A Helper Thread Based EDP Reduction Scheme for Adapting Application Execution in CMPs*, Y. Ding, M. Kandemir, P. Raghavan and M. J. Irwin, 2008.
- The Maria Goeppert-Mayer Distinguished Scholar Award, Argonne National Laboratory (Department of Energy) and the University of Chicago, for contributions to scalable parallel techniques for sparse linear system solution, 2002.
- The National Science Foundation, Computer and Information Science and Engineering Directorate, CAREER Award for parallel sparse matrix computations, 1995-2000.
- The Pennsylvania State University
 - Faculty Scholar Medal in Engineering for contributions to parallel scientific computing, 2010.
 - Committee on Institutional Cooperation Academic Leadership Program Fellow, 2009.
 - Faculty Teaching Award, Department of Computer Science and Engineering, 2006.

Selected Advisory and Review Board Activities (2009 – present)

- National Science Foundation
 - Search Advisory Committee for the Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), 2019.
https://www.nsf.gov/od/searches/cise-190211/cise_search_cmte.jsp
 - Advisory Committee for Computer and Information Science and Engineering (CISE-AC), 2015-present. <https://www.nsf.gov/cise/advisory.jsp>. See also “*Realizing the Potential of Data Science*”, F. Berman, R. Rutenbar, B. Hailpern, H. Christensen, S. Davidson, D. Estrin, M. J. Franklin, M. Martonosi, P. Raghavan, V. Stodden and A. S. Szalay, *Communications of the ACM* Vol. 61, #4, pp.67—72, 2018.
 - Advisory Committee for Cyberinfrastructure, 2018-present.
<https://www.nsf.gov/cise/oac/advisory.jsp>
 - Committee of Visitors for the Review of the Office of Cyberinfrastructure, 2005-2010, 29-page report, 2011.
<http://www.nsf.gov/od/iaa/activities/cov/oci/2011/OCI%20COV%20FY%202008%20-%20FY%202010%20-120512.pdf>
 - NSF review panels, various, including notably, CISE: Expeditions in Computing Blue Ribbon Reverse Site Visit panel, 2015, and Chair, Cross-Directorate: Extreme Science and Engineering Discovery Environment (XSEDE) Panel, 2014.
- National Academies Panels and Reports
 - National Research Council (NRC) Committee on Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science in 2017-2020, 2014-2016
<https://www.nap.edu/catalog/21886/future-directions-for-nsf-advanced-computing-infrastructure-to-support-us-science-and-engineering-in-2017-2020>
 - Laboratory Assessments Board, Review of the Information Technology Laboratory at the National Institute of Standards and Technology (NIST), 2018.
<https://www.nap.edu/initiative/panel-on-review-of-the-information-technology-laboratory-at-the-national-institute-of-standards-and-technology>
 - Division of Engineering and Physical Sciences:
 - Technical Advisory Board to assess the scientific quality of R&D at the Army Research Laboratory.
 - Digitization and Communications Science, 2009-2012.
<http://www8.nationalacademies.org/cp/projectview.aspx?key=49528>

- Information Sciences, 2013-2016.
<https://www.nap.edu/read/21916/chapter/1>
- Computational Science, 2017. <https://www.nap.edu/read/25011/chapter/1>
- Information Sciences, 2019.
<https://www8.nationalacademies.org/pa/projectview.aspx?key=49528>
- Department of Energy and its Laboratories
 - Member, Board of Governors, UT-Battelle, manages Oak Ridge National Laboratory for the Department of Energy, 2016-present.
 - Member, Science Advisory Board, Oak Ridge National Laboratory, 2016-present.
 - Lawrence Livermore National Laboratory (LLNL), Computation Directorate External Review Committee, 2009-2012, 2014-2015.
 - Office of Science, Committee of Visitors for the Applied Mathematics Advanced Scientific Computing Research (ASCR) program, 2013.
- Computer Research Association, Committee on the Status of Women in Computing Research (CRA-W) <http://cra-w.org/Home.aspx> . Board of Trustees, co-chair for the Distinguished Lecture Series, 2013-2016. Annual engagement with the Graduate Cohort Workshops, 2009-2015.
- Network for Earthquake Engineering Simulation, 2011-2015. <http://nees.org/about>
- U.S. Army Research Office, Board of Visitors, Computing Sciences Division 2014.
- China-US Software Workshop, National Science Foundation and the National Natural Science Foundation of China, Leader, Extreme-Scale Software, 2012.
- The National Science Foundation and WTEC Co., Inventing a New America through Discovery and Innovation in Science, Engineering and Medicine. Chapter 6 – “Ensuring Sustainable Software for Simulation-Based Engineering and Science”, 2010.
http://www.nsf.gov/mps/ResearchDirectionsWorkshop2010/RWD-color-FINAL-usletter_2010-07-16.pdf
- National Science Foundation and WTEC Co., Committee on Vision for Simulation Based Engineering and Science Research in the Next Decade, Software Section, 2009. (see <http://www.wtec.org/sbes-vision/>)
- Blue Waters Petascale Applications Advisory Committee, NCSA and The University of Illinois at Urbana-Champaign, 2009-2011.

Selected Professional Activities and Editorships (Most recent 10 years)

- The Society for Industrial and Applied Mathematics (SIAM)
 - Member of the Council, <https://www.siam.org/About-SIAM/Leadership>; SIAM is led by its officers, elected members of its Board and Council, 2015 -present.
 - Committee on Science Policy, <https://www.siam.org/About-SIAM/Committees/Committee-on-Science-Policy-CSP>, 2015-2019.
 - Book Committee <https://www.siam.org/about-SIAM/committees/Book-Committee> , 2017-present.
 - Editorial Board, SIAM series on Computational Science and Engineering, <http://bookstore.siam.org/computational-science-and-engineering/>, 2009-2016.
 - Wilkinson Prize Selection Committee, 2018.
 - Editorial Board, SIAM series on Software, Environments and Tools, <http://bookstore.siam.org/software-environments-and-tools/>, 2012 – present

- SIAM Workshop on Future Directions in Computational Science and Engineering Education and Research, 2015.
- Associate Editor, SIAM Journal of Scientific Computing, <https://www.siam.org/Publications/Journals/SIAM-Journal-on-Scientific-Computing-SISC> , 2005-2012.
- Co-Chair, SIAM Conference on Computational Science and Engineering, <https://archive.siam.org/meetings/cse11/index.php> , January 2010 - March 2011 (850 attendees).
- The Institute of Electrical and Electronic Engineers (IEEE) and the Association of Computing Machinery (ACM)
 - Chair, Technical Program, IEEE/ACM Supercomputing 2017, November 2015 – November 2017 (over 10,000 attendees).
 - IEEE Computer Society Fellows Evaluation Committee, 2015.
 - Co-Chair, Awards, IEEE/ACM Supercomputing 2015.
 - Co-Chair, Invited and Plenary Talks, IEEE/ACM Supercomputing 2014.
 - Vice-Chair, Applications, IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2014.
 - IEEE Young Achievers in Scalable Computing Selection Committee, 2014-2016.
 - Co-Chair Technical Papers, Supercomputing 2012 (over 9,000 attendees).
 - Ad hoc committee to establish a "Verified Results" policy for the ACM Transactions on Mathematical Software, member, 2012.
 - Chair, Doctoral Research Showcase, IEEE/ACM Supercomputing, 2009.
- Associate Editor, Journal of Computational Science, <http://www.journals.elsevier.com/journal-of-computational-science/>, 2011-2015.
- Associate Editor, Journal of Parallel and Distributed Computing, <http://www.journals.elsevier.com/journal-of-parallel-and-distributed-computing/>, 2010-2015.

Selected Invited Presentations (Most recent 10 years)

- 11/18 IEEE/ACM Supercomputing, SC'18, Dallas, TX, *Superscaling Performance through Energy-Efficient Supercomputing*.
- 7/18 Workshop on Clusters, Clouds and Data for Scientific Computing, Chemin de Chanze, France, *Rethinking the Computational Complexity and Efficiency in the Age of 'Big Data.'*
- 4/18 Purdue University, West Lafayette, IN, *Rethinking Performance and Resiliency for Massively Parallel Processing of Large Sparse Data Sets*.
- 9/16 The 28th International Workshop on Languages and Compilers for Parallel Computing, Raleigh, NC, USA, Keynote, *Toward programming models for parallel processing of sparse data sets*.
- 7/15 Algorithms and Scheduling Techniques to Manage Resilience and Power Consumption in Distributed Systems, Schloss Dagstuhl, Germany, *Scheduling for parallel sparse matrix computations*.
- 3/15 SIAM Conference on Computational Science and Engineering (SIAM CSE15), Salt Lake City, UT, Panel Speaker, *The Future of CSE as a Discipline*.
- 9/14 Clusters and Computational Data for Scientific Computing Workshop, Lyon, France, *Sparse computations and soft errors*
- 7/14 9th Scheduling for Large Scale Systems Workshop, Lyon, France, *Energy-aware high throughput co-schedules*
- 11/13 EarthCube End-User Domain Workshop for Rock Deformation and Mineral Physics

Research 2013, Alexandria, VA, *Cyberscience: driving innovations through computational and data-enabled research*

- 8/13 National Science Foundation Division of Advanced Cyberinfrastructure, Washington, D.C., *Science in the Digital Age: Experiences & Perspectives*
- 9/12 Clusters, Clouds & Data for Scientific Computing CCDSC 2012, Dareizé, France, *Strong Scaling for Sparse Codes: Myth or Reality?*
- 6/12 7th International Workshop on Parallel Matrix Algorithms and Applications (PMAA'12), Birkbeck University of London, UK, *Achieving energy-aware high performance for parallel sparse matrix and graph computations*
- 9/11 China-USA Computer Software Workshop, sponsored by the National Natural Science Foundation of China (NSFC) and the US National Science Foundation (NSF), Peking University, Beijing, China, *Extreme-Scale Software*
- 5/11 Advanced Computing and Computational Sciences Division, Army Research Laboratory, Aberdeen, MD, *New Dimensions to Parallel Computing: Co-managing Performance, Reliability, Energy Trade-offs*
- 4/10 Computer Science, Cornell University, Ithaca, NY, *Energy-Aware Scalability of Parallel Sparse Scientific Computing*
- 5/09 Scheduling for large-scale systems, Knoxville, TN, *Energy-Aware Scheduling for Scalable Matrix Computations*
- 2/09 Indiana University School of Informatics, Bloomington, IN, *Sparsity, Structure, Parallelism and Power*