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RESEARCH and PROFESSIONAL EXPERIENCE

University of Illinois Chicago (2022 – Present)

- **Warren S. McCulloch Professor**, *Department of Computer Science* (with courtesy appointments in Electrical and Computer Engineering (2024 – Present) and the Richard and Loan Hill Department of Biomedical Engineering (2026 – Present). Tenured faculty member engaged in research and instruction, and a member of the Honors College. Research spans scientific visualization, large-scale data analytics, and the design of research infrastructure for scientific discovery. Ongoing efforts address the analysis of data produced by supercomputers, large-scale scientific instruments, and sensor networks, with the goal of integrating edge and high-performance computing across the computing continuum.
  - Professor (2022 – Present)
  - Visiting Professor (2022)
- **Faculty Affiliate**, *University of Illinois System's Institute of Government and Public Affairs* (2026 – Present), Serves as a Faculty Affiliate on the *Science and Technology Policy Working Group*. Collaborates with faculty from across the University of Illinois System on interdisciplinary research and public-policy initiatives related to artificial intelligence, computing, cybersecurity, data, and emerging technologies. Contributes expertise that helps connect academic research with policymakers, government agencies, and broader public discussions.

Argonne National Laboratory (1992 – Present)

- **Argonne Distinguished Fellow** (2025 – Present), Recognized for exceptional leadership and research in high-performance computing, large-scale data analytics, and advanced visualization.
- **Founding Co-Director**, *George Crabtree Institute for Discovery* (2024 – Present), a joint institute between the University of Illinois Chicago and Argonne National Laboratory. In collaboration with the University of Illinois Chicago, the co-director is responsible for the overall direction of the institute, including setting its strategic focus and developing joint research efforts between the two institutions.
- **Division Director**, *Argonne Leadership Computing Facility* (2010 – Present), Responsible for strategic direction of the facility, which includes planning and executing facility upgrades (in collaboration with the project director) and integrated data strategies, risk assessment and management, operations reporting and reviews, staff promotion and retention, and safety. The ALCF is home to some of the world's fastest supercomputers: *Polaris*, an HPE Apollo 6500 Gen10+ supercomputer, and *Aurora*, an Intel CPU/GPU supercomputer currently ranked as one of the fastest AI (HPL MxP) systems in the world that supports scientific and engineering open science research.
- **Deputy Associate Laboratory Director**, *Computing, Environment and Life Sciences Directorate* (2006 – Present), Provides strategic planning and management of the Laboratory Directorate comprising Biosciences, Computational Science, Data Science and Learning, Environmental Sciences, Mathematics and Computer Science divisions, and the Argonne Leadership Computing Facility. Executes a research program that couples computing-related activities with various science domains whose future depends on progress in computing.

- **Research Scientist** (1992 – Present), Active research activities in high-performance computing, scientific visualization of large and complex datasets, information visualization related to high-performance computing, virtual reality for science, and the integration of edge services.
  - Senior Scientist - RD6 (2012 – Present)
  - Scientist - RD5 (2004 – 2012)
  - Scientist - RD4 (2001 – 2004)
  - Scientist - RD3 (2000 – 2001)
  - Assistant Scientist - RD2 (1996 – 2000)
  - Scientist Associate - RD1 (1992 – 1996)

University of Chicago (1999 – Present)

- **Senior Scientist at Large**, The University of Chicago Consortium for Advanced Science and Engineering (CASE) (2018 – Present), *Member of an organization focused on facilitating research collaborations between faculty at UChicago and scientists and scholars at other institutions, including Argonne, Fermilab, and Marine Biological Laboratory.*

- **Senior Fellow**, Computation Institute, a joint institute of the University of Chicago and Argonne National Laboratory (1999 – 2018), *Member of a multi-disciplinary research center that worked to advance complex, system-level scientific problems using a wide range of computational approaches and computing platforms.*
  - Senior Fellow (2004 – 2018)
  - Fellow (1999 – 2004)

Illinois Institute of Technology (2021 – 2023)

- **Research Professor**, Department of Computer Science (2021 – 2023), *Co-supervisor of graduate students in the area of high performance computing.*

Northern Illinois University (2012 – 2022)

- **Presidential Research, Scholarship and Artistry Professor**, Department of Computer Science, *Tenured faculty member engaged in research and instruction. Founded the Data, Devices, and Interaction Laboratory (ddiLab) in 2012 as a new university resource to support a range of computer science research projects. The lab is designed to help students investigate how computing can be used to support and enhance knowledge and discovery.*
  - PRSA Professor (2020 – 2022)
  - Professor (2017 – 2020)
  - Associate Professor with tenure (2015 – 2017)
  - Associate Professor (2012 – 2015)

EDUCATION

- **Ph.D. in Computer Science** (2009)
  Physical Sciences Division, The University of Chicago, Chicago, IL
  Dissertation: *Visualization and Collaboration Technologies to Support High-Performance Computing Research*
  Committee: Rick Stevens (Advisor), Todd Dupont, Ian Foster, Mark Hereld, and Ewing Lusk

- **Master of Science in Computer Science** (2002)
  Physical Sciences Division, The University of Chicago, Chicago, IL
  Thesis: *Development and Analysis of a Movie Playback Tool for Use in Tiled Display Environments*
  Advisor: Rick Stevens

- **Master of Science in Electrical Engineering and Computer Science** (1994)
  College of Engineering, University of Illinois Chicago, Chicago, IL
  Thesis: *Extending Genetic Programming for Discrete Volume Visualization*
  Committee: Thomas A. DeFanti (Advisor), Tom Moher, and Daniel J. Sandin

- **Graduate coursework in Physics** (1990 – 1991)
  College of Liberal Arts and Sciences, Northern Illinois University, DeKalb, IL
- **Bachelor of Science in Physics** (1990)
  College of Liberal Arts and Sciences, Northern Illinois University, DeKalb, IL

Executive Education

- **Alumnus** (2013)
  Harvard Business School, Harvard University, Cambridge, MA
  General Management Program
- **Participant** (2012)
  The University of Chicago Booth School of Business, Chicago, IL
  Executive Education Course: Essentials of Effective Management: The Psychology of Management
- **Participant** (2012)
  Hasso Plattner Institute of Design, Stanford University, Stanford, CA
  Design Thinking Boot Camp: From Insights to Innovation
- **Participant** (2008 Cohort)
  The University of Chicago Booth School of Business, Chicago, IL
  Argonne's Strategic Laboratory Leadership Program Coursework included: Effective Leadership, Strategic Thinking, Building and Implementing Growth Strategies, and Leading Change and Innovation

Teaching Experience

- **University of Illinois Chicago**
  - Edge Computing Systems (CS 494) (Sp2026)
  - Creative Coding (CS 427) (Sp2025)
  - Introduction to High Performance Computing (CS 455) (Sp2023, Sp2024, Sp2025)
  - Honors College Mentoring - (2023 – Present) [3 honors students]
  - Undergraduate Mentoring - (2022 – Present) [Early Research Scholars Team (2023-24)]
- **Northern Illinois University**
  - Big Ideas Lecture (CSCI 600) (Fa2018, Fa2019, Sp2020, Fa2020, Sp2021, Fa2021, Sp2022)
  - Data Structures and Algorithms (CSCI 340) (Sp2014, Sp2017, Sp2020, Fa2020, Sp2021, Fa2021)
  - Data Visualization (CSCI 490, 627) (Fa2012, Fa2013, Sp2015, Sp2016, Sp2019, Sp2022)
  - Information Visualization (CSCI 628) (Sp2020)
  - Introduction to Virtual Reality (CSCI 490, 680) (Sp2018)
  - Independent Study - iOS Graphics (Su2014) [1 student], Data Visualization (Su2016) [7 students], Data Visualization (Fa2016) [12 students], Game Development (Fa2016) [5 students], Data Visualization (Su2017) [8 students], Virtual Reality (Fa2018)[6 students], Virtual Reality (Fa2020)[1 student], Edge Computing (Sp2021)[1 student], Edge Computing (Fa2021)[1 student]
  - Undergraduate Mentoring - (2014–2022) [8 Research Rookies, 3 Simmon Scholars, 1 McKearn Fellow, 1 summer research opportunity program participant, and 8 senior capstone projects]

AWARDS AND HONORS

- **Best Paper** 2025
  Machine Learning Driven Auto-tuning for Non-uniform All-to-All Collectives, IEEE International Conference on High Performance Computing, Data, Analytics, and Data Science (HiPC)
- **Best Visualization Award** 2025
  Real-time Scientific Visualization and Interactive Steering for High-Performance Computing Simulations, PEARC Conference
- **Distinguished Fellow** 2025
  Argonne National Laboratory
- **Impact Argonne Award (Innovation)** 2025
- **Distinguished Senior Research and Development Award** 2024
  IEEE Chicago Chapter
- **Best Paper** 2024
  Bridging Gaps in Simulation Analysis through a General Purpose, Bidirectional Steering Interface with Ascent, IEEE/ACM International Workshop on In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV)
- **Gordon Bell Finalist** 2024
  MProt-DPO: Breaking the ExaFLOPS Barrier for Multimodal Protein Design Workflows with Direct Preference Optimization
- **Distinguished Alumni Award** 2024
  College of Liberal Arts and Sciences, Northern Illinois University
- **Impact Argonne Award (Extraordinary Effort)** 2024
- **Best Paper** 2023
  Scaling Computational Fluid Dynamics: In Situ Visualization of NekRS using SENSEI, IEEE/ACM International Workshop on In Situ Infrastructures for Enabling Extreme-Scale Analysis and Visualization (ISAV)
- **IEEE SciVis Contest Winner: Best Overall** 2023
  Neuronal Network Simulations of the Human Brain
- **IEEE SciVis Contest Winner: Best Workflow** 2023
  Neuronal Network Simulations of the Human Brain
- **Argonne National Laboratory Commercialization Excellence Award for Delivering Impact** 2023
- **Argonne Board of Governors' Distinguished Performance Award** 2023
- **Honorable Mention, Best Paper** 2023
  ChemoGraph: Interactive Visual Exploration of the Chemical Space, EuroVis'23
- **Impact Argonne Award (Extraordinary Effort)** 2023
- **Impact Argonne Award (Enhancement of Argonne's Reputation)** 2023
- **Impact Argonne Award (Enhancement of Argonne's Reputation)** 2023

- **ACM Gordon Bell Special Prize for HPC-Based COVID-19 Research** 2022
  GenSLMs: Genome-scale Language Models Reveal SARS-CoV-2 Evolutionary Dynamics, Supercomputing 2022
- **Argonne Board of Governors' Pinnacle of Education Award** 2022
- **Impact Argonne Award (Enhancement of Argonne's Reputation)** 2022
- **Best Paper (Nominee), IEEE Transactions on Visualization and Computer Graphics** 2021
  Real-Time Omnidirectional Stereo Rendering: Generating 360° Surround-View Panoramic Images for Comfortable Immersive Viewing, IEEE VR 2021 (invited high-impact paper presented at SIGGRAPH 2021)
- **The Secretary of Energy Achievement Award** 2021
  High Performance Computing Resource Team
- **Impact Argonne Award (Enhancement of Argonne's Reputation)** 2020
- **Impact Argonne Award (Innovation)** 2020
- **Impact Argonne Award (Extraordinary Effort)** 2020
- **Excellence in Teaching Award** 2019–2020
  Northern Illinois University Department of Computer Science
- **Top Recognition for Exemplary Blend of Networking, Computing, and Storage** 2019
  Real-Time Analysis of Streaming Synchrotron Data, SCinet Technology Challenge
- **James M. Lufkin Award for Best IPCC Paper** 2016
  Improving Models of Document Cycling: Accounting for the Less Visible Writing Activities of an Annual Reporting Process at a Supercomputing Facility, IEEE IPCC
- **Honorable Mention, Best Paper** 2016
  Parallel Distributed, GPU-Accelerated, Advanced Lighting Calculations for Large-Scale Volume Visualization, 6th IEEE Symposium on Large-Scale Data Analysis and Visualization (LDAV)
- **Excellence in Teaching Award** 2015–2016
  Northern Illinois University Department of Computer Science
- **Best Poster** 2015
  Streaming Ultra High Resolution Images to Large Tiled Display at Nearly Interactive Frame Rates with vl3, 5th IEEE Symposium on Large-Scale Data Analysis and Visualization (LDAV)
- **Best Paper** 2014
  Exploring Void Search for Fault Detection on Extreme Scale Systems, IEEE Cluster
- **University of Illinois Chicago City Partner Award** 2014
  University of Illinois Alumni Association
- **Star Leadership Award** 2014
  Grace McWayne Elementary (*for establishing an after-school technology program for fourth and fifth graders*)

- **Argonne National Laboratory Pacesetter** 2012
  Extraordinary Contribution
- **ACM Gordon Bell Prize [Honorable Mention]** 2011
  A New Computational Paradigm in Multiscale Simulations: Applications to Blood Flow
- **R&D 100 Award** 2007
  Access Grid 3.0
- **SC05 HPC Analytics Challenge** 2005
  Real-Time Change Detection and Alerts from Highway Traffic Data, International Conference on High Performance Computing, Networking, Storage and Analysis (SC'05)
- **Best Panel** 2001
  Commodity Graphics Accelerators for Scientific Visualization, 12th Annual IEEE Visualization Conference (VIS)

PUBLICATIONS

Journals, Books, and Book Chapters [Peer Reviewed] (Award)

67. Andrew E. Johnson, Luc Renambot, G. Elisabeta Marai, Daria Tsoupikova, Michael E. Papka, Lance Long, Dana Plepys, Jonas Talandis, Maxine D. Brown, Jason Leigh, Daniel J. Sandin, and Thomas A. DeFanti. Electronic Visualization Laboratory's 50th Anniversary Retrospective: Look to the Future, Build on the Past. *PRESENCE: Virtual and Augmented Reality*, pages 1–51, April 2024, https://direct.mit.edu/pvar/article-pdf/doi/10.1162/pres_a_00421/2366902/pres_a_00421.pdf

66. Ratanond Koonchanok, Michael E. Papka, and Khairi Reda. Trust your gut: Comparing human and machine inference from noisy visualizations. *IEEE Transactions on Visualization and Computer Graphics*, pages 1–11, 2024

65. Thomas Marrinan, Victor A. Mateevitsi, Madeleine Moeller, Alina Kanayinkal, and Michael E. Papka. 2023 IEEE Scientific Visualization Contest Winner: VisAnywhere: Developing Multiplatform Scientific Visualization Applications . *IEEE Computer Graphics and Applications*, 44(05):93–103, September 2024

64. Qi Wu, Joseph A. Insley, Victor A. Mateevitsi, Silvio Rizzi, Michael E. Papka, and Kwan-Liu Ma. Distributed neural representation for reactive in situ visualization. *IEEE Transactions on Visualization and Computer Graphics*, pages 1–15, 2024

63. Bharat Kale, Austin Clyde, Maoyuan Sun, Arvind Ramanathan, Rick Stevens, and Michael E. Papka. Chemograph: Interactive visual exploration of the chemical space. *Computer Graphics Forum*, 42(3):13–24, 2023, https://onlinelibrary.wiley.com/doi/pdf/10.1111/cgf.14807 [**Best Paper Award, Honorable Mention**]

62. Bharat Kale, Maoyuan Sun, and Michael E. Papka. The state of the art in visualizing dynamic multivariate networks. *Computer Graphics Forum*, 42(3):471–490, 2023, https://onlinelibrary.wiley.com/doi/pdf/10.1111/cgf.14856

61. Jarrad Hampton-Marcell, Tasia Bryson, Jeffrey Larson, J. Taylor Childers, Spencer Pasero, Cortez Watkins, Thomas Reed, Dorletta Flucas-Payton, and Michael E. Papka. Leveraging national laboratories to increase black representation in stem: recommendations within the department of energy. *International Journal of STEM Education*, 10(1):4, 2023

60. Maxim Zvyagin, Alexander Brace, Kyle Hippe, Yuntian Deng, Bin Zhang, Cindy Orozco Bohorquez, Austin Clyde, Bharat Kale, Danilo Perez-Rivera, Heng Ma, Carla M. Mann, Michael Irvin, Gregory J. Pauloski, Logan Ward, Valerie Hayot-Sasson, Murali Emani, Sam Foreman, Zhen Xie, Diangen Lin, Maulik Shukla, Weili Nie, Josh Romero, Christian Dallago, Arash Vahdat, Chaowei Xiao, Thomas Gibbs, Ian Foster, James J. Davis, Michael E. Papka, Thomas Brettin, Rick Stevens, Anima Anandkumar, Venkatram Vishwanath, and Arvind Ramanathan. Genslms: Genome-scale language models reveal sars-cov-2 evolutionary dynamics. *bioRxiv*, 2022, https://www.biorxiv.org/content/early/2022/11/23/2022.10.10.511571.full.pdf [***ACM Gordon Bell Prize***]

59. Rafael Vescovi, Ryan Chard, Nickolaus D. Saint, Ben Blaiszik, Jim Pruyne, Tekin Bicer, Alex Lavens, Zhengchun Liu, Michael E. Papka, Suresh Narayanan, Nicholas Schwarz, Kyle Chard, and Ian T. Foster. Linking scientific instruments and computation: Patterns, technologies, and experiences. *Patterns*, 3(10):100606, 2022

58. Khairi Reda, Amey A. Salvi, Jack Gray, and Michael E. Papka. Color nameability predicts inference accuracy in spatial visualizations. *Computer Graphics Forum*, 40(3):49–60, 2021, https://onlinelibrary.wiley.com/doi/pdf/10.1111/cgf.14288 [**Best Paper Award**]

57. Thomas Marrinan and Michael E. Papka. Real-time omnidirectional stereo rendering: Generating 360° surround-view panoramic images for comfortable immersive viewing. *IEEE Transactions on Visualization and Computer Graphics*, 27(5):2587–2596, 2021

56. Travis Mackoy, Bharat Kale, Michael E. Papka, and Ralph A. Wheeler. viewsq, a visual molecular dynamics (vmd) module for calculating, analyzing, and visualizing x-ray and neutron structure factors from atomistic simulations. *Computer Physics Communications*, 264:107881, 2021

55. Zhengchun Liu, Rajkumar Kettimuthu, Michael E. Papka, and Ian Foster. Bftrainer: Low-cost training of neural networks on unfillable supercomputer nodes. *arXiv preprint arXiv:2106.12091*, 2021

54. Yuping Fan, Paul Rich, William Allcock, Michael Papka, and Zhiling Lan. Hybrid workload scheduling on hpc systems. *arXiv preprint arXiv:2109.05412*, 2021

53. Murali Emani, Venkatram Vishwanath, Corey Adams, Michael E. Papka, Rick Stevens, Laura Florescu, Sumti Jairath, William Liu, Tejas Nama, and Arvind Sujeeth. Accelerating Scientific Applications With SambaNova Reconfigurable Dataflow Architecture. *Computing in Science & Engineering*, 23(2):114–119, 2021

52. James J. Hack and Michael E. Papka. The us high-performance computing consortium in the fight against covid-19. *Computing in Science & Engineering*, 22(6):75–80, 2020

51. Priyanjani Chandra, Pratool Bharti, and Michael Papka. Poster: A computer vision and ai based solution to determine the change in water level in stream, 2020

50. Charlie Catlett, Pete Beckman, Nicola Ferrier, Howard Nusbaum, Michael E. Papka, Marc G. Berman, and Rajesh Sankaran. Measuring cities with software-defined sensors. *Journal of Social Computing*, 1(1):14–27, 2020

49. Michael E. Papka. Predicting the risk of cancer with computational electrodynamics. 2019

48. Thomas Marrinan, Greg Eisenhauer, Matthew Wolf, Joseph A. Insley, Silvio Rizzi, and Michael E. Papka. Parallel streaming between heterogeneous hpc resources for real-time analysis. *Journal of Computational Science*, 31:163–171, 2019

47. Li Yu, Zhou Zhou, Yuping Fan, Michael E. Papka, and Zhiling Lan. System-wide trade-off modeling of performance, power, and resilience on petascale systems. *The Journal of Supercomputing*, 74(7):3168–3192, 2018

46. Mark Kostuk, Thomas D. Uram, Todd Evans, Dmitri M. Orlov, Michael E. Papka, and David Schissel. Automatic between-pulse analysis of diii-d experimental data performed remotely on a supercomputer at argonne leadership computing facility. *Fusion Science and Technology*, 74(1-2):135–143, 2018

45. Ryan Chard, Ravi Madduri, Nicholas T. Karonis, Kyle Chard, Kirk L. Duffin, Caesar E. Ordoñez, Thomas D. Uram, Justin Fleischauer, Ian T. Foster, Michael E. Papka, and John Winans. Scalable pct image reconstruction delivered as a cloud service. *IEEE Transactions on Cloud Computing*, 6(01):182–195, January 2018

44. John T. Childers, Thomas D. Uram, Thomas J. LeCompte, Michael E. Papka, and Douglas P. Benjamin. Adapting the serial Alpgen parton-interaction generator to simulate LHC collisions on millions of parallel threads. *Computer Physics Communications*, 210:54–59, 2017

43. Sean Wallace, Zhou Zhou, Venkatram Vishwanath, Susan Coghlan, John Tramm, Zhiling Lan, and Michael E. Papka. Application power profiling on ibm blue gene/q. *Parallel Computing*, 57:73–86, 2016

42. Will Usher, Ingo Wald, Aaron Knoll, Michael E. Papka, and Valerio Pascucci. In situ exploration of particle simulations with cpu ray tracing. *Supercomputing Frontiers and Innovations*, 3(4):4–18, October 2016

41. Thomas D. Uram and Michael E. Papka. Expanding the scope of high-performance computing facilities. *Computing in Science & Engineering*, 18(3):84–87, 2016

40. Khairi Reda, Andrew E. Johnson, Michael E. Papka, and Jason Leigh. Modeling and evaluating user behavior in exploratory visual analysis. *Information Visualization*, 15(4):325–339, 2016

39. Paris Perdikaris, Joseph A. Insley, Leopold Grinberg, Yue Yu, Michael E. Papka, and George Em Karniadakis. Visualizing multiphysics, fluid-structure interaction phenomena in intracranial aneurysms. *Parallel Computing*, 55:9–16, 2016

38. Huy Bui, Eun-Sung Jung, Venkatram Vishwanath, Andrew Johnson, Jason Leigh, and Michael E. Papka. Improving sparse data movement performance using multiple paths on the blue gene/q supercomputer. *Parallel Computing*, 51:3–16, 2016

37. Li Yu, Zhou Zhou, Sean Wallace, Michael E. Papka, and Zhiling Lan. Quantitative modeling of power performance tradeoffs on extreme scale systems. *Journal of Parallel and Distributed Computing*, 84:1–14, 2015

36. James J. Hack and Michael E. Papka. Big data: Next-generation machines for big science. *Computing in Science & Engineering*, 17(4):63–65, 2015

35. Attila Gyulassy, Aaron Knoll, Kah Chun Lau, Bei Wang, Peer-Timo Bremer, Michael E. Papka, Larry A. Curtiss, and Valerio Pascucci. Interstitial and interlayer ion diffusion geometry extraction in graphitic nanosphere battery materials. *IEEE transactions on visualization and computer graphics*, 22(1):916–925, 2015

34. Sriram Lakshminarasimhan, Xiaocheng Zou, David A. Boyuka, Saurabh V. Pendse, John Jenkins, Venkatram Vishwanath, Michael E. Papka, Scott Klasky, and Nagiza F. Samatova. Diraq: scalable in situ data-and resource-aware indexing for optimized query performance. *Cluster computing*, 17(4):1101–1119, 2014

33. James J. Hack and Michael E. Papka. New frontiers in leadership computing part ii[guest editorial]. *Computing in Science & Engineering*, 16(05):10–12, 2014

32. James J. Hack and Michael E. Papka. New frontiers in leadership computing part ii[guest editorial]. *Computing in Science & Engineering*, 16(06):10–12, 2014

31. Khairi Reda, Lance Long, Kenichi Nomura, Priya Vashishta, and Michael Papka. A nanoscale forest seen through a big lens. 2013

30. Khairi Reda, Alessandro Febretti, Aaron Knoll, Jillian Aurisano, Jason Leigh, Andrew Johnson, Michael E. Papka, and Mark Hereld. Visualizing large, heterogeneous data in hybrid-reality environments. *IEEE Computer Graphics and Applications*, 33(4):38–48, 2013

29. Aaron Knoll, Maria KY Chan, Kah Chun Lau, Bin Liu, Jeffrey Greeley, Larry Curtiss, Mark Hereld, and Michael E. Papka. Uncertainty classification and visualization of molecular interfaces. *International Journal for Uncertainty Quantification*, 3(2), 2013

28. Nicholas T. Karonis, Kirk L. Duffin, Caesar E. Ordoñez, Bela Erdelyi, Thomas D. Uram, Eric C. Olson, George Coutrakon, and Michael E. Papka. Distributed and hardware accelerated computing for clinical medical imaging using proton computed tomography (pct). *Journal of Parallel and Distributed Computing*, 73(12):1605–1612, 2013

27. Leopold Grinberg, Joseph A. Insley, Dmitry A. Fedosov, Vitali A. Morozov, Michael E. Papka, and George Em Karniadakis. Tightly coupled atomistic-continuum simulations of brain blood flow on petaflop supercomputers. *IEEE Computing in Science & Engineering*, 14(6):58–67, 2012

26. George Coutrakon, Kirk Duffin, Bela Erdelyi, Nicholas Karonis, Eric Olson, Caesar Ordoñez, Michael E. Papka, and Thomas Uram. High-performance multiple-cpu/gpu proton computed tomography. *Transactions*, 106(1):70–72, 2012

25. Jack Dongarra, Pete Beckman, Terry Moore, Patrick Aerts, Giovanni Aloisio, Jean-Claude Andre, David Barkai, Jean-Yves Berthou, Taisuke Boku, Bertrand Braunschweig, Franck Cappello, Barbara Chapman, Xuebin Chi, Alok Choudhary, Sudip Dosanjh, Thom Dunning, Sandro Fiore, Al Geist, Bill Gropp, Robert Harrison, Mark Hereld, Michael Heroux, Adolfy Hoisie, Koh Hotta, Zhong Jin, Yutaka Ishikawa, Fred Johnson, Sanjay Kale, Richard Kenway, David Keyes, Bill Kramer, Jesus Labarta, Alain Lichnewsky, Thomas Lippert, Bob Lucas, Barney Maccabe, Satoshi Matsuoka, Paul Messina, Peter Michielse, Bernd Mohr, Matthias S. Mueller, Wolfgang E. Nagel, Hiroshi Nakashima, Michael E. Papka, Dan Reed, Mitsuhisa Sato, Ed Seidel, John Shalf, David Skinner, Marc Snir, Thomas Sterling, Rick Stevens, Fred Streitz, Bob Sugar, Shinji Sumimoto, William Tang, John Taylor, Rajeev Thakur, Anne Trefethen, Mateo Valero, Aad van der Steen, Jeffrey Vetter, Peg Williams, Robert Wisniewski, and Kathy Yelick. The international exascale software project roadmap. *The International Journal of High Performance Computing Applications*, 25(1):3–60, 2011, https://doi.org/10.1177/1094342010391989

24. Robert T. Fisher, Leo P. Kadanoff, Donald Q. Lamb, Anshu Dubey, Tomasz Plewa, Alan Calder, Fausto Cattaneo, Peter Constantin, Ian Foster, Michael E. Papka, Snezhana I. Abarzhi, S. M. Asida, Paul M. Rich, Chad C. Glendenin, Katie Antypas, Daniel J. Sheeler, Lynn B. Reid, Brad Gallagher, and Shawn G. Needham. Terascale turbulence computation using the FLASH3 application framework on the IBM Blue Gene/L system. *IBM Journal of Research and Development*, 52(1.2):127–136, 2008

23. Charlie Catlett, William E. Allcock, Phil Andrews, Ruth Aydt, Ray Bair, Natasha Balac, Bryan Banister, Trish Barker, Mark Bartelt, Pete Beckman, Francine Berman, Gary Bertoline, Alan Blatecky, Jay Boisseau, Jim Bottum, Sharon Brunett, Julian Bunn, Michelle Butler, David Carver, John Cobb, Tim Cockerill, Peter F. Couvares, Maytal Dahan, Diana Diehl, Thom Dunning, Ian Foster, Kelly Gaither, Dennis Gannon, Sebastien Goasguen, Michael Grobe, Dave Hart, Matt Heinzel, Chris Hempel, Wendy Huntoon, Joseph Insley, Christopher Jordan, Ivan Judson, Anke Kamrath, Nicholas Karonis, Carl Kesselman, Patricia Kovatch, Lex Lane, Scott Lathrop, Michael Levine, David Lifka, Lee Liming, Miron Livny, Rich Loft, Doru Marcusiu, Jim Marsteller, Stuart Martin, Scott McCaulay, John McGee, Laura McGinnis, Michael McRobbie, Paul Messina, Reagan Moore, Richard Moore, J.P. Navarro, Jeff Nichols, Michael E. Papka, Rob Pennington, Greg Pike, Jim Pool, Raghu Reddy, Dan Reed, Tony Rimovsky, Eric Roberts, Ralph Roskies, Sergiu Sanielevici, J. Ray Scott, Anurag Shankar, Mark Sheddon, Mike Showerman, Derek Simmel, Abe Singer, Dane Skow, Shava Smallen, Warren Smith, Carol

Song, Rick Stevens, Craig Stewart, Robert B. Stock, Nathan Stone, John Towns, Tomislav Urban, Mike Vildibill, Edward Walker, Von Welch, Nancy Wilkins-Diehr, Roy Williams, Linda Winkler, Lan Zhao, and Ann Zimmerman. *High Performance Computing and Grids in Action*, volume 16, chapter TeraGrid: Analysis of Organization, System Architecture, and Middleware Enabling New Types of Applications, pages 225–249. IOS Press, 2008

22. Joseph A. Insley, Michael E. Papka, Suchuan Dong, George Karniadakis, and Nicholas T. Karonis. Runtime visualization of the human arterial tree. *IEEE Transactions on Visualization and Computer Graphics*, 13(4):810–821, 2007

21. Justin Binns, Jonathan DiCarlo, Joseph A. Insley, Torrance Leggett, Cory Lueninghoener, John-Paul Navarro, and Michael E. Papka. Enabling community access to teragrid visualization resources. *Concurrency and Computation: Practice and Experience*, 19(6):783–794, 2007

20. Suchuan Dong, Joseph Insley, Nicholas T. Karonis, Michael E. Papka, Justin Binns, and George Karniadakis. Simulating and visualizing the human arterial system on the teragrid. *Future Generation Computer Systems*, 22(8):1011–1017, 2006

19. Jonathan C. Silverstein, Fred Dech, Justin Binns, David Jones, Michael E. Papka, and Rick Stevens. Distributed collaborative radiological visualization using access grid. *Studies in Health Technology and Informatics*, 111:477–481, 2005

18. Katarzyna Keahey, Michael E. Papka, Q Peng, David Schissel, Geni Abla, Takuya Araki, Justin Burruss, Elliot Feibush, Peter Lane, Scott Klasky, Torrance Leggett, Doug Mccune, and Lew Randerson. Grid support for collaborative control room in fusion science. *Cluster Computing*, 8(4):305–311, October 2005

17. Justin R. Burruss, Geni Abla, Scott Flanagan, Katarzyna Keahey, Torrance Leggett, Christiane Ludesche, Doug McCune, Michael E. Papka, Qian Peng, Lew Randerson, and David P. Schissel. Developments in remote collaboration and computation. *Fusion Science and Technology*, 47(3):814–818, 2005

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1. Michael E. Papka. *MS Thesis: Extending genetic programming for discrete volume visualization*. PhD thesis, University of Illinois at Chicago, 1994

PROFESSIONAL SERVICE AND ACTIVITIES

Professional Memberships

- **Association for Computing Machinery** (Distinguished Member) 1990 – Present
- **Institute of Electrical and Electronics Engineers** (Senior Member) 1994 – Present
- **American Association for the Advancement of Science** (Member) 2008 – Present
- **Computer Science Teachers Association** (Member) 2024 – Present

Editorial Roles

- **Associate Editor** 2022 – Present
  Frontiers in High Performance Computing, Architecture and Systems
- **Department Editor** 2015 – 2020
  IEEE Computing in Science and Engineering, Leadership Computing

Advisory Boards

- **External Advisory Committee** 2025 – Present
  The Ohio State University, Computer Science and Engineering
- **Advisory Committee** 2015 – Present
  Loyola University Chicago, Computer Science
- **Advisory Board** 2012 – 2022
  Harvard University, Computational Science and Engineering
- **Advisory Board** 2016 – 2019
  Precipitating Change – Integrating Meteorology, Mathematics, and Computational Thinking

Conference Organization

- **General Co-Chair**
  IEEE Visualization and Visual Analytics (IEEE VIS) 2027, hosted in Chicago, with Fabio Miranda, Khairi Reda, Victor Mateevitsi
- **Area Curation Committee** 2022 – 2025
  IEEE Visualization and Visual Analytics (IEEE VIS)
- **Co-Chair, Visualization Showcase** 2021
  PEARC 2021, with Joseph Insley (ANL/NIU)
- **Founder and Steering Committee** 2010 – 2019
  Symposium on Large Data Analysis and Visualization (LDAV), with Jim Ahrens, Chris Johnson, Kwan-Li Ma
- **General Co-Chair** 2015
  IEEE Visualization and Visual Analytics (IEEE VIS) 2015, hosted in Chicago, with Maxine Brown (UIC)

Program Committees and Reviewing

- **IEEE Transactions on Computers** 2026
  Reviewer
- **The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC)** 2018 – 2025
  Chair, State of the Practice (2025); Art of HPC (2024); Data Analytics, Visualization & Storage (2018, 2023)

- **IEEE Visualization and Visual Analytics (IEEE VIS)** 2016 – 2025
  Workshops Co-Chair (2025); Technical Committee (2025); Reviewer: Full Papers (2016, 2023 – 2025); Short Papers (2024); Workshops (2025)
- **EuroVis** 2020 – 2024
  Education Papers (2024); Full Papers (2020, 2021, 2023)
- **ACM International Symposium on High-Performance Parallel and Distributed Computing (HPDC)** 2025 – 2026
  Kizashi Talk: *The Next User Never Sleeps* (2026); **Panel:** Data Centers: Information, Misinformation, and the Future of Large-Scale Computing (2026); Student Poster Judge (2025, 2026); Session Chair (2026); Panelist (2026); **Keynote**, FlexScience Workshop: *Rethinking Specialization and Thinking About the Evolution of HPC Facilities* (2025)
- **ACM Intelligent User Interfaces** 2024 – 2025
  Posters and Demos (2024, 2025)
- **IEEE eScience** (Reviewer) 2025 – 2026
- **IEEE HiPC** (Scalable Data Science) 2025
- **IEEE ISMAR** (Reviewer) 2024
- **PAISE** (Parallel AI and Systems for the Edge) 2020 – 2026
- **International Symposium on Visual Computing** (Reviewer) 2010 – 2025
- **National Science Foundation** Multiple Years
  Major Research Instrumentation; Strategic Technologies for Cyberinfrastructure

University Service

- **CS + Game Program Development** (Member) 2025 – 2026
- **Provost Search Committee** (Member) 2025 – 2026
- **Computer Science Advisory Committee** (Member) 2025 – 2026
- **Computer Science Computing Committee** 2022 – 2026
  Member (2022 – Present), Chair (2024 – 2026)
- **Computer Science Promotion and Tenure Committee** (Member) 2025 – 2026
- **Computer Science Department Head Search Committee** (Member) 2024 – 2025
- **Dean of Engineering Search Committee** (Member) 2023 – 2024
- **University of Illinois System Research Computing Advisory Committee** (Voting Member) 2024 – 2026

Laboratory Service

- **Executive Sponsor** 2019 – 2025
  Argonne African American Employee Resource Group