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RESEARCH INTERESTS

- Medical Image Computing: real-time image-to-mesh conversion and non-rigid registration
- High-end Scientific Computing: parallel mesh generation and execution models
- Parallel, Distributed and Grid Computing: runtime systems and web-services

EDUCATION

1. Ph.D., Department of Computer Science, Purdue University, 1992.
2. M.Sc., Department of Mathematics, Purdue University, 1987.
3. B.Sc., Department of Mathematics, Aristotle University, Greece, 1984.

ACADEMIC POSITIONS

1. Full Professor, Computer Science Department, College of William and Mary, 2008 to present.
2. Full Professor (by courtesy) Applied Science Department, 2008 to present.
3. Director, Center for Real-Time Computing, 2007 to present.
4. Visiting Associate Professor, Department of Radiology, Harvard Medical School, Spring 2005.
5. Visiting Associate Professor, Department of Mechanical Engineering, MIT, Spring 2005.
6. Visiting IBM Professor, Brown University, Fall of 2004.
7. Alumni Memorial Distinguished Associate Professor of Computer Science, 2004 to 2007.
8. Associate Professor, Computer Science Department, College of William and Mary, 2000 to 2004.
9. Assistant Professor, Computer Science and Engineering, University of Notre Dame, 1997 to 2000.
10. Research Associate III, Advanced Computing Research Institute, Cornell University, 1995 to 1997.
11. Visiting Scientist, ICASE, NASA Langley Research Center, Summer of 1994 and Summer of 1996.
12. Alex Nason Research Scientist, Northeast Parallel Architectures Center, Syracuse Univ., 1992 to 1995.

HONORS AND AWARDS

1. John Simon Guggenheim Award in Medicine and Health, 2007.
2. Alumni Memorial Distinguished Professorship, College of William and Mary, 2004 to 2007.
3. Career Award, National Science Foundation, 1999-2004.
4. Alex Nason, Postdoctoral Computational Science Fellowship, Syracuse University, 1992-1995.
5. David Ross, Graduate Student Research Fellowship, Purdue University, 1989.

GRANTS While at W&M as PI: generated \$4,012,00 with more than \$3,712,000 from peer-reviewed grant applications.

1. **NSF, \$500,000**, A Novel Algorithmic Approach for Real-Time Image-to-Mesh Conversion of Brain MRI, 2009-2012, grant no CCF-0916526.
2. **NSF, \$270,000**, A Multi-Layered Finite Element Application and Runtime System for Scalable High-End Computer Architectures, 2008-2011, grant No. CCF-0833081.
3. **NSF \$263,602**: Software Environment for Real-Time Non-Rigid Registration of Intraoperative Medical Images Using Commodity and Grid Computing, 2007-2010, grant No. CSR-0719929.
4. **NSF 103,823\$**: Three-Dimensional Generalized Parallel Delaunay Mesh Generation for the Numerical Solution of Partial Differential Equations, 2007-2009, grant no. CCS-0750901.
5. **NASA, \$84,000**: Domain Decomposition for Parallel Advancing Front Method Using VGrid, 2006-2009, grant No. NNL06AA02H and NNX07AM10H.
6. **John Simon Guggenheim Foundation**: Medical Image Computing, 2007-2008.
7. **Virginia State \$68,000**, Medical Image Initiative: Center for Real-Time Computing, 2006 to 2007.
8. **Fields Institute, Toronto, Canada, \$900**: Near Real-Time Non-Rigid Registration of pre- and intra-operative MRI for Image Guided Neurosurgery, Summer 2007.
9. **Howard Hughes Medical Institute, \$1,800,000**: Undergraduate Science Application, 2006-2010, (Participant¹, PI: Prof. Margaret Saha).
10. **VIMS, \$30,000**: Parallel Orthogonal Unstructured Mesh Generation for Modeling Storm Surge and Beach Erosion, 2006-2007.
11. **NSF, \$228,000**: Acquisition of STEMS: A laboratory for end-to-end development of software and tools for emerging multigrain supercomputers, 2005-2008, grant No. MRI CNS-0521381, (PI with D. Nikolopoulos and B. Lowekamp).
12. **NSF, \$450,000**: ITR: An Application Driven Approach for Runtime Scheduling of Multigrain Adaptive Computation, 2003-2009, grant No. ITR CNS-0312980, (PI with D. Nikolopoulos).
13. **Brown University, \$5,000**, Parallel Mesh Generation Seminar, Fall 2004.
14. **NSF, \$618,000**: Mesh Generation and Optimistic Computation on the Grid, 2002-2005, grant No. ANI-0203974, (PI with B. Lowekamp, and G. Lee).
15. **NSF, \$16,581**: REU Supplement for Mesh Generation and Optimistic Computation on the Grid, 2003-2004, grant No. ANI-0332523.
16. **NSF, \$297,886**: Adaptive Software for Field-driven Simulations, 2000-2004. PI to a subcontract from Cornell University NSF grant No. ACI-0085969, K. Pingali (PI). The total grant amount is **\$5,000,000** and involves 21 professors and senior research scientists from Cornell Univ., Mississippi State Univ. and the College of William and Mary.
17. **NSF \$290,000**: Research Infrastructure: A two-tier Computation Visualization Facility for Multiscale Problems, 1999 to 2004, NSF grant No. EIA-9972853, (Co-PI with K. Pingali(PI), C. Cruz-Neira, G. Gao, and T. Ingrassia). Total grant amount **\$1,500,000** and involves 11 professors and senior research scientists from Cornell Univ., Iowa State Univ., Delaware Univ., and the College of William and Mary.

¹Develop a new course on Medical Image Computing

18. **NSF CAREER AWARD \$125,000:** Application-driven Approach for Prototyping Run-Time Systems for Future Teraflops and Petaflops Architectures, 1999 to 2004, NSF grant No. CCR-9876179, transferred to the College of William and Mary as NSF grant No. CCR-0049068).
19. **NSF REU \$5,000:** Data Movement and Control Substrate for Windows OS, 2001.
20. **Microsoft Corp., \$26,029:** Software Donations to PES Lab, 2001
21. **NSF \$176,705:** CISE Challenge – Crack Propagation on Teraflops Computers, 1998 to 2001. PI to a subcontract from Cornell NSF grant No. EIA-9726388, Keshav Pingali (PI). Total grant amount **\$1,799,924** and involves 11 professors and senior research scientists from Cornell University, Delaware University, and the College of William and Mary.
22. **NSF \$10,000:** Introducing the Next Generation of Computational Scientists in the Science and Art of Meshing, NSF, 2001 to 2002, NSF grant No. EIA-0111840.
23. **The College of William and Mary \$ 300,000:** Parallel Experimental Systems Lab, 2000 to 2007.
24. **NSF, \$52,668:** Systems Support for the Crack Propagation Project, 1999 to 2001. Supplement I received as a PI subcontract to NSF grant No. EIA-9726388.
25. **Dell Corp. \$30,000:** Equipment and Software Donations to PES Lab, 2000.
26. **NSF \$19,500:** Portable Runtime Systems, 1998-2001, NSF, grant No. ACI-9612959.
27. **AHPCRC, \$1,000:** New formulation of the mesh partitioning problem. Invited to a workshop at Army High Perf. Computing Research Center (AHPCRC) at the Univ. of Minnesota, Oct., 1999.
28. **Indiana State, \$ 80,997:** Multimedia Aspects of Telemedicine, 21st Century Research & Technology Fund, 2000-2001. Awarded as a subcontract to a 21st Century Research to Purdue University, Co-PI, A. Elmagarmid (PI). The total grant amount is **1,698,000**.
29. **SUR from IBM Corp., \$309,544:** Scalable Shared Memory: Case Studies, 1998 to 2000, (PI) with P. Antsaklis, M. Lemmon, A. Lumsdaine, E. Maggin, M. Stadtherr, and R. Stevenson).
30. **University of Notre Dame, \$215,000:** Hydra Cluster, 2000, (Co-PI, with A. Lumsdaine(PI), E. Maginn, M. Stadtherr, R. Stevenson, S. Paolucci, J. Westerink).
31. **DARPA, \$604,200:** Hybrid Multithreaded Technology: PIM Based Memory, 1998-1999. DARPA ITO Through NASA, JPL. (P. Kogge PI, participant with many other CSE faculty.)
32. **Army Research Office, \$250,000:** Scalable Metacomputing, 1998, (Co-PI, with A. Lumsdaine(PI), E. Maggin, M. Stadtherr, R. Stevenson).
33. **NSF, \$10,000:** Workshop on Structured Adaptive Mesh Refinement Grid Methods, 1997, grant No. ASC-9710443, (Co-PI, with M. Norman(PI), S. Baden and D. Gannon).
34. **DoE \$7,125:** Workshop on Structured Adaptive Mesh Refinement Grid Methods, 1997, (PI).
35. **University of Notre Dame, \$37,250:** Parallel Experimental Systems Lab, 1997 to 1999.
36. **Northeast Parallel Architectures Center, \$120,000:** Computational Science Fellowship, 1992-1995.

The total amount of funds I generated for my group is about \$4,600,000 and the total amount of funds in the projects I participated is about \$10,000,000.

Pending Grants:

37. **NIH, 1,967,149,** Hybrid Real-Time Non-Rigid Registration Utility for Image Guided Neurosurgery (PI, with Ron Kikinis and Alex Golby at Harvard Medical School and Jim Dunkan and Xenios Papademitris from Yale Medical School), 2010-2015.

RESEARCH ACTIVITIES

Founder and director of the **Parallel Experimental Systems (PES) Lab**. The PES Lab was established in 1997 at the Univ. of Notre Dame and was relocated in the Fall of 2000 at the College of William and Mary.

Founder and director of the **Center for Real-Time Computing**. It is established in 2007 with support from *John Simon Guggenheim Foundation and the College of William and Mary* and is based on PESLab and extends its mission to promote innovation in time critical applications like real-time medical image analysis for Image Guided Therapy.

Postdoctoral Student Supervision:

1. Dr. Christos Antonopoulos, “Multigrain Delaunay Methods”, 2004 to 2006.
2. Dr. Andrey Chernikov, “Parallel Generalized Delaunay Mesh Generation”, 2007 to present.

Ph.D. Student Supervision:

1. Kevin Barker, Ph.D., April 2004: “Runtime Systems Support for Load Balancing of Parallel Adaptive and Irregular Applications”, Currently he is a Technical Staff Member at LANL.
2. Andrey Chernikov, Ph.D. June 2007: “Parallel Generalized Delaunay Refinement”. Currently he is a Visiting Assistant Professor at the College of William and Mary.
3. Leonidas Linardakis, Ph.D., June 2007: “Decoupling Method for Parallel 2D Delaunay Mesh Generation”. Currently he is a Research Scientist at Max Planck Institute.
4. Andriy Fedorov, Ph.D., April, 2009: “Enabling Technology for Non-Rigid Registration during Image-Guided Neurosurgery”. Currently he is a Postdoc with Radiology Department, Harvard Medical School.
5. Andriy Kot, (expect to defend his Ph.D. thesis in Fall 2009).
6. Yixun Liu (Medical Image Analysis, expect to defend his Ph.D. thesis proposal in Spring’10)
7. Panayiotis Foteinos, (Parallel Mesh Generation, expect to defend his Ph.D. thesis proposal in Spring’10)

Master Student Supervision:

1. Michael Weissberger (Optimizing Gamma Knife Shots, started Fall’07)
2. Yixun Liu (Medical Image Analysis, started Fall’07)
3. Panayiotis Foteinos, (Parallel Mesh Generation, started Fall’07)
4. Eric Billet, (Master Project: Quantitative assessment of similarity metrics and their applications to non-rigid registration), Spring of 2008.
5. George Zagaris, (Master Thesis: Parallel Advancing Front Method), Summer of 2008.
6. Chaman Verma, (Master Project: Code re-use in parallel mesh generation, Spring 2005).
7. Denis Kenzor, (Master Project: PROAM: Parallel Real-time Optimally Adapting Meshes), Fall 2003.
8. Andriy Fedorov, (Master Thesis: Communication Layer for Asynchronous Mobile Applications), Fall 2003.
9. Andriy Kot, (Master Project: Evaluation of traditional out-of-core techniques for parallel adaptive applications, Fall 2003).
10. Leonidas Linardakis, (Master Thesis: Delaunay Decoupling Method for Parallel Guaranteed Quality Mesh Generation), Fall 2003.
11. Brian Holinka, (Master Project: Parallel Constrained Delaunay Triangulation), Spring 2002, ACM Award.

12. Demian Nave, (Master Thesis: Parallel Guaranteed-Quality 3D Delaunay Mesh Generation for Polyhedral Domains), University of Notre Dame, Fall 2002.
13. Kevin Barker, (Master Thesis: Prototype of a Runtime Support System for Multi-Layer Parallel Architectures), University of Notre Dame, Fall 2000.

Honor Thesis Supervision:

1. George Zagaris, “Two dimensional Hybrid Mesh Generation”, April, 2005.

Publications

Articles in Refereed Journals (J)

1. A Template for Developing Next Generation Parallel Delaunay Refinement Methods (with A. Chernikov), Special Issue of Finite Element Analysis and Design (in press), June 2009.
2. Generalized 2D Delaunay Mesh Refinement (with A. Chernikov), in SIAM Journal for Scientific Computing (in press), May 2009.
3. A Multigrain Delaunay Mesh Generation Method for Multicore SMT-based Architectures (with C. Antonopoulos, F. Blagojevic, A. Chernikov and D. Nikolopoulos). Journal of Parallel and Distributed Systems (in press), March 2009.
4. Algorithm Software and Hardware Optimizations for Delaunay Mesh Generation on Simultaneous Multithreaded Architectures (with C. Antonopoulos, F. Blagojevic, A. Chernikov D. Nikolopoulos). Journal of Parallel and Distributed Systems (in press), March, 2009.
5. A Quantitative Assessment of Approaches to Mesh Generation for Surgical Simulation (with Bhautik Joshi, Andriy Fedorov, Simon K. Warfield, Sebastien Ourselin), Engineering with Computers, Vol. 24(4) pages 417-430, 2008.
6. Graded Delaunay Decoupling Method for Parallel Guaranteed Quality Planar Mesh Generation, (with L. Linardakis), In SIAM Journal for Scientific Computing, Vol. 30(4), pages 1875-1891, 2008.
7. Parallel 2D Constrained Delaunay Mesh Generation, (with A. Chernikov). *ACM Transactions of Mathematical Software*, Vol. 34 (1), February, 2008.
8. A Static Medial Axis Domain Decomposition for 2D Geometries, (with L. Linardakis). *ACM Transactions of Mathematical Software*, Vol 34(1), February, 2008.
9. Non-rigid alignment of preoperative MRI, RI, DT-MRI, with intra-operative MRI for enhanced visualization and navigation in image-guided neurosurgery (with N. Archip, O. Clatz, A. Fedorov, A. Kot, S. Whalen, D. Kacher, F. Jolesz, A. Golby, P. Black, S. Warfield), in *NeuroImage* Volume 35, Issue 2, No. 1, pages 609-624, April 2007.
10. Parallel Unstructured Mesh Generation by an Advancing Front Method, (with Yasushi Ito, Alan Shih, Anil Erukala, Bharat Soni, A. Chernikov, and Kazuhiro Nakahashi), *Mathematics and Computers in Simulation*, Vol. 75, Issue 6-6, pp 200-209, January, 2007.
11. Parallel Guaranteed Quality Planar Delaunay Mesh Refinement by Concurrent Point Insertion (with A. Chernikov), *SIAM Journal for Scientific Computing*, Vol. 28, No. 5, pp 1907-1926, 2006.
12. Parallel Decoupled Refinement Method for Tetrahedral Meshes Using Terminal-Edge Bisection Algorithm (with Maria-Cecilia Rivara, Carlo Calderon, and A. Fedorov), *Engineering with Computers*, Volume 22, Number 2, pages 111-119, September, 2006.
13. Delaunay Decoupling Method for Parallel Guaranteed Quality Planar Mesh Generation, (with L. Linardakis). *SIAM Journal for Scientific Computing*, Vol. 27, No. 4, pp 1394-1423, 2006.
14. “Green” Multi-layered “Smart” Memory Management System (with A. Kot), *International Scientific Journal of Computing*, Vol 2, No 3, pp 91–97, 2004.
15. Guaranteed-Quality Parallel Delaunay Refinement for Restricted Polyhedral Domains (with D. Nave and P. Chew). In *Computational Geometry: Theory and Applications*, Volume 28, No 2-3, pages 191-215, June 2004.

16. A Load Balancing Framework for Adaptive and Asynchronous Applications, (with K. Barker, A. Chernikov, and K. Pingali), *IEEE Trans. Parallel and Distributed Systems*, Vol 14, No 12, pp 183-192 Feb. 2004.
17. Parallel Delaunay Mesh Generation Kernel (with D. Nave), In *Int. J. Num. Methods in Engineering*, Vol. 58, No. 2, pp 161-176, 2003.
18. Data Movement and Control Substrate for Parallel Adaptive Applications, (with K. Barker, J. Dobellaere, D. Nave, K. Pingali). *Concurrency and Computation Practice and Experience*, Vol. 14(2), pp 77-105, February 2002.
19. Simultaneous Mesh Generation and Partitioning, (with D. Nave), *Mathematics and Computers in Simulation*, Vol. 54, Issue 4-5, pp 321-339, December 2000.
20. Mobile Object Layer: A Runtime Substrate for Parallel Adaptive and Irregular Computations (with K. Barker, D. Nave, and C. Hawblitzel), *Advances in Engineering Software*, Vol. 31 (8-9), pp 621-637, August 2000.
21. Comparison of optimization heuristics for the data distribution problem, (with N. Mansour and G. Fox), *Concurrency Practice and Experience*, Vol. 9(5), pp 319-343, May 1997.
22. Multithreaded Model For Load Balancing Parallel Adaptive Computations On Multicomputers, *Journal of Applied Numerical Mathematics* Vol. 20, pp 349–365, April 1996.
23. Mapping Algorithms and Software Environment for Data Parallel Iterative PDE Solvers, (with E. Houstis and J. Rice), *Special Issue of the Journal of Parallel and Distributed Computing on Data-Parallel Algorithms and Programming*, Vol. 21(1), pp 75–95, April 1994.

Articles in Electronic Journals (J_E)

24. The Use of Robust Local Hausdorff Distances in Accuracy Assessment for Image Alignment of Brain MRI (with Billet E. and Fedorov A.), in *The Insight Journal* , Vol. January - June, 2008.
25. Parallel 3D Exact Signed Euclidean Distance Transform (with R. Staubs, A. Fedorov, L. Linardakis, and D. Benjamin) in *The Insight Journal* , Vol. July - December, 2006.
26. Tetrahedral Mesh Generation for Medical Imaging, (with A. Fedorov, Ron Kikinis and Simon Warfield), In *The Insight Journal* , Vol. for 2005 MICCAI Open-Source Workshop, August, 2005.

Under-Revision or Submitted Journal Articles (Drafts are available on the WEB or upon request.)

27. A Parametric Study of Optimistic Computation in Wide-Area, Distributed Environments (with Craig Lee). Submitted (under revision) to *Concurrency Practice and Experience*, June, 2008.
28. Parallel Out-of-Core Delaunay Refinement, (with A. Kot and A. Chernikov). Submitted (under revision) to *ACM Journal of Experimental Algorithmics*, 2008.
29. Parallel Runtime System for Out-of-Core Mesh Generation, (with A. Kot, and A. Chernikov), Submitted to *Concurrency Practice and Experience*, June 2009.
30. Fully Generalized 2D Constrained Delaunay Mesh Refinement, (with P. Foteinos and A. Chernikov). Submitted to *SIAM SISC*, June 2009.

In Preparation Journal Articles (Drafts are available upon request.)

31. Practical Performance Model For Optimizing Dynamic Load Balancing of Adaptive Applications, (with K. Barker and Andriy Kot). *IEEE Transactions of Parallel and Distributed Systems*, 2008.
32. Parallel Semi-Generalized 3D Parallel Deluanay Refinement, (with Andrey Chernikov), in *SISC*, 2009.
33. Parallel 3D Advance Front Method for Complex Aerospace Geometries, (with G. Zagaris and A. Chernikov, and S. Pirzadeh), *IJNME*, 2009.

34. Near real-time nonrigid registration for image guided neurosurgery using commodity and Grid computing (with A. Fedorov, A. Kot, Nicholas Ayache, Neculai Archip, Peter Black, Olivier Clatz, Alexandra Golby, Ron Kikinis, Simon K. Warfield), to be re-submitted in IEEE Transactions on Information Technology in Biomedicine, 2009.

Books and Book Chapters (B)

35. Parallel Mesh Generation: Theory and Practice (with Andrey Chernikov), Chapman and Hall/CRC, to be completed by 2009.
36. Toward Improved Tumor Targeting for Image Guided Neurosurgery with Intra-operative Parametric Search using Distributed and Grid Computing (with Andriy Fedorov, Andriy Kot, Yixun Liu, Olivier Clatz, Peter M. Black, Alexandra J. Golby, and Ron Kikinis), DDDAS Book (in press), Springer Verlag, May 2009.
37. Parallel Mesh Generation, book chapter in *Numerical Solution of Partial Differential Equations on Parallel Computers*, (Eds. Are Magnus Bruaset, Aslak Tveito), Springer-Verlag, pp 237-259, 2005.
38. New approach to parallel mesh generation and partitioning problem, book chapter in *Computational Science, Mathematics and Software*, (Eds. E. Houstis and R. Boisvert), Purdue University Press, West Lafayette, pp 319-344, 2001.
39. Structured Adaptive Mesh Refinement Grid Methods, book edited with S. Baden, D. Gannon, and M. Norman, Volume 117, IMA Volumes in Mathematics and its Applications, Springer-Verlag, 1999.

Papers in Proceedings of Refereed Conferences and Workshops (C)

40. Real-time Non-rigid Registration of Medical Images on a Cooperative Parallel Architecture, (with Yixun Liu, Andriy Fedorov, Ron Kikinis), to appear in the Proceedings of IEEE International Conference on Bioinformatics & Biomedicine, Washington D.C., Nov, 2009.
41. Towards Exascale Parallel Delaunay Mesh Generation, (with Andrey Chernikov, Andriy Fedorov, Andriy Kot, Leonidas Linardakis, and Panagiotis Foteinos). In the proceedings of 18th International Meshing Roundtable, Salt Lake City, Utah, Oct. 2009.
42. Modeling Class Cohesion as Mixtures of Latent Topics, (with Yixun Liu, Denys Poshyvanyk, Rudolf Ferenc, Tibor Gyimothy). To appear in the Proceedings of 25th IEEE International Conference on Software Maintenance, Edmonton, Alberta, Canada, June, 2009.
43. A Framework for Parallel Unstructured Grid Generation for Complex Aerodynamic Simulations, (with George Zagaris, and Shahyar Pirzadeh). In proceedings (to appear) of the 47th AIAA Aerospace Science Meeting, Orlando, FL, January 2009.
44. Tetrahedral Mesh Generation for Non-Rigid Registration of Brain MRI: Analysis of the Requirements and Evaluation of Solutions (with Andriy Fedorov). In proceedings of 17th International Meshing Roundtable, Publisher Springer Verlag, pages 55-72, October, 2008
45. Three-Dimensional Delaunay Refinement for Multi-Core Processors (with Andrey Chernikov) In proceedings of 22nd ACM International Conference on Supercomputing, pages 214-224, June 2008.
46. A (Condensed) Parametric Study of Optimistic Computation in Wide-Area, Distributed Environments (with Craig Lee). In proceedings of Mardi Gras Conference, pages 1-8, 2008.
47. Experience with Memory Allocators for Parallel Mesh Generation on Multicore Architectures (with Andrey N. Chernikov, Christos D. Antonopoulos, Scott Schneider, and Dimitrios S. Nikolopoulos), in proceedings of the 10th ISGG Conference on Numerical Grid Generation, Crete, Greece, 2007.
48. Three-Dimensional Semi-Generalized Point Placement Method for Delaunay Mesh Refinement (with Andrey Chernikov), In proceedings of 16th International Meshing Roundtable, pp 25-44, 2007.
49. Application-driven quantitative assessment of approaches to mesh generation (with Dear Bhautik Joshi, Andriy Fedorov, Simon K. Warfield, Sebastien Ourselin). In proceedings of IEEE International Symposium on Biomedical Imaging: From Nano to Macro, 2007.

50. Evaluation of Remote Memory Access Communication on the Cray XT3, (with Vinod Tipparaju, Andriy Kot, Jarek Nieplocha, Monika ten Bruggencate). In proceedings of 7th Workshop on Communication Architecture for Clusters, 2007.
51. Toward Real-Time Image Guided Neurosurgery Using Distributed and Grid Computing (with A. Fedorov , A. Kot, Neculai Archip, Peter Black, Olivier Clatz, Alexandra Golby, Ron Kikinis, Simon K. Warfield), In Proceedings (in CD-ROM) of International Conference for High Performance Computing, Networking, Storage and Analysis (SC06), Tampa, FL, 2006.
52. Generalized Delaunay Mesh Refinement: From Scalar to Parallel, (with Andrey Chernikov). In the Proceedings of 15th International Meshing Roundtable, pp 563–580, Springer, September, 2006.
53. An evaluation of three approaches to tetrahedral mesh generation for deformable registration of brain MR images, (with Andriy Fedorov, Ron Kikinis and Simon Warfield). In proceedings of 3rd IEEE International Symposium on Biomedical Imaging, pp 658-661, Arlington, VA, 2006.
54. Effective Out-of-Core Parallel Delaunay Mesh Refinement using Off-the-Shelf Software (with Andriy Kot and Andrey Chernikov), in proceedings (in CD-ROM) of International Parallel & Distributed Processing Symposium, Rhodes, Greece, 2006.
55. Integration of patient specific modeling and advanced image processing techniques for image-guided neurosurgery (with Neculai Archip, Andriy Fedorov, Golby Alexandra, Bryan Loyd, Black McLaren, and Simon Warfield), in Proceedings of Medical Imaging 2006: Visualization, Image-Guided Procedures, and Display, pp 422-429 San Diego, CA, Feb 11-16, 2006.
56. Parallel 2D Graded Guaranteed Quality Delaunay Mesh Refinement (with Andrey Chernikov), In proceedings of 14th International Meshing Roundtable, pp 505-517, San Diego, California, September 11-14, 2005.
57. Parallel Out-of-Core Delaunay Refinement (with Andriy Kot and Andrey Chernikov). Proceedings of Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, pp 183-190, Sofia, Bulgaria, September 5-7, 2005.
58. Boundary Refinement in Delaunay Mesh Generation Using Arbitrarily Ordered Vertex Insertion, (with Demian Nave), 17th In proceedings of Canadian Conference on Computational Geometry, University of Windsor, pp 282-285, August 10-12, 2005.
59. Out-of-Core Parallel Delaunay Mesh Generation (with Andriy Kot and Andrey Chernikov), *In proceedings (in CD-ROM) of 17th IMACS World Congress Scientific Computation, Applied Mathematics and Simulation.*, Paris, France July 11 - 15, 2005.
60. Multigrain Parallel Delaunay Mesh Generation: Challenges and Opportunities for Multithreaded Architectures (with Christos D. Antonopoulos, Xiaoning Ding, Andrey Chernikov, Filip Blagojevic, Dimitrios S. Nikolopoulos), In proceedings of the 19th ACM International Conference on Supercomputing (ICS05), pp 367-376, Cambridge, Massachusetts. June 2005.
61. Generation of Unstructured Meshes in Parallel Using an Advancing Front Method. (with Yasushi Ito, Alan Shih, Anil Erukala, Bharat Soni, Andrey Chernikov, and Kazuhiro Nakahashi). 9th International Conference on Numerical Grid Generation in Computational Field Simulations, June 2005.
62. Practical Performance Model For Optimizing Dynamic Load Balancing of Adaptive Applications, (with Kevin Barker), In proceedings (in CD-ROM) of 19th International Parallel and Distributed Processing Symposium, Denver, Colorado, April 4-8, 2005.
63. Parallel Guaranteed Quality Planar Delaunay Mesh Generation by Concurrent Point Insertion (with Andrey Chernikov), In proceedings of 14th Annual Fall Workshop on Computational Geometry, Massachusetts Institute of Technology, pp 55-56, Cambridge, MA, Nov 19-20, 2004.
64. Parallel Refinement of Tetrahedral Meshes Using Terminal-Edge Bisection Algorithm (with Maria-Cecilia Rivara and Daniel Pizarro), In proceedings of 13th International Meshing Roundtable, pp 427-436, Williamsburg, VA, Sep 19-22, 2004.
65. Location Management in Object-based Distributed Computing, (with Andriy Fedorov). In the proceedings of Cluster, pp 299-308, San Diego, California, Sept. 20-23, 2004.

66. Communication Support for Dynamic Load Balancing of Irregular Adaptive Applications (with Andriy Fedorov), In the proceedings of 3rd Workshop on Compile and Runtime Techniques for Parallel Computing, pp 555-562, Montreal, Quebec, Canada, Aug. 15-18, 2004.
67. Practical and Efficient Point Insertion Scheduling Method for Parallel Guaranteed Quality Delaunay Refinement, (with A. Chernikov), In the proceedings of *18th International Conference on Supercomputing*, pp 48-57, 2004.
68. A Novel Dynamic Load Balancing Library for Cluster Computing (with Mahadevan Balasubramaniam, Kevin Barker, Ioana Banicescu, Jaderick P. Pabico, and Ricolindo L. Carino), 3rd International Symposium on Parallel and Distributed Computing in association with HeteroPar'04 University College Cork, Ireland July 5th - 7th 2004.
69. An Evaluation of a Framework for the Dynamic Load Balancing of Highly Adaptive and Irregular Applications (with K. Barker), In proceedings of Supercomputing Conference 2003, pp 45-IEEE/ACM Publications, 2003.
70. "Green" Mult-Layered "Smart" Memory Management System, (with A. Kot), in proceedings of Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications Lviv, Ukraine September 8 - 10, 2003.
71. Computational Science Simulations based on Web Services, (with Paul Chew, S. Gopalsamy, Gerd Heber, Tony Ingraffea, Edward Luke, Joaquim Neto, Keshav Pingali, Alan Shih, Bharat Soni, Paul Stodghill, David Thompson, Steve Vavasis, and Paul Wawrzynek), In proceedings of International Conference on Computational Science, pp 299-308, 2003.
72. Parallel Mesh Generation: A Case Study of Optimistic Computing on the Grid (with A. Fedorov, C. Lee and B. Lowekamp and M. Zangrilli). In Proceedings of the Workshop on Next Generation Software, 17th International Parallel and Distributed Processing Symposium, pp 204-, April 22 - April 26, 2003, Nice, France.
73. Parallel Guaranteed Quality Delaunay Mesh Generation and Refinement: Current Status, In proceedings of Workshop on Mesh Quality and Dynamic Meshing Workshop, pp 13-26, Sandia National Labs, January 16 - 17, 2003.
74. A Case Study of Optimistic Computing on the Grid: Parallel Mesh Generation (with Craig Lee and Bruce Lowekamp). In Proceedings of Workshop on Performance Analysis and Distributed Computing, August 19-23, 2002 Schloss Dagstuhl, Germany.
75. Guaranteed-Quality Parallel Delaunay Refinement for Restricted Polyhedral Domains (with D. Nave and P. Chew). In proceedings of 8th Symposium on Computational Geometry, Universitat Politcnica de Catalunya, Barcelona, Spain, pp 135-144, ACM Publications, 2002.
76. Parallel FEM Simulation of Crack Propagation – Challenges, Status, and Perspectives. (with B. Carter, Chuin-Shan Chen, P. Chew, G. R. Gao, G. Heber, A. Ingraffea, R. Krause, Chris Myers, Demian Nave, Keshav Pingali, Paul Stodghill, Stephen S. Vavasis, P. Wawrzynek). In proceedings of 7th International Workshop for Solving Irregularly Structured Problems in Parallel, Cancun, Mexico, Lecture Notes in Computer Science Vol. 1800, pp 443-449, Springer-Verlag Publications, 2000.
77. Simultaneous Mesh Generation and Partitioning for 3D Domains (with Demian Nave). In proceedings of 8th International Meshing Roundtable, Lake Tahoe, CA, pp 55-66, Sandia National Labs Publications, 1999.
78. Mobile Object Layer: A runtime substrate for mobile adaptive computations, (with Kevin Barker, Demian Nave and Chris Hawblitzel), In proceedings of 2nd International Symposium on Computing in Object-Oriented Parallel Environments, Santa Fe, NM, Lecture Notes in Computer Science, Vol. 1505, pp 71-82, Springer-Verlag Publications, 1998.
79. Parallel Run-time System for Adaptive Mesh Refinement, In proceedings of 5th International Workshop for Solving Irregularly Structured Problems in Parallel, Berkeley, CA, Lecture Notes in Computer Science, Vol. 1457, pp 397-405, Springer-Verlag Publications, 1998.
80. Data Movement and Control Substrate for Parallel Scientific Computing, (with Induprakas Kodukula and Keshav Pingali). In proceedings of Communication and Architectural Support for Network-Based Parallel Computing, San Antonio TX, Lecture Notes in Computer Science, Vol 1199, pp 256-268, Springer-Verlag Publications, 1997.

81. Compiler and run-time support for irregular and adaptive applications, (with Induprakas Kodukula, and Keshav Pingali). In proceedings of 11th International Conference on Supercomputing, Vienna, Austria, pp 229 - 236, ACM Publications, 1997.
82. Parallel Constrained Delaunay Meshing (with Paul Chew and F. Sukup), In the proceedings of Symposium on Trends in Unstructured Mesh Generation, Northwestern University, Evanston, IL, pp 89-96, ASME/ASCE/SES Publications 1997.
83. Performance evaluation of data mapping algorithms for parallel single-phase iterative PDE solvers, (with N. Mansour, and G. C. Fox), In the proceedings of the Scalable High Performance Computing Conference, Knoxville TN. pp 764–772, IEEE Publications, 1994.
84. An alternative to data-mapping for parallel iterative PDE solvers: Parallel Grid Generation, In the proceedings of the Scalable Parallel Libraries Conference, NSF/ERC for Computational Field Simulation, Mississippi State Univ. Mississippi, pp 36–44, IEEE Publications, 1993.
85. Geometry based mapping strategies for PDE computation. (with C.E. Houstis, E.N. Houstis). In proceedings of the 5th International Conference on Supercomputing, Cologne-Germany, pp 115–127, ACM Publications, 1991.
86. Domain Decomposer: A software tool for partitioning and allocation of PDE computations based on Geometry Decomposition strategies. (with C.E. Houstis, E.N. Houstis, P.N. Papachiou, S.K. Kortesis, and J.R. Rice), In proceedings of the 4th International Symposium on Domain Decomposition Methods, Moscow, USSR, pp 341–357, SIAM Publications, 1991.
87. Parallel ELLPACK: A numerical Simulation Programming Environment for Parallel MIMD Machines. E.N. Houstis, J.R. Rice, N.P. Chrisochoides, H.C. Karathanases, P.N. Papachiou, M.K. Samartzis, E.A. Vavalis, Ko Yang Wang and S. Weerawarana, In the proceedings of the 4th International Conference on Supercomputing, Amsterdam, The Netherlands, pp 96–107, ACM Publications, 1990.
88. Automatic Load Balanced Partitioning Strategies For PDE Computations. (with C.E. Houstis, E.N.Houstis, S.K. Kortesis and J.R. Rice). In the proceedings of the 3th International Conference on Supercomputing, Crete, Greece, pp 99-107, ACM Publications, 1989.

Refereed or Invited Short Papers

89. Toward Improved Tumor Targeting for Image Guided Neurosurgery with Intra-operative Parametric Search using Distributed and Grid Computing (with Andriy Fedorov). In Proceedings of 22nd IEEE International Parallel and Distributed Processing Symposium (NSF/NGS Workshop) Maimi, FL, April, 2008.
90. Experience with Memory Allocators for Parallel Mesh Generation on Multicore Architectures, (with Andrey Chernikov, Christos Antonopoulos, Scott Schneider and Dimitrios Nikolopoulos), to appear in the proceedings of the 10th ISGG Conference on Numerical Grid Generation, October, 2007.
91. Grid-Enabled Software Environment for Enhanced Dynamic Data-Driven Visualization and Navigation During Image-Guided Neurosurgery (with Andriy Fedorov, Andriy Kot, Stephen Whalen, Dan Kacher, Neculai Archip, Daniel Goldberg-Zimring, Ron Kikinis, Ferenc Jolesz, Alexandra Golby, Peter M. Black, Olivier Clatz, Simon K. Warfield), Invited in Dynamic Data Driven Application Systems, International Conference on Computational Science 2007.
92. Parallel Graded Generalized Delaunay Mesh Refinement (with Andrey Chernikov), Referred, In proceedings of 16th Annual Fall Workshop on Computational Geometry, Smith College, Boston, MA, Nov 10-11, 2006.
93. Parallel Guaranteed Quality Planar Delaunay Mesh Generation by Concurrent Point Insertion (with Andrey Chernikov), Referred, in 14th Annual Fall Workshop on Computational Geometry, Massachusetts Institute of Technology, Cambridge, MA, Nov 19-20, 2004.
94. Parallel Programming Environment for Mesh Generation (with Andrey Chernikov and Kevin Barker), In proceedings of 8th International Conference on Numerical Grid Generation in Computational Filed Simulations, Hawaii, June, 2002.

95. A local Re-connection Scheme for Parallel Delaunay Mesh Generation, (with D. Nave), 3rd Symposium on Trends in Unstructured Mesh Generation, In proceedings of the 6th US Nat. Cong. on Comput. Mechanics, Dearborn Michigan, (Abstract, pp 316), US Assoc. for Comput. Mechanics Publications, 2001.
96. Parallel guaranteed-quality h-refinement and mesh generation, (with D. Nave). In proceedings of p and hp Finite Element Methods: Mathematics and Engineering Practice, Washington University, St. Louis, (Extended Abstract, pp 39-40), 2000.
97. On the Parallelization of Quality-Guarantee 3D Delaunay Mesh Generators, (with D. Nave). In proceedings of the 2nd Symposium on Trends in Unstructured Mesh Generation, University of Colorado, Boulder Boulder, CO, (Extended Abstract in <http://www.andrew.cmu.edu/user/sowen/usccm99/abstracts.htm>) and US Assoc. for Comput. Mechanics Publications 1999.
98. MENUS-PGG : Mapping Environment for Numerical Unstructured & Structured - Parallel Grid Generation. (with Geoffrey C. Fox and Joe Thompson), Invited in Contemporary Mathematics, Vol 180, pp 381—386, AMS Publications, 1995.
99. A Computational Toolkit for Colliding Black Holes and CFD (with T. Haupt, and G. C. Fox), Invited in proceedings of the 25th AIAA-94-2249 Fluid Dynamics Conference, Colorado Springs, CO, 1994.
100. Multithread load-balancing approach for multi-block parallel PDE computations. In proceedings of the 14th IMACS World Congress on Computational and Applied Mathematics, Atlanta, pp 93-96, IMACS Publications, 1994.
101. Partitioning Heuristics for PDE Computations Based on Parallel Hardware and Geometry Characteristics, (with J. Rice.) In proceedings of Advances in Computer Methods for PDEs VII, New Brunswick, NJ, pp 127-133, IMACS Publications, 1992.
102. The parallelization of level 2 and 3 BLAS operations on distributed memory machines (with Aboelaze Mokhtar, E. N. Houstis, and C. E. Houstis). In proceedings of Advances in Computer Methods for Partial Differential Equations VII, New Brunswick, NJ, pp 119-126, IMACS Publications, 1992.
103. Parallel Iterative Methods, (with Elias Houstis, S.B. Kim, M.K. Samartzis, and J.R. Rice). In proceedings of Advances in Computer Methods for Partial Differential Equations VII, New Brunswick, NJ, pp 134-141, IMACS Publications, 1992.

Other Conference Articles and Abstracts

104. Adaptive Mesh Refinement for Non-Rigid Registration of Brain MRI (with Andriy Fedorov) In proceedings of Computational Bioimaging and Visualization Minisymposium in 8th World Congress on Computational Mechanics, Venice, Italy, July 2008.
105. Parallel Mesh Generation for Medical Image Computing. Invited in minisymposium on Parallel Mesh and Visualization Methods for Medical Images, SIAM Conference on Parallel Processing for Scientific Computing, Atlanta, GA on March 12-14, 2008.
106. Parallel Mesh Generation For CFD Simulations Of Complex Real-World Aerodynamic Problems, (with George Zagaris, Shahyar Pirzadeh and Andrey Chernikov), to appear in the proceedings of the 6th Symposium on Trends in Unstructured Mesh Generation, July 2007.
107. 2D Parallel Constrained Delaunay Mesh Generation: A Multigrain Approach on Deep Multiprocessors (with C. Antonopoulos and D. Nikolopoulos), Invited in workshop in programming models for HPCS ultra-scale applications, Cambridge, MA, June, 2005.
108. A categorical approach for parallel Delaunay mesh generation, (with Stratos Prassidis) Invited in Algebraic Topological Methods in Computer Science, Department of Mathematics, University of Western Ontario, July 16-20, 2004.
109. Simulation of Crack Propagation in a Teraflops Computing Environment, (with A. Ingraffea, P. Wawrzynek, C. Myers, R. Krause, D. Schneider, K. Pingali, S. Vavasis, P. Chew, P. Stodhill, G.

- R. Gao). *Software Issues in Comput. Mech.*, Aug. 4-6, 1999, Univ. of Colorado, Boulder Boulder, CO, (Abstract) 1999.
110. Data Migration Framework for the Load Balancing of Parallel Adaptive Unstructured Mesh Computations. (with D. Nave and C. Hawblitzel). Refereed, in proceedings of the 6th International Conference on Numerical Grid Generation in Computational Field Simulation, University of Greenwich, Avery Hill Campus, London, UK, 1998.
 111. Compiler support for easing the programmer's burden (with Induprakas Kodukula, and Keshav Pingali). Invited and presented in the Workshop on Structured Adaptive Mesh Refinement Grid Methods, IMA Univ. of Minnesota, 1997.
 112. Task Parallel implementation of the BOWYER-WATSON algorithm, (with Florian Sukup), Refereed, in proceedings of 5th Intern. Conference on Numerical Grid Generation in Comput. Fluid Dynamics and Related Fields, pp 773–782, 1996.
 113. Parallel Adaptive Delaunay Grid Generation (Abstract in <http://www.ma.hw.ac.uk/icms/apde/abstracts/chrisochoides/info.html>), (with Paul Chew). Refereed, in proceedings of Grid Adaptation in Computational PDEs: Theory and Applications, Edinburgh, Scotland, 1996.
 114. An Evaluation of Data Mapping Approaches for Parallel Multi-Block Euler Solvers (with A. Chatterjee, R. Vaidyanathan, and G. Fox), Accepted in Computational Fluid Dynamics (CFD'94), Kyoto Japan, 1994.
 115. Load Balancing Method for Static Parallel Grid Generation Accepted in 4th International Conference on Numerical Grid Generation in Comput. Filed Simulations, UK, 1994.
 116. A Methodology for Developing High Performance Computing Models: Storm-Scale Weather Prediction, (with K. Droegemeier, G. Fox, and K. Mills). Invited in proceedings of the Simulation MultiConference on High Performance Computing, pp 82–89, 1993.
 117. Parallel Grid Generation on Distributed Memory MIMD Machines for 3-Dimensional General Domains, (with G. Fox and J. Thompson). Accepted in Computational Fluid Dynamics (CFD'93), Paris, France, 1993.

Poster Publications

118. Tetrahedral Mesh Generation for Medical Imaging, (with Andriy Fedorov, Ron Kikinis and Simon Warfield), In electronic proceedings of MICCAI open source workshop (refereed, poster presentation), 2005.
119. Out-of-Core Parallel Mesh Generation, (with A. Kot), Supercomputing (refereed), 2004.
120. Exploiting Simultaneous Multithreading for Parallel Mesh Generation on Intel HT Processors, (with Christos Antonopoulos and Dimitrios Nikolopoulos). Poster at the 13th International Meshing Roundtable, Williamsburg, VA, September 2004.
121. Scheduling Point Insertion for Parallel Delaunay Meshing, (with Andrey Chernikov), Poster at the 13th International Meshing Roundtable, Williamsburg, VA, September 2004.
122. Towards Optimistic Delaunay Meshing on the Grid (with Demian Nave, Craig Lee, David Deerfield II), Poster at the 13th International Meshing Roundtable, Williamsburg, VA, September 2004.
123. Application-driven approach for prototyping runtime systems for future Teraflops and Petaflops Architectures (invited poster) 1st NSF CAREER AWARDEE MENTORING AND NETWORKING WORKSHOP (Jan 21-23), 2004.
124. Clam: Communication Layer for Asynchronous Mobile Applications, 4th Symposium of the Los Alamos Computer Science Institute: 27 - 29 October, 2003.
125. An evaluation of Domain Decomposition methods in parallel mesh generation (with A.Chernikov, L. Linardakis, C. Verma), 11th International Meshing Roundtable, Ithaca, NY, September, 2002.
126. A Two-tier Computation and Visualization Facility for Multi-scale Problems: Status in parallel mesh generation. 2002 NSF CISE/EIA PI's Workshop, Snowbird, Utah, July 12-14, 2002.

127. Implicit Load Balancing Library for Adaptive and Unstructured Mesh Generation (with K. Barker), 10th International Meshing Roundtable, Newport Beach, CA, October, 2001.
128. Parallel Constrained Delaunay Triangulation (with B. Holinka), 10th International Meshing Roundtable, Newport Beach, CA, October, 2001.
129. Runtime Support for Parallel PDE computations, 8th SIAM Conference on Parallel Processing for Scientific Computing, Minneapolis, MN, March, 1997
130. Runtime Library for Parallel Unstructured Grid Generation, Supercomputing, Pittsburgh, PA, November, 1996.
131. A Remote Service Protocol for Dynamic Load Balancing of Multithreaded Parallel Computations, (with Juan Miguel del Rosario) Frontiers'95, McLean, VA, February, 1995.

Technical Reports

132. WM-CS-2009-09: Real-time Non-rigid Registration of Medical Images on a Cooperative Parallel Architecture, (with Yixun Liu, Andriy Fedorov, and Ron Kikinis. Department of Computer Science, College of William and Mary, July 2009
133. WM-CS-2009-05: Non-Rigid Registration for Image-Guided Neurosurgery on TeraGrid: A Case Study, (with Andriy Fedorov, Benjamin Clifford, Simon K. Warfield, and Ron Kikinis). Department of Computer Science, College of William and Mary, May 2009
134. BrownSC-2005-09: A Survey of Parallel Mesh Generation Methods, Division of Applied Mathematics, Brown University, 2005.
135. TR 99-08: "Simultaneous Mesh Generation and Partitioning for Delaunay Meshes" (with Demian Nave), Computer Science and Engineering, University of Notre Dame.
136. TR 98-16: Data Migration Substrate for the Load Balancing of Parallel Adaptive Unstructured Mesh Computations (With D. Nave, Chris Hawblitzel).
137. TR 98-17: The Mobile Object Layer: A run-time substrate for mobile adaptive computations Authors: Nikos Chrisochoides, Kevin Barker, Demian Nave, Chris Hawblitzel. Computer Science and Engineering, University of Notre Dame. *Note: A shorter version appears in proceedings of the 2nd Intern. Symposium on Computing in Object-oriented Parallel Environments as part of the Lecture Notes in Computer Science Series.*
138. CTC-96TR235: Task Parallel Implementation of the Bowyer-Watson Algorithm, (with F. Sukup). Cornell Theory Center, Cornell University, 1996.
139. NASA CR-198244 ICASE Report No. 95-83: Multithreaded Model for Dynamic Load Balancing Parallel Adaptive PDE Computations, Institute for Computer Applications in Science and Engineering Mail Stop 132C, NASA Langley Research Center Hampton, VA 23681-0001, December 1995, pp 25.
140. SCCS-672: Scalable BLAS 2 and 3 Matrix Multiplication for Sparse Banded Matrices on Distributed Memory MIMD Machines, (with M. Aboelaze, E. Houstis, and C. Houstis) NPAC, Syracuse University, NY.
141. SCCS-674: Parallel structured grid generation, (with Chatterjee, A., Rajani, V., and Fox, G.), NPAC, Syracuse, NY, March 1994.
142. SCCS-472: Structured Grid Generation for General domains on Distributed Memory MIMD machines. (with G.C. Fox and J. F. Thompson), SCCS-472 *Accepted in International Conference on Domain Decomposition Methods in Scientific and Engineering Computing, October 27–30, 1993.*
143. CSD-TR-92-101: On the Mapping of Partial Differential Equation Computations onto Distributed Memory MIMD Parallel Machines, Computer Science, Purdue University, 1992. Computer Sciences Department, Purdue University, West Lafayette, IN 47907.
144. CSD-TR-912: Parallel (//) ELLPACK PDE Solving System. (with E. N. Houstis, J.R. Rice, H.C. Karathanases, P.N. Papachiou, M.K. Samartzis, E.A. Vavalis, Ko Yang Wang), Computer Sciences Department, Purdue University, West Lafayette, IN 47907.

145. CSD-TR-1039: Parallel Ellpack : User's Guide, (with E.N. Houstis, J.R. Rice, S.B. Kim, T. Ku, K.Y. Wang, and S. Weerawarana). Computer Sciences Department, Purdue University, West Lafayette, IN 47907.

Invited Scholarly Talks (45)

1. Preventing Medical Some Errors in Image Guided Neurosurgery, Modeling and Simulation Conference, Virginia Beach, Virginia, 2008.
2. Parallel Mesh Generation Using COTS, Intel, Hillsboro, Oregon, May 2008.
3. Real-time Non-Rigid Registration for Image Guided Neurosurgery: Mesh Generation, Dept.of Computer Science and Engineering, UCR, Feb, 2008.
4. Near Real-Time Non-Rigid Registration for Image Guided Neurosurgery, DDDAS Panel in GLOB-COM, Washington DC, November, 2007.
5. Near Real-Time Non-Rigid Registration for Image Guided Neurosurgery, Workshop on Brain Biomechanics: Mathematical Modeling of Hydrocephalus and Syringomyelia, Center for Mathematical Medicine, Fields Institute, Toronto, Canada, August 2007.
6. Grid-Enabled Software Environment for Enhanced Dynamic Data-Driven Visualization and Navigation During Image Guided Neurosurgery, ICCS2007 Workshop on Dynamic Data Driven Applications Systems, China, May 2007.
7. Real-Time Non-Rigid Registration for Image Guided Neurosurgery (IGNS): Mesh Generation, Waterloo Institute for Health Informatics Research and The Centre for Centre for Computational Mathematics in Industry and Commerce, Waterloo University, March 2007.
8. Real-Time Non-Rigid Registration for Image Guided Neurosurgery: Current Status and Future Directions, Old Dominion University, February, 2007.
9. Real-Time Non-Rigid Registration for Image Guided Neurosurgery, Invited in Institute for Computational Engineering and Sciences, University of Texas, Astin, TX, February 2007.
10. Parallel Unstructured Mesh Generation Using COTS: One step closer to real-time mesh generation, Invited in Visualization Center, University of Texas, Austin, TX, February 2007.
11. The case for real-time mesh generation for image guided therapy, Invited in WONAPDE 2007: Unstructured mesh Generation, University of Concepcion, Chile, January 2007.
12. Parallel Mesh Generation an Overview, Math, Computer Science, Computer and Electrical Engineering Departments, Aristotle University, Greece, July 2005.
13. 15 Year Evolution of Parallel Mesh Generation Methods, Workshop on High-end Scientific Computing, Brown University, May 2005.
14. Parallel mesh generation using COTS software, Keynote talk at the Annual Computational Science and Engineering Research Symposium, University of Illinois at Urbana-Champaign, April 2005.
15. Parallel mesh generation using COTS software, Mechanical Engineering, Massachusetts Institute of Technology, MA, November 2004.
16. Parallel mesh generation using COTS software, Mechanical Engineering, Worcester Polytechnic Institute, MA, November 2004.
17. Parallel mesh generation using COTS software, NASA Langley research Center, VA, November 2004.
18. Finite Element Mesh Generation: From Millions to Billions, ASP Workshop, Cornell University, September 2004.
19. Parallel Mesh Generation: COTS and Web-Services, Invited (with A. Chernikov) ICOSAHOM'04, Brown University, June 2004.
20. Survey of parallel mesh generation methods, in Parallel Mesh Generation Mini-symposium in SIAM Parallel Processing Conference, CA, February 2004.

21. Portable Runtime Environment for Mobile Applications, in the Mini-symposium on Adaptivity in Parallel and Distributed Computing Through Interoperating Systems and Applications, in SIAM Parallel Processing Conference, CA, February 2004.
22. Parallel Mesh Generation Past, Present and Future Directions, EURESCO Conference on Advanced Environments and Tools for High Performance Computing and GIS , Albufeira, Portugal, 14-19 June 2003
23. Parallel Mesh Generation: Current Status and Future Directions, Division of Applied Mathematics, Brown University , Providence, RI March, 2002.
24. Parallel guaranteed-quality h-refinement and mesh generation p and hp Finite Element Methods: Mathematics and Engineering Practice, St. Louis, May 31 - June 2, 2000.
25. Parallel Unstructured Mesh Generation and Refinement, Computer Science and Engineering, Rensselaer Polytechnic Institute, March, 2000.
 - (a) Computer Science and Engineering, University of Connecticut February, 2000.
 - (b) Electrical and Computer Engineering, University of Delaware, November, 1999.
26. New formulation of the mesh partitioning problem. Workshop on Graph Partitioning is being held at the Army High Performance Computing Research Center (AHPCRC) at the University of Minnesota, October 15, 1999.
27. Can we couple Mesh Generation and Partitioning? Invited in Computer Science Department, Old Dominion University, October 13, 1999.
28. Latency Tolerant Iterative PDE Solvers for Traditional and Future Parallel Machines. John Rice 65 birthday. Purdue Univ., May, 1999.
29. On the Parallelization of Quality-Guarantee 3D Delaunay Mesh Generators, Computer Science Department, Purdue University, March, 1999.
30. Mobile Object Layer, Advanced Computing Laboratory, Los Alamos National Laboratory, Los Alamos, New Mexico, October 1996.
31. Runtime Support System for Parallel PDE Computations, HERMIS, Athens, Greece, September 1996.
32. Multithreaded model for dynamic load balancing parallel adaptive PDE computations, Institute for Computer Applications in Science and Engineering, NASA Langley Research Center, August, 1995.
33. Exploring Concurrency in Scientific Computing Applications, Microprocessor Research Lab, INTEL, Santa Clara, CA, July 1995. *Version of this talk were also presented at:*
 - (a) Electrical and Computer Engineering, Washington State University, Fall 1995.
 - (b) Electrical and Computer Engineering, UIUC, Spring 1995.
34. Problems and Technologies for the Automatic Mapping of PDEs on Distributed Address Space MIMD Machines, Advanced Computing Research Institute, Cornell Theory Center, Cornell University, October 1994. *Versions of this talk were also presented at:*
 - (a) ICASE, NASA Langley Research Center, August 1995.
 - (b) Computer Science Department at Old Dominion University, August 1994.
 - (c) Cray Research Inc. (Earth & Environmental Sciences, Applications Department), May 1994.
 - (d) Intel Corp. (Supercomputer Systems Division, OR), May 1994.
 - (e) Thinking Machines Corp. (Numerical Applications), April 1994.
35. On the Mapping of Parallel PDE computations, Computer Science Research and Development Center at UIUC, April 1992. *Version of this talk was also presented at the Computer Science Department at Old Dominion University, October 1993.*

Contributed Talks (13)

1. Adaptive Mesh Refinement for Non-Rigid Registration of Brain MRI, Computational Bioimaging and Visualization Minisymposium in 8th World Congress on Computational Mechanics, Venice, Italy, July 2008.

2. Three-Dimensional Delaunay Refinement for Multi-Core Processors, ICS08, Kos, Greece, 2008.
3. Practical and Efficient Point Insertion Scheduling Method for Parallel Guaranteed Quality Delaunay Refinement, (with A. Chernikov), In the proceedings of *18th International Conference on Supercomputing*, 2004.
4. Automatic Domain Decomposition for Parallel 2D Constrained Delaunay Mesh Generation, (with A. Chernikov), 4th Symposium on Trends in Unstructured Mesh Generation July 27-31, 2003 Albuquerque, NM.
5. Overview of Software Systems for Mesh Generation Session, in Birds-of-Feather, 10th International Meshing Roundtable, Newport Beach, CA, October, 2001.
6. Overview of Parallel Mesh Generation, Session in Birds-of-Feather, 9th International Meshing Roundtable, New Orleans, Louisiana, October, 2000.
7. Simultaneous Mesh Generation and Partitioning for 3D Domains, 8th International Meshing Roundtable, Lake Tahoe, CA, October, 1999.
8. Parallel Run-time System for Adaptive Mesh Refinement, IRREGULAR'98, Berkeley, CA, August, 1998.
9. Performance evaluation of data mapping algorithms for parallel single-phase iterative PDE solvers, In Scalable High Performance Computing Conference, Knoxville Tennessee, April, 1994.
10. Dynamic Load Balancing: Multithreaded Approach, Parallel Object-Oriented Methods and Applications, Santa Fe, New Mexico, December 1994.
11. MENUS-PGG : Mapping Environment for Numerical Unstructured & Structured, 7th International Conference on Domain Decomposition Methods in Scientific and Engineering Computing, University of Pennsylvania, October, 1993.
12. An alternative to data-mapping for scalable iterative PDE solvers: Parallel Grid Generation, Scalable Parallel Libraries Conference, National Science Foundation Engineering Research Center for Computational Field Simulation, Mississippi State, Mississippi, October, 1993.
13. Parallel Grid Generation, Presented in Summer Program for Modeling, Mesh Generation and Adaptive Methods for PDEs, Institute for Mathematics and its Applications, University of Minnesota, July 1993. *Shorter version of this talk was presented at Center for Research on Parallel Computation, Rice University, November, 1993.*

PROFESSIONAL SERVICES

Editor

1. Associate Editor, Computing, International Scientific Journal, Ternopil Academy of National Economy, Institute of Computer Information Technologies , 2003-present.
2. Special Issue on Mesh Generation, Engineering with Computers, 2004.
3. Structured Adaptive Mesh Refinement Grid Methods, (with S. Baden, D. Gannon, and M. Norman) Volume 117, IMA Volumes in Mathematics and its Applications, Springer-Verlag, 1999.

Program Chair/Organizer

1. Co-organizer, Minisymposium on Parallel Mesh Generation, Eleventh SIAM Conference on Parallel Processing for Scientific Computing, CA, February 2006.
2. Co-Organizer, Workshop on High-end Scientific Computing, Brown University, Providence, RI, May 16, 2005
3. Co-organizer, Minisymposium on Parallel Mesh Generation, Eleventh SIAM Conference on Parallel Processing for Scientific Computing, CA, February 2004.
4. General Chair and member of the Steering Committee of 11th International Meshing Roundtable, Ithaca, NY, Sept. 15-18, 2002.

5. Co-Chair for Technical Program and member of the Steering Committee for 10th International Meshing Roundtable, Newport Beach, CA, October, 2001.
6. Co-organizer of the Structured Adaptive Mesh Refinement Workshop, Institute of Mathematics and it Applications, University of Minnesota, Summer 1997.

Program Conference Committees

1. The 30th IEEE Real-Time Systems Symposium, Washington, D.C., Dec. 1 to 4, 2009
2. Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, in Rende, Italy, 21-23 September 2009.
3. High Performance Computing, San Diego, CA, March, 2009
4. Sixth Workshop on High Performance Grid Computing, Italy, May, 2009.
5. Supercomputing Conference, Austin, Texas, 2008.
6. 15th International Conference on High Performance Computing (HiPC), 2008.
7. Fifth Workshop on High Performance Grid Computing, April, 2008.
8. High Performance Computing and Simulation Symposium, 2008.
9. Recent Approaches to Numerical Analysis: Theory, Methods and Applications, Kalamata, Greece, September 1-5, 2008.
10. Supercomputing Conference, Reno, NV, 2007.
11. International Parallel and Distributed Processing Symposium, Southern California, 2007.
12. Recent Approaches to Numerical Analysis: Theory, Methods and Applications, Kalamata, Greece, September 3-7, 2007.
13. 14th International Conference on High Performance Computing (HiPC), India, 2007.
14. High Performance Computing Symposium, Norfolk VA, 2007.
15. Fourth High-Performance Grid Computing Workshop, Long Beach, California, March, 2007.
16. Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, in Dortmund, Germany, 6-8 September 2007
17. International Conference for Supercomputing, ACM/IEEE, 2006.
18. Parallel Processing for Scientific Computing, San Francisco, CA, Feb. 2006.
19. International Parallel and Distributed Processing Symposium, Rhodes Island, Greece, 2006.
20. High Performance Computing Symposium, Huntsville AL, April, 2006.
21. Third High-Performance Grid Computing Workshop, Rhodes Island, Greece, April 2006.
22. IEEE Third International Workshop on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, Sofia, Bulgaria, September 5-7, 2005.
23. Second High-Performance Grid Computing Workshop, Denver CO. April 8, 2005,
24. Applications for Computational Grids, Santa Fe, NM, April 26- 30, 2004.
25. Supercomputing 2003, Phoenix, AR, Nov. 15 to 18, 2003.
26. Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications Lviv, Ukraine September 8 - 10, 2003.
27. First Partitioning Mesh-based Applications for Computational Grids May 18-21, 2003 Montreal, Quebec, Canada.
28. International Parallel and Distributed Processing Symposium, Ft. Lauderdale, April 15 to 19, 2002.
29. 11th International Heterogeneous Computing Workshop, Ft. Lauderdale, April 15, 2002.
30. International Conference for Supercomputing, ACM/IEEE, 2001.

31. International Conference for Parallel Processing, 1996.

Moderator and Session Chair

1. Moderator of the Software for Mesh Generation Session in Bird of Feather, at 10th International Meshing Roundtable, 2001.
2. Moderator of the Parallel Mesh Generation Session in Bird of Feather, at 9th International Meshing Roundtable, 2000.
3. Parallel Processing (Session I) in 7th International Conference on Numerical Grid Generation in Computational Field Simulation, Chateau Whistler Resort, Whistler, British Columbia, Canada, September 23-28, 2000.

Reviewing Activities: Grant Proposals

1. National Science Foundation, Panel Review, 2009
2. National Science Foundation, Panel Review, 2009
3. National Science Foundation, Panel Review, 2009
4. National Science Foundation, Panel Review, 2007
5. National Science Foundation, (mail panelist), 2005
6. Dutch National Science Foundation, (mail panelist), 2004
7. National Science Foundation, Panel Review, 2001
8. National Science Foundation, Panel Review, 2001
9. National Science Foundation, Panel Review, 2001
10. National Science Foundation, Panel Review, 1999
11. National Science Foundation, Panel Review, 1999 December 1999.
12. National Science Foundation, Panel Review, 1997

Reviewing Activities: Journals and Conferences

- Journals: Journal of Parallel and Distributed Computing, Parallel Computing, IEEE Transactions Parallel and Distributing Systems, Concurrency Practice and Experience, Journal of Computational Physics, SIAM Journal for Scientific Computing, Engin. with Computers.
- Conferences: Supercomputing Conference, International Conference for Supercomputing, International Parallel & Distributed Processing Symposium, International Conference for Parallel Processing, International Meshing Roundtable.

TEACHING ACTIVITIES

Graduate Courses

1. Medical Image Computing, Fall 2005, Fall 2008.
2. Topics in Mesh Generation, Spring 2002, Fall 2008
3. Parallel Meshing I, Fall 2001, Fall 2003
4. Complexity and Algorithms, Spring 1997
5. Numerical Methods and Computation, Fall 1997, Fall 1998, Fall 1999
6. Topics in Parallel Computing, Spring 1998
7. Individual Studies (cs690/790), some years.
8. Master Thesis (cs700), some years.

9. Doctoral Dissertation (cs800), all years.

Undergraduate Courses

1. Discrete Structures of Computer Science, 2000, 2001, 2003, 2007
2. Medical Image Processing and Analysis, Fall 2006.
3. Individual Studies (cs490)

Short Courses & Lectures

1. Parallel Mesh Generation (AM281), Brown University, Fall 2004.
2. Parallel Mesh Generation (Tutorial), 13th International Meshing Roundtable, Williamsburg, VA, 2004.
3. Parallel Mesh Generation Lecture in the 7th International Conference on Numerical Grid Generation in Computational Field Simulation, Chateau Whistler Resort, Whistler, British Columbia, Canada, September 23-28, 2000.
4. Parallel Numerical Grid Generation, Army Research Lab, Aberdeen, MD, 1997.

Research Education for Undergraduate Students

- William and Mary:

1. Alexander Gvakharia, started Summer of 2009.
2. Alison Smith (co-advised with Dr. Andrey Chernikov, started Spring of 2008)
3. Robert Staubs (started summer 2006 and continued the Fall 2006)
4. George Zagaris, "Two dimensional Hybrid Mesh Generation", April, 2005.
5. Eileen Tschetter (started Summer 2003, Fall 2003).
6. Houtan Bastani, "Grid Computing", (started: Summer 2001, received the **Fulbright Scholarship** for 2003-04 and Cummings Scholarship for Summer 2002).
7. Jay Underwood, "Parallel Meshing", (Summer 2002).

- University of Notre Dame: Jeff Dobbelaere, Mary Corbett, Brian Holinka, Lisa Hannan, Mohamed Aly Helmy, Charlie Vazac.

- Cornell University: Reza Behforouz (continued for graduate studies at Stanford Univ.).

Other Teaching related activities

Research Graduate Students Supervised and Funded

1. *College of William and Mary:* Jeff Dobbelaere, Mary Corbett.
2. *University of Notre Dame:* Laura Sichitiu, Scott Hampton.
3. *Cornell University:* Vineet Ahuja (currently in Sun Microsystems Inc.).
4. *Syracuse University:* Animesh Chatterjee (currently in Sun Microsystems Inc.), Rajani Vaidyanathan.

Ph.D. Thesis Committees

1. Kevin Rudd, "Parallel 3D Acoustic and Elastic Wave Simulation Methods with Applications in Nondestructive Evaluation" Dept. of Applied Sciences, College of William and Mary.
2. Radu Siminiceanu "New Techniques in Symbolic Model Checking", Computer Science Dept. College of William and Mary.
3. Shannon Kunz, "Design of Microserver Memory Architecture for Massively Parallel Computing", Dept. of CSE, University of Notre Dame.
4. Yevgenii Rastigejev, "Wavelet Collocation Methods for Solving Partial Differential Equations in Multiple Dimensions" Dept. of AME, University of Notre Dame.

OTHER SERVICES

College of Arts and Sciences:

1. Faculty Compensation Board, 2005 to 2009.
2. Summer Scholarship Committee, 2006-07.
3. SPEAK Committee, 2003 to 2004.
4. Committee on Graduate Studies, 2003 to 2004.
5. Committee on Honors and Interdisciplinary Studies, 2001-2004.

Computer Science Department:

6. Chair Hiring Committee, 2008-09
7. Graduate Director 2003 to 2004.
8. Coordinator of Curriculum Committee 2001-2002 and 2006 - present.
9. Member of Hiring Committee, 2001-02, 2005-06 and 2006-07

Committees at the University of Notre Dame:

10. University Task Force for IT Security, 2000.
11. University Committee on Computing and Information Services, 1999-2000.
12. University Committee on Technical Computing, 1999-2000.
13. College of Engineering Computing Committee, 1999-2000.
14. CSE Chairman Search Committee 1999-2000.
15. CSE Graduate Committee, 1999-2000.