

George Ostrouchov

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Education

Ph.D., Statistics

Iowa State University, Ames, IA, December 1984

Dissertation: *Large Sparse Least Squares Computations*

M.Sc., Statistics

Iowa State University, Ames, IA, May 1981

Project: *Accuracy of Approximate Confidence Bounds Computed from Interval Censored Weibull and Lognormal Data*

B.Math., Honours Co-op, Statistics

University of Waterloo, Waterloo, Canada, May 1978

Current Appointments

2021–Present *Distinguished Member of the R&D Staff*, Systems and Decision Sciences Group, Mathematics in Computation Section, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2009–Present *Joint Faculty Professor of Statistics*, Department of Business Analytics and Statistics, The University of Tennessee, Knoxville

Past Appointments

2020–2021 *Senior Member of the R&D Staff*, Systems and Decision Sciences Group, Mathematics in Computation Section, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2012–2020 *Senior Member of the R&D Staff*, Scientific Data Group, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2012–2020 *Senior Data Scientist*, Advanced Data and Workflow Group (Matrix appointment), Oak Ridge Leadership Computing Facility, Oak Ridge National Laboratory

2004–2011 *Acting Group Leader and Senior Research Staff Member*, Statistics and Data Sciences Group, Computer Science and Mathematics Division, Oak Ridge National Laboratory

2003–2009 *Adjunct Professor of Statistics*, Department of Statistics, Operations, and Management Science (initially Department of Statistics), The University of Tennessee, Knoxville

- 1994-1996** *Adjunct Faculty*, Great Lakes Colleges Association
- 1993-2003** *R&D Staff Member II*, Statistics and Data Sciences Group (previously Statistics Group in Mathematical Sciences Section), Computer Science and Mathematics Division (previously Engineering Physics and Mathematics Division), Oak Ridge National Laboratory
- 1983-1993** *R&D Staff Member I*, Statistics Group, Mathematical Sciences Section (initially Mathematics and Statistics Research Section), Engineering Physics and Mathematics Division (initially in Computer Sciences Division), Oak Ridge National Laboratory
- 1983-1983** *Instructor*, Department of Statistics, Iowa State University
- 1981-1983** *Free-lance software consultant*, Computing Center, Iowa State University
- 1979-1983** *Research Assistant*, Department of Statistics, Iowa State University
- 1978 Early Summer** *Research Assistant*, Universität Hohenheim, Germany
- 1978 Late Summer** *Research Assistant*, Swiss International Air Lines AG, Zurich, Switzerland
- 1974-1979 (Co-op + 1yr)** *Statistician/Analyst*, Informetrica Ltd., Ottawa, Canada

Recognitions

- Elected Member, International Statistical Institute, 2019.
- People's Choice Award, High Productivity Languages Track, Intel HPC Developer Conference, 2017
- Fellow, American Association for the Advancement of Science, "*For distinguished leadership in the field of statistical computing, particularly to enable parallel computation on big data with statistical software, and for service to profession.*" 2016
- Distinguished Contributor, Computer Science and Mathematics Division, Oak Ridge National Laboratory, 2012
- Fellow, American Statistical Association, "*For excellent and sustained research and collaboration involving the statistical analysis of massive data sets, and for outstanding service to the mathematical sciences community.*" 2010
- Outstanding Mentor Award, US Department of Energy Office of Science "*In recognition of your dedication as a mentor. For your willingness to share knowledge and to inspire and instill confidence in the next generation of scientists and engineers by setting high expectations, seeking creative solutions, and immersing inquisitive minds in the world of science.*", 2010
- Certificate of Appreciation from US Undersecretary of Energy "*For exemplary performance in ensuring the success of the Terrorism Prevention Measures Optimization Project conducted on behalf of the Department of Energy's Office of Science*", 2007

Martin Marietta Energy Systems, Government-Use Invention Award for “*Cost Matrix Software using Sparse Matrix Technology*”, First use of sparse matrix methods in large accounting systems. 1994

Phi Kappa Phi, 1981

Mu Sigma Rho, 1980

Professional Activities

Editorial Board: Foundations of Data Science, 2019 - present

Organizer and Moderator: Panel Discussion: “High-Performance Statistical Computing: Building a Statistics Community within Supercomputing,” SC21, November 15, 2021

National Academies Panel: A review of NIST’s Information Technology Laboratory Divisions, 2021

Program Committee: Parallel and Distributed Algorithms for Decision Sciences Workshop at 50th International Conference on Parallel Processing, Aug. 9, 2021

Member: University of Tennessee Research Computing Task Force, 2019 - 2020

Organizing Committee: Conference on Data Analysis (CoDA2020), February 25-27, 2020, Santa Fe, NM

Program Committee: The 5th International Workshop on Data Analysis and Reduction for Big Scientific Data (DRBSD-5), November 17, 2019, Denver, CO.

Faculty Search Committee Business Analytics and Statistics Department, University of Tennessee, 2018-2020

Guest Associate Editor: Statistical Analysis and Data Mining, Special Issue, 2018-2019

Organizing Committee: Conference on Data Analysis (CoDA2018), March 7-9, 2018, Santa Fe, NM

Prize Committee: Technometrics Wilcoxon and Youden Prize, 2016-2018

Program Committee: 3rd Workshop on Advances in Software and Hardware for Big Data to Knowledge Discovery (ASH) at IEEE International Conference on Big Data, Dec. 5-8, 2016, Washington DC

Organizing Committee: Conference on Data Analysis (CoDA2016), March 2-4, 2016, Santa Fe, NM

Guest Associate Editor Statistical Analysis and Data Mining, Special Issue, 2014-2015

Organizer: Birds-of-a-Feather Session on *Super-R: Supercomputing and R for Data-Intensive Analysis*, at The International Conference for High Performance Computing, Networking, Storage and Analysis, November 16-21, 2014, Denver, CO.

Program Committee Workshop on Advances in Software and Hardware for Big Data to Knowledge Discovery (ASH) at IEEE International Conference on Big Data, October 27-30, 2014, Washington, DC

Organizer: Birds-of-a-Feather Session on *Super-R: Supercomputing & R for Data-Intensive Analysis*, at The International Supercomputing Conference, June

22-26, 2014, Leipzig, Germany.

Organizing Committee: Conference on Data Analysis (CoDA2014), March 5-7, 2014, Santa Fe, NM

Organizer: Birds-of-a-Feather Session on *Super-R: Supercomputing and R for Data-Intensive Analysis*, at The International Conference for High Performance Computing, Networking, Storage and Analysis, November 17-22, 2013, Denver, CO.

Guest Associate Editor Technometrics, Special Issue on Data-Focused Research across the Department of Energy, 2012-2013

Organizing Committee: Conference on Data Analysis (CoDA2012), February 29 - March 2, 2012, Santa Fe, NM

Elected Program Chair: ASA SPES, Joint Statistical Meetings, July 31 - August 5, 2010, Vancouver, Canada

Program Committee: 4th International Workshop on Knowledge Discovery from Sensor Data at KDD 2010, July 25-28, 2010, Washington, DC

Program Committee: Workshop on Resiliency in High Performance Computing (Resilience 2010) at IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing (CCGrid 2010), May 17-20, 2010, Melbourne, Australia

Organizer: Advancing Clarity and Scale in Statistical Computing at Joint Research Conference on Statistics in Quality, Industry, and Technology, May 25 - 27, 2010, Gaithersburg, Maryland

Program Committee: Workshop on Knowledge Discovery from Climate Data: Prediction, Extremes, and Impacts at ICDM 2009, December 6-9, 2009, Miami, Florida

Program Chair-Elect: American Statistical Association, Section on Physical and Engineering Sciences, Joint Statistical Meetings, August 2-6, 2009, Washington, DC

Program Committee: 3rd International Workshop on Knowledge Discovery from Sensor Data at KDD 2009, June 28-July 1, 2009, Paris, France

Program Committee: Workshop on Resiliency in High Performance Computing (Resilience 2009) at HPDC, June 9-13, 2009, Munich, Germany

Program Committee: Workshop on Radiation Effects and Fault Tolerance in Nanometer Technologies at ACM ICCF, May 5-7, 2008, Ischia, Italy

Panelist and Moderator: Workshop on Mathematics for Analysis of Petascale Data, sponsored by the Department of Energy's Office of Advanced Scientific Computing Research, 2008

Program Committee: Workshop on Resiliency in High Performance Computing (Resilience 2008) at CCGrid, May 19-22, 2008, Lyon, France

Program Committee: Society for Industrial and Applied Mathematics, Conference on Data Mining, April 24-26, 2008, Atlanta, GA

Organizing Committee: 1st International Workshop on Knowledge Discovery from Sensor Data at KDD 2007, August 12, 2007, San Jose, CA

Co-Chair: Search Committee for Governor's Chair in Statistics at ORNL/UT, 2007-2008

Task Force: American Statistical Association Presidential Task Force on Interactions

with Other Organizations, 2006–2007

Conference Chair: 13th Spring Research Conference (SRC) on Statistics in Industry and Technology (as co-Chair of Joint Research Conference on Statistics in Quality, Industry, and Technology), Knoxville, TN, 2006

Management Committee: Spring Research Conference on Statistics series co-sponsored by the Section on Physical and Engineering Sciences of the American Statistical Association and the Institute of Mathematical Statistics, 2003-2005.

Panelist: Science Case for Large Scale Simulation (SCaLeS) Workshop, Washington, DC, June 24-25, 2003

Program Committee: 6th International Workshop on High Performance Data Mining: Pervasive and Data Stream Mining, 2003.

Panelist: Interagency Working Group on High End Computing (HEC IWG), Washington, DC, June 16-18, 2003.

Planning Committee American Statistical Association Planning Meeting on Statistics and National Defense and Security, Washington, DC, 2002

Organizer and Chair: Distributed Data Mining at C. Warren Neel Conference on Statistical Data Mining, Knoxville, June 22-25, 2002.

Program Committee: C. Warren Neel Conference on Statistical Data Mining, Knoxville, 2002.

Organizer and Chair: Dimension Reduction for Simulation Science Data at the Joint Statistical Meetings, Atlanta, GA, 2001.

Associate Editor: Technometrics, 1995–2002.

Associate Editor: Journal of Statistical Computation and Simulation, 1988–1994.

Organizer and Chair: Minisymposium on Matrix Computations in Statistics at The Third SIAM Conference on Applied Linear Algebra, Madison, WI, 1988.

Memberships

American Association for the Advancement of Science (AAAS), Sections: Statistics; Information, Computing, and Communication; Mathematics

American Statistical Association (ASA), Sections: Physical and Engineering Sciences; Statistical Computing; Statistical Graphics

International Statistical Institute (ISI), Section: International Association for Statistical Computing (IASC)

Society for Industrial and Applied Mathematics (SIAM)

The R Foundation Supporting Member

Association for Computing Machinery: Special Interest Group on High Performance Computing (ACM-SIGHPC)

National Ski Patrol

Grants and Awards

PI: “Fulbright Distinguished Chair at the Faculty of Mathematics and Physics, Charles University,” Project: Bringing Statistics to High Performance Computing,” Department of State and Charles University, 2022, \$29,950

PI: “Harnessing Scalable Libraries for Statistical Computing on Modern Architectures and Bringing Statistics to Large Scale Computing,” National Science Foundation, Division of Mathematical Sciences Grant, 2014-2019, \$600,000

Data Analysis Services Lead: “NICS Remote Data Analysis and Visualization Center,” National Science Foundation, Office of Cyber Infrastructure Grant, 2009-2013, \$10,000,000.

Co-PI: “Petascale Enabled Discovery,” Oak Ridge National Laboratory Computational Science Initiative, 2008-2009, \$62,000.

Senior Personnel: “Visualization and Analytics Center for Enabling Technologies (VACET)” Department of Energy, Office of Science Award, 2007-2011, \$11,000,000 (\$2,000,000 for ORNL)

PI: “Bringing Statistical Visualization to the Terascale and Beyond: Visual Analysis in Full Context,” Oak Ridge National Laboratory Directed Research and Development Program (LDRD), 2004-2005, \$565,000.

Senior Personnel: “Scientific Data Management Integrated Software Infrastructure Center” Department of Energy, Office of Science Award, 2002-2004, \$1,660,000.

PI: “Scalable Tools for Petascale Distributed Data Analysis,” Oak Ridge National Laboratory Directed Research and Development Program (LDRD), 2002-2003, \$630,000.

PI: “Computing Transition States on High Dimensional Potential Surfaces with Application to Chemistry in Nanospaces,” Oak Ridge National Laboratory Directed Research and Development Program (LDRD), 2001-2002, \$100,000.

PI: “Spatial Statistical Models and Optimal Survey Design for Rapid Geophysical Characterization of UXO Sites,” DOD/DOE/EPA Strategic Environmental Research and Development Program (SERDP) Award, 2001-2002, \$663,000.

PI: “Dose Estimation from Daily and Weekly Dosimetry Data,” National Institutes of Health Grant, 1996-1997, \$150,000.

Media Highlights

1. Supercomputing article on “GPU Lifetimes on Titan Supercomputer: Survival Analysis and Reliability” mentioned on HPC Wire
<https://www.hpcwire.com/2021/01/04/whats-new-in-hpc-research-gpu-lifetimes-the-square-kilometre-array-support-tickets-mor>
2. Big Data Research article review on HPC Wire: <https://www.hpcwire.com/2016/07/06/olcf-researchers-scale-r-tackle-big-science-data-sets/>
3. Software release mentioned on HPC Wire: <https://www.hpcwire.com/off-the-wire/ornl-data-scientists-release-pbdr-1-0/>

4. ORNL Highlight: <https://csmd.ornl.gov/news/ornl-data-scientists-issue-10-software-release-continue-drawing-new-statistical-data-u>
5. Invited session OLCF Highlight: <https://www.olcf.ornl.gov/2018/08/29/preaching-pbdr/>
6. Journal paper CSMD Highlight: <https://csmd.ornl.gov/highlight/evaluation-state-time-synchronization-leadership-class-supercomputers>
7. *NobleProg*, a worldwide training and consultancy organization on Management, IT, Statistics, Programming and Artificial Intelligence independently chose to offer a three day class around the pbdr project software: “Programming with Big Data in R Training Course” <https://www.nobleprog.com/cc/bigdatar/?type=onsite&participants=1&how=private>

Publications

Refereed Publications

- [1] George Ostrouchov. “Symbolic Givens reduction and row-ordering in large sparse least squares problems”. In: *SIAM J. Scientific and Statistical Computation* 8 (1987), pp. 248–264.
- [2] George Ostrouchov and W. Q. Meeker, Jr. “Accuracy of approximate confidence bounds computed from interval censored Weibull and log-normal data”. In: *J. Statistical Computation and Simulation* 29 (1988), pp. 43–76.
- [3] George Ostrouchov. “ANOVA model fitting via sparse matrix computations: a fast direct method”. In: *SIAM J. Scientific and Statistical Computation* 10 (1989), pp. 58–71.
- [4] George Ostrouchov and Edward L. Frome. “A model search procedure for hierarchical models”. In: *Computational Statistics & Data Analysis* 15 (1993), pp. 285–296.
- [5] Toby J. Mitchell, George Ostrouchov, Edward L. Frome, and George D. Kerr. “A method for estimating occupational radiation dose to individuals, using weekly dosimetry data”. In: *Radiation Research* 147 (1997), pp. 195–207.
- [6] Jingqian Jiang, Michael W. Berry, June M. Donato, George Ostrouchov, and Nancy W. Grady. “Mining consumer product data via latent semantic indexing”. In: *Intelligent Data Analysis* 3 (1999), pp. 377–398.
- [7] George Ostrouchov. “Accounting for bias and measurement error in occupational studies”. In: *Radiation Research* 151 (1999), pp. 107–108.
- [8] Darryl J. Downing, Valerii V. Fedorov, William F. Lawkins, Max D. Morris, and George Ostrouchov. “Large Data Series: Modeling the Usual to Identify the Unusual”. In: *Computational Statistics & Data Analysis* 32 (2000), pp. 245–258.
- [9] Faisal N. Abu-Khzam, Nagiza Samatova, George Ostrouchov, Michael A. Langston, and Al Geist. “Distributed Dimension Reduction Algorithms for Widely Dispersed Data”. In: *Parallel and Distributed Computing and Systems*. ACTA Press, 2002, pp. 174–178.

- [10] Yong Ming Qu, George Ostrouchov, Nagiza F. Samatova, and G. A. Geist III. “Principal Component Analysis for Dimension Reduction in Massive Distributed Data Sets”. In: *Workshop on High Performance Data Mining at the Second SIAM International Conference on Data Mining*. 2002, pp. 4–9.
- [11] Nagiza F. Samatova, G. Al Geist, George Ostrouchov, and Anatoli Melechko. “Parallel Out-of-core Algorithm for Genome-Scale Enumeration of Metabolic Systemic Pathways”. In: *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS.02)*. 2002, pp. 8–17.
- [12] Nagiza F. Samatova, George Ostrouchov, G. Al Geist, and Anatoli Melechko. “RACHET: An Efficient Cover-Based Merging of Clustering Hierarchies from Distributed Datasets”. In: *Distributed and Parallel Databases* 11 (2002), pp. 157–180.
- [13] George Ostrouchov and Nagiza F. Samatova. *High end computing for full-context analysis and visualization: when the experiment is done*. White paper accepted by the High End Computing Revitalization Task Force (HECRTF) Washington, DC. June 2003.
- [14] Byung-Hoon Park, Nagiza Samatova, George Ostrouchov, and G. A. Geist III. “XMap: Fast Dimension Reduction Algorithms for Multivariate Streamline Data”. In: *Proceedings of the 6th International Workshop on High Performance Data Mining: Pervasive and Data Stream Mining*. 2003, pp. 1–6.
- [15] Gong-Xin Yu, George Ostrouchov, Al Geist, and Nagiza F. Samatova. “An SVM-based Algorithm for Identification of Photosynthesis-specific Genome Features”. In: *Computational Systems Bioinformatics Conference, International IEEE Computer Society* 0 (2003), p. 235. DOI: <http://doi.ieeecomputersociety.org/10.1109/CSB.2003.1227323>.
- [16] George Ostrouchov and Nagiza F. Samatova. “Embedding methods and robust statistics for dimension reduction”. In: *COMPSTAT2004*. Ed. by Jaromir Antoch. Physica-Verlag, 2004, pp. 359–370.
- [17] Byung-Hoon Park, George Ostrouchov, and Nagiza F. Samatova. “Reservoir-based random sampling with replacement from a data stream”. In: *Proceedings of the 2004 SIAM International Conference on Data Mining*. 2004, pp. 492–496.
- [18] George Ostrouchov and Nagiza F. Samatova. “On FastMap and the Convex Hull of Multivariate Data: Toward Fast and Robust Dimension Reduction”. In: *IEEE Transactions on Pattern Analysis and Machine Intelligence* 27 (2005), pp. 1340–1343.
- [19] S. Ahern, J. R. Daniel, J. Gao, G. Ostrouchov, R. J. Toedte, and C. Wang. “Multi-scale data visualization for computational astrophysics and climate dynamics at Oak Ridge National Laboratory”. In: *Journal of Physics: Conference Series* 46 (2006), pp. 550–555. URL: <http://stacks.iop.org/1742-6596/46/550>.
- [20] W Bethel, C Johnson, C Hansen, S Parker, A Sanderson, C Silva, X Tricoche, V Pascucci, H Childs, J Cohen, M Duchaineau, D Laney, P Lindstrom, S Ahern, J Meredith, G Ostrouchov, K Joy, and B Hamann. “VACET: Proposed SciDAC2 Visualization and Analytics Center for Enabling Technologies”. In: *Journal of Physics: Conference Series* 46 (2006), pp. 561–569. URL: <http://stacks.iop.org/1742-6596/46/561>.

- [21] S. Khan, A. R. Ganguly, S. Bandyopadhyay, S. Saigal D. J. Erickson III, V. Protopopescu, and G. Ostrouchov. “Nonlinear statistics reveals stronger ties between ENSO and the tropical hydrological cycle”. In: *Geophysical Research Letters* 33 (2006). L24402, doi:10.1029/2006GL027941.
- [22] E. W. Bethel, C. Johnson, C. Aragon, Prabhat, O. Rübel, G. Weber, V. Pascucci, H. Childs, P.-T. Bremer, B. Whitlock, S. Ahern, J. Meredith, G. Ostrouchov, K. Joy, B. Hamann, C. Garth, M. Cole, C. Hansen, S. Parker, A. Sanderson, C. Silva, and X. Tricoche. “DOE’s SciDAC Visualization and Analytics Center for Enabling Technologies - Strategy for Petascale Visual Data Analysis Success”. In: *CTWatch Quarterly* 3.4 (Nov. 2007). URL: <http://www.ctwatch.org/quarterly/articles/2007/11/does-scidac-visualization-and-analytics-center-for-enabling-technologies-strategy-for-petascale-visual-data-analysis-success/>.
- [23] E. W. Bethel, C. Johnson, K. Joy, S. Ahern, V. Pascucci, H. Childs, J. Cohen, M. Duchaineau, B. Hamann, C. Hansen, D. Laney, P. Lindstrom, J. Meredith, G. Ostrouchov, S. Parker, C. Silva, A. Sanderson, and X. Tricoche. “SciDAC visualization and analytics center for enabling technology”. In: *Journal of Physics: Conference Series* 78 (2007), 012032 (5pp). URL: <http://stacks.iop.org/1742-6596/78/012032>.
- [24] Kenneth I Joy, Mark Miller, Hank Childs, E Wes Bethel, John Clyne, George Ostrouchov, and Sean Ahern. “Frameworks for visualization at the extreme scale”. In: *Journal of Physics: Conference Series* 78 (2007), 012035 (10pp). URL: <http://stacks.iop.org/1742-6596/78/012035>.
- [25] S. Khan, S. Bandyopadhyay, A. R. Ganguly, S. Saigal D. J. Erickson III, V. Protopopescu, and G. Ostrouchov. “Relative performance of mutual information estimation methods for quantifying the dependence among short and noisy data”. In: *Physical Review E* 76 (2007), pp. 1–15.
- [26] S. Khan, G. Kuhn, A. R. Ganguly, III D. J. Erickson, and G. Ostrouchov. “Spatio-temporal variability of daily and weekly precipitation extremes in South America”. In: *Water Resources Research* 43 (2007). W11424, doi:10.1029/2006WR005384.
- [27] Byung-Hoon Park, George Ostrouchov, and Nagiza F. Samatova. “Sampling Streaming Data with Replacement”. In: *Computational Statistics & Data Analysis* 52 (2007), pp. 750–762.
- [28] N. Taerat, N. Naksinehaboon, C. Chandler, J. Elliott, C. Leangsuksun, G. Ostrouchov, and S. L. Scott. “Using Log Information to Perform Statistical Analysis on Failures Encountered by Large-Scale HPC Deployments”. In: *High Availability and Performance Computing Workshop (HAPCW 2008)*. 2008, (6pp).
- [29] E W Bethel, C Johnson, S Ahern, J Bell, P-T Bremer, H Childs, E Cormier-Michel, M Day, E Deines, T Fogal, C Garth, C G R Geddes, H Hagen, B Hamann, C Hansen, J Jacobsen, K Joy, J Kruger, J Meredith, P Messmer, G Ostrouchov, V Pascucci, K Potter, Prabhat, D Pugmire, O Rubel, A Sanderson, C Silva, D Ushizima, G Weber, B Whitlock, and K Wu. “Occam’s razor and petascale visual data analysis”. In: *Journal of Physics: Conference Series* 180 (2009), 012084 (18pp). URL: <http://stacks.iop.org/1742-6596/180/012084>.

- [30] G. Ostrouchov, T. Naughton, C. Engelmann, G. Vallée, and S. L. Scott. “Nonparametric Multivariate Anomaly Analysis in Support of HPC Resilience”. In: *Proceedings of the 5th IEEE International Conference on E-Science Workshops*. Dec. 2009, pp. 80–85. DOI: 10.1109/ESCIW.2009.5407992.
- [31] George Ostrouchov. “A Matrix Computation View of FastMap and RobustMap Dimension Reduction Algorithms”. In: *SIAM Journal on Matrix Analysis and Applications* 31.3 (2009), pp. 1351–1360. DOI: 10.1137/070710767.
- [32] George Ostrouchov, William E. Doll, Les P. Beard, Max D. Morris, and Dennis A. Wolf. “Multiscale Structure of UXO Site Characterization: Spatial Estimation and Uncertainty Quantification”. In: *Stochastic Environmental Research and Risk Assessment* 23.2 (2009), pp. 215–225.
- [33] N. Taerat, N. Naksinehaboon, C. Chandler, J. Elliott, C. Leangsuksun, G. Ostrouchov, S. L. Scott, and C. Engelmann. “Blue Gene/L Log Analysis and Time to Interrupt Estimation”. In: *Availability, Reliability and Security, International Conference on*. Los Alamitos, CA, USA: IEEE Computer Society, 2009, pp. 173–180. ISBN: 978-0-7695-3564-7. DOI: <http://doi.ieeecomputersociety.org/10.1109/ARES.2009.105>.
- [34] F. Fuentes, H. Kettani, G. Ostrouchov, M. Stoitsov, and H.A. Nam. “Exploration of High-Dimensional Nuclei Data”. In: *Communication Software and Networks, 2010. ICCSN '10. Second International Conference on*. Feb. 2010, pp. 521–524. DOI: 10.1109/ICCSN.2010.105.
- [35] Robert Sisneros, Jian Huang, George Ostrouchov, and Forrest M. Hoffman. “Visualizing Life Zone Boundary Sensitivities Across Climate Models and Temporal Spans”. In: *Procedia CS* 4 (2011), pp. 1582–1591.
- [36] Lei Jiang, Pragneshkumar B. Patel, George Ostrouchov, and Ferdinand Jamitzky. “OpenMP-style parallelism in data-centered multicore computing with R”. In: *SIGPLAN Not.* 47.8 (Feb. 2012), pp. 335–336. ISSN: 0362-1340. DOI: 10.1145/2370036.2145882. URL: <http://doi.acm.org/10.1145/2370036.2145882>.
- [37] Jeremy Logan, Scott Klasky, Hasan Abbasi, Qing Liu, George Ostrouchov, Manish Parashar, Norbert Podhorszki, Yuan Tian, and Matthew Wolf. “Understanding I/O Performance Using I/O Skeletal Applications”. In: *Euro-Par 2012 Parallel Processing*. Ed. by Christos Kaklamani, Theodore Papatheodorou, and PaulG. Spirakis. Vol. 7484. Lecture Notes in Computer Science. Springer Berlin Heidelberg, 2012, pp. 77–88. ISBN: 978-3-642-32819-0. DOI: 10.1007/978-3-642-32820-6_10. URL: http://dx.doi.org/10.1007/978-3-642-32820-6_10.
- [38] George Ostrouchov, Wei-Chen Chen, Drew Schmidt, and Pragnesh Patel. “Programming with Big Data in R”. Poster at the 6th Extremely Large Databases Conference, Workshop & Tutorials, Stanford, CA. Sept. 2012. URL: https://www-conf.slac.stanford.edu/xldb2012/poster_abstracts.asp.
- [39] Drew Schmidt, George Ostrouchov, Wei-Chen Chen, and Pragneshkumar Patel. “Tight Coupling of R and Distributed Linear Algebra for High-Level Programming with Big Data”. In: *High Performance Computing, Networking, Storage and*

- Analysis (SCC), 2012 SC Companion: 2012*, pp. 811–815. DOI: 10.1109/SC.Companion.2012.113.
- [40] Wei-Chen Chen, George Ostrouchov, David Pugmire, Prabhat, and Michael Wehner. “A Parallel EM Algorithm for Model-Based Clustering Applied to the Exploration of Large Spatio-Temporal Data”. In: *Technometrics* 55.4 (2013), pp. 513–523. DOI: 10.1080/00401706.2013.826146.
- [41] George Ostrouchov. “A Call for Participation in XSEDE Computing: Statisticians Needed for Big Data”. In: *AMSTAT News* 432 (June 2013), pp. 31–32. URL: <https://magazine.amstat.org/wp-content/uploads/2013an/June2013.pdf>.
- [42] George Ostrouchov, Drew Schmidt, Wei-Chen Chen, and Pragneshkumar Patel. “Combining R with Scalable Libraries to Get the Best of Both for Big Data”. In: *IASC Satellite Conference for the 59th ISI WSC & the 8th Conference of IASC-ARS*. 2013, pp. 85–90.
- [43] Robert Sisneros, Jian Huang, George Ostrouchov, Sean Ahern, and B. David Semeraro. “Contrasting Climate Ensembles: A Model-Based Visualization Approach for Analyzing Extreme Events”. In: *Procedia Computer Science* 18.0 (2013). 2013 International Conference on Computational Science, pp. 2347–2356. DOI: <http://dx.doi.org/10.1016/j.procs.2013.05.406>.
- [44] George Ostrouchov, Joshua New, Jibonananda Sanyal, and Pragneshkumar Patel. “Uncertainty Analysis of a Heavily Instrumented Building at Different Scales of Simulation”. In: *3rd International High Performance Buildings Conference*. 3561 (10pp). Purdue University, Lafayette, IN, July 2014.
- [45] J. Y. Choi, J. Logan, M. Wolf, G. Ostrouchov, T. Kurc, Q. Liu, N. Podhorszki, S. Klasky, M. Romanus, Q. Sun, M. Parashar, R. M. Churchill, and C. Chang. “TGE: Machine Learning Based Task Graph Embedding for Large-Scale Topology Mapping”. In: *2017 IEEE International Conference on Cluster Computing (CLUSTER)*. Sept. 2017, pp. 587–591. DOI: 10.1109/CLUSTER.2017.67.
- [46] Scott Klasky, Eric Suchyta, Mark Ainsworth, Qing Liu, Ben Whitney, Matthew Wolf, Jong Youl Choi, Ian T. Foster, Mark Kim, Jeremy S. Logan, Kshitij Mehta, Todd S. Munson, George Ostrouchov, Manish Parashar, Norbert Podhorszki, David Pugmire, and Lipeng Wan. “Exacution: Enhancing Scientific Data Management for Exascale”. In: *2017 IEEE 37th International Conference on Distributed Computing Systems (ICDCS)* (2017), pp. 1927–1937.
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- [23] George Ostrouchov. “From Distance-Based Dimension Reduction to Robust Statistics and Matrix Computation”. Department of Statistics, University of Georgia, Oct. 2005.
- [24] George Ostrouchov. “Data-Parallel Analysis and Graphics with R”. DOE Computer Graphics Forum. Duck, NC, Apr. 28–30, 2008.
- [25] George Ostrouchov. “Stalking the Interactive Terabyte with R: Data-Parallel Statistical Computing”. Department of Statistics, Operations, and Management Science, University of Tennessee, Apr. 29, 2008.
- [26] George Ostrouchov. “Data Analysis for HPC Resilience: A Perspective from Statistics”. National HPC Workshop on Resilience. Washington, DC, Aug. 12–14, 2009.
- [27] George Ostrouchov. “Fast Simultaneous Dimension Reduction and Clustering: Viewing Data from Extremes”. Spring Research Conference on Statistics in Industry and Technology. Vancouver, British Columbia, May 27–29, 2009.
- [28] George Ostrouchov. “Statistics and High Performance Computing: Petabytes of Data and Millions of Processors”. Conference CELEBRATING 75 Years of STATISTICS at Iowa State. Ames, Iowa, June 3–5, 2009.
- [29] George Ostrouchov, Thomas J. Naughton, and Stephen L. Scott. “Reliability in Supercomputing: A Million Processors Cooperating to Solve One Problem”. Joint Statistical Meetings. Washington, DC, Aug. 2–6, 2009.

- [30] George Ostrouchov. “Data-Parallel Statistical Computing: a Model Based Clustering Example”. Joint Research Conference on Statistics in Quality, Industry, and Technology. Gaithersburg, MD, May 25–27, 2010.
- [31] George Ostrouchov. “Data, Statistics, and High Performance Computing”. International Conference on Software Technology and Engineering. **Keynote**. San Juan, Puerto Rico, Oct. 3–5, 2010.
- [32] George Ostrouchov. “Parallel statistical computing: Are we embracing the scalable concurrency revolution?” Joint Statistical Meetings. Vancouver, Canada, Aug. 1–6, 2010.
- [33] George Ostrouchov. “Statistics and High Performance Computing: Focus on Data”. University of Maryland Baltimore County, Baltimore, MD, Dec. 3, 2010.
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- [40] George Ostrouchov. “Optimizing Data Layout in Distributed Parallel Statistical Computing”. REU Site: Interdisciplinary Program in High Performance Computing. University of Maryland, Baltimore County, MD, June 20, 2013.
- [41] George Ostrouchov. “pbdR: Programming with Big Data in R”. Department of Biostatistics. Virginia Commonwealth University, Richmond, VA, Nov. 15, 2013.
- [42] George Ostrouchov, Wei-Chen Chen, Drew Schmidt, and Pragneshkumar Patel. “Programming with Big Data in R”. Joint Statistical Meetings. Montreal, Canada, Aug. 4–8, 2013.
- [43] George Ostrouchov and Drew Schmidt. “pbdR: Programming with big data in R”. Workshop on Processing and Analysis of Very Large Data Sets. Knoxville, TN, Aug. 6–8, 2013.
- [44] George Ostrouchov, Drew Schmidt, Wei-Chen Chen, and Pragneshkumar Patel. “Bringing Exploratory Analytics to Big Data on Leadership Class HPC Platforms”. SIAM Conference on Computational Science and Engineering. Boston, MA, Feb. 25–Mar. 1, 2013.
- [45] George Ostrouchov, Drew Schmidt, Wei-Chen Chen, and Pragneshkumar Patel. “Combining R with Scalable Libraries to Get the Best of Both for Big Data”. In: *IASC Satellite Conference for the 59th ISI WSC & the 8th Conference of IASC-ARS*. 2013, pp. 85–90.

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- [47] George Ostrouchov. “pbdR: A Sustainable Path for Scalable Statistical Computing”. First Workshop for High Performance Technical Computing in Dynamic Languages (HPTCDL) **Keynote**, SC14. New Orleans, LA, Nov. 17, 2014.
- [48] George Ostrouchov. “pbdR: Bringing R Analytics to Large Distributed Architectures”. Swiss Supercomputing Center. Lugano, Switzerland, June 20, 2014.
- [49] George Ostrouchov. “Taking R to Big Platforms and Supercomputers with pbdR”. Bioconductor Developer Day **Keynote**. Boston, MA, July 30, 2014.
- [50] George Ostrouchov. “pbdR: A Sustainable Path for Scalable Statistical Computing”. Workshop on Distributed Computing in R. Palo Alto, CA, Jan. 26–27, 2015.
- [51] George Ostrouchov. “pbdR: Harnessing HPC Research for Parallel Computing with R”. Institute of Statistical Mathematics High Performance Computing Conference and HPC on R Workshop. Tokyo, Japan, Oct. 9–12, 2015.
- [52] George Ostrouchov. “R and pbdR: An Overview”. Faculty of Mathematics and Physics, Charles University. Praha, Czechia, Jan. 16, 2015.
- [53] George Ostrouchov. “Taking R from Your Laptop to a Cluster Computer”. Spring Restarch Conference. May 20–22, 2015.
- [54] George Ostrouchov. “Taking R from Your Laptop to a Cluster Computer”. Department of Mathematical Sciences, University of Memphis. Memphis, Tennessee, Dec. 4, 2015.
- [55] George Ostrouchov. “Taking Statistical Computing to Parallel Platforms with R and pbdR”. Department of Business Analytics and Statistics, University of Tennessee, Feb. 27, 2015.
- [56] George Ostrouchov. “Programming with Big Data in R”. Future Trends in Nuclear Physics Computing. Thomas Jefferson National Accelerator Facility, Newport News, VA, Mar. 16–18, 2016.
- [57] George Ostrouchov. “Statistical Computing with R on Distributed and Multicore Platforms”. 44th Annual Meeting of the Statistical Society of Canada. Brock University, St. Catharines, Ontario, Canada, May 29–June 1, 2016.
- [58] George Ostrouchov. “Bringing Modern Statistical Science to HPC”. Innovative Computing Laboratory. University of Tennessee, Knoxville, TN, Feb. 3, 2017.
- [59] George Ostrouchov. “Data Reduction with Applied Statistics and Machine Learning for Computational Climate Science”. SIAM Conference on Computational Science and Engineering. Atlanta, GA, Feb. 27–Mar. 3, 2017.
- [60] George Ostrouchov. “Enabling Data Science on Modern HPC Architectures”. University of Tennessee, Data Science Engineering Program. Knoxville, TN, Oct. 26, 2017.
- [61] George Ostrouchov. “Enabling Data Science on Modern HPC Architectures”. National Institute of Standards Information Technology Laboratory Science Day. **Keynote**. Gaithersburg, MD, Nov. 2, 2017.

- [62] George Ostrouchov. “Stalking the Interactive Terabyte”. The Intel HPC Developer Conference. Winner of People’s Choice Award for the High Productivity Languages Track. Denver, CO, Nov. 11–12, 2017.
- [63] George Ostrouchov, Keith Britt, Erica Grant, Travis Humble, and Terry Jones. “Compute Principal Components on an Adiabatic Quantum System?” Joint Statistical Meetings. Baltimore, MD, July 29–Aug. 3, 2017.
- [64] George Ostrouchov. “Statistics Goes to Supercomputing”. International Conference on Statistics and Its Applications (ICSA). Pala, Kerala, India, Jan. 3–5, 2018.
- [65] George Ostrouchov. “Statistical Computing on Large Parallel Architectures”. ISI 62nd World Statistics Congress. Kuala Lumpur, Malaysia, Aug. 18–23, 2019.
- [66] George Ostrouchov and Drew Schmidt. “Statistical Computing on Large Parallel Architectures”. Advanced Statistics meets Machine Learning III Workshop. Chicago, IL, Nov. 13–15, 2019.
- [67] George Ostrouchov. “An Evaluation of GPU Reliability on Titan”. Bredesen Data Science Seminar. Knoxville, TN, Apr. 7, 2020.
- [68] George Ostrouchov. “Harnessing the Power of Supercomputers for R Workflows”. SIAM Conference on Computational Science and Engineering. Virtual Conference, Mar. 1, 2021.

Tutorials

- [1] George Ostrouchov. *R Programming Language Workshop in Three Lectures*. Oak Ridge Leadership Computing Facility Training Event, July 29, August 4-5, 2011, Oak Ridge, TN. Link. 2011.
- [2] George Ostrouchov, Pragnesh Patel, and Drew Schmidt. *R Programming Language Workshop 2012*. Oak Ridge Leadership Computing Facility Training Event, June 28-29, 2012, Oak Ridge, TN. Link. 2012.
- [3] George Ostrouchov. *pbDR: Programming with Big Data in R*. Seoul National University, August 17-18, 2013, Seoul, South Korea. Link. 2013.
- [4] George Ostrouchov and Drew Schmidt. *Programming with Big Data in R*. useR!, The R User Conference 2013, July 9-12, Albacete, Spain. Link. 2013.
- [5] Drew Schmidt and George Ostrouchov. *Introducing R: from Your Laptop to HPC and Big Data*. SC13 The International Conference for High Performance Computing, Networking, Storage and Analysis, November 16-22, 2013, Denver, CO. Link. 2013.
- [6] George Ostrouchov. *pbDR: Programming with Big Data in R*. Institute of Statistical Mathematics, February 17-18, 2014, Tokyo, Japan. Link. 2014.
- [7] George Ostrouchov and Drew Schmidt. *Introducing R: from Your Laptop to HPC and Big Data*. SC14 The International Conference for High Performance Computing, Networking, Storage and Analysis, November 16-21, 2014, New Orleans, LA. Link. Nov. 2014.
- [8] Drew Schmidt and George Ostrouchov. *Programming with Big Data in R*. useR!, The R User Conference 2013, June 30 - July 3, Los Angeles, CA. Link. June 2014.

- [9] Russel Zaretski, Michael Gilchrist, Eric Carr, George Ostrouchov, and Brian O'Meara. *Computing in the Cloud: What Every Computational Life Scientist Should Know*. National Institute for Mathematical and Biological Synthesis (MBioS), April 6-8, 2014, Knoxville, TN. Link. Apr. 2014.
- [10] George Ostrouchov. *Analytics session: Programming with Big Data in R*. PRACE Winter School 2015 - HPC Tools for Data Intensive Processing, January 12-15, Ostrava, Czech Republic. Link. 2015.
- [11] George Ostrouchov. *Parallel Programming with Big Data in R: pbdR*. 60th World Statistics Congress, July 23-31, 2015, Rio De Janeiro, Brazil. Link. July 2015.
- [12] Norbert Podhorszki, Quing Gary Liu, Scott Klasky, George Ostrouchov, Dave Pugmire, and Jong Choi. *Data Management, Analysis and Visualization Tools for Data-Intensive Science*. SC15 The International Conference for High Performance Computing, Networking, Storage and Analysis, November 15-20, 2015, Austin, TX. Link. Nov. 2015.
- [13] George Ostrouchov. *Using R for HPC Data Science*. IT4Innovations Czech Supercomputing Center, October 6-7, Ostrava, Czechia. Link. 2016.
- [14] George Ostrouchov and Wei-Chen Chen. *Essentials of High Performance and Parallel Statistical Computing in R*. Joint Statistical Meetings, July 29 – August 3, Baltimore, MD. Link. 2017.
- [15] George Ostrouchov. *pbdR as a Parallel Server for a Laptop RStudio Session*. Oak Ridge Leadership Computing Facility User Call. Link. 2018.
- [16] George Ostrouchov. *Statistical Analysis of Big Data Using R*. Department of Statistics, Mangalore University, Karnataka, India. Funded by Global Initiative of Academic Networks (GIAN). Link. Dec. 2018.
- [17] Drew Schmidt and George Ostrouchov. *Data Science with R and pbdR at ORNL: From the CADES Cloud to the OLCF*. Oak Ridge Leadership Computing Facility Event. Link. 2018.

Mentoring Activities

Linda Keleher, B.S., Ohio Northern University, Oak Ridge Science and Engineering Research Semester 1989

Eric Sedlacek, B.S., Ohio Northern University, Oak Ridge Science and Engineering Research Semester 1990

John Pospisil, B.S., Nebraska Wesleyan University, Oak Ridge Science and Engineering Research Semester 1991

Asim YarKhan, M.S., University of Tennessee, Graduate Research Assistant 1993-1994

DeMarkus V. Webb, B.S., University of Tennessee, Research Alliance for Minorities Summer, 2000

Yongming Qu, Ph.D., Iowa State University, DOE Higher Education Research Experience, 2001

Ade Ola, Ph.D., Virginia State University, Minority Educational Institution Summer Faculty Research Program 2002

Bryan Hathorn, Ph.D., California Institute of Technology, Postdoctoral Appointment, 2001-2002

David A. Bauer, B.Sc., Georgia Institute of Technology, Energy Research Undergraduate Laboratory Fellowship 2002

Byung Hoon Park, Ph.D. University of Maryland, Postdoctoral Appointment, 2002-2004

Jennifer Golek, Ph.D., University of Tennessee, DOE Higher Education Research Experience 2002-2003

Ian Watkins, M.S., University of Tennessee, DOE Higher Education Research Experience 2002-2003

Alan Parks, Ph.D., Lawrence University, Oak Ridge Science Semester 2003

Rajesh V. Munavalli, M.S., DOE Higher Education Research Experience 2003-2004

Aruna Buddana, M.S., University of Tennessee, DOE Higher Education Research Experience, 2004

Abdelhamid Meziani, Ph.D., Florida International University, Minority Educational Institution Summer Faculty Research Program, 2004

Lionel Lovett, B.Sc., Jackson State University, ORNL Research Alliance in Math and Science 2005

Houssain Kettani, Ph.D., Jackson State University, DOE Higher Education Research Experience, 2005, 2006

James R. Wilcox, Tennessee Governors Academy, 2008-2009

Fernando E. Fuentes, B.Sc., Polytechnic University of Puerto Rico, ORNL Research Alliance in Math and Science 2009

Yael M Camacho-Bonaparte, B.Sc., Polytechnic University of Puerto Rico, FaST, 2009, 2011

Shamir J Quinones Dueno, B.Sc., Polytechnic University of Puerto Rico, FaST, 2009

Emmanuel Aviles Saez, B.Sc., Polytechnic University of Puerto Rico, FaST, 2009

Javier Colon, B.Sc., Polytechnic University of Puerto Rico, FaST, 2011

Yanran Lu, B.Sc., Princeton University, NSF, 2011

UMBC REU Program University of Maryland, Baltimore County, National Science Foundation, Research Experiences for Undergraduates, 2011

Wei-Chen Chen, Ph.D., Iowa State University, Postdoctoral Appointment, 2011-2013

Hilde Oliver, B.Sc., University of South Carolina, DOE Higher Education Research Experience, 2012

UMBC REU Program University of Maryland, Baltimore County, National Science Foundation, Research Experiences for Undergraduates, 2013

Denver Coker, B.Sc. University of North Georgia, Joint Institute of Computational Sciences Summer Internship, 2013

Reid Vincent Paris, B.Sc. University of Maine, DOE Higher Education Research Experience, 2015

Drew Schmidt, M.Sc. University of Tennessee, Graduate Research Assistant, 2015-2017

Luping Yu, M.Sc. University of Tennessee, Advanced Short-Term Research Opportunity (ASTRO), 2017

Liyu Gong, Ph.D University of Kentucky, Advanced Short-Term Research Opportunity (ASTRO), 2017

Reid Vincent Paris, M.Sc. Iowa State University, Joint Institute for Computational Sciences (JICS) Summer Internship, 2017 and 2019

Qiyiwen Zhang, M.Sc. Washington University in St. Louis, Joint Institute for Computational Sciences (JICS) Summer Internship, 2019

Byung-Jun Kim, M.Sc. Virginia Polytechnic, National Science Foundation Mathematical Sciences Graduate Internship (NSF-MSGI), 2019

Reviewer Activities

Analytical Chemistry

Bit

Communications in Statistics: Simulation and Computation

Computational Statistics and Data Analysis

CRC Press, Taylor & Francis Group, book proposal reviews

Department of Energy, Office of Science, Proposals

Handbook of Parallel Computing and Statistics

High Performance Computing (HPC) Review

IEEE Transactions on Systems Man and Cybernetics

DOE INCITE Proposals, Computational Readiness Reviews

Jack Youden Prize for best expository paper in Technometrics

Journal of Computational and Graphical Statistics

Journal of the American Statistical Association

Journal of Statistical Computation and Simulation

Journal of Statistical Software

KAUST Research Computing Allocation Committee scientific reviews

National Science Foundation, Proposals, Review Panels

Natural Sciences and Engineering Research Council of Canada, Proposals

OLCF Director's Discretion Computational Readiness Reviews

SIAM Journal on Scientific and Statistical Computing

SIAM/ASA Journal on Uncertainty Quantification

Statistical Analysis and Data Mining

Stochastic Environmental Research and Risk Assessment

Technometrics

The American Statistician

Languages

Fluent in English, Russian, and Czech. Can function in German and Polish.