

James D. Teresco

Associate Professor

Siena College, Department of Computer Science

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Education

Ph.D. Computer Science	Rensselaer Polytechnic Institute, 2000
M.S. Computer Science	Union College, 1993
B.S. Mathematics and Computer Science	Union College, 1992

Professional Career

2016–	Associate Professor of Computer Science	Siena College
2015–2016	Associate Professor of Computer Science	The College of Saint Rose
2012–2015	Assistant Professor of Computer Science	The College of Saint Rose
2010–2012	Visiting Assistant Professor of Computer Science	Siena College
2010	Consultant	Clickshare Service Corp.
2009–2010	Visiting Associate Professor of Computer Science	Mount Holyoke College
2008–2009	Principal Software Engineer	Clickshare Service Corp.
2009	Adjunct Faculty, Computer Science	Rensselaer Polytechnic Institute
2008	Adjunct Professor of Computer Science	Siena College
2007–2008	Visiting Associate Professor of Computer Science	Mount Holyoke College
2000–2007	Assistant Professor of Computer Science	Williams College
2003–2004	Visiting Faculty Researcher	Sandia National Laboratories
1999–2000	Research Scientist	Rensselaer Polytechnic Institute
1993–1999	Graduate Research Assistant	Rensselaer Polytechnic Institute
1996, 1998, 1999	Adjunct Instructor of Computer Science	Union College
1996–1998	Laboratory Manager, Parallel Asynchronous and Synchronous Theory and Applications (PASTA) Laboratory	Union College
1992–1998	Technical Assistant	Power Technologies, Inc.

Professional Societies and Affiliations

ACM	Student Member (1989–1993), Full Member (2002–present)
USACM	Student Member (1997–2001), Full Member (2001–2008)
SIAM	Full Member (2002–2015)
IEEE Computer Society	Full Member (2005–2011)
CCSC Northeast Region	Member (2004–present), Regional Board Member (2006–present)

Honors

Phi Beta Kappa, Alumni Member, Union College, 2008
Robert McNaughton Prize (for computer science), Rensselaer Polytechnic Institute, 2000
Computer Science Alumni Silver Award, Union College, 2000
Founders Award, Rensselaer Polytechnic Institute, 1997
Martin Terry Resch Prize (for pure mathematics), Union College, 1992
Sigma Xi
Upsilon Pi Epsilon, Computer Science Honor Society
Salutatorian, Union College Class of 1992

Research Interests

Computer Science education, particularly in the use of highway data and online maps for teaching and visualizing graph and other algorithms and data structures. Parallel processing in undergraduate curricula. Parallel scientific computation. Dynamic load balancing for adaptive computations in heterogeneous, hierarchical (including hyperthreaded and multi-core), non-dedicated and transient computational environments. Distributed data structures. Tools to facilitate parallel processing.

Ph.D. Dissertation

“A Hierarchical Partition Model for Parallel Adaptive Finite Element Computation,” Department of Computer Science, Rensselaer Polytechnic Institute, 2000. Advisor: Joseph E. Flaherty.

Conferences and Other Presentations

“Map-based Algorithm Visualization with METAL Highway Data.” *SIGCSE 2018, The 49th ACM Technical Symposium on Computer Science Education*, Baltimore, February 22, 2018.

“Improved Highway Data and Map Visualizations for Teaching Data Structures and Algorithms.” Paper presentation. *The EDSIG Conference on Information Systems and Computing Education (EDSIGCON)*, Austin, November 7, 2017.

“Using Metal’s Expanded Highway Graphs and Maps in Computer Science Courses.” Tutorial Presentation. *Thirty-third Annual Consortium for Computing Sciences in College Eastern Conference*, Muhlenburg College, Allentown, October 21, 2017.

“Rethinking CCSCNE: Challenges and Opportunities.” Panel. *Twenty-first Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, Hamilton College, Clinton, April 30, 2016.

“The ‘Roadgeek’ CS Prof: Class Projects Using Travel Mapping Data.” Siena College, Loudonville, February 19, 2016.

“Teaching Computer Graphics to Non-Majors.” Provisions Session, The College of Saint Rose, Albany, February 16, 2016.

“Using Highway Mapping Data Graphs and Map Visualizations in Computer Science Courses.” Tutorial presentation. *Twenty-fourth Annual Consortium for Computing Sciences in Colleges Rocky Mountain Conference*, Southern Utah University, Cedar City, October 2, 2015.

“Popularity-Based Temporal Relevance Estimation for Micro-Blogging Retrieval.” *52nd ACM Southeast Conference*, Kennesaw, March 28, 2014.

“Helping Students Understand the Datapath with Simulators and Crazy Models.” *SIGCSE 2013, The 44th ACM Technical Symposium on Computer Science Education*, Denver, March 8, 2013.

“Highway Data and Map Visualizations for Educational Use.” *SIGCSE 2012, The 43rd ACM Technical Symposium on Computer Science Education*, Raleigh, March 3, 2012.

“Evaluating application-level vs. middleware-level load balancing for parallel adaptive computation,” Contributed talk. *SIAM Conference on Parallel Processing for Scientific Computing*, Savannah, February 16, 2012.

“Using the Google Maps API with Highway Mapping Data as a Pedagogical Tool,” Demo presentation. *Sixteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, Western New England College, Springfield, April 15, 2011.

“Graph Algorithms Using Highway Mapping Data and the Google Maps API,” Poster. *SIGCSE 2011, The 42nd ACM Technical Symposium on Computer Science Education*, Dallas, March 14, 2011.

“Supporting Efficient Parallel Scientific Computation on Modern Clusters.” Colgate University, Hamilton, April 29, 2010.

“A Dijkstra’s Algorithm Shortest Path Assignment Using the Google Maps API,” Poster. *Fifteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, University of Hartford, April 16, 2010.

“Teaching Parallel Processing to Upper Level Undergraduates,” Minisymposium talk. *SIAM Conference on Parallel Processing for Scientific Computing*, Atlanta, March 13, 2008.

“Structures and Load Balancing for Parallel Adaptive Scientific Computation.” Siena College, Loudonville, February 22, 2008.

“Supporting Efficient Parallel Computation on Modern Clusters.” Iona College, New Rochelle, February 7, 2008.

“Dynamic Load Balancing from Supercomputers to Clusters to the Desktop.” Wheaton College, Norton, February 1, 2008.

“Dynamic Monitoring for Load Balancing in Cluster Environments,” Invited minisymposium talk. *Ninth U.S. National Congress on Computational Mechanics*, San Francisco, July 23, 2007.

“Chip Multiprocessors: Parallel Computation for the Desktop.” Mount Holyoke College, South Hadley, April 10, 2007.

“Dynamic Load Balancing for Hyperthreaded and Multi-Core Cluster Nodes,” Contributed talk. *SIAM Conference on Computational Science & Engineering*, Costa Mesa, February 21, 2007.

“Automated Dynamic Redistribution of Virtual Operating Systems under the Xen Virtual Machine Monitor,” Accepted paper presentation. *IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN 2007)*, Innsbruck, February 13, 2007.

“Resource-Aware Parallel Computation for Modern Clusters,” Invited talk. Mount Holyoke College, South Hadley, February 6, 2007; Union College, Schenectady, February 7, 2007.

“Parallel, Adaptive Scientific Computation in Heterogeneous, Hierarchical, and Non-Dedicated Computing Environments,” Invited talk. National Institute of Standards and Technology, Mathematical & Computational Sciences Division Seminar Series, Gaithersburg, June 15, 2006.

“Parallel, Adaptive Scientific Computation in Heterogeneous, Hierarchical, and Non-Dedicated Computing Environments,” Invited talk. Siena College Computer Science Seminar Series, Loudonville, April 6, 2006.

“Resource-Aware Parallel Scientific Computation for Heterogeneous and Non-Dedicated Clusters,” Minisymposium talk. *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, February 24, 2006.

“Tools for High-Performance Scientific Computation in Cluster Environments,” Minisymposium talk. *SIAM Conference on Parallel Processing for Scientific Computing*, San Francisco, February 23, 2006.

“Resource-Aware Dynamic Load Balancing for Heterogeneous, Hierarchical, and Non-Dedicated Computing Environments,” Invited talk. McGill Computational Science and Engineering Seminar Series, Montreal, January 27, 2006.

“Partitioning and Dynamic Load Balancing for Heterogeneous, Hierarchical, and Non-dedicated Environments,” Invited minisymposium talk. *Eighth U.S. National Congress on Computational Mechanics*, Austin, July 25, 2005.

“Dynamic Load Balancing for Heterogeneous and Hierarchical Computing Environments,” Invited minisymposium talk. *Third M.I.T. Conference on Computational Fluid and Solid Mechanics*, Cambridge, June 15, 2005.

“Resource-Aware Parallel Computation for Clusters,” Invited minisymposium talk. *International Conference on Computational Science 2005: ICCS’05*, Atlanta, May 23, 2005.

“An Overview of Resource-Aware Parallel Computing (With an Emphasis on Hierarchical Partitioning and Load Balancing),” Minisymposium talk. *SIAM Conference on Computational Science & Engineering*, Orlando, February 14, 2005.

“Resource-Aware Scientific Computation,” Williams College Science Lunch Talk, Williamstown, November 9, 2004.

“Parallel Adaptive Scientific Computation in Heterogeneous Computing Environments,” Williams College Computer Science Colloquium, Williamstown, October 15, 2004.

“Dynamic Load Balancing for Heterogeneous and Hierarchical Clusters,” Invited minisymposium talk. *2004 SIAM Annual Meeting*, Portland, July 15, 2004.

“Hierarchical Partitioning and Dynamic Load Balancing for Scientific Computation,” Invited minisymposium talk. *PARA’04 Workshop on State-of-the-Art in Scientific Computing*, Copenhagen, June 22, 2004.

“SALSA_MPI: A Framework for Dynamically Reconfigurable MPI Applications” (Poster), *NSF-RPI Workshop on PCN ’04*, Troy, April 29, 2004.

“An Overview of Architecture-Aware Parallel Computation,” Minisymposium talk. *Eleventh Conference on Parallel Processing for Scientific Computing*, San Francisco, February 26, 2004.

“Parallel Adaptive Scientific Computation in Heterogeneous Computing Environments,” Invited talk. Union College Computer Science Seminar Series, Schenectady, January 15, 2004.

“System-sensitive Dynamic Load Balancing for Parallel Adaptive Computation” (Poster), *ADAPT ’03, Conference on Adaptive Methods for Partial Differential Equations and Large-scale Computation*, Troy, October 11, 2003.

“Adaptive Parallel Computation over Dynamic and Heterogeneous Networks” (Poster), *ADAPT ’03, Conference on Adaptive Methods for Partial Differential Equations and Large-scale Computation*, Troy, October 11, 2003.

“Octree/SFC Dynamic Load Balancing for Parallel Adaptive Computation” (Poster), *ADAPT ’03, Conference on Adaptive Methods for Partial Differential Equations and Large-scale Computation*, Troy, October 11, 2003.

“A Comparison of Zoltan Dynamic Load Balancers for Adaptive Computation,” Contributed minisymposium talk. *VII International Conference on Computational Plasticity*, Barcelona, April 8, 2003.

“Dynamic Load Balancing for Adaptive Scientific Computation,” Williams College Computer Science Colloquium, October 4, 2002.

“Architecture-Aware Dynamic Load Balancing,” *IMACS Workshop on Adaptive Methods for Partial Differential Equations*, Toronto, August 6-9, 2002.

“Architecture-Oriented Load Balancing” (Poster), *Workshop on Multi-Scale Computation*, Troy, November 8, 2001.

“Octree Load Balancing” (Poster), *Workshop on Multi-Scale Computation*, Troy, November 8, 2001.

“Hierarchical Programming and Dynamic Load Balancing,” Invited minisymposium talk. *Sixth U.S. National Congress on Computational Mechanics*, Dearborn, August 1-4, 2001.

“A Hierarchical Data Management System for Parallel Partitioning of Adaptive Computation,” Invited minisymposium talk. *Tenth SIAM Conference on Parallel Processing for Scientific Computing*, Portsmouth, March 12-14, 2001.

“Partitioning and Load Balancing for Parallel Adaptive Scientific Computation,” Williams College Computer Science Colloquium, March 9, 2001.

“Partitioning and Load Balancing for Adaptive Finite Element Computation,” Invited talk. *Workshop on Graph Partitioning and Applications: Current and Future Directions*, Minneapolis, October 14-15, 1999.

“Distributed Mesh Structures for Adaptive Finite Element Computation,” Invited minisymposium talk. *Fifth U.S. National Congress on Computational Mechanics*, Boulder, August 4-6, 1999.

“Adaptive and Parallel Finite Element Computation,” Invited talk. *Workshop on Recent Advances in Computational Structural Dynamics and High-Performance Computing*, Vicksburg, November 3-4, 1998.

“Parallel Infrastructure for Adaptive Finite Element Computation,” Invited minisymposium talk. *Fourth U.S. National Congress on Computational Mechanics*, San Francisco, August 6-8, 1997.

“Automated Scalable, Parallel Adaptive Computation” (Poster), *Department of Energy Accelerated Scientific Computation Initiative (ASCI) site review*, University of Chicago, May 23, 1997.

“A Partition Model for Distributing Computational Load in an Object-Oriented Analysis Framework for Parallel Adaptive Finite Element Methods,” *RPI/IBM Research Exchange*, Poughkeepsie, February 7, 1997.

“The Quality of Partitions Produced by an Iterative Load Balancer,” Invited workshop talk. *Third Workshop on Languages, Compilers, and Runtime Systems for Scalable Computers*, Troy, May 22-24, 1995.

“Self-Organization in Three-Dimensional Cellular Automata” (Poster), *National Conference on Undergraduate Research*, Minneapolis, March 20-22, 1992.

Journal Publications

J. D. Teresco, J. Faik and J. E. Flaherty. Resource-aware scientific computation on a heterogeneous cluster. *Computing in Science & Engineering*. Vol. 7, Number 2, pp. 40–50, 2005.

K. D. Devine, E. G. Boman, R. T. Heaphy, B. A. Hendrickson, J. D. Teresco, J. Faik, J. E. Flaherty and L. G. Gervasio. New challenges in dynamic load balancing. *Appl. Numer. Math.*, Vol. 52, pp. 133–152, 2005.

J. D. Teresco, M. W. Beall, J. E. Flaherty and M. S. Shephard. A hierarchical partition model for adaptive finite element computation. *Comput. Methods in Appl. Mech. Engng.*, Vol. 184, pp. 269–285, 2000.

J. E. Flaherty, R. M. Loy, C. Özturan, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. Parallel structures and dynamic load balancing for adaptive finite element computation. *Appl. Num. Math.*, Vol. 26, pp. 241–263, 1998.

J. E. Flaherty, R. M. Loy, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. Adaptive local refinement with octree load-balancing for the parallel solution of three-dimensional conservation laws. *J. Parallel and Distributed Computing*, Vol. 47, pp. 139–152, 1997.

Book Chapters

J. D. Teresco, J. E. Flaherty, et al. “Approaches to Architecture-Aware Parallel Scientific Computing.” Chapter in *Parallel Processing for Scientific Computing*, M. A. Heroux, P. Raghavan, H. D. Simon, editors. pp. 33–58. SIAM, 2006.

J. D. Teresco, J. E. Flaherty and K. D. Devine. “Partitioning and Dynamic Load Balancing for the Numerical Solution of Partial Differential Equations.” Chapter in *Numerical Solution of Partial Differential Equations on Parallel Computers*, A. M. Bruaset, P. Bjørstad, A. Tveito, editors. pp. 55–88. Springer-Verlag, 2006.

K. El Maghraoui, T. Desell, B. K. Szymanski, J. D. Teresco and C. A. Varela. “Towards a Middleware Framework for Dynamically Reconfigurable Scientific Computing.” Chapter in *Grid Computing: New Frontiers of High Performance Computing*, L. Grandinetti, editor. Elsevier, 2005.

Conference Proceedings

J. D. Teresco, R. Fathi, L. Ziarek, M. R. Bamundo, A. Pengu, and C. F. Tarbay. Map-based Algorithm Visualization with METAL Highway Data. *Proc. SIGCSE 2018*, to appear, 2018.

J. D. Teresco. Improved Highway Data and Map Visualizations for Teaching Data Structures and Algorithms. *2017 Proc. EDSIG Conference*, Austin, Texas, ISCAP, L. Lester, N. Bhatnagar, J. Cummings and J. Sharp, editors, Volume 3, Number 4325, 2017.

M. F. Alohalay and J. D. Teresco. Popularity-Based Temporal Relevance for Micro-Blogging Retrieval. *Proc. 52nd ACM Southeast Conference*, Kennesaw, Georgia, ACM, 2014.

M. B. Gousie and J. D. Teresco. Helping Students Understand the Datapath with Simulators and Crazy Models. *Proc. 44th ACM technical symposium on Computer Science Education, SIGCSE '13*, Denver, Colorado, ACM, pp. 329–334, 2013.

J. D. Teresco. Highway Data and Map Visualizations for Educational Use. *Proc. 43rd ACM technical symposium on Computer Science Education, SIGCSE '12*, Raleigh, North Carolina, ACM, pp. 553–558, 2012.

T. F. Vachon and J. D. Teresco. A System for Automated Dynamic Redistribution of Virtual Operating Systems Under the Xen Virtual Machine Monitor. *Proc. The IASTED Conference on Parallel*

and Distributed Computing and Networks, PDCN 2007, Innsbruck, Austria, February 13-15, 2007. Acta Press, 2007.

J. D. Teresco, J. Faik and J. E. Flaherty. Hierarchical Partitioning and Dynamic Load Balancing for Scientific Computation. *Applied Parallel Computing, State of the Art in Scientific Computing, Proc. 7th International Workshop, PARA 2004*, Lyngby, Denmark, June 20-23, 2004. J. Dongarra, K. Madsen, J. Wasniewski, editors. Volume 3732 of *Lecture Notes in Computer Science*, Springer-Verlag pp. 911–920, 2006.

J. D. Teresco, L. Effinger-Dean and A. Sharma. Resource-Aware Parallel Adaptive Computation for Clusters. *Proc. Computational Science – ICCS 2005: 5th International Conference*, Atlanta, GA, USA, Part II, V. S. Sunderam, G. D. van Albada, P. M. A. Sloot, J. J. Dongarra, editors. Volume 3515 of *Lecture Notes in Computer Science*, Springer-Verlag, pp. 107–115. 2005.

K. El Maghraoui, J. E. Flaherty, B. K. Szymanski, J. D. Teresco and C. Varela. Adaptive Computation over Dynamic and Heterogeneous Networks, in R. Wyrzykowski, J. Dongarra, M. Paprzycki and J. Wasniewski (Eds.), *Proc. Fifth International Conference on Parallel Processing and Applied Mathematics (PPAM 2003)*, Czestochowa, Poland. Volume 3019 of *Lecture Notes in Computer Science*, Springer-Verlag, Berlin, pp. 1083–1090, 2004.

J. D. Teresco and L. P. Ungar. A Comparison of Zoltan Dynamic Load Balancers for Adaptive Computation. *Proc. VII International Conference on Computational Plasticity*, Barcelona, 2003.

J. E. Flaherty and J. D. Teresco. Software for parallel adaptive computation, in M. Deville and R. Owens, editors, *Proc. 16th IMACS World Congress on Scientific Computation, Applied Mathematics and Simulation*. Paper 174–6, IMACS, Lausanne, 2000.

J. E. Flaherty, R. M. Loy, M. S. Shephard and J. D. Teresco. Software for the parallel adaptive solution of conservation laws by discontinuous Galerkin methods. In B. Cockburn, G. Karniadakis, and S.-W. Shu, editors, *Discontinuous Galerkin Methods Theory, Computation, and Applications*, volume 11 of *Lecture Notes in Computational Science and Engineering*, pp. 113–124, 2000.

J. E. Flaherty, R. M. Loy, M. S. Shephard, M. L. Simone, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. Distributed octree data structures and local refinement method for the parallel solution of three-dimensional conservation laws. In M. Bern, J. Flaherty, and M. Luskin, editors *Grid Generation and Adaptive Algorithms*, volume 113 of *The IMA Volumes in Mathematics and its Applications*, pp. 113–134, 1999.

J. E. Flaherty, M. Dindar, R. M. Loy, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. An adaptive and parallel framework for partial differential equations, in D. F. Griffiths, D. J. Higham and G. A. Watson, eds., *Numerical Analysis 1997 (Proc. 17th Biennial Conf.)*, No. 380, pp. 74-90, 1998.

J. E. Flaherty, R. M. Loy, P. C. Scully, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. Load balancing and communication optimization for parallel adaptive finite element computation. *Proc. XVII Int. Conf. Chilean Comp. Sci. Soc.*, pp. 246–255, 1997.

J. E. Flaherty, R. M. Loy, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. Predictive load balancing for parallel adaptive finite element computation, in H. R. Arabnia, ed., *Proc. PDPTA '97*, vol. I, pp. 460–469, 1997.

B. K. Szymanski, E. Deelman, J. E. Flaherty, C. D. Norton, J. D. Teresco and L. H. Ziantz. Parallel Scientific Computing on the IBM SP2 at Rensselaer's Scientific Computation Research Center, in *Proc. Sup'Eur 96, High Performance Computing in Europe on IBM Platforms*, Krakow, pp. 97–110, 1996.

C. L. Bottasso, J. E. Flaherty, C. Özturan, M. S. Shephard, B. K. Szymanski, J. D. Teresco and L. H. Ziantz. The quality of partitions produced by an iterative load balancer, in B. K. Szymanski and B. Sinharoy, eds., *Proc. Third Workshop on Languages, Compilers, and Runtime Systems*, pp. 265–277, Troy, 1996.

C. R. Calkins, J. Robertson and J. D. Teresco. A Parallel Approach to 3D Cellular Automata, in *Proc. National Conference on Undergraduate Research IV*, pp. 975–979, Minneapolis, 1992.

Manuscripts and Technical Reports

J. Faik, J. D. Teresco, K. D. Devine, J. E. Flaherty and L. G. Gervasio. “A Model for resource-aware load balancing on heterogeneous clusters.” Williams College Department of Computer Science Technical Report CS-05-01, 2005.

K. El Maghraoui, C. A. Varela, B. K. Szymanski, J. E. Flaherty and J. D. Teresco. “A Middleware Framework for Dynamically Reconfigurable MPI Applications.” Williams College Department of Computer Science Technical Report CS-04-12, 2004.

J. Faik, J. E. Flaherty, L. G. Gervasio, J. D. Teresco, K. D. Devine and E. G. Boman. “A Model for resource-aware load balancing on heterogeneous clusters.” Williams College Department of Computer Science Technical Report CS-04-03, 2004. Presented at Cluster '04. Superseded by Williams College Department of Computer Science Technical Report CS-05-01, 2005.

P. M. Campbell, K. D. Devine, J. E. Flaherty, L. G. Gervasio and J. D. Teresco. “Dynamic Octree Load Balancing Using Space-Filling Curves.” Williams College Department of Computer Science Technical Report CS-03-01, 2003.

Grants Funded

J. E. Flaherty (Rensselaer) and J. D. Teresco, “Dynamic Data Management and Load Balancing for Parallel Adaptive Computation,” Sandia National Laboratories, \$150,000, November 4, 2000 - November 3, 2001.

J. E. Flaherty (Rensselaer) and J. D. Teresco, “Hierarchical Dynamic Data Management and Load Balancing for Parallel Adaptive Computation,” Sandia National Laboratories, \$100,000, April 1, 2002 - March 31, 2003.

J. D. Teresco, S. Adjerid (Virginia Tech) and P. K. Moore (Southern Methodist), “Conference on Adaptive Methods for Partial Differential Equations and Large-scale Computation,” Army Research Office, \$10,000, August 8, 2003 - February 7, 2004.

P. K. Moore (Southern Methodist), J. D. Teresco and S. Adjerid (Virginia Tech), “Conference on Adaptive Methods for Partial Differential Equations and Large-scale Computation,” National Science Foundation, \$5,000.

Software Development

Map-Based Educational Tools for Algorithm Learning (METAL). This is a project to provide a system that allows students to experiment with graph algorithms using the Google Maps API and highway routing data from the Travel Mapping project. Students can implement graph algorithms and display, in Google Maps, the results of computations using those algorithms. Interactive map-based visualizations of algorithms are also provided. <http://courses.teresco.org/metal/>

Travel Mapping. This project gathers information about highways around the world and allows its users to track their accumulated travels, and view statistics and maps of those travels. The project involved significant Python programming, a database design and deployment, and development of web-facing tools using PHP and JavaScript, among others. <https://github.com/TravelMapping>

Clinched Highway Mapping Data as a Pedagogical Tool. This the predecessor project to METAL, using earlier highway routing data from the Clinched Highway Mapping (CHM) Project, and before the introduction of interactive map-based algorithm visualization.

Clickshare. Software system that provides account registration, multi-site authentication, site access control, transaction and billing services for electronic and print publications. <http://www.clickshare.com>

Hierarchical partitioning and load balancing within the Zoltan Toolkit. New partitioning procedure within Sandia’s Zoltan Toolkit to support automatic hierarchical partitioning, where different partitioning procedures are used in different parts of the computing environment. Available under GNU Lesser General Public License (LGPL). <http://www.cs.sandia.gov/Zoltan/>

Dynamic Resource Utilization Model (DRUM). Software library to support resource-aware large-scale scientific computation in heterogeneous, hierarchical, and dynamic computing environments. Designed to work independently or to be used in conjunction with the partitioners and load balancers in Sandia National Laboratories’ Zoltan Toolkit. Freely available. <http://j.teresco.org/research/drum/>

Zoltan parameter parsing library. Small software library to allow parameters to be passed to the Zoltan Toolkit to be read from a configuration file. Freely available.

Rensselaer Partition Model, C++ library to support generalized distributed mesh data structures, supporting multiple partitions per processor and a wider variety of distributed mesh structures.

Parallel Mesh Database, C library using the Message Passing Interface to create and manipulate distributed mesh data structures for parallel adaptive finite element methods.

PMDBtool, scripting language to manipulate meshes using the Parallel Mesh Database and the Zoltan Toolkit.

Peer Review

Served as reviewer for *2003 ASME International Mechanical Engineering Congress and R&D Expo*, *Concurrency and Computation: Practice and Experience*, *Engineering with Computers*, *ICCS2005 Education Session on High Performance Computing in Academia*, *IEEE Transactions on Parallel and Distributed Systems*, *International Parallel and Distributed Processing Symposium*, *Journal of Applied and Computational Mathematics*, *Journal of Parallel Algorithms and Applications*, *SIAM Review*, *Parallel Computing*, *Scientific Programming*, *SIAM Journal on Scientific Computing*, *Simulation: Transactions of the Society for Modeling and Simulation International*, *Euro-Par 2005*, *The Computer Journal*, *Wiley Book Series on Parallel and Distributed Computing*, *39th ACM Technical Symposium on Computer Science Education (SIGCSE 2008)*, *15th Annual IEEE International Conference on High Performance Computing (HiPC08)*, *CCSCNE 2009*, *CCSCMW 2010*, *SIGCSE 2011*, *CCSCNE 2011*, *ITiCSE 2011*, *PPAM 2011*, *CCSCMW 2012*, *ITiCSE 2012*, *SIGCSE 2012*, *CCSCNE 2012*, *SIGCSE 2013*, *CCSCNE 2013*, *SIGCSE 2014*, *Cluster Computing*, *CCSCMW 2015*, *ACM Inroads*, *CCSCNE 2017*, *EDSIGCON 2017*, *SIGCSE 2018*.

Served as reviewer for grant proposals for the National Science Foundation, the U.S. Army Research Laboratory, the Dutch National Science Foundation (NWO), the U.S. Department of Energy Office of Science Applied Mathematics Research Program, and the Kentucky Science & Engineering Foundation.

Other Contributions to the Community

Edited article “File Server” for the *Encyclopedia of Computer Science*, 4th ed., A. Ralston, E. D. Reilly, D. Hemmendinger, editors, Nature Publishing Group, pp. 710–711, 2000.

Co-organizer for conference *ADAPT '03: Adaptive Methods for Partial Differential Equations and Large-Scale Computation*, October 2003, at Rensselaer Polytechnic Institute.

Co-organizer of minisymposium on architecture-aware parallel computing at the *Eleventh Conference on Parallel Processing for Scientific Computing (PP'04)*, February 2004, in San Francisco.

Co-chair for Panels/Tutorials/Workshops for the *Ninth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2004, at Union College.

Co-organizer of minisymposium on resource-aware parallel computing at the *SIAM Conference on Computational Science & Engineering (CSE'05)*, February 2005, in Orlando.

Co-chair for Student Posters for the *Tenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2005, at Providence College.

Co-organizer of minisymposium on tools for high-performance scientific computation in cluster environments at the *SIAM Conference on Parallel Processing for Scientific Computing (PP'06)*, February 2006, in San Francisco.

Co-chair for Papers for the *Eleventh Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2006, at the College of the Holy Cross.

Held “Robotics Day” open house for local middle school students in conjunction with final project presentations for *LEGO Robot Engineering*, January 2007.

Co-chair for Papers for the *Twelfth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2007, at the Rochester Institute of Technology.

Organizer of minisymposium “The Pipeline: Education in Parallel and Scientific Computation” at the *SIAM Conference on Parallel Processing for Scientific Computing (PP'08)*, March 2008, in Atlanta.

Co-chair for Papers for the *Thirteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2008, at Wagner College.

Co-chair for Panels/Tutorials/Workshops for the *Fourteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2009, at SUNY Plattsburgh.

Co-chair for Papers for the *Seventeenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2012, at Quinnipiac University.

Co-chair for Papers for the *Eighteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2013, at Siena College.

Chair for Reviewers and Faculty Posters for the *Nineteenth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2014, at Providence College.

Program Chair for the *Twentieth Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2015, at The College of the Holy Cross.

Program Chair for the *Twenty-first Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2016, at Hamilton College.

Member of Editorial Advisory Board for *ACM Inroads*, 2016-present.

Conference Co-Chair for the *Twenty-second Annual Consortium for Computing Sciences in Colleges Northeastern Conference*, April 2017, at The College of Saint Rose.

Advising

Co-advisor for Jamal Faik, Ph.D. Thesis, Rensselaer, 2000-05.

Co-advisor for Luis Gervasio, Ph.D. Candidate, Rensselaer, 2001-06.

Co-advisor for Paul Campbell, Masters Thesis, Rensselaer, 2000-01.

Advisor for Kai Chen, Summer Research Student, Williams College, 2001.
Advisor for Lida Ungar, Summer Research Student, Williams College, 2002.
Advisor for Joshua Ain, Senior Honors Thesis, Williams College, 2002-03.
Advisor for Diane Bennett, Summer Research Student, Williams College, 2003.
Advisor for Arjun Sharma, Summer Research Student, Williams College, 2004.
Advisor for Laura Effinger-Dean, Summer Research Student, Williams College, 2004.
Advisor for Bartolome Tablante, Summer Research Student, Williams College, 2005.
Advisor for Travis Vachon, Senior Honors Thesis, Williams College, 2005-06.
Ph.D. Committee Member for Kaoutar El Maghraoui, Rensselaer, 2005-2007.
Advisor for Manar Alohaly, Masters Project/Thesis, The College of Saint Rose, 2013.
Advisor for Razieh Fathi, Masters Project, The College of Saint Rose, 2014-15.
Supervisor for MariaRose Bamundo, Arjol Pengu, and Clarice Tarbay, Summer Scholars Research, Siena College, 2017.

Teaching

Design and Analysis of Algorithms, CSIS 385, Siena College, Spring 2011, Spring 2017, Spring 2018.
Parallel Processing, CSIS 400, Siena College, Fall 2008, Fall 2017.
Data Structures, CSIS 210, Siena College, Fall 2016, Fall 2017.
Advanced Programming, CSIS 225, Siena College, Spring 2017.
Problem Solving with Spreadsheets, CSIS 011, Siena College, Fall 2016, Spring 2017.
Operating Systems, CSC 432, The College of Saint Rose, Spring 2016.
The Art and Science of Computer Graphics (Python-based), CSC 112, The College of Saint Rose, Fall 2015, Spring 2016.
Problem Solving with Java, CSC 252, The College of Saint Rose, Fall 2013, Spring 2014, Fall 2014, Spring 2015, Fall 2015, Spring 2016.
Programming Unix with C, CSC 381 (2 credit, hybrid/online), The College of Saint Rose, Fall 2015, Winter Immersion 2016.
Data Structures and Algorithm Analysis, CSC 501, The College of Saint Rose, Fall 2013, Fall 2014, Fall 2015.
Competitive Programming, CSC 385, The College of Saint Rose, Spring 2015.

Algorithms, CSC 431, The College of Saint Rose, Spring 2013, Spring 2015.

Software Engineering, CSC 507, The College of Saint Rose, Spring 2013, Spring 2014, Spring 2015.

Programming Languages, CSC 433, The College of Saint Rose, Fall 2012, Fall 2014.

Advanced Programming, CSC 523, The College of Saint Rose, Summer 2014.

Programming Unix with C, CSC 381 (1 credit), The College of Saint Rose, Fall 2013, Winter Immersion 2014.

Introduction to Programming, CSC 202, The College of Saint Rose, Fall 2012, Fall 2013.

The Art and Science of Computer Graphics (Scheme-based), CSC 112, The College of Saint Rose, Spring 2013.

Operating Systems, CSIS 330, Siena College, Spring 2012.

Introduction to Programming, CSIS 120, Siena College, Spring 2011, Spring 2012.

Assembly Language and Computer Architecture, CSIS 220, Siena College, Fall 2010, Fall 2011.

Web Design, CSIS 180, Siena College, Fall 2011.

Introduction to Computer Applications Laboratory, CSIS 010, Siena College, Fall 2010, Spring 2011.

Introduction to Computer Applications, CSIS 010, Siena College, Fall 2010.

The Art and Science of Computer Graphics, COMSC 110, Mount Holyoke College, Spring 2008, Spring 2010.

Operating Systems, COMSC 322, Mount Holyoke College, Spring 2008, Spring 2010.

Data Structures, COMSC 211, Mount Holyoke College, Fall 2009.

Computer Architecture, COMSC 324, Mount Holyoke College, Fall 2007, Fall 2009.

Computer Organization, CSCI 2500, Rensselaer Polytechnic Institute, Spring 2009.

Parallel Processing, COMSC 341-02, Mount Holyoke College, Fall 2007.

LEGO Robot Engineering, CSCI-014, Williams College, Winter 2007.

Computer Organization, CSCI-237, Williams College, Fall 2005, Fall 2006.

Operating Systems, CSCI-432, Williams College, Fall 2001, Fall 2002, Spring 2005, Fall 2006.

Parallel Processing, CSCI-338, Williams College, Fall 2000 (lecture format), Spring 2003 (lecture format), Spring 2006 (tutorial format).

Data Structures and Advanced Programming, CSCI-136, Williams College, Spring 2001, Fall 2001, Fall 2004, Fall 2005.

Introduction to Computer Science, CSCI-134, Williams College, Spring 2002, Spring 2003, Spring 2005.

C, Unix, and Software Tools, CSCI-010, Williams College, Winter 2001.

Operating Systems, CSCI-4210, Rensselaer Polytechnic Institute, Fall 1999.

Operating Systems, CSC-135, Union College, Winter 1998, Winter 1999.

Programming in C for Engineers, ESC-013, Union College, Winter 1996.