

PADMA RAGHAVAN
Vanderbilt University
Vice Provost for Research
Professor, Computer Science

Contact Information

Vanderbilt University

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Vice Provost for Research Bio: <https://www.vanderbilt.edu/provost/areas/vice-provost-for-research/>

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Education

12/91 Ph.D. Computer Science, Penn State (The Pennsylvania State University), 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 – present Inaugural Vice Provost for Research, Vanderbilt University

2/16 – present Professor of Computer Science and Computer Engineering, Vanderbilt University

10/13 – 1/16 Associate Vice President for Research, Penn State

7/10 – 1/16 Founding Director, Institute for Computational & Data Science, Penn State

3/12 – 1/16 Distinguished Professor, Department of Computer Science and Engineering, Penn State

7/05 – 3/12 Professor, Department of Computer Science and Engineering, Penn State

8/00 – 7/05 Associate Professor, Department of Computer Science and Engineering; Penn State

8/94 – 7/00 Assistant Professor, Department of Computer Science, the University of Tennessee

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

Research contributions are in the form of new algorithms in two broad areas:

- Computational and data science including parallel matrix and graph algorithms for predictive modeling, e.g., structural mechanics, material science, neuroscience.
- High performance computing aka supercomputing, including scalable, energy-efficient, and resilient algorithms.

Summary counts include 6 edited volumes/book chapters/position papers; 118 refereed publications; 44 M.S. and Ph.D. theses and 7 post-doctoral researchers supervised; and 35 grants awarded totaling approximately \$20 million from various agencies including Army, DARPA, DOE, NASA, NSA, NSF, and NIH, as well as corporate sponsors including IBM.

Honors and Awards

- Fellow of the IEEE, for contributions to robust scalable sparse solvers and energy-efficient parallel scientific computing, 2013.
- 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.
- Awards for Refereed Publications (* indicates student or postdoctoral fellow supervision):
 - A. Benoit, V. Le Fèvre*, P. Raghavan, Y. Robert, H. Sun*. 2020. Design and Comparison of Resilient Scheduling Heuristics for Parallel Jobs. In *Proceedings of the 22nd Workshop on Advances in Parallel and Distributed Computational Models (APDCM '20)*, 2020. New Orleans, LA, USA. (Best Paper)
 - S. Kirmani*, P. Raghavan. 2013. Scalable Parallel Graph Partitioning. In *Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis (SC '13)*, November 2013, Denver, CO, USA, 51:1-10. (Finalist for Best Student Paper Award)
 - M. Shantharam*, S. Srinivasmurthy*, P. Raghavan. 2011. Characterizing the Impact of Soft Errors on Iterative Methods in Scientific Computing. *ACM International Conference on Supercomputing* (2011), 152-161. (Invited Paper, Short version awarded Best Poster at Supercomputing 2010)
 - Y. Ding*, M. Kandemir, P. Raghavan and M. J. Irwin. 2008. A Helper Thread Based EDP Reduction Scheme for Adapting Application Execution in CMPs. *22nd IEEE/ACM International Parallel and Distributed Symposium (IPDPS '08)*, 2008, 1-14. DOI: 10.1109/IPDPS.2008.4536297. (Best Paper)
- The Pennsylvania State University
 - Faculty Scholar Medal 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 (Most recent 10 years)

- National Academies Panels and Committees
 - National Academy of Sciences Journal Summit, *Senior Research Officers Panel on Scholarly Publishing*, March 22-23, 2021.
 - National Academies of Sciences, Engineering, and Medicine. 2021.
 - *An Assessment of Selected Divisions of the Information Technology Laboratory at the National Institute of Standards and Technology: Fiscal Year 2021.*
<https://doi.org/10.17226/26354>.
 - National Research Council (NRC) Committee on Future Directions for NSF Advanced Computing Infrastructure to Support U.S. Science in 2017-2020.
 - 2016: <https://doi.org/10.17226/21886>
 - 2014: <https://doi.org/10.17226/18972>
 - Laboratory Assessments Board, Panel on the Review of the Information Technology Laboratory at the National Institute of Standards and Technology (NIST), 2018.
 - *An Assessment of Four Divisions of the Information Technology Laboratory at the National Institute of Standards and Technology: Fiscal Year 2018.*
<https://doi.org/10.17226/25283>
 - Division of Engineering and Physical Sciences: Technical Advisory Board to assess the scientific quality of R&D at the Army Research Laboratory.
 - Information Sciences, 2019.
<https://www8.nationalacademies.org/pa/projectview.aspx?key=49528>
 - Computational Science, 2017-2018. <https://doi.org/10.17226/25011>

- Division of Engineering and Physical Sciences cont.
 - Information Sciences, 2013-2016.
 - 2016: <https://doi.org/10.17226/21916>
 - 2015: <https://doi.org/10.17226/21675>
 - 2014: <https://doi.org/10.17226/18661>
 - Digitization and Communications Science, 2009-2012.
 - <https://www.nap.edu/read/18269/chapter/1>
- National Science Foundation
 - Directorate for Computer and Information Science and Engineering, Advisory Committee (CISE-AC), 2015-2023. <https://www.nsf.gov/cise/advisory.jsp>
 - NSF CISE Vision 2030, 2021. https://nsf.gov/cise/advisory/CISE_Vision_2030.pdf
 - Report of the Subgroup of the CISE AC on Private-Sector Partnerships, 2021. https://nsf.gov/cise/advisory/CISE_AC_PrivateSectorPartnerships_2021.pdf
 - Search Advisory Committee for the Assistant Director, Directorate for Computer and Information Science and Engineering (CISE), 2019. <https://www.nsf.gov/cise/advisory.jsp>
 - Office of International Science and Engineering, Advisory Committee (AC-ISE), 2020-2023. <https://www.nsf.gov/od/oise/OISE-AC/Bios/index.jsp>
 - Office of Cyberinfrastructure, Advisory Committee (AC-CI), 2018-2021. <https://www.nsf.gov/cise/oac/advisory.jsp>
 - *Opportunities in Artificial Intelligence and Machine Learning. A report of the Cyberinfrastructure Research and Innovation Working Group, Advisory Committee for Cyberinfrastructure*, 2021. <https://go.usa.gov/xM57X>
 - Notable Review Panels:
 - Expeditions in Computing, Blue Ribbon Reverse Site Visit (panelist), 2015.
 - XSEDE: Extreme Science and Engineering Discovery Environment (chair), 2014.
 - Committee of Visitors for the Review of the Office of Cyberinfrastructure, 2005-2010, 2011. <https://www.nsf.gov/od/oia/activities/cov/oci/2011/OCI%20COV%20FY%202008%20-%20FY%202010%20-120512.pdf>
 - Network for Earthquake Engineering Simulation Governance Board, 2011-2015. https://www.nsf.gov/news/special_reports/nees/NetworkforEarthquakeEngineeringSimulation_SR.pdf
- Department of Energy and its Laboratories
 - Board of Governors, UT-Battelle, manages Oak Ridge National Laboratory for the Department of Energy, member, 2016-present.
 - Lawrence Livermore National Laboratory (LLNL), Computation Directorate External Review Committee, member, 2009-2012, 2014-2015.
 - Office of Science, Committee of Visitors for the Applied Mathematics Advanced Scientific Computing Research (ASCR) program, member, 2013.
- Computer Research Association
 - Committee on the Status of Women in Computing Research (CRA-W) Board of Trustees, co-chair for the Distinguished Lecture Series, 2013-2016.
 - Faculty Career Development Workshops, speaker, 2010-2016.
 - Graduate Cohort Workshops, speaker, 2009-2015.

- 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.
- Blue Waters Petascale Applications Advisory Committee, NCSA and The University of Illinois at Urbana-Champaign, 2009-2011.
- The National Science Foundation and WTEC Co., *Inventing a New America through Discovery and Innovation in Science, Engineering and Medicine: A Vision for Research Development in Simulation-Based Engineering and Science in the Next Decade*, 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

Selected Professional Activities and Editorships (Most recent 10 years)

- Association of American Universities, Senior Research Officers Annual Meeting Planning Committee 2019-2020; Steering Committee, 2021.
- American Association for the Advancement of Science, [Golden Goose Award](#) committee member, 2017-2019, 2021.
- Board of Visitors, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, 2021.
- EU Visual Exploration for Extreme Computing Project, Advisory Board, Project Director Andreas Gerndt, German Aerospace Center (DLR), 2019-present.
- The Society for Industrial and Applied Mathematics (SIAM)
 - Member of the Council, SIAM is led by its officers, elected members of its Board and Council, 2015 -2020. <https://www.siam.org/About-SIAM/Leadership>
 - Committee on Science Policy, 2015-2019. <https://www.siam.org/About-SIAM/Committees/Committee-on-Science-Policy-CSP>
 - Contributor. Officers of the SIAM Activity Group on Computational Science and Engineering (SIAG/CSE). Research and Education in Computational Science and Engineering. *SIAM Review* 60, 3 (2018), 707– 754.
 - Wilkinson Prize Selection Committee, 2017. <https://evoq-eval.siam.org/prizes-recognition/major-prizes-lectures/detail/james-h-wilkinson-prize-in-numerical-analysis-and-scientific-computing>
 - Book Committee, 2017-present. <https://www.siam.org/about-SIAM/committees/Book-Committee>
 - Editorial Board, SIAM series on Computational Science and Engineering, 2009-2016. <http://bookstore.siam.org/computational-science-and-engineering/>
 - Editorial Board, SIAM series on Software, Environments and Tools, 2012 – present. <http://bookstore.siam.org/software-environments-and-tools/>
 - Associate Editor, SIAM Journal of Scientific Computing, 2005-2012. <https://www.siam.org/Publications/Journals/SIAM-Journal-on-Scientific-Computing-SISC>
 - Co-Chair, SIAM Conference on Computational Science and Engineering, January 2010 - March 2011 (850 attendees). <https://archive.siam.org/meetings/cse11/index.php>
- 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).
 - Member, IEEE Young Achievers in Scalable Computing Selection Committee, 2014-2016.
 - Co-Chair, Awards, IEEE/ACM Supercomputing 2015.
 - Member, IEEE Computer Society Fellows Evaluation Committee, 2015.
 - Co-Chair, Invited and Plenary Talks, IEEE/ACM Supercomputing 2014.

- IEEE and ACM cont.
 - Vice-Chair, Applications, IEEE International Parallel and Distributed Processing Symposium (IPDPS) 2014.
 - Member, Ad hoc committee to establish a "Verified Results" policy for the ACM Transactions on Mathematical Software, 2012.
 - Co-Chair Technical Papers, Supercomputing 2012 (over 9,000 attendees).
 - Chair, Doctoral Research Showcase, IEEE/ACM Supercomputing, 2009.
- Associate Editor, Journal of Computational Science, 2011-2015.
<http://www.journals.elsevier.com/journal-of-computational-science/>
- Associate Editor, Journal of Parallel and Distributed Computing, 2010-2015
<http://www.journals.elsevier.com/journal-of-parallel-and-distributed-computing/>