CURRICULUM VITAE

Danny Z. Chen

Department of Computer Science and Engineering
University of Notre Dame
Notre Dame, Indiana 46556, USA
Phone: (574) 631-8804
FAX: (574) 631-9260
E-mail: dchen@nd.edu
http://www3.nd.edu/∼dchen

Current Position

Professor, Computer Science and Engineering, University of Notre Dame.

Education

Ph.D. Computer Science, Purdue University, West Lafayette, Indiana, 1992.
Thesis: *Parallel Techniques for Paths, Visibility, and Related Problems*.
Thesis Advisor: Mikhail J. Atallah.

M.S. Computer Science, Purdue University, West Lafayette, Indiana, 1988.

B.S. Computer Science, University of San Francisco, California, 1985.

B.S. Mathematics, University of San Francisco, California, 1985.

Research Interests

- Computational Biomedicine
- Biomedical Imaging
- Algorithm Design, Analysis, and Implementation
- Computational Geometry
- Data Mining
- Machine Learning
- Parallel and Distributed Computation
- VLSI Design

Honors and Awards

- The 2017 PNAS Cozzarelli Prize of the National Academy of Sciences of the United States of America for the paper, "3D Visualization and a Deep Learning Model Reveal Complex Fungal Parasite Networks in Behaviorally Manipulated Ants," by M. Fredericksen, Y. Zhang, M. Hazen, R. Loreto, C. Mangold, D.Z. Chen, and D. Hughes, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, Vol. 114, No. 47, November

21, 2017, pp. 12590-12595. Six papers published in PNAS in 2017 were selected for this award for "outstanding scientific excellence and originality".

https://www.eurekalert.org/pub_releases/2018-02/potn-pas022718.php

http://www.pnas.org/page/about/cozzarelli-prize

http://www.pnas.org/cozzarelliprizearticles

- The Outstanding Faculty Teaching Award, Department of Computer Science and Engineering, University of Notre Dame, 2012.
- Laureate Award of the 2011 Computerworld Honors Program, for his work on "Arc-Modulated Radiation Therapy". The program stated: "The program, founded in 1988, recognizes organizations and individuals who have used information technology to promote and advance public welfare, benefit society and change the world for the better."
- The "Close Runner-up" of the 2008 Roberts Prize for the best paper published in *Physics in Medicine and Biology* (PMB) in 2008. The PMB journal published 520 articles in 2008.
- The James A. Burns, C.S.C. Award for Graduate Education, University of Notre Dame, 2009.
- The Kaneb Teaching Award, Department of Computer Science and Engineering, University of Notre Dame, 2004.
- Rooney Family Associate Professor of Engineering, University of Notre Dame, August 2000 — August 2002.
- The NSF (National Science Foundation) Faculty Early Career Development (CAREER) Award, 1996.
- One of the two nominees of the University of Notre Dame for the NSF (National Science Foundation) Presidential Faculty Fellows (PFF) Awards, 1995.
- Clark Equipment Assistant Professor of Computer Science and Engineering, University of Notre Dame, for the 1994 — 1995 academic year.
- Nominee of the Department of Computer Sciences, Purdue University, for the ACM (Association for Computing Machinery) Best Doctoral Dissertation Award, 1993.

Professional Societies

- Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- Distinguished Scientist of the Association for Computing Machinery (ACM)
- ACM Special Interest Group on Automata and Computability Theory (SIGACT)
- Member of the American Association for the Advancement of Science (AAAS)

Professional Experience

- August 2002 — present: Professor of Computer Science and Engineering with tenure, University of Notre Dame.
- January 2011 — present: Concurrent Professor, Department of Applied and Computational Mathematics and Statistics, University of Notre Dame.

- April 2012 — May 2012: Visiting Professor, College of Computer Science, Zhejiang University, Hangzhou, China.
- February 2012 — March 2012: Visiting Professor, Institute for Interdisciplinary Information Sciences (IIIS), Tsinghua University, Beijing, China.
- January 2003 — July 2003: Visiting Professor, Department of Computer Science, Hong Kong University of Science and Technology (HKUST), Hong Kong.
- August 1998 — August 2002: Associate Professor of Computer Science and Engineering with tenure, University of Notre Dame.
- June 21 — July 17, 1996: Invited lecturer to the Center for Applied Science and Engineering and Institute of Information Science, Academia Sinica, Nankang, Taiwan. Giving lectures, and conducting research in computational geometry and parallel computation with several world leading experts in these fields and with researchers at the Academia Sinica.
- June 1 — July 31, 1994: Visiting the Max-Planck-Institut (MPI) fur Informatik in Saarbrucken, Germany. Conducting research in computational geometry and parallel computation with leading researchers at the MPI.
- August 1992 — August 1998: Assistant Professor, Dept. of Computer Science and Engineering, University of Notre Dame.

Supervision of Ph.D. Thesis Students

1. Robert J. Szczerba, "New Cell Decomposition Techniques for Planning Optimal Paths," August 1996 (with Dr. John J. Uhran, Jr. being a co-advisor; CEO and Founder of X Tech Ventures, LLC, NY; Senior Fellow Emeritus of Lockheed Martin Systems Integration).
2. Kevin S. Klenk, "On Geometric Optimal Path Query Problems," May 1998 (IT finance manager at JPL/NASA).
3. Ovidiu Daescu, "On Geometric Optimization Problems," May 2000 (award of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 1998 — 1999; full professor with tenure, Department of Computer Science, University of Texas at Dallas, Texas, USA).
4. Jinhui Xu, "Arrangements, Algorithms, and Applications," August 2000 (awards of the 1999 Summer Graduate Research Fellowship and Fellow of the Center for Applied Mathematics of the University of Notre Dame, 1999 — 2000; full professor with tenure, Department of Computer Science and Engineering, State University of New York at Buffalo, New York, USA; received NSF CAREER Award).
5. Xiaodong Wu, "New Algorithmic Techniques for Partitioning and Covering Problems, with Applications," August 2002 (award of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 2001 — 2002; full professor with tenure, Department of Electrical and Computer Engineering and Department of Radiation Oncology, University of Iowa, Iowa, USA; received NSF CAREER Award and NIH Career Award).
6. Yumin Zhang, "Low Power Design Techniques," August 2002 (co-advisor, with Dr. Xiaobo S. Hu being the advisor; Synopsis, Inc).
7. Shuang (Sean) Luan, 'Geometric Algorithms for Leaf Sequencing Problems in Intensity-Modulated Radiation Therapy," May 2004 (award of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 2002 — 2003; associate professor with tenure,

Department of Computer Science and Department of Radiology, University of New Mexico, New Mexico, USA).

8. Chao Wang, "New Algorithms for Treatment Planning and Delivery Problems in Intensity-Modulated Radiation Therapy," August 2007 (two awards of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 2004 — 2006; Opnet Technologies, Bethesda, MD).

9. Bin Xu, "New Algorithms for Spatial Data Clustering Problems," May 2008 (director, SymphonyIRI Group, Chicago).

10. Haitao Wang, "Algorithms and Data structures for Geometric Object Approximation Problems," May 2010 (award of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 2009 — 2010; associate professor with tenure, Department of Computer Science, Utah State University, Utah, USA).

11. Ewa Misiolek, "Efficient Algorithms for Geometric Problems in Computer-Aided Manufacturing," May 2011 (award of 2004 Summer Graduate Fellowship of the Center for Applied Mathematics of the University of Notre Dame; associate professor with tenure, Mathematics Department, Saint Mary's College, Indiana, USA).

12. Xiaomin Liu, "Identification, Segmentation, and Analysis of Objects in Biomedical Images," August 2011 (award of Fellow of the Center for Applied Mathematics of the University of Notre Dame, 2009 — 2010, and award of Fellow of Applied and Computational Mathematics and Statistics, 2010 — 2011; computer vision scientist, Hologic, Inc., CA).

13. Jian Mu, "New Algorithms for Biomedical Image Processing and Computer Vision," January 2015 (location software engineer, Apple Inc., CA).

14. Kai Xiao, "GPU-based Acceleration Techniques: Algorithms, Implementations, and Applications," August 2015 (co-advisor with Dr. Xiaobo S. Hu; Intel Labs — Research).

15. Jiazhuo Wang, "New Approaches for Biological Structures Identification in Histology Tissue Images," August 2016 (senior research scientist, Blippar, Mountain View, CA).

16. Jianxu Chen, "New Approaches for Biomedical Image Segmentation, Cell Tracking and Related Applications," August 2017 (received the best graduate student poster award of CSE Deprtament, 2015; received the CSE Outstanding Research Assistant Award for 2015-2016; scientist, the Allen Institute for Cell Science, Seattle, Washington).

17. Lin Yang, in progress (received the best graduate student poster award of CSE Deprtament, 2017).

18. Yizhe Zhang, in progress (received the CSE Outstanding Teaching Assistant Award for 2015-2016).

19. Shenglong Zhu, in progress (co-advisor, with Dr. Scott Emrich).

20. Hao Zheng, in progress (co-advisor, with Dr. Chaoli Wang).

21. Zhuo Zhao, in progress.

22. Peixian Liang, in progress.

23. Suraj Mishra, in progress (co-advisor, with Dr. Xiaobo S. Hu).

24. Hongxiao Wang, in progress.

Supervision of Master's Thesis Students

1. Kevin S. Klenk, "Rectilinear Shortest Path Queries among Weighted Obstacles," December 1994.
2. Peter J. Blatner, "Approximating Orthogonal Polygons Using a Shortest Path Approach," May 1995.
3. Rebecca M. Hertenstein, "Improvement and Implementation of Algorithms for Approximating Two-Dimensional Polygonal Curves," May 1996.
4. Ovidiu Daescu, "Maintaining Visibility of a Polygon with a Moving Point of View," May 1997.
5. Yifan Li, "Algorithms for Congruent Disk Packing," December 2001.
6. Shuang Luan, "An Experimental Study and Comparison of Topological Peeling and Topological Walk," May 2002.
7. Ewa Misiolek, "Efficient Algorithms for Simplifying Flow Networks," December 2003.
8. Ying Du, "Approximation Algorithms for Multicommodity Flow and Normalized Cut Problems: Implementations and An Experimental Study," May 2004.
9. Keefe D. Roedersheimer, "A Study of the Impact of Multi-leaf Collimator Rotation," December 2005.
10. Joseph E. Lammersfeld, "Implementing Four-Dimensional Triangulations in CGAL," May 2006.

Supervision of Postdoctoral Scholars

1. Yiping Lu, January — July 2002.
2. Bo Zhou, August 2006 — August 2009 (co-supervised with Xiaobo S. Hu).
3. Chao Wang, August 2007 — August 2008.
4. Chuancai Gu, February 2016 — January 2017.
5. Xiaoming Chen, September 2016 — present.

Supervision of Undergraduate Research Projects

1. Joseph Bishay, "Implementation of a Robotic Motion Planning Algorithm," 1996 — 1997.
2. Demian M. Nave, "Implementation of Planar Point Location Algorithms," 1997.
3. Mark J. Harris, "Implementation of Randomized Planar Point Location Algorithms," 1997 — 1998.
4. Joel P. Hypolite, "Implementation of Polygon Triangulation Algorithms," 1997 — 1998.
5. Brent M. Hostrawser, "Algorithms and Graphics Software for Models of Growing Trees," 1998.

6. David A. Cieslak, "Collimator Minimum Area Algorithm," 2004.

7. Mark A. Healy, "Implementation of IMRT Algorithms," 2006 — 2007.

8. Yan Gu, International Summer Undergraduate Research Experience (iSURE), "Algorithms on Minimizing the Maximum Sensor Movement," summer 2011.

9. Yiqing Cai, International Summer Undergraduate Research Experience (iSURE), "Segmentation of Pseudomonas Aeruginosa for Cell Dynamics Analysis in Time-Lapse Images," summer 2015.

10. Chen Wei, International Summer Undergraduate Research Experience (iSURE), "Tracking of Pseudomonas Aeruginosa for Cell Dynamics Analysis in Time-Lapse Images," summer 2015.

11. James Dong, "GUI Development for Ant Tracking and Analysis," summer 2017.

12. Yejia (Charley) Zhang, "Using Convolutional Nets to Improve Semantic Segmentation," summer 2017.

Books and Monographs

1. *Proceedings of the 12th Annual International Computing and Combinatorics Conference (COCOON)*, with D.T. Lee, eds., Lecture Notes in Computer Science, Vol. 4112, Springer Verlag, 2006.

2. *Proceedings of the 4th International Frontiers of Algorithmics Workshop (FAW)*, with D.T. Lee and Shi Ying, eds., Lecture Notes in Computer Science, Vol. 6213, Springer Verlag, 2010.

Book Chapters

1. "Parallel Computational Geometry," with M. J. Atallah, *Parallel Computing*: *Paradigms and Applications*, A. Y. Zomaya (Eds.), International Thomson Computer Press, Boston, MA, 1996, pp. 162–197.

2. "Efficient Algorithms for Geometric Shortest Path Query Problems," *Handbook of Combinatorial Optimization*, Vol. 2, D.-Z. Du and P. M. Pardalos (Eds.), Kluwer Academic Publishers, Boston, MA, 1998, pp. 1–33.

3. "Deterministic Parallel Computational Geometry," with M. J. Atallah, *Handbook on Computational Geometry*, J.-R. Sack and J. Urrutia (Eds.), Elsevier Science Publishers, Amsterdam, 1999, pp. 155–200.

4. "Sphere Packing and Medical Applications," with J. Xu, Chapter 78 of the *Handbook of Approximation Algorithms and Metaheuristics*, T.F. Gonzalez (Eds.), Taylor & Francis Books (Chapman & Hall/CRC Press), New York, 2007, pp. 78.1–78.14.

5. "Algorithmics in Intensity-Modulated Radiation Therapy," with C. Wang, *Algorithms and Theory of Computation Handbook, Volume II: Special Topics and Techniques*, 2nd edition, M.J. Atallah and M. Blanton (eds.), Chapman & Hall/CRC Press, Boca Raton, FL, 2010, pp. 7-1 – 7-22.

6. "Energy Minimization for Multiprocessor Systems Executing Real-time Tasks," with Y. Zhang and X.S. Hu, Chapter 23 of the *Handbook of Energy-Aware and Green Computing*, Vol. 1, I. Ahmad and S. Ranka (eds.), Chapman & Hall/CRC Computer & Information Science Series, 2012, pp. 519–542.

7. "Efficient Algorithms for Geometric Shortest Path Query Problems," *Handbook of Combinatorial Optimization*, 2nd Edition, P.M. Pardalos, D.-Z. Du, and R.L. Graham (eds.), Springer Science+Business Media, LLC, New York, 2016, to appear.

Journal Articles (published or accepted for publication)

1. "An Optimal Parallel Algorithm for the Minimum Circle-Cover Problem," with M. J. Atallah, *Information Processing Letters*, Vol. 32, 1989, pp. 159–165.

2. "An Optimal Parallel Algorithm for the Visibility of a Simple Polygon from a Point," with M. J. Atallah and H. Wagener, *Journal of the Association for Computing Machinery*, Vol. 38, No. 3, July 1991, pp. 516–533.

3. "Parallel Rectilinear Shortest Paths with Rectangular Obstacles," with M. J. Atallah, *Computational Geometry: Theory and Applications*, Vol. 1, No. 2, 1991, pp. 79–113.

4. "On Parallel Rectilinear Obstacle-Avoiding Paths," with M. J. Atallah, *Computational Geometry: Theory and Applications*, Vol. 3, No. 6, 1993, pp. 307–313.

5. "Testing a Simple Polygon for Monotonicity Optimally in Parallel," with S. Guha, *Information Processing Letters*, Vol. 47, No. 6, October 1993, pp. 325–331.

6. "Efficient Geometric Algorithms on the EREW PRAM," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 6, No. 1, January 1995, pp. 41–47.

7. "Efficient Parallel Binary Search on Sorted Arrays, with Applications," *IEEE Transactions on Parallel and Distributed Systems*, Vol. 6, No. 4, April 1995, pp. 440–445.

8. "An Optimal Parallel Algorithm for Detecting Weak Visibility of a Simple Polygon," an **invited paper** in the Special Issues of the *International Journal of Computational Geometry and Applications* on Selected Papers from the *Eighth Annual ACM Symposium on Computational Geometry* (1992), Vol. 5, Nos. 1 & 2, 1995, pp. 93–124.

9. "Optimal Parallel Hypercube Algorithms for Polygon Problems," with M. J. Atallah, *IEEE Transactions on Computers*, Vol. 44, No. 7, July 1995, pp. 914–922.

10. "Computing the All-Pairs Longest Chains in the Plane," with M. J. Atallah, *International Journal of Computational Geometry and Applications*, Vol. 5, No. 3, 1995, pp. 257–271.

11. "An Optimal Algorithm for Shortest Paths on Weighted Interval and Circular-Arc Graphs, with Applications," with M. J. Atallah and D. T. Lee, *Algorithmica*, Vol. 14, No. 5, November 1995, pp. 429–441.

12. "Rectilinear Short Path Queries among Rectangular Obstacles," with K. S. Klenk, *Information Processing Letters*, Vol. 57, No. 6, March 1996, pp. 313–319.

13. "Optimally Computing the Shortest Weakly Visible Subedge of a Simple Polygon," *Journal of Algorithms*, Vol. 20, No. 3, May 1996, pp. 459–478.

14. "Fast and Efficient Operations on Parallel Priority Queues," with X.S. Hu, *Parallel Processing Letters*, Vol. 6, No. 4, December 1996, pp. 451–467.

15. "A Framed-Quadtree Approach for Determining Euclidean Shortest Paths in a 2-D Environment," with R. J. Szczerba and J. J. Uhran, Jr., *IEEE Transactions on Robotics and Automation*, Vol. 13, No. 5, October 1997, pp. 668–681.

16. "Maintaining Visibility of a Polygon with a Moving Point of View," with O. Daescu, *Information Processing Letters*, Vol. 65, No. 5, March 1998, pp. 269–275.

17. "Planning Shortest Paths among 2D and 3D Weighted Regions Using Framed-Subspaces," with R. J. Szczerba and J. J. Uhran, Jr., *The International Journal of Robotics Research*, Vol. 17, No. 5, May 1998, pp. 531–546.

18. "Determining Weak Visibility of a Polygon from an Edge in Parallel," *International Journal of Computational Geometry and Applications*, Vol. 8, No. 3, June 1998, pp. 277–304.

19. "Finding the Convex Hull of Discs in Parallel," with W. Chen, K. Wada, K. Kawaguchi, *International Journal of Computational Geometry and Applications*, Vol. 8, No. 3, June 1998, pp. 305–319.

20. "Solving the All-Pair Shortest Path Query Problem on Interval and Circular-Arc Graphs," with D. T. Lee, R. Sridhar, and C. N. Sekharan, *Networks*, Vol. 31, No. 4, July 1998, pp. 249–257.

21. "Skew Voronoi Diagrams," with O. Aichholzer, F. Aurenhammer, D.T. Lee, and E. Papadopoulou, *International Journal of Computational Geometry and Applications*, Vol. 9, No. 3, June 1999, pp. 235–247.

22. "Parallel Algorithms for Longest Increasing Chains in the Plane and Related Problems," with M. J. Atallah and K. S. Klenk, *Parallel Processing Letters*, Vol. 9, No. 4, 1999, pp. 511–520.

23. "Parallel Algorithms for Maximum Matching in Complements of Interval Graphs and Related Problems," with M.G. Andrews, M.J. Atallah, and D.T. Lee, *Algorithmica*, Vol. 26, No. 2, 2000, pp. 263–289.

24. "Shortest Path Queries among Weighted Obstacles in the Rectilinear Plane," with K. S. Klenk and H.-Y. T. Tu, *SIAM Journal on Computing*, Vol. 29, No. 4, 2000, pp. 1223–1246.

25. "Parallel Algorithms for Partitioning Sorted Sets and Related Problems," with W. Chen, K. Wada, and K. Kawaguchi, *Algorithmica*, Vol. 28, No. 2, 2000, pp. 217–241.

26. "Determining an Optimal Penetration among Weighted Regions in Two and Three Dimensions," with O. Daescu, X.S. Hu, X. Wu, and J. Xu, *Journal of Combinatorial Optimization* for a Special Issue on Optimization Problems in Medical Applications, Vol. 5, No. 1, 2001, pp. 59–79.

27. "Lower Bounds for Computing Geometric Spanners and Approximate Shortest Paths," with G. Das and M. Smid, *Discrete Applied Mathematics*, Vol. 110, Nos. 2–3, 2001, pp. 151–167.

28. "An Efficient Direct Approach for Computing Shortest Rectilinear Paths among Obstacles in a Two-Layer Interconnection Model," with J. Xu, *Computational Geometry: Theory and Applications*, Vol. 18, No. 3, 2001, pp. 155–166.

29. "Efficient Algorithms for Optimization-Based Image Segmentation," with T. Asano, N. Katoh, and T. Tokuyama, *International Journal of Computational Geometry and Applications*, Vol. 11, No. 2, 2001, pp. 145–166.

30. "Efficient List-Approximation Techniques for Floorplan Area Minimization," with X.S. Hu and R. Sambandam, *ACM Transactions on Design Automation of Electronic Systems*, Vol. 6, No. 3, 2001, pp. 372–400.

31. "On Connecting Red and Blue Rectilinear Polygonal Obstacles with Non-intersecting Monotone Rectilinear Paths," with M. J. Atallah, *International Journal of Computational Geometry and Applications*, Vol. 11, No. 4, 2001, pp. 373–400.

32. "On Geometric Path Query Problems," with O. Daescu and K. S. Klenk, *International Journal of Computational Geometry and Applications*, Vol. 11, No. 6, 2001, pp. 617–645.

33. "Two-Variable Linear Programming in Parallel," with J. Xu, *Computational Geometry: Theory and Applications*, Vol. 21, No. 3, March 2002, pp. 155–165.

34. "Efficient Global Register Allocation for Minimizing Energy Consumption," with Y. Zhang and X.S. Hu, *ACM SIGPLAN Notices*, Vol. 37, No. 4, April 2002, pp. 42–53. (SIGPLAN stands for the ACM Special Interest Group on Programming Languages.)

35. "Efficiently Approximating Polygonal Paths in Three and Higher Dimensions," with G. Barequet, O. Daescu, M. T. Goodrich, and J. Snoeyink, *Algorithmica*, Vol. 33, No. 2, February 2002, pp. 150–167.

36. "Cell Selection from Technology Libraries for Minimizing Power," with Y. Zhang and X.S. Hu, *Integration, The VLSI Journal*, Vol. 31, No. 2, May 2002, pp. 133–158.

37. "Optimal Polygon Cover Problems and Applications," with X.S. Hu and X. Wu, an **invited paper** in the Special Issue of the *International Journal of Computational Geometry and Applications* on Selected Papers from the *Eleventh Annual International Symposium on Algorithms and Computation* (2000), Vol. 12, No. 4, August 2002, pp. 309–338.

38. "Image Segmentation with Asteroidality/Tubularity and Smoothness Constraints," with J. Wang and X. Wu, *International Journal of Computational Geometry and Applications*, Vol. 12, No. 5, October 2002, pp. 413–428.

39. "Efficient Parallel Algorithms for Planar *st*-Graphs," with M. J. Atallah and O. Daescu, an **invited paper** in the Special Issue of *Algorithmica* on Selected Papers from the *Eighth Annual International Symposium on Algorithms and Computation* (1997), Vol. 35, No. 3, 2003, pp. 194–215.

40. "Space-Efficient Algorithms for Approximating Polygonal Curves in Two Dimensional Space," with O. Daescu, *International Journal of Computational Geometry and Applications*, Vol. 13, No. 2, April 2003, pp. 95–111.

41. "Topological Peeling and Applications," with S. Luan and J. Xu, *International Journal of Computational Geometry and Applications*, Vol. 13, No. 2, April 2003, pp. 135–172.

42. "Computing Optimal Beams in Two and Three Dimensions," with X.S. Hu and J. Xu, *Journal of Combinatorial Optimization*, Vol. 7, No. 2, June 2003, pp. 111–136.

43. "An Optimal Algorithm for Configuring Delivery Options of a One-Dimensional Intensity Modulated Beam," with S. Luan, L. Zhang, X. Wu, and C. X. Yu, *Physics in Medicine and Biology*, Vol. 48, No. 15, August 2003, pp. 2321–2338. (This is an **IoP Select** paper (IoP stands for Institute of Physics); **IoP Select** selects papers published in IoP journals based on both of their breadth and international significance.)

44. "Finding an Optimal Path without Growing the Tree," with O. Daescu, X.S. Hu, and J. Xu, an **invited paper** in the Special Issue of *Journal of Algorithms* on Selected Papers from the *Sixth Annual European Symposium on Algorithms (ESA)* (1998), Vol. 49, No. 1, October 2003, pp. 13–41.

45. "Efficient Algorithms for k-Terminal Cuts on Planar Graphs," with X. Wu, an **invited paper** in the Special Issue of *Algorithmica* on Selected Papers from the *12th Annual International Symposium on Algorithms and Computation* (2001), Vol. 38, No. 2, November 2003, pp. 299–316.

46. "A New MLC Segmentation Algorithm/Software for Step-and-Shoot IMRT Delivery," with S. Luan, C. Wang, X.S. Hu, S. A. Naqvi, C. X. Yu, and C. L. Lee, *Medical Physics*, Vol. 31, No. 4, April 2004, pp. 695–707.

47. "Efficient Approximation Algorithms for Pairwise Data Clustering and Applications," with X. Wu, J.J. Mason, and S.R. Schmid, an **invited paper** in the Special Issue of the *International Journal of Computational Geometry and Applications* on Selected Papers from the *9th International Computing and Combinatorics Conference* (2003), Vol. 14, Nos. 1-2, April 2004, pp. 85–104.

48. "Geometric Permutations of High Dimensional Spheres," with Y. Huang and J. Xu, an **invited paper** in the Special Issue of *Computational Geometry: Theory and Applications* on Selected Papers from the *10th Fall Workshop on Computational Geometry* (2000), Vol. 29, No. 1, September 2004, pp. 47–60.

49. "Geometric Algorithms for Static Leaf Sequencing Problems in Radiation Therapy," with X.S. Hu, S. Luan, C. Wang, and X. Wu, an **invited paper** in the Special Issue of the *International Journal of Computational Geometry and Applications* on Selected Papers from the *19th Annual ACM Symposium on Computational Geometry* (2003), Vol. 14, No. 5, October 2004, pp. 311–339.

50. "Efficient Algorithms and Implementations for Optimizing the Sum of Linear Fractional Functions, with Applications," with O. Daescu, Y. Dai, N. Katoh, X. Wu, and J. Xu, *Journal of Combinatorial Optimization*, Vol. 9, No. 1, February 2005, pp. 69–90.

51. "Geometric Algorithms for Density-Based Data Clustering," with M. Smid and B. Xu, *International Journal of Computational Geometry and Applications*, Vol. 15, No. 3, June 2005, pp. 239–260.

52. "Optimal Terrain Construction Problems and Applications in Intensity-Modulated Radiation Therapy," with X. S. Hu, S. Luan, X. Wu, and C. X. Yu, an **invited paper** in the Special Issue of *Algorithmica* on Selected Papers from the *10th Annual European Symposium on Algorithms (ESA)* (2002), Vol. 42, No. 3-4, June 2005, pp. 265–288.

53. "Polygonal Path Approximation with Angle Constraints," with O. Daescu, J. Hershberger, P. M. Kogge, N. Mi, and J. Snoeyink, *Computational Geometry: Theory and Applications*, Vol. 32, No. 3, November 2005, pp. 173–187.

54. "Optimal Surface Segmentation in Volumetric Images – A Graph-Theoretic Approach," with K. Li, X. Wu, and M. Sonka, *IEEE Transactions on Pattern Recognition and Machine Intelligence*, Vol. 28, No. 1, January 2006, pp. 119–134.

55. "Minimum Area Convex Packing of Two Arbitrary Convex Polygons," with K. Tang and C. Wang, *International Journal of Computational Geometry and Applications*, Vol. 16, No. 1, February 2006, pp. 41–74.

56. "Two Flow Network Simplification Algorithms," with E. Misiolek, *Information Processing Letters*, Vol. 97, No. 5, March 2006, pp. 197–202.

57. "An Improved MLC Segmentation Algorithm and Software for Step-and-Shoot IMRT Delivery without Tongue-and-Groove Error," with S. Luan, C. Wang, X.S. Hu, S.A. Naqvi, X. Wu, and C.X. Yu, *Medical Physics*, Vol. 33, No. 5, May 2006, pp. 1199–1212.

58. "Generalized Geometric Approaches for Leaf Sequencing Problems in Radiation Therapy," with X.S. Hu, S. Luan, S.A. Naqvi, C. Wang, and C.X. Yu, an **invited paper** to the Special Issue of *International Journal of Computational Geometry and Applications* on Selected Papers from the *15th Annual International Symposium on Algorithms and Computation (ISAAC)* (2004), Vol. 16, Nos. 2-3, June 2006, pp. 175–204.

59. "Construction of the Nearest Neighbor Embracing Graph of a Point Set," with M.Y. Chan, F.Y.L. Chin, and C.A. Wang, *Journal of Combinatorial Optimization*, Vol. 11, No. 4, June 2006, pp. 435–443.

60. "New Developments in Intensity Modulated Radiation Therapy," with C.X. Yu, D.M. Shepard, M.A. Earl, D. Cao, S. Luan, and C. Wang, an **invited paper** to *Technology in Cancer Research and Treatment*, Vol. 5, No. 5, October 2006, pp. 451-464.

61. "Predicting Protein-Protein Interactions from Protein Domains Using a Set Cover Approach," with C. Huang, F. Morcos, S.P. Kanaan, S. Wuchty, and J.A. Izaguirre, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Vol. 4, No. 1, January-March 2007, pp. 78–87.

62. "The Layered Net Surface Problems in Discrete Geometry and Medical Image Segmentation," with X. Wu, K. Li, and M. Sonka, an **invited paper** to the Special Issue of *International Journal of Computational Geometry and Applications* on Selected Papers from the *16th Annual International Symposium on Algorithms and Computation (ISAAC)* (2005), Vol. 17, No. 3, June 2007, pp. 261–296.

63. "Fabricatable Interconnect and Molecular QCA Circuits," with A. Chaudhary, X.S. Hu, M.T. Niemier, R. Ravichandran, and K.M. Whitton, *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, Vol. 26, No. 11, November 2007, pp. 1978–1991.

64. "Leaf-Sequencing for Intensity-Modulated Arc Therapy Using Graph Algorithms," with S. Luan, C. Wang, D. Cao, D.M. Shepard, and C.X. Yu, *Medical Physics*, Vol. 35, No. 1, January 2008, pp. 61–69.

65. "Mountain Reduction, Block Matching, and Applications in Intensity-Modulated Radiation Therapy," with X.S. Hu, S. Luan, C. Wang, and X. Wu, an **invited paper** to the Special Issue of *International Journal of Computational Geometry and Applications* on Selected Papers from the *21st Annual ACM Symposium on Computational Geometry (SCG)* (2005), Vol. 18, Nos. 1 & 2, February & April 2008, pp. 63–106.

66. "Arc-Modulated Radiation Therapy (AMRT): A Single-Arc Form of Intensity-Modulated Arc Therapy," with C. Wang, S. Luan, G. Tang, M.A. Earl, and C.X. Yu, *Physics in Medicine and Biology*, Vol. 53, No. 22, November 2008, pp. 6291–6303.

67. "Geometric Algorithms for the Constrained 1-D K-Means Clustering Problems and IMRT Applications," with M.A. Healy, C. Wang, and B. Xu, *International Journal of Foundations of Computer Science*, Vol. 20, No. 2, April 2009, pp. 361–377.

68. "Inferring Protein-protein Interactions from Multiple Protein Domain Combinations," with S.P. Kanaan, C. Huang, S. Wuchty, and J.A. Izaguirre, *Methods in Molecular Biology*, Vol. 541, March 2009, pp. 43–59.

69. "Segmentation, Reconstruction, and Analysis of Blood Thrombus Formation in 3-D 2-Photon Microscopy Images," with J. Mu, X. Liu, M.M. Kamocka, Z. Xu, M. Alber, and E.D. Rosen, *EURASIP Journal on Advances in Signal Processing*, Vol. 2010, Article ID 147216, 8 pages, 2010. doi:10.1155/2010/147216.

70. "Two-photon Intravital Imaging of Thrombus Development," with M.M. Kamocka, J. Mu, X. Liu, N. Chen, A. Zollman, B. Sturonas-Brown, K. Dunn, Z. Xu, M. Alber, and E.D. Rosen, *Journal of Biomedical Optics*, Vol. 15, No. 1., February 2010, 016020, doi:10.1117/1.3322676.

71. "A Multiscale Model of Venous Thrombus Formation with Surface-Mediated Control of Blood Coagulation Cascade," with Z. Xu, J. Lioi, J. Mu, M.M. Kamocka, X. Liu, E.D. Rosen, and M. Alber, *Biophysical Journal*, Vol. 98, No. 9, May 2010, pp. 1723–1732.

72. "Finding Many Optimal Paths without Growing Any Optimal Path Trees," with E. Misiolek, *International Journal of Computational Geometry and Applications*, Vol. 20, No. 4, August 2010, pp. 449–469.

73. "GPU-Accelerated Monte Carlo Convolution/Superposition Implementation for Dose Calculation," with B. Zhou, C.X. Yu, and X.S. Hu, *Medical Physics*, Vol. 37, No. 11, November 2010, pp. 5593–5603.

74. "New Algorithms for Online Rectangle Filling with k-Lookahead," with H. Wang and A. Chaudhary, an **invited paper** to the Special Issue of *Journal of Combinatorial Optimization* on Selected Papers from the *14th Annual International Computing and Combinatorics Conference (COCOON)* (2008), Vol. 21, No. 1, January 2011, pp. 67–82.

75. "Study of Elastic Collisions of *M. xanthus* in Swarms," with C.W. Harvey, F. Morcos, C.R. Sweet, D. Kaiser, S. Chatterjee, X. Liu, and M. Alber, *Physical Biology*, Vol. 8, No. 2., April 2011, 026016, doi:10.1088/1478-3975/8/2/026016.

76. "Coupled Path Planning, Region Optimization, and Applications in Intensity-modulated Radiation Therapy," with S. Luan and C. Wang, an **invited paper** in the Special Issue of *Algorithmica* on Selected Papers from the *16th Annual European Symposium on Algorithms (ESA)* (2008), Vol. 60, No. 1, May 2011, pp. 152–174.

77. "Correlation between Fibrin Network Structure and Mechanical Properties: An Experimental and Computational Analysis," with E. Kim, O.V. Kim, K.R. Machlus, X. Liu, T. Kupaev, J. Lioi, A.S. Wolberg, E.D. Rosen, Z. Xu, and M. Alber, *Soft Matter*, Vol. 7, No. 10, May 2011, pp. 4983–4992.

78. "Shape Rectangularization Problems in Intensity-Modulated Radiation Therapy," with N. Bansal, D. Coppersmith, X.S. Hu, S. Luan, E. Misiolek, B. Schieber, and C. Wang, *Algorithmica*, Vol. 60, No. 2, June 2011, pp. 421–450.

79. "Representing a Functional Curve by a Curve with Fewer Peaks," with C. Wang and H. Wang, *Discrete & Computational Geometry*, Vol. 46, No. 2, September 2011, pp. 334–360.

80. "Online Rectangle Filling," with H. Wang and A. Chaudhary, *Theoretical Computer Science*, Vol. 412, No. 39, September 2011, pp. 5247–5275.

81. "Processing an Offline Insertion-Query Sequence with Applications," with H. Wang, *International Journal of Foundations of Computer Science*, Vol. 22, No. 6, September 2011, pp. 1439–1456.

82. "A New Algorithm for a Field Splitting Problem in Intensity-Modulated Radiation Therapy," with K. Engel and C. Wang, *Algorithmica*, Vol. 61, No. 3, November 2011, pp. 656–673.

83. "Improved Algorithms for Path Partition and Related Problems," with H. Wang, *Operations Research Letters*, Vol. 39, No. 6, November 2011, pp. 437-440.

84. "Free-Form Surface Partition in 3-D," with E. Misiolek, *International Journal of Computational Geometry and Applications*, Vol. 21, No. 6, December 2011, pp. 609-634.

85. "Flattening Topologically Spherical Surface," with E. Misiolek, an **invited paper** to the Special Issue of *Journal of Combinatorial Optimization* on Selected Papers from the *2nd International Frontiers of Algorithmics Workshop (FAW)* (2008), Vol. 23, No. 3, April 2012, pp. 309-321.

86. "An Improved Algorithm for Reconstructing a Simple Polygon from the Visibility Angles," with H. Wang, *Computational Geometry: Theory and Applications*, Vol. 45, Nos. 5-6, July 2012, pp. 254-257.

87. "Fitting a Step Function to a Point Set with Outliers Based on Simplicial Thickness Data Structures," with H. Wang, *International Journal of Computational Geometry and Applications*, Vol. 22, No. 3, June 2012, pp. 215-241.

88. "Computing Toolpaths for 5-axis Machines," with E. Misiolek, an **invited paper** to the Special Issue of *Theoretical Computer Science* on Selected Papers from the *4th Annual International Conference on Combinatorial Optimization and Applications (COCOA)* (2010), Vol. 447, August 2012, pp. 13-25.

89. "Locating an Obnoxious Line among Planar Objects," with H. Wang, *International Journal of Computational Geometry and Applications*, Vol. 22, No. 5, October 2012, pp. 391-405.

90. "Efficient Implementation of the 3D-DDA Ray Traversal Algorithm on GPU and Its Application in Radiation Dose Calculation," with K. Xiao, B. Zhou, and X.S. Hu, *Medical Physics*, Vol. 39, No. 12, December 2012, pp. 7619-7625.

91. "Optimal Graph Search Based Segmentation of Airway Tree Double Surfaces across Bifurcations," with X. Liu, M.H. Tawhai, X. Wu, E.A. Hoffman, and M. Sonka, *IEEE Transactions on Medical Imaging*, Vol. 32, No. 3, March 2013, pp. 493–510.

92. "Approximating Points by a Piecewise Linear Function," with H. Wang, *Algorithmica*, Vol. 66, No. 3, July 2013, pp. 682–713.

93. "A Note on Searching Line Arrangements and Applications," with H. Wang, *Information Processing Letters*, Vol. 113, Nos. 14-16, July-August 2013, pp. 518–521.

94. "Computing Shortest Paths amid Convex Pseudodisks," with J. Hershberger and H. Wang, *SIAM Journal on Computing*, Vol. 42, No. 3, 2013, pp. 1158-1184.

95. "Algorithms on Minimizing the Maximum Sensor Movement for Barrier Coverage of a Linear Domain," with Y. Gu, J. Li, and H. Wang, *Discrete & Computational Geometry*, Vol. 50, No. 2, September 2013, pp. 374–408.

96. "Spatial Organization of Dendritic Cells within Tumor Draining Lymph Nodes Impacts Clinical Outcome in Breast Cancer Patients," with A.Y. Chang, N. Bhattacharya, J. Mu, F. Setiadi, G. Lee, D. Simons, S. Yadegarynia, K. Hemati, A. Kapelner, V. Carcamo-Cavazos, Z. Ming, D.N. Krag, E.J. Schwartz, and P.P. Lee, *Journal of Translational Medicine*, **11**:242, October 2013, 12 pages, doi:10.1186/1479-5876-11-242.

97. "Algorithms for Interval Structures with Applications," with E. Misiolek, an **invited paper** to the Special Issue of *Theoretical Computer Science* on Selected Papers from the *5th International Frontiers of Algorithmics Workshop and 7th International Conference on Algorithmic Aspects in Information and Management (FAW-AAIM)* (2011), Vol. 508, October 2013, pp. 41–53.

98. "The Topology Aware File Distribution Problem," with S.T. O'Neil, A, Chaudhary, and H. Wang, an **invited paper** to the Special Issue of *Journal of Combinatorial Optimization* on Selected Papers from the *17th Annual International Computing and Combinatorics Conference (COCOON)* (2011), Vol. 26, No. 4, November 2013, pp. 621–635.

99. "Accelerating Radiation Dose Calculation: A Multi-FPGA Solution," with B. Zhou, X.S. Hu, and C.X. Yu, *ACM Transactions on Embedded Computing Systems*, Vol. 13, No. 1s, November 2013, Article 33, 25 pages.

100. "GPU-optimized Volume Ray Tracing for Massive Numbers of Rays in Radiotherapy," with B. Zhou, K. Xiao, and X.S. Hu, *ACM Transactions on Embedded Computing Systems*, Vol. 13, No. 3, December 2013, Article 42, 17 pages.

101. "New Algorithms for Facility Location Problems on the Real Line," with H. Wang, *Algorithmica*, Vol. 69, No. 2, June 2014, pp. 370–383.

102. "Outlier Respecting Points Approximation," with H. Wang, *Algorithmica*, Vol. 69, No. 2, June 2014, pp. 410–430.

103. "Notch-Dependent Repression of miR-155 in the Bone Marrow Niche Regulates Hematopoiesis in an NF-kB-Dependent Manner," with L. Wang, H. Zhang, S. Rodriguez, L. Cao, J. Parish, C. Mumaw, A. Zollman, M.M. Kamoka, J. Mu, E.F. Srour, B.R. Chitteti, H. HogenEsch, X. Tu, T.M. Bellido, H.S. Boswell, T. Manshouri, S. Verstovsek, M.C. Yoder, R. Kapur, A.A. Cardoso, and N. Carlesso, *Cell Stem Cell*, Vol. 15, No. 1, July 2014, pp. 51–65.

104. "Packing Cubes into a Cube is NP-complete in the Strong Sense," with Y. Lu and J. Cha, an **invited paper** to the Special Issue of *Journal of Combinatorial Optimization* on Selected Papers from the *19th Annual International Computing and Combinatorics Conference (COCOON)* (2013), Vol. 29, No. 1, January 2015, pp. 197–215.

105. "Visibility and Ray Shooting Queries in Polygonal Domains," with H. Wang, *Computational Geometry: Theory and Applications*, Vol. 48, No. 2, February 2015, pp. 31–41.

106. "Optimization Approaches to Volumetric Modulated Arc Therapy Planning," with J. Unkelbach, T. Bortfeld, D.L. Craft, M. Alber, M. Bangert, R. Bokrantz, R. Li, L. Xing, C. Men, S. Nill, D. Papp, E. Romeijn, and E. Salari, *Medical Physics*, Vol. 42, No. 3, March 2015, pp. 1367–1377, http://dx.doi.org/10.1118/1.4908224 .

107. "A Two-Layer Structure Prediction Framework for Microscopy Cell Detection," with Y. Xu, W. Wu, E. Chang, J. Mu, P.P. Lee, K.R.M. Blenman, and Z. Tu, *Computerized Medical Imaging and Graphics*, Vol. 41, April 2015, pp. 29–36.

108. "Computing Shortest Paths among Curved Obstacles in the Plane," with H. Wang, *ACM Transactions on Algorithms (TALG)*, Vol. 11, No. 4, Article No. 26, April 2015.

109. "Computing Maximum Non-crossing Matching in Convex Bipartite Graphs," with X. Liu and H. Wang, *Discrete Applied Mathematics*, Vol. 187, May 2015, pp. 50–60.

110. "Optimal Point Movement for Covering Circular Regions," with X. Tan, H. Wang, and G. Wu, *Algorithmica*, Vol. 72, No. 2, June 2015, pp. 379–399.

111. "Weak Visibility Queries of Line Segments in Simple Polygons," with H. Wang, *Computational Geometry: Theory and Applications*, Vol. 48, No. 6, August 2015, pp. 443–452.

112. "Efficient Algorithms for the One-Dimensional k-Center Problem," with J. Li and H. Wang, *Theoretical Computer Science*, Vol. 592, August 2015, pp. 135–142.

113. "A Circular Matrix-merging Algorithm with Application in Volumetric Intensity-Modulated Arc Therapy," with D.L. Craft and L. Yang, *Theoretical Computer Science*, Vol. 607, Part 2, November 2015, pp. 126–134.

114. "A New Algorithm for Computing Visibility Graphs of Polygonal Obstacles in the Plane," with H. Wang, *Journal of Computational Geometry*, Vol. 6, No. 1, 2015, pp. 316–345.

115. "Shell: A Spatial Decomposition Data Structure for Ray Traversal on GPU," with K. Xiao, X.S. Hu, and B. Zhou, *IEEE Transactions on Computers*, Vol. 65, No. 1, January 2016, pp. 230–243.

116. "An Integrative Platform for Three-dimensional Quantitative Analysis of Spatially Heterogeneous Metastasis Landscapes," with I.H. Guldner, L. Yang, K.R. Cowdrick, Q. Wang, W.V.A. Barrios, V.R. Zellmer, Y. Zhang, M. Host, F. Liu, and S. Zhang, *Scientific Reports*, **6**, Article number: 24201, doi:10.1038/srep24201, April 12, 2016.

117. "Matroid and Knapsack Center Problems," with J. Li, H. Liang, and H. Wang, *Algorithmica*, Vol. 75, No. 1, May 2016, pp. 27–52.

118. "Iris Recognition Based on Human-Interpretable Features," with J. Chen, F. Shen, and P.J. Flynn, *IEEE Transactions on Information Forensics & Security*, Vol. 11, No. 7, July 2016, pp. 1476–1485.

119. "Kinetic Transition Networks for the Thomson Problem and Smale's Seventh Problem," with D. Mehta, J. Chen, H. Kusumaatmaja, and D.J. Wales, *Physical Review Letters*, Vol. 117, No. 2, Article number: 028301, July 6, 2016, doi: 10.1103/PhysRevLett.117.028301, selected as PRL Editors' Suggestion. http://journals.aps.org/prl/abstract/10.1103/PhysRevLett.117.028301

120. "A Seeding-Searching-Ensemble Method for Gland Segmentation in H&E-Stained Images," with Y. Zhang, L. Yang, J.D. MacKenzie, and R. Ramachandran, *BMC Medical Informatics and Decision Making*, the special issue for selected papers in the BIBM'2015 Conference, Vol. 16(Suppl. 2):80, July 21, 2016, pp. 123–134, DOI: 10.1186/s12911-016-0312-5 .

121. "A Hybrid Approach for Segmentation and Tracking of *Myxococcus xanthus* Swarms," with J. Chen and M. Alber, *IEEE Transactions on Medical Imaging*, Vol. 35, No. 9, September 2016, pp. 2074–2084.

122. "Two-Point L_1 Shortest Path Queries in the Plane," with R. Inkulu and H. Wang, *Journal of Computational Geometry*, Vol. 7, No. 1, 2016, pp. 473-519. DOI: http://dx.doi.org/10.20382/jocg.v7i1a20.

123. "Computing the Visibility Polygon of an Island in a Polygonal Domain," with H. Wang, *Algorithmica*, Vol. 77, No. 1, January 2017, pp. 40-64.

124. "Compression-induced Structural and Mechanical Changes of Fibrin-collagen Composites," with O.V. Kim, R.I. Litvinov, J. Chen, J.W. Weisel, and M. Alber, *Matrix Biology*, Vol. 60-61, July 2017, pp. 141-156.

125. "On Clustering Induced Voronoi Diagrams," with Z. Huang, Y, Liu, and J. Xu, *SIAM Journal on Computing*, Vol. 46, No. 6, November 2017, pp. 1679-1711.

126. "3D Visualization and a Deep Learning Model Reveal Complex Fungal Parasite Networks in Behaviorally Manipulated Ants," with M. Fredericksen, Y. Zhang, M. Hazen, R. Loreto, C. Mangold, and D. Hughes, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, Vol. 114, No. 47, November 21, 2017, pp. 12590-12595,

    doi:10.1073/pnas.1711673114 .

127. "Single Molecule Sequencing-guided Scaffolding and Correction of Draft Assemblies," with S. Zhu and S.J. Emrich, accepted to *BMC Genomics* for selected papers of ICCABS'2016.

128. "Online Scheduling of Moldable Parallel Tasks," with D. Ye and G. Zhang, accepted to *Journal of Scheduling*.

Miscellaneous Journal Publications (survey articles and position statements)

1. "Strategic Directions in Computational Geometry," with R. Tamassia (editor and working group chair), P.K. Agarwal, N. Amato, D. Dobkin, R.L.S. Drysdale, S. Fortune, M.T. Goodrich, J. Hershberger, J. O'Rourke, F.P. Preparata, J.-R. Sack, S. Suri, I.G. Tollis, J.S. Vitter, and S. Whitesides, *ACM Computing Surveys*, Vol. 28, No. 4, December 1996, pp. 591–606.

2. "Developing Algorithms and Software for Geometric Path Planning Problems," *ACM Computing Surveys*, Vol. 28, No. 4es, December 1996, Article 18,

    http://www.acm.org/pubs/citations/journals/surveys/1996-28-4es/a18-chen/

3. "Sphere Packing Problem," *Encyclopedia of Algorithms*, Springer US, Part 18, 2008, pp. 871-874.

4. "Guest Editors' Foreword," with D.T. Lee, *Algorithmica*, Vol. 53, No. 2, 2009, pp. 155–156.

5. "Guest Editors' Foreword," with D.T. Lee, *International Journal of Computational Geometry and Applications*, Vol. 19, No. 3, 2009, pp. 212–213.

Conference Papers

1. "An Optimal Parallel Algorithm for the Visibility of a Simple Polygon from a Point (Preliminary Version)," with M. J. Atallah, *Proc. of the Fifth Annual ACM Symposium on Computational Geometry (SCG)*, Saarbrucken, Germany, June 1989, pp. 114–123.

2. "Parallel Rectilinear Shortest Paths with Rectangular Obstacles," with M. J. Atallah, *Proc. of the Second Annual ACM Symposium on Parallel Algorithms and Architectures (SPAA)*, Springer Verlag, Crete, Greece, July 1990, pp. 270–279.

3. "Efficient Geometric Algorithms on the EREW PRAM," *Proc. of the Twenty-Eighth Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, October 1990, pp. 818–827.

4. "An Optimal Parallel Algorithm for Detecting Weak Visibility of a Simple Polygon (Extended Abstract)," *Proc. of the Eighth Annual ACM Symposium on Computational Geometry (SCG)*, Berlin, Germany, June 1992, pp. 63–72.

5. "Testing a Simple Polygon for Monotonicity Optimally in Parallel," with S. Guha, *Proc. of the Seventh IEEE International Parallel Processing Symposium (IPPS)*, Newport Beach, California, April 1993, pp. 326–330.

6. "On Parallel Rectilinear Obstacle-Avoiding Paths," with M. J. Atallah, *Proc. of the Fifth Canadian Conference on Computational Geometry (CCCG)*, Waterloo, Canada, August 1993, pp. 210–215.

7. "Computing the All-Pairs Longest Chains in the Plane," with M. J. Atallah, an **invited paper** in *Lecture Notes in Computer Science*, Vol. 709, Springer Verlag, *Proc. of the Third International Workshop on Algorithms and Data Structures (WADS)*, Montreal, Canada, August 1993, pp. 1–13.

8. "An Optimal Algorithm for Shortest Paths on Weighted Interval and Circular-Arc Graphs, with Applications," with M. J. Atallah and D. T. Lee, *Lecture Notes in Computer Science*, Vol. 726, Springer Verlag, *Proc. of the First Annual European Symposium on Algorithms (ESA)*, Bad Honnef, Germany, September 1993, pp. 13–24.

9. "Optimal Parallel Hypercube Algorithms for Polygon Problems," with M. J. Atallah, *Proc. of the Fifth IEEE Symposium on Parallel and Distributed Processing (SPDP)*, Dallas, Texas, December 1993, pp. 208–215.

10. "Optimally Computing the Shortest Weakly Visible Subedge of a Simple Polygon," *Lecture Notes in Computer Science*, Vol. 762, Springer Verlag, *Proc. of the Fourth Annual International Symposium on Algorithms and Computation (ISAAC)*, Hong Kong, December 1993, pp. 323–332.

11. "Solving the All-Pair Shortest Path Problem on Interval and Circular-Arc Graphs," with D. T. Lee, *Proc. of the Eighth IEEE International Parallel Processing Symposium (IPPS)*, Cancún, Mexico, April 1994, pp. 224–228.

12. "Fast and Efficient Operations on Parallel Priority Queues," with X.S. Hu, *Lecture Notes in Computer Science*, Vol. 834, Springer Verlag, *Proc. of the Fifth Annual International Symposium on Algorithms and Computation (ISAAC)*, Beijing, China, August 1994, pp. 279–287.

13. "Determining Weak External Visibility of Polygons in Parallel," *Proc. of the Sixth Canadian Conference on Computational Geometry (CCCG)*, Saskatoon, Canada, August 1994, pp. 375–380.

14. "Planning Conditional Shortest Paths in an Unknown Environment," with R. J. Szczerba and J. J. Uhran, Jr., *Proc. of the Thirty-Second Annual Allerton Conference on Communication, Control, and Computing*, Monticello, Illinois, September 1994, pp. 671–672.

15. "Optimal Hypercube Algorithms for Triangulating Classes of Polygons and Related Problems," *Proc. of the Seventh International Conference on Parallel and Distributed Computing Systems (PDCS)*, Las Vegas, Nevada, October 1994, pp. 174–179.

16. "On the All-Pairs Euclidean Short Path Problem," *Proc. of the Sixth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, San Francisco, January 1995, pp. 292–301.

17. "Parallel Algorithms for Maximum Matching in Interval Graphs," with M.G. Andrews, M.J. Atallah, and D.T. Lee, an **extended paper** in the *Proc. of the Ninth IEEE International Parallel Processing Symposium (IPPS)*, Santa Barbara, California, April 1995, pp. 84–92.

18. "Shortest Path Queries among Weighted Obstacles in the Rectilinear Plane," with K. S. Klenk and H.-Y. T. Tu, *Proc. of the Eleventh Annual ACM Symposium on Computational Geometry (SCG)*, Vancouver, Canada, June 1995, pp. 370–379.

19. "Optimal Guarding of Polygonal Chains and Polygons," with V. Estivill-Castro and J. Urrutia, *Proc. of the Seventh Canadian Conference on Computational Geometry (CCCG)*, Quebec City, Canada, August 1995, pp. 133–138.

20. "Rectilinear Short Path Queries among Rectangular Obstacles," with K. S. Klenk, *Proc. of the Seventh Canadian Conference on Computational Geometry (CCCG)*, Quebec City, Canada, August 1995, pp. 169–174.

21. "Planning Conditional Shortest Paths through an Unknown Environment: A Framed-Quadtree Approach," with R. J. Szczerba and J. J. Uhran, Jr., *Proc. of the 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vol. 3, Pittsburgh, August 1995, pp. 33–38.

22. "Determining Conditional Shortest Paths in an Unknown, Three-Dimensional Environment Using Framed-Octrees," with R. J. Szczerba and J. J. Uhran, Jr., *Proc. of the 1995 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Vancouver, Canada, October 1995, pp. 4101–4106.

23. "Weighted Selection on Coarse-Grain Hypercubes," with A. K. Gupta, *Proc. of the Seventh IEEE Symposium on Parallel and Distributed Processing (SPDP)*, San Antonio, Texas, October 1995, pp. 544–552.

24. "Polynomial-Time Solutions to Image Segmentation," with T. Asano, N. Katoh, and T. Tokuyama, *Proc. of the Seventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, Atlanta, Georgia, January 1996, pp. 104–113.

25. "Efficient Algorithms for Orthogonal Polygon Approximation," with X.S. Hu and P. J. Blatner, *Proc. of the 1996 IEEE International Symposium on Circuits and Systems (ISCAS)*, Atlanta, Georgia, May 1996, pp. 779–782.

26. "Efficient Approximation Algorithms for Floorplan Area Minimization," with X.S. Hu, *Proc. of the 33rd ACM/IEEE Design Automation Conference (DAC)*, Las Vegas, Nevada, June 1996, pp. 483–486.

27. "An Efficient Approach for Determining Shortest Paths among 2-D and 3-D Weighted Regions," with R. J. Szczerba and J. J. Uhran, Jr., *Proc. of the IEEE-SMC Symposium on Robotics and Cybernetics* (this is part of the *IEEE-SMC IMACS Multiconference on Computational Engineering in Systems Applications (CESA)*), Lille, France, July 1996, pp. 198–203.

28. "Lower Bounds for Computing Geometric Spanners and Approximate Shortest Paths," with G. Das and M. Smid, *Proc. of the Eighth Canadian Conference on Computational Geometry (CCCG)*, Ottawa, Canada, August 1996, pp. 155–160.

29. "Maintaining Visibility of a Polygon with a Moving Point of View," with O. Daescu, *Proc. of the Eighth Canadian Conference on Computational Geometry (CCCG)*, Ottawa, Canada, August 1996, pp. 240–245.

30. "Parallel Algorithms for Partitioning Sorted Sets and Related Problems," with W. Chen, K. Wada, and K. Kawaguchi, *Lecture Notes in Computer Science*, Vol. 1136, Springer Verlag, *Proc. of the Fourth Annual European Symposium on Algorithms (ESA)*, Barcelona, Spain, September 1996, pp. 234–245.

31. "Planar Spanners and Approximate Shortest Path Queries among Obstacles in the Plane," with S. Arikati, L. P. Chew, G. Das, M. Smid, and C. D. Zaroliagis, *Lecture Notes in Computer Science*, Vol. 1136, Springer Verlag, *Proc. of the Fourth Annual European Symposium on Algorithms (ESA)*, Barcelona, Spain, September 1996, pp. 514–528.

32. "Pursuing a Petaflop: Point Designs for 100 TF Computers Using PIM Technologies," with P. M. Kogge, S. C. Bass, J. B. Brockman, and E. Sha, *Proc. of the Sixth IEEE Symposium on the Frontiers of Massively Parallel Computation (Frontiers)*, Annapolis, Maryland, October 1996, pp. 88–97.

33. "Applications of a Numbering Scheme for Polygonal Obstacles in the Plane," with M. J. Atallah, an **invited paper** in *Lecture Notes in Computer Science*, Vol. 1178, Springer Verlag, *Proc. of the Seventh Annual International Symposium on Algorithms and Computation (ISAAC)*, Osaka, Japan, December 1996, pp. 1–24.

34. "Determining Optimal Paths, Based on Time and Distance Metric Combinations, in a Dynamic 2-D Environment," with R. J. Szczerba and J. J. Uhran, Jr., *Proc. of the 1997 International Federation of Automatic Control (IFAC) Conference on Control of Industrial Systems*, Belfort, France, May 1997, Vol. 3, pp. 685-691.

35. "Voronoi Diagrams for Direction-Sensitive Distances," with O. Aichholzer, F. Aurenhammer, D.T. Lee, A. Mukhopadhyay, and E. Papadopoulou, *Proc. of the Thirteenth Annual ACM Symposium on Computational Geometry (SCG)*, Nice, France, June 1997, pp. 418–420.

36. "On Geometric Path Query Problems," with O. Daescu and K. S. Klenk, *Lecture Notes in Computer Science*, Vol. 1272, Springer Verlag, *Proc. of the Fifth International Workshop on Algorithms and Data Structures (WADS)*, Halifax, Nova Scotia, Canada, August 1997, pp. 248–257.

37. "Parallel Algorithms for Longest Increasing Chains in the Plane and Related Problems," with M. J. Atallah and K. S. Klenk, *Proc. of the Ninth Canadian Conference on Computational Geometry (CCCG)*, Kingston, Canada, August 1997, pp. 59–64.

38. "Scheduling for Power Reduction in a Real-Time System," with J. J. Brown, G. W. Greenwood, X.S. Hu, and R. W. Taylor, *Proc. of the 1997 ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED)*, Monterey, California, August 1997, pp. 84–87.

39. "Minimum Turns/Shortest Path Problems: A Framed-Subspace Approach," with R. J. Szczerba and K. S. Klenk, *Proc. of the 1997 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Orlando, Florida, October 1997, pp. 398–403.

40. "A New Approach for Determining Optimal Paths in a Dynamic, 2-D Environment Using Framed-Octree," with J. Xu and R. J. Szczerba, *Proc. of the 1997 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Orlando, Florida, October 1997, pp. 3744–3749.

41. "Efficient Parallel Algorithms for Planar *st*-Graphs," with M. J. Atallah and O. Daescu, *Lecture Notes in Computer Science*, Vol. 1350, Springer Verlag, *Proc. of the Eighth Annual International Symposium on Algorithms and Computation (ISAAC)*, Singapore, December 1997, pp. 223–232.

42. "Efficiently Approximating Polygonal Paths in Three and Higher Dimensions," with G. Barequet, O. Daescu, M. T. Goodrich, and J. Snoeyink, *Proc. of the Fourteenth Annual ACM Symposium on Computational Geometry (SCG)*, Minneapolis, Minnesota, June 1998, pp. 317–326.

43. "Parallel Content-Based Image Analysis on PIM Processors," with O. Daescu and P. M. Kogge, *Proc. of the IEEE Workshop on Content-Based Access of Image and Video Libraries*, Santa Barbara, California, June 1998, pp. 73–77.

44. "Two-Variable Linear Programming in Parallel," with J. Xu, *Lecture Notes in Computer Science*, Vol. 1432, Springer Verlag, *Proc. of the Sixth Scandinavian Workshop on Algorithm Theory (SWAT)*, Stockholm, Sweden, July 1998, pp. 169–180.

45. "An Efficient Direct Approach for Computing Shortest Rectilinear Paths among Obstacles in a Two-Layer Interconnection Model," with J. Xu, *Proc. of the 10th Canadian Conference on Computational Geometry (CCCG)*, Montreal, Canada, August 1998, pp. 72–73.

46. "Space-Efficient Algorithms for Approximating Polygonal Curves in Two Dimensional Space," with O. Daescu, *Lecture Notes in Computer Science*, Vol. 1449, Springer Verlag, *Proc. of the Fourth Annual International Computing and Combinatorics Conference (COCOON)*, Taipei, Taiwan, August 1998, pp. 45–54.

47. "Parallel Geometric Algorithms in Coarse-Grain Network Models," with M.J. Atallah, *Lecture Notes in Computer Science*, Vol. 1449, Springer Verlag, *Proc. of the Fourth Annual International Computing and Combinatorics Conference (COCOON)*, Taipei, Taiwan, August 1998, pp. 55–64.

48. "Finding an Optimal Path without Growing the Tree," with O. Daescu, X.S. Hu, and J. Xu, *Lecture Notes in Computer Science*, Vol. 1461, Springer Verlag, *Proc. of the Sixth Annual European Symposium on Algorithms (ESA)*, Venice, Italy, August 1998, pp. 356–367.

49. "Low Energy Register Allocation Beyond Basic Blocks," with Y. Zhang and X.S. Hu, *Proc. of the 1999 IEEE International Symposium on Circuits and Systems (ISCAS)*, Orlando, Florida, May 1999, Vol. 1, pp. 290–293.

50. "Determining an Optimal Penetration among Weighted Regions in Two and Three Dimensions," with O. Daescu, X.S. Hu, X. Wu, and J. Xu, *Proc. of the Fifteenth Annual ACM Symposium on Computational Geometry (SCG)*, Miami Beach, Florida, June 1999, pp. 322-331.

51. "Global Register Allocation for Minimizing Energy Consumption," with Y. Zhang and X.S. Hu, *Proc. of the 1999 ACM/IEEE International Symposium on Lower Power Electronics and Design (ISLPED)*, San Diego, California, August 1999, pp. 100–102.

52. "Optimizing the Sum of Linear Fractional Functions and Applications," with O. Daescu, Y. Dai, N. Katoh, X. Wu, and J. Xu, *Proc. of the Eleventh Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, San Francisco, California, January 2000, pp. 707–716.

53. "Shortest Path Queries in Planar Graphs," with J. Xu, *Proc. of the Thirty-Second Annual ACM Symposium on Theory of Computing (STOC)*, Portland, Oregon, May 2000, pp. 469–478.

54. "Determining Optimal Paths in a Weighted and Dynamic 2D Environment Using Framed-Octree," with B. Xu and R. J. Szczerba, *Proc. of the Fourth Annual ACM International Conference on Autonomous Agents (Agents)*, Barcelona, Spain, June 2000, pp. 29–30.

55. "A New Algorithm and Simulation for Computing Optimal Paths in a Dynamic and Weighted 2-D Environment," with B. Xu and R. J. Szczerba, *Proc. of the 2000 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, Nashville, Tennessee, October 2000, pp. 313–318.

56. "Optimal Beam Penetrations in Two and Three Dimensions," with X.S. Hu and J. Xu, *Lecture Notes in Computer Science*, Vol. 1969, Springer Verlag, *Proc. of the Eleventh Annual International Symposium on Algorithms and Computation (ISAAC)*, Taipei, Taiwan, December 2000, pp. 491–502.

57. "Optimal Polygon Cover Problems and Applications," with X.S. Hu and X. Wu, *Lecture Notes in Computer Science*, Vol. 1969, Springer Verlag, *Proc. of the Eleventh Annual International Symposium on Algorithms and Computation (ISAAC)*, Taipei, Taiwan, December 2000, pp. 564–576.

58. "Geometric Permutations of High Dimensional Spheres," with Y. Huang and J. Xu, *Proc. of the Twelfth Annual SIAM-ACM Symposium on Discrete Algorithms (SODA)*, Washington, D.C., January 2001, pp. 244–245.

59. "Polygonal Path Approximation with Angle Constraints," with O. Daescu, J. Hershberger, P. M. Kogge, and J. Snoeyink, *Proc. of the Twelfth Annual SIAM-ACM Symposium on Discrete Algorithms (SODA)*, Washington, D.C., January 2001, pp. 342–343.

60. "Cell Selection from Technology Libraries for Minimizing Power," with Y. Zhang and X.S. Hu, *Proc. of the ACM/IEEE Asia and South Pacific Design Automation Conference (ASP-DAC)*, Pacifico Yokohama, Yokohama, Japan, January 30 – February 2, 2001, pp. 609–614.

61. "Data Clustering Based Segmentation Algorithms for Bone CT Images," with X. Wu, *Proc. of the Ninth Annual Symposium of Computational Methods in Orthopaedic Biomechanics (PRE-ORS)*, University of California, San Francisco, February 2001, p. 19.

62. "A New Automated 3D Finite Element Mesh Generation Method from Medical Images," with S. Yi and J. Mason, *Proc. of the Ninth Annual Symposium of Computational Methods in Orthopaedic Biomechanics (PRE-ORS)*, University of California, San Francisco, February 2001, p. 20.

63. "A New Graph-Based Skeletonization Method," with S. Yi and J. Mason, *Proc. of the Ninth Annual Symposium of Computational Methods in Orthopaedic Biomechanics (PRE-ORS)*, University of California, San Francisco, February 2001, p. 25.

64. "Algorithms for Congruent Sphere Packing and Applications," with X.S. Hu, Y. Huang, Y. Li, and J. Xu, *Proc. of the Seventeenth Annual ACM Symposium on Computational Geometry (SCG)*, Medford, Massachusetts, June 2001, pp. 212–221.

65. "A New Leaf-Sequencing Algorithm for Intensity-Modulated Arc Therapy," with X. Wu, X.S. Hu, S. Luan, L. Zhang, and C. X. Yu, the *Forty-third Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Salt Lake City, Utah, July 2001. *Medical Physics*, Vol. 28, No. 6, June 2001, p. 1252.

66. "Maximum Red/Blue Interval Matching with Applications," with X.S. Hu and X. Wu, *Lecture Notes in Computer Science*, Vol. 2108, Springer Verlag, *Proc. of the Seventh Annual International Computing and Combinatorics Conference (COCOON)*, Guilin, China, August 2001, pp. 150–158.

67. "Efficient Algorithms for k-Terminal Cuts on Planar Graphs," with X. Wu, *Lecture Notes in Computer Science*, Vol. 2223, Springer Verlag, *Proc. of the Twelfth Annual International Symposium on Algorithms and Computation (ISAAC)*, Christchurch, New Zealand, December 2001, pp. 332–344.

68. "Topological Peeling and Implementation," with S. Luan and J. Xu, *Lecture Notes in Computer Science*, Vol. 2223, Springer Verlag, *Proc. of the Twelfth Annual International Symposium on Algorithms and Computation (ISAAC)*, Christchurch, New Zealand, December 2001, pp. 454–466.

69. "Image Segmentation with Monotonicity and Smoothness Constraints," with J. Wang and X. Wu, *Lecture Notes in Computer Science*, Vol. 2223, Springer Verlag, *Proc. of the 12th Annual International Symposium on Algorithms and Computation (ISAAC)*, Christchurch, New Zealand, December 2001, pp. 467–479.

70. "Task Scheduling and Voltage Selection for Energy Minimization," with Y. Zhang and X.S. Hu, *Proc. of the 39th ACM/IEEE Design Automation Conference (DAC)*, New Orleans, June 2002, pp. 183–188.

71. "Optimal Net Surface Problems with Applications," with X. Wu, *Lecture Notes in Computer Science*, Vol. 2380, Springer Verlag, *Proc. of the 29th International Colloquium on Automata, Languages and Programming (ICALP)*, Málaga, Spain, July 2002, pp. 1029–1042.

72. "An Experimental Study and Comparison of Topological Peeling and Topological Walk," with S. Luan and J. Xu, *Lecture Notes in Computer Science*, Vol. 2387, Springer Verlag, *Proc. of the Eighth Annual International Computing and Combinatorics Conference (COCOON)*, Singapore, August 2002, pp. 456–466.

73. "Optimal Terrain Construction Problems and Applications in Intensity-Modulated Radiation Therapy," with X. S. Hu, S. Luan, X. Wu, and C. X. Yu, *Lecture Notes in Computer Science*, Vol. 2461, Springer Verlag, *Proc. of the 10th Annual European Symposium on Algorithms (ESA)*, Rome, Italy, September 2002, pp. 270–283.

74. "Geometric Algorithms for Density-Based Data Clustering," with M. Smid and B. Xu, *Lecture Notes in Computer Science*, Vol. 2461, Springer Verlag, *Proc. of the 10th Annual European Symposium on Algorithms (ESA)*, Rome, Italy, September 2002, pp. 284–296.

75. "Energy Minimization of Real-Time Tasks on Variable Voltage Processors with Transition Energy Overhead," with Y. Zhang and X.S. Hu, *Proc. of the ACM/IEEE Asia and South Pacific Design Automation Conference (ASP-DAC)*, Kitakyushu, Japan, January 2003, pp. 65–70.

76. "Geometric Algorithms for Static Leaf Sequencing Problems in Radiation Therapy," with X.S. Hu, S. Luan, C. Wang, and X. Wu, *Proc. of the 19th Annual ACM Symposium on Computational Geometry (SCG)*, San Diego, June 2003, pp. 88–97.

77. "Geometric Algorithms for Agglomerative Hierarchical Clustering," with B. Xu, *Lecture Notes in Computer Science*, Vol. 2697, Springer Verlag, *Proc. of the Ninth International Computing and Combinatorics Conference (COCOON)*, Big Sky, Montana, July 2003, pp. 30–39.

78. "Pairwise Data Clustering and Applications," with X. Wu, J.J. Mason, and S.R. Schmid, *Lecture Notes in Computer Science*, Vol. 2697, Springer Verlag, *Proc. of the Ninth Annual International Computing and Combinatorics Conference (COCOON)*, Big Sky, Montana, July 2003, pp. 455–466.

79. "A New Leaf Sequencing Algorithm/Software for Step and Shoot IMRT Delivery," with S. Luan, C. Wang, S.A. Naqvi, X.S. Hu, C.L. Lee, and C.X. Yu, the *Forty-fifth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, San Diego, CA, August 2003. *Medical Physics*, Vol. 30, No. 6, June 2003, p. 1404.

80. "Efficient Optimal Surface Detection: Theory, Implementation and Experimental Validation," with K. Li, X. Wu, and M. Sonka, *Proc. of SPIE International Symposium on Medical Imaging: Imaging Processing*, Vol. 5370, San Diego, CA, February 2004, pp. 620–627.

81. "Quantum-Dot Cellular Automata (QCA) Circuit Partitioning: Problem Modeling and Solutions," with D.A. Antonelli, T.J. Dysart, X.S. Hu, A.B. Khang, P.M. Kogge, R.C. Murphy, and M.T. Niemier, *Proc. of 41st ACM/IEEE Design Automation Conference (DAC)*, San Diego, CA, June 2004, pp. 363–368.

82. "Globally Optimal Segmentation of Interacting Surfaces with Geometric Constraints," with K. Li, X. Wu, and M. Sonka, *Proc. of IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, Vol. I, Washington, D.C., June 27 – July 2, 2004, pp. 394–399.

83. "Construction of the Nearest Neighbor Embracing Graph of a Point Set," with M.Y. Chan, F.Y.L. Chin, and C.A. Wang, *Lecture Notes in Computer Science*, Vol. 3111, Springer Verlag, *Proc. of 9th Scandinavian Workshop on Algorithm Theory (SWAT)*, Humlebæk, Denmark, July 2004, pp. 150–160.

84. "A New MLC Segmentation Algorithm for Step-and-Shoot IMRT without Tongue-and-Groove Leakage," with S. Luan, C. Wang, X.S. Hu, S.A. Naqvi, and C.X. Yu, the *Forty-sixth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Pittsburgh, PA, July 2004. *Medical Physics*, Vol. 31, No. 6, June 2004, p. 1843.

85. "A Study of the Impact of MLC Constraints on the Number of Segments in Step-and-Shoot IMRT Delivery," with S. Luan, C. Wang, X.S. Hu, and C.X. Yu, the *Forty-sixth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Pittsburgh, PA, July 2004. *Medical Physics*, Vol. 31, No. 6, June 2004, p. 1843.

86. "Approximation Algorithms for Multicommodity Flow and Normalized Cut Problems: An Implementation and Experimental Study," with Y. Du and X. Wu, *Lecture Notes in Computer Science*, Vol. 3106, Springer Verlag, *Proc. of 10th Annual International Computing and Combinatorics Conference (COCOON)*, Jeju Island, Korea, August 2004, pp. 112–121.

87. "Efficient Algorithms for Approximating a Multi-Dimensional Voxel Terrain by a Unimodal Terrain," with J. Chun, N. Katoh, and T. Tokuyama, *Lecture Notes in Computer Science*, Vol. 3106, Springer Verlag, *Proc. of 10th Annual International Computing and Combinatorics Conference (COCOON)*, Jeju Island, Korea, August 2004, pp. 238–248.

88. "Generalized Geometric Approaches for Leaf Sequencing Problems in Radiation Therapy," with X.S. Hu, S. Luan, C. Wang, S.A. Naqvi, and C.X. Yu, *Lecture Notes in Computer Science*, Vol. 3341, Springer Verlag, *Proc. of 15th Annual International Symposium on Algorithms and Computation (ISAAC)*, Hong Kong, December 2004, pp. 271–281.

89. "Mountain Reduction, Block Matching, and Applications in Intensity-Modulated Radiation Therapy," with X.S. Hu, S. Luan, C. Wang, and X. Wu, *Proc. of the 21st Annual ACM Symposium on Computational Geometry (SCG)*, Pisa, Italy, June 2005, pp. 35–44.

90. "Simultaneous Segmentation of Multiple Closed Surfaces Using Optimal Graph Searching," with K. Li, S. Millington, X. Wu, and M. Sonka, *Lecture Notes in Computer Science*, Vol. 3565, Springer Verlag, *Proc. of the 19th International Conference on Information Processing in Medical Imaging (IPMI)*, Glenwood Springs, Colorado, July 2005, pp. 406–417.

91. "A Generalized MLC Segmentation Algorithm for Step-and-Shoot IMRT with No Tongue-and-Groove Error," with C. Wang, S. Luan, X.S. Hu, and C. Yu, the *Forty-seven Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Seattle, Washington, July 2005. *Medical Physics*, Vol. 32, No. 6, June 2005, p. 1972.

92. "The Impact of Multileaf Collimator Rotation in IMRT Planning," with K. Roedersheimer, S. Luan, and L. Xing, the *Forty-seven Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Seattle, Washington, July 2005. *Medical Physics*, Vol. 32, No. 6, June 2005, pp. 1973–1974.

93. "Efficient Algorithms for Simplifying Flow Networks," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 3595, Springer Verlag, *Proc. of the 11th Annual International Computing and Combinatorics Conference (COCOON)*, Kunming, China, August 2005, pp. 737–746.

94. "The Effect of Collimator Rotation on IMRT Treatment Planning," with S. Luan, P.H. Heintz, S.A. Sorensen, A.A. Jimenez, K.D. Roedersheimer, and G. Wong, *Forty-seven Annual Meeting of the American Society for Therapeutic Radiology and Oncology (ASTRO)*, Denver, Colorado, October 2005.

95. "Eliminating Wire Crossings for Molecular Quantum-dot Cellular Automata Implementation," with A. Chaudhary, X.S. Hu, M.T. Niemier, R. Ravichandran, and K.M. Whitton, *Proc. of 2005 IEEE/ACM International Conference on Computer-Aided Design (ICCAD)*, San Jose, California, November 2005, pp. 565–571.

96. "The Layered Net Surface Problems in Discrete Geometry and Medical Image Segmentation," with X. Wu, K. Li, and M. Sonka, *Lecture Notes in Computer Science*, Vol. 3827, Springer Verlag, *Proc. of the 16th Annual International Symposium on Algorithms and Computation (ISAAC)*, Sanya, Hainan, China, December 2005, pp. 17–27. One of the six Best Paper Candidates out of 549 submissions to ISAAC'05.

97. "An FPGA Solution for Radiation Dose Calculation," with K. Whitton, X.S. Hu, and C.X. Yu, *Proc. of the 14th Annual IEEE Symposium on Field-Programmable Custom Computing Machines (FCCM)*, Napa Valley, CA, April 2006, pp. 227–236.

98. "A Leaf Sequencing Software for Intensity-Modulated Radiation Therapy," with S. Luan, C. Wang, and X.S. Hu, *Proc. of the 19th IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, Salt Lake City, Utah, June 2006, pp. 3–8.

99. "Patient Breathing Motion Synchronized IMAT: A New Technique for Compensating Intrafraction Organ Motions," with S. Luan, C. Wang, D. Cao, W. D'Souza, and C.X. Yu, the *Forty-eight Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Orlando, Florida, July 30 – August 3, 2006. *Medical Physics*, Vol. 33, No. 6, June 2006, p. 2043.

100. "New Field Splitting Algorithms for Intensity-Modulated Radiation Therapy," with C. Wang and M.A. Healy, the *Forty-eight Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Orlando, Florida, July 30 – August 3, 2006. *Medical Physics*, Vol. 33, No. 6, June 2006, p. 2206.

101. "Traversing the Machining Graph," with R. Fleischer, J. Li, H. Wang, and H. Zhu, *Lecture Notes in Computer Science*, Vol. 4168, Springer Verlag, *Proc. of the 14th Annual European Symposium on Algorithms (ESA)*, Zurich, Switzerland, September 2006, pp. 220–231.

102. "On Approximating the Maximum Simple Sharing Problem," with R. Fleischer, J. Li, Z. Xie, and H. Zhu, *Lecture Notes in Computer Science*, Vol. 4288, Springer Verlag, *Proc. of the 17th International Symposium on Algorithms and Computation (ISAAC)*, Kolkata, India, December 2006, pp. 547-556.

103. "Field Splitting Problems in Intensity-Modulated Radiation Therapy," with C. Wang, *Lecture Notes in Computer Science*, Vol. 4288, Springer Verlag, *Proc. of the 17th International Symposium on Algorithms and Computation (ISAAC)*, Kolkata, India, December 2006, pp. 690-700.

104. "Shape Rectangularization Problems in Intensity-Modulated Radiation Therapy," with X.S. Hu, S. Luan, E. Misiolek, and C. Wang, *Lecture Notes in Computer Science*, Vol. 4288, Springer Verlag, *Proc. of the 17th International Symposium on Algorithms and Computation (ISAAC)*, Kolkata, India, December 2006, pp. 701-711.

105. "Density-Based Data Clustering Algorithms for Lower Dimensions Using Space-filling Curves," with B. Xu, *Lecture Notes in Computer Science*, Vol. 4426, Springer Verlag, *Proc. of the 11th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)*, Nanjing, China, May 2007, pp. 997-1005.

106. "Hardware Acceleration for 3-D Radiation Dose Calculation," with B. Zhou, X.S. Hu, and C.X. Yu, *Proc. of the 18th IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP)*, Montreal, Quebec, Canada, July 2007, pp. 290–295.

107. "A New Field Splitting Algorithm for Intensity-Modulated Radiation Therapy," with M.A. Healy, C. Wang, and X. Wu, *Lecture Notes in Computer Science*, Vol. 4598, Springer Verlag, *Proc. of the 13rd Annual International Computing and Combinatorics Conference (COCOON)*, Banff, Alberta, Canada, July 2007, pp. 4-15.

108. "Finding Many Optimal Paths without Growing Any Optimal Path Trees," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 4598, Springer Verlag, *Proc. of the 13rd Annual International Computing and Combinatorics Conference (COCOON)*, Banff, Alberta, Canada, July 2007, pp. 232-242.

109. "IMAT Leaf Sequencing Using Graph Algorithms," with S. Luan, C. Wang, D. Cao, D. Shepard, and C.X. Yu, the *Forty-Ninth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Minneapolis, Minnesota, July 2007.

110. "Geometric Algorithms for the Constrained 1-D K-Means Clustering Problems and IMRT Applications," with M.A. Healy, C. Wang, and B. Xu, *Lecture Notes in Computer Science*, Vol. 4613, Springer Verlag, *Proc. of the 1st International Frontiers of Algorithmics Workshop (FAW)*, Lanzhou, China, August 2007, pp. 1-13.

111. "Approximating the Maximum Sharing Problem," with A. Chaudhary, R. Fleischer, X.S. Hu, J. Li, M.T. Niemier, Z. Xie, and H. Zhu, *Lecture Notes in Computer Science*, Vol. 4619, Springer Verlag, *Proc. of the 10th Workshop on Algorithms and Data Structures (WADS)*, Halifax, Canada, August 2007, pp. 52-63.

112. "Online Rectangle Filling," with H. Wang and A. Chaudhary, *Lecture Notes in Computer Science*, Vol. 4927, Springer Verlag, *Proc. of the 5th Workshop on Approximation and Online Algorithms (WAOA)*, Eilat, Israel, October 2007, pp. 274-287.

113. "Optimal Field Splitting, with Applications in Intensity-Modulated Radiation Therapy," with C. Wang, *Lecture Notes in Computer Science*, Vol. 5059, Springer Verlag, *Proc. of the 2nd International Frontiers of Algorithmics Workshop (FAW)*, Changsha, China, June 2008, pp. 4-15.

114. "Optimal Surface Flattening," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 5059, Springer Verlag, *Proc. of the 2nd International Frontiers of Algorithmics Workshop (FAW)*, Changsha, China, June 2008, pp. 233-244.

115. "New Algorithms for Online Rectangle Filling with k-Lookahead," with H. Wang and A. Chaudhary, *Lecture Notes in Computer Science*, Vol. 5092, Springer Verlag, *Proc. of the 14th Annual International Computing and Combinatorics Conference (COCOON)*, Dalian, China, June 2008, pp. 385-394.

116. "Dynamic Leaf Sequencing with Monitor Units Control," with C. Wang, S. Luan, G. Tang, and C.X. Yu, *Fiftieth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Houston, Texas, July 2008.

117. "Arc-Modulated Radiation Therapy (AMRT): A Novel Method for Rotational Radiation Therapy," with C. Wang, S. Luan, G. Tang, M.A. Earl, and C.X. Yu, *Fiftieth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Houston, Texas, July 2008.

118. "IMRT Leaf Sequencing with Intensity-based Segment Weight Optimization," with S. Luan, C. Wang, G. Tang, and C.X. Yu, *Fiftieth Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Houston, Texas, July 2008.

119. "Optimal Graph-based Segmentation of 3D Pulmonary Airway and Vascular Trees across Bifurcations," with X. Liu, X. Wu, and M. Sonka, *Proc. of the 1st Annual Workshop on Pulmonary Image Analysis*, at the *11th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, New York City, September 2008, pp. 103-111.

120. "Stabbing Convex Polygons with a Segment or a Polygon," with P.K. Agarwal, S.K. Ganjugunte, E. Misiolek, M. Sharir, and K. Tang, *Lecture Notes in Computer Science*, Vol. 5193, Springer Verlag, *Proc. of the 16th Annual European Symposium on Algorithms (ESA)*, Karlsruhe, Germany, September 2008, pp. 52-63.

121. "Coupled Path Planning, Region Optimization, and Applications in Intensity-Modulated Radiation Therapy," with S. Luan and C. Wang, *Lecture Notes in Computer Science*, Vol. 5193, Springer Verlag, *Proc. of the 16th Annual European Symposium on Algorithms (ESA)*, Karlsruhe, Germany, September 2008, pp. 271-283.

122. "Free-form Surface Partition in 3-D," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 5369, Springer Verlag, *Proc. of the 19th International Symposium on Algorithms and Computation (ISAAC)*, Gold Coast, Australia, December 2008, pp. 521-532.

123. "Optimal Graph Search Based Image Segmentation for Objects with Complex Topologies," with X. Liu, X. Wu, and M. Sonka, *Proc. of the SPIE International Symposium on Medical Imaging: Imaging Processing*, Vol. 7259, Lake Buena Vista, Florida, February 2009, pp. 725915-1 – 725915-10.

124. "Processing an Offline Insertion-Query Sequence with Applications," with H. Wang, *Lecture Notes in Computer Science*, Vol. 5598, Springer Verlag, *Proc. of the 3rd International Frontiers of Algorithmics Workshop (FAW)*, Hefei, Anhui, China, June 2009, pp. 141-152.

125. "A Multi-FPGA Accelerator for Dose Calculation in Radiation Therapy," with B. Zhou, X.S. Hu, and C. Yu, the *51st Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Anaheim, CA, July 2009.

126. "GPU-based Implementation of Monte Carlo Superposition for Dose Calculation," with B. Zhou, X.S. Hu, and C. Yu, the *51st Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Anaheim, CA, July 2009.

127. "A Multi-FPGA Accelerator for Radiation Dose Calculation in Cancer Treatment," with B. Zhou, X.S. Hu, and C.X. Yu, *Proc. of the 7th IEEE Symposium on Application Specific Processors (SASP)*, San Francisco, CA, July 2009, pp. 70–79.

128. "Segmentation, Reconstruction, and Analysis of Blood Thrombi in 2-Photon Microscopy Images," with J. Mu, X. Liu, M.M. Kamocka, Z. Xu, M. Alber, and E.D. Rosen, *Proc. of the 22nd IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, Albuquerque, New Mexico, August 2009, 10.1109/CBMS.2009.5255347, pp. 1–8.

129. "Measurement, Evaluation and Analysis of Wall Thickness of 3D Airway Trees across Bifurcations," with X. Liu, M.H. Tawhai, E.A. Hoffman, and M. Sonka, the *2nd Annual International Workshop on Pulmonary Image Analysis*, at the *12th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, London, UK, September 2009.

130. "Combined Experimental and Simulation Study of Blood Clot Formation," with Z. Xu, J. Lioi, M. Alber, J. Mu, X. Liu, M.M. Kamocka, and E.D. Rosen, *Proc. of the 2009 IEEE Toronto International Conference — Science and Technology for Humanity TIC-STH*, Toronto, Canada, September 2009, ISBN: 978-1-4244-3878-5.

131. "A Web-based Automated QA Analysis Program for Digital Image Tracking," with L. Trestrail, D. Sanchez, D.J. Sandoval, P.H. Heintz, and S. Luan, the *95th Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA)*, Chicago, IL, November 29–December 4, 2009.

132. "Approximating Points by a Piecewise Linear Function: I," with H. Wang, *Lecture Notes in Computer Science*, Vol. 5878, Springer Verlag, *Proc. of the 20th International Symposium on Algorithms and Computation (ISAAC)*, Honolulu, Hawaii, December 2009, pp. 224-233.

133. "Approximating Points by a Piecewise Linear Function: II. Dealing with Outliers," with H. Wang, *Lecture Notes in Computer Science*, Vol. 5878, Springer Verlag, *Proc. of the 20th International Symposium on Algorithms and Computation (ISAAC)*, Honolulu, Hawaii, December 2009, pp. 234-243.

134. "Locating an Obnoxious Line among Planar Objects," with H. Wang, *Lecture Notes in Computer Science*, Vol. 5878, Springer Verlag, *Proc. of the 20th International Symposium on Algorithms and Computation (ISAAC)*, Honolulu, Hawaii, December 2009, pp. 740-749.

135. "Study of the Role of Factor VII in Venous Thrombus Formation Using Combination of a Multiscale Model and Experiment," with M. Alber, Z. Xu, J. Lioi, M.M. Kamocka, X. Liu, J. Mu, and E.D. Rosen, the *54th Biophysical Society Annual Meeting and Exhibits*, San Francisco, California, February 2010.

136. "Representing a Functional Curve by Curves with Fewer Peaks," with C. Wang and H. Wang, *Lecture Notes in Computer Science*, Vol. 6139, Springer Verlag, *Proc. of the 12th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)*, Bergen, Norway, June 2010, pp. 200-211.

137. "Dose Calculation Accelerating: A Comparison Study of GPU and FPGA Based on Collapsed Cone Algorithm," with B. Zhou, C.X. Yu, and X.S. Hu, the *52nd Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Philadelphia, Pennsylvania, July 2010.

138. "Optimal Registration Based On Connected Rubber Model," with B. Zhou, H. Wang, C.X. Yu, and X.S. Hu, the *52nd Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Philadelphia, Pennsylvania, July 2010.

139. "Improved Points Approximation Algorithms Based on Simplicial Thickness Data Structures," with H. Wang, *Lecture Notes in Computer Science* Vol. 6460, Springer Verlag, *Proc. of the 21st International Workshop on Combinatorial Algorithms (IWOCA)*, London, United Kingdom, July 2010, pp. 363-376.

140. "Densest k-Subgraph Approximation on Intersection Graphs," with R. Fleischer and J. Li, *Lecture Notes in Computer Science*, Vol. 6534, Springer Verlag, *Proc. of the 8th Workshop on Approximation and Online Algorithms (WAOA)*, Liverpool, United Kingdom, September 2010, pp. 83-93.

141. "Computing Toolpaths for 5-axis NC Machines," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 6508, Springer Verlag, *Proc. of the 4th Annual International Conference on Combinatorial Optimization and Applications (COCOA)*, the Big Island, Hawaii, December 2010, pp. 270-284.

142. "Computing Shortest Paths amid Pseudodisks," with H. Wang, *Proc. of the 22nd Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, San Francisco, January 2011, pp. 309-326.

143. "Segmentation of Knee Joints in X-ray Images Using Decomposition-based Sweeping and Graph Search," with J. Mu, X. Liu, S. Luan, P.H. Heintz, and G.W. Mlady, *Proc. of the SPIE International Symposium on Medical Imaging: Imaging Processing*, Vol. 7962, 79620H, Lake Buena Vista, Florida, February 2011, doi:10.1117/12.878414.

144. "Identification and Classification of Cells in Multispectral Microscopy Images of Lymph Nodes," with X. Liu, A.F. Setiadi, M. Alber, and P.P. Lee, *Proc. of the SPIE International Symposium on Medical Imaging: Imaging Processing*, Vol. 7962, 79620J, Lake Buena Vista, Florida, February 2011, doi:10.1117/12.878399.

145. "Collapsed-cone Based Deformation Field Regularization for Nonrigid Image Registration," with B. Zhou, C.X. Yu, A. Godley, X.A. Li, and X.S. Hu, *Proc. of the 8th IEEE International Symposium on Biomedical Imaging (ISBI)*, Chicago, Illinois, March 30 — April 2, 2011, pp. 1205-1208.

146. "Algorithms for Interval Structures with Applications," with E. Misiolek, *Lecture Notes in Computer Science*, Vol. 6681, Springer Verlag, *Proc. of the 5th International Frontiers of Algorithmics Workshop and 7th International Conference on Algorithmic Aspects in Information and Management (FAW-AAIM)*, Jinhua, China, May 2011, pp. 196–207.

147. "Memory-Efficient Volume Ray Tracing on GPU for Radiotherapy," with B. Zhou and X.S. Hu, *Proc. of the 9th IEEE Symposium on Application Specific Processors (SASP)*, San Diego, CA, June 2011, pp. 46-51. One of the four Best Paper Candidates.

148. "Treatment Plan Validation through Graphical Fingerprint," with B. Zhou, C.X. Yu, K. Xiao, and X.S. Hu, the *53rd Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Vancouver, Canada, July 31–August 4, 2011.

149. "Tissue Dependent Deformation Field Regularization through Collapsed Cone Convolution/Superposition," with B. Zhou, C.X. Yu, and X.S. Hu, the *53rd Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Vancouver, Canada, July 31–August 4, 2011.

150. "The Topology Aware File Distribution Problem," with S. O'Neil, A. Chaudhary, and H. Wang, *Lecture Notes in Computer Science*, Vol. 6842, Springer Verlag, *Proc. of the 17th Annual International Computing and Combinatorics Conference (COCOON)*, Dallas, Texas, August 2011, pp. 366–378.

151. "New Algorithms for 1-D Facility Location and Path Equipartition Problems," with H. Wang, *Lecture Notes in Computer Science*, Vol. 6844, Springer Verlag, *Proc. of the 12th International Symposium on Algorithms and Data Structures (WADS)*, Brooklyn, New York, August 2011, pp. 207–218.

152. "A Nearly Optimal Algorithm for Finding L_1 Shortest Paths among Polygonal Obstacles in the Plane," with H. Wang, *Lecture Notes in Computer Science*, Vol. 6942, Springer Verlag, *Proc. of the 19th European Symposium on Algorithms (ESA)*, Saarbrcken, Germany, September 2011, pp. 481-492.

153. "Efficient Algorithms for the Weighted k-Center Problem on a Real Line," with H. Wang, *Lecture Notes in Computer Science*, Vol. 7074, Springer Verlag, *Proc. of the 22nd International Symposium on Algorithms and Computation (ISAAC)*, Yokohama, Japan, December 2011, pp. 584-593.

154. "Outlier Respecting Points Approximation," with H. Wang, *Lecture Notes in Computer Science*, Vol. 7074, Springer Verlag, *Proc. of the 22nd International Symposium on Algorithms and Computation (ISAAC)*, Yokohama, Japan, December 2011, pp. 594-603.

155. "An Improved Algorithm for Reconstructing a Simple Polygon from the Visibility Angles," with H. Wang, *Lecture Notes in Computer Science*, Vol. 7074, Springer Verlag, *Proc. of the 22nd International Symposium on Algorithms and Computation (ISAAC)*, Yokohama, Japan, December 2011, pp. 604-613.

156. "Automatic Segmentation and Analysis of Fibrin Networks in 3D Confocal Microscopy Images," with X. Liu, J. Mu, K.R. Machlus, A.S. Wolberg, E.D. Rosen, Z. Xu, and M. Alber, *Proc. of the SPIE International Symposium on Medical Imaging: Imaging Processing*, Vol. 8314, 831439, San Diego, California, February 2012, doi:10.1117/12.911712, pp. 831439-1 – 831439-10.

157. "Computing Maximum Non-crossing Matching in Convex Bipartite Graphs," with X. Liu and H. Wang, *Lecture Notes in Computer Science*, Vol. 7285, Springer Verlag, *Proc. of the 6th International Frontiers of Algorithmics Workshop and 8th International Conference on Algorithmic Aspects in Information and Management (FAW-AAIM)*, Beijing, China, May 2012, pp. 105–116.

158. "Algorithms on Minimizing the Maximum Sensor Movement for Barrier Coverage of a Linear Domain," with Y. Gu, J. Li, and H. Wang, *Lecture Notes in Computer Science*, Vol. 7357, Springer Verlag, *Proc. of the 13rd Scandinavian Symposium and Workshops on Algorithm Theory (SWAT)*, Helsinki, Finland, July 2012, pp. 177–188.

159. "Computing the Visibility Polygon of an Island in a Polygonal Domain," with H. Wang, *Lecture Notes in Computer Science*, Vol. 7391, Springer Verlag, *Proc. of the 39th International Colloquium on Automata, Languages and Programming (ICALP)*, Part I, Warwick, UK, July 2012, pp. 218–229.

160. "Detecting and Tracking Motion of *Myxococcus xanthus* Bacteria in Swarms," with X. Liu, C.W. Harvey, H. Wang, and M. Alber, *Lecture Notes in Computer Science*, Vol. 7510, Springer Verlag, *Proc. of the 15th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part I, Nice, France, October 2012, pp. 373–380.

161. "Optimal Point Movement for Covering Circular Regions," with X. Tan, H. Wang, and G. Wu, *Lecture Notes in Computer Science*, Vol. 7676, Springer Verlag, *Proc. of the 23rd International Symposium on Algorithms and Computation (ISAAC)*, Taipei, Taiwan, December 2012, pp. 332–341.

162. "Weak Visibility Queries of Line Segments in Simple Polygons," with H. Wang, *Lecture Notes in Computer Science*, Vol. 7676, Springer Verlag, *Proc. of the 23rd International Symposium on Algorithms and Computation (ISAAC)*, Taipei, Taiwan, December 2012, pp. 609–618.

163. "L_1 Shortest Path Queries among Polygonal Obstacles in the Plane," with H. Wang, *Proc. of the 30th Symposium on Theoretical Aspects of Computer Science (STACS)*, *Leibniz International Proceedings in Informatics (LIPIcs)*, Vol. 20, Schloss Dagstuhl – Leibniz-Zentrum fuer Informatik, ISBN 978-3-939897-50-7, Kiel, Germany, Feb. 27-March 2, 2013, pp. 293–304.

164. "Matroid and Knapsack Center Problems," with J. Li, H. Liang, and H. Wang, *Lecture Notes in Computer Science*, Vol. 7801, Springer Verlag, *Proc. of the 16th Conference on Integer Programming and Combinatorial Optimization (IPCO)*, Valparaiso, Chile, March 2013, pp. 110–122.

165. "GPU Acceleration of Data Assembly in Finite Element Methods and Its Energy Implications," with L. Tang, X.S. Hu, M.T. Niemier, R.F. Barrett, S.D. Hammond, and G. Hsieh, *Proc. of the 24th IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP)*, Washington D.C., June 2013, pp. 321–328.

166. "Computing Shortest Paths among Curved Obstacles in the Plane," with H. Wang, *Proc. of the 29th Annual ACM Symposium on Computational Geometry (SoCG)*, Rio de Janeiro, Brazil, June 2013, pp. 369–378.

167. "Packing Cubes into a Cube Is NP-hard in the Strong Sense," with Y. Lu and J. Cha, *Lecture Notes in Computer Science*, Vol. 7936, Springer Verlag, *Proc. of the 19th Annual International Computing and Combinatorics Conference (COCOON)*, Hangzhou, China, June 2013, pp. 603–613.

168. "Accelerating Collapsed Cone Convolution/Superposition Dose Calculation on GPU Using Spatial Decomposition," with K. Xiao, B. Zhou, and X.S. Hu, *55th Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Indianapolis, Indiana, August 2013, *Medical Physics*, Special Issue for the AAPM Annual Meeting, Vol. 40, No. 6, p. 475.

169. "Visibility and Ray Shooting Queries in Polygonal Domains," with H. Wang, *Lecture Notes in Computer Science*, Vol. 8037, Springer Verlag, *Proc. of the 13rd Bi-annual International Symposium on Algorithms and Data Structures (WADS)*, Western Ontario, Canada, August 2013, pp. 244–255.

170. "Shell: A Spatial Decomposition Data Structure for 3D Curve Traversal on Many-core Architectures," with K. Xiao, X.S. Hu, and B. Zhou, *Lecture Notes in Computer Science*, Vol. 8125, Springer Verlag, *Proc. of the 21st Annual European Symposium on Algorithms (ESA)*, Sophia Antipolis, France, September 2013, pp. 815–826.

171. "On Clustering Induced Voronoi Diagrams," with Z. Huang, Y, Liu, and J. Xu, *Proc. of the 54th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, Berkeley, California, October 2013, pp. 390–399.

172. "An Automated Approach for Fibrin Network Segmentation and Structure Identification in 3D Confocal Microscopy Images," with J. Chen, O.V. Kim, R.I. Litvinov, J.W. Weisel, and M.

Alber, *Proc. of the 27th IEEE International Symposium on Computer-Based Medical Systems (CBMS)*, **a long oral presentation**, New York, NY, May 2014, pp. 173–178.

173. "Light-Emitting Memory: A Modular LED Panel with 10K True-Color Frame Rate for 3D Display Applications," with B. Zhou and X.S. Hu, *Society for Information Display's Display Week, International Symposium, Seminar and Exhibition (SID)*, San Diego, CA, June 2014, *SID Symposium Digest of Technical Papers*, Vol. 45, No. 1, pp. 918–921.

174. "Two-Point L_1 Shortest Path Queries in the Plane," with R. Inkulu and H. Wang, *Proc. of the 30th Annual ACM Symposium on Computational Geometry (SoCG)*, Kyoto, Japan, June 2014, pp. 406–415.

175. "A Circular Matrix-merging Algorithm with Application in VMAT Radiation Therapy," with D.L. Craft and L. Yang, *Lecture Notes in Computer Science*, Vol. 8497, Springer Verlag, *Proc. of the 8th International Frontiers of Algorithmics Workshop (FAW)*, Zhangjiajie, China, June 2014, pp. 36–47.

176. "Efficient Monte Carlo Dose Calculation on CPU-GPU Heterogeneous Systems," with K. Xiao, B. Zhou, and X.S. Hu, the *56th Annual Meeting and Technical Exhibition of the American Association of Physicists in Medicine (AAPM)*, Austin, Texas, July 2014.

177. "Identifying Neutrophils in H&E Staining Histology Tissue Images," with J. Wang, J.D. MacKenzie, and R. Ramachandran, *Lecture Notes in Computer Science*, Vol. 8673, Springer International Publishing Switzerland, *Proc. of the 17th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part I, Boston, MA, September 2014, pp. 73–80.

178. "A Matching Model Based on Earth Mover's Distance for Tracking *Myxococcus xanthus*," with J. Chen, C.W. Harvey, and M. Alber, *Lecture Notes in Computer Science*, Vol. 8674, Springer International Publishing Switzerland, *Proc. of the 17th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Boston, MA, September 2014, pp. 113–120. Selected as one of the top 50 student papers in MICCAI'2014.

179. "Segmentation of Vascular Structures and Hematopoietic Cells in 3D Microscopy Images and Quantitative Analysis," with J. Mu, L. Yang, M. Kamocka, A. Zollman, and N. Carlesso, *Proc. of the SPIE International Symposium on Medical Imaging: Imaging Processing*, Orlando, Florida, February 941305, 2015, doi:10.1117/12.2082350.

180. "Iris Recognition Based on Human-Interpretable Features," with J. Chen, F. Shen, and P.J. Flynn, *Proc. of the 1st IEEE International Conference on Identity, Security and Behavior Analysis (ISBA)*, Hong Kong, March 2015, 6 pages, DOI: 10.1109/ISBA.2015.7126352; ISBN: 978-1-4799-1974-1.

181. "Segmenting Subcellular Structures in Histology Tissue Images," with J. Wang, J.D. MacKenzie, R. Ramachandran, Y. Zhang, and H. Wang, *Proc. of the 12th IEEE International Symposium on Biomedical Imaging (ISBI)*, New York, NY, April 2015, pp. 556–559.

182. "Monte Carlo Based Ray Tracing in CPU-GPU Heterogeneous Systems and Applications in Radiation Therapy," with K. Xiao, X.S. Hu, and B. Zhou, a full paper in *Proc. of the 24th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC)*, Portland, Oregon, June 2015, pp. 247–258.

183. "Packing Cubes into a Cube in ($D > 3$)-Dimensions," with Y. Lu and J. Cha, *Lecture Notes in Computer Science*, Vol. 9198, Springer Verlag, *Proc. of the 21st International Computing and Combinatorics Conference (COCOON)*, Beijing, China, August 2015, pp. 264–276.

184. "An Optimization-based Approach for Restoring Missing Structures and Textures in Images," with J. Mu, *Proc. of the 22nd IEEE International Conference on Image Processing (ICIP)*, Quebec City, Canada, September 2015, pp. 3705-3709.

185. "Detection of Glands and Villi by Collaboration of Domain Knowledge and Deep Learning," with J. Wang, J.D. MacKenzie, and R. Ramachandran, *Lecture Notes in Computer Science*, Vol. 9350, Springer Verlag, *Proc. of the 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Munich, Germany, October 2015, pp. 20–27.

186. "Neutrophils Identification by Deep Learning and Voronoi Diagram of Clusters," with J. Wang, J.D. MacKenzie, and R. Ramachandran, *Lecture Notes in Computer Science*, Vol. 9351, Springer Verlag, *Proc. of the 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part III, Munich, Germany, October 2015, pp. 226–233.

187. "A Hybrid Approach for Segmentation and Tracking of *Myxococcus Xanthus* Swarms," with J. Chen, S. Mahserejian, and M. Alber, *Lecture Notes in Computer Science*, Vol. 9351, Springer Verlag, *Proc. of the 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part III, Munich, Germany, October 2015, pp. 284–291.

188. "Fast Background Removal in 3D Fluorescence Microscopy Images Using One-Class Learning," with L. Yang, Y. Zhang, I.H. Guldner, and S. Zhang, *Lecture Notes in Computer Science*, Vol. 9351, Springer Verlag, *Proc. of the 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part III, Munich, Germany, October 2015, pp. 292–299.

189. "A Seeding-Searching-Ensemble Method for Gland Segmentation and Detection," with Y. Zhang, L. Yang, J.D. MacKenzie, and R. Ramachandran, a regular paper in *Proc. of the 2015 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Washington D.C., November 2015, pp. 357–362.

190. "Segmentation and Tracking of Pseudomonas Aeruginosa for Cell Dynamics Analysis in Time-Lapse Images," with J. Chen, Y. Cai, C. Wei, L. Yang, and M. Alber, *Proc. of the 13rd IEEE International Symposium on Biomedical Imaging (ISBI)*, Prague, Czech Republic, April 2016, pp. 968–971.

191. "Single Molecule Sequencing-guided Scaffolding and Correction of Draft Assemblies," with S. Zhu and S.J. Emrich, *Proc. of the 6th IEEE International Conference on Computational Advances in Bio and Medical Sciences (ICCABS)*, Atlanta, Georgia, October 2016, doi:10.1109/ICCABS.2016.7802766 .

192. "A Deep Learning Approach for Semantic Segmentation in Histology Tissue Images," with J. Wang, J.D. MacKenzie, and R. Ramachandran, *Lecture Notes in Computer Science*, Vol. 9901, Springer Verlag, *Proc. of the 19th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Athens, Greece, October 2016, pp. 176-184.

193. "3D Segmentation of Glial Cells Using Fully Convolutional Networks and k-Terminal Cut," with L. Yang, Y. Zhang, I.H. Guldner, and S. Zhang, *Lecture Notes in Computer Science*, Vol. 9901, Springer Verlag, *Proc. of the 19th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Athens, Greece, October 2016, pp. 658-666.

194. "Combining Fully Convolutional and Recurrent Neural Networks for 3D Biomedical Image Segmentation," with J. Chen, L. Yang, Y. Zhang, and M. Alber, *Proc. of the 30th Annual Conference on Neural Information Processing Systems (NIPS)*, Barcelona, Spain, December 2016, pp. 3036-3044.

195. "Coarse-to-Fine Stacked Fully Convolutional Nets for Lymph Node Segmentation in Ultrasound Images," with Y. Zhang, M. Ying, L. Yang, and A.T. Ahuja, a regular paper in the *Proc. of the 2016 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Shenzhen, China, December 2016, pp. 443-448.

196. "Optimizing Memory Efficiency for Convolution Kernels on Kepler GPUs," with X. Chen, J. Chen, and X.S. Hu, the *Proc. of the 54th ACM/IEEE Design Automation Conference (DAC)*, Austin, Texas, June 2017, pp. 68:1-68:6.

197. "Three-dimensional Visualization of the Embryonic Murine Chondrocranium Using Contrast-enhanced MicroCT," with T.M. Ryan, T. Stecko, S.M. Perrine, H. Zheng, K. Kawasaki, and J. Richtsmeier, *Tomography for Scientific Advancement (ToScA) North America Symposium*, oral presentation, Austin, Texas, June 2017.

198. "Neuron Segmentation Using Deep Complete Bipartite Networks," with J. Chen, S. Banerjee, A. Grama, and W. Scheirer, *Lecture Notes in Computer Science*, Vol. 10434, Springer, the *Proc. of the 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Quebec City, Canada, September 2017, pp. 21-29.

199. "A Fast Background Removal Method For 3D Multi-Channel Deep Tissue Fluorescence Imaging," with C. Li, X. Li, H. Cao, H. Jiang, X. Deng, L. Yang, and Z. Shao, *Lecture Notes in Computer Science*, Vol. 10434, Springer, the *Proc. of the 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part II, Quebec City, Canada, September 2017, pp. 92-99.

200. "Suggestive Annotation: A Deep Active Learning Framework for Biomedical Image Segmentation," with L. Yang, Y. Zhang, J. Chen, and S. Zhang, *Lecture Notes in Computer Science*, Vol. 10435, Springer, the *Proc. of the 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part III, Quebec City, Canada, September 2017, pp. 399-407. Selected as oral presentation (only 3.67% of all 791 submissions were selected as oral presentations).

201. "Deep Adversarial Networks for Biomedical Image Segmentation Utilizing Unannotated Images," with Y. Zhang, L. Yang, J. Chen, M. Fredericksen, and D.P. Hughes, *Lecture Notes in Computer Science*, Vol. 10435, Springer, the *Proc. of the 20th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Part III, Quebec City, Canada, September 2017, pp. 408-416.

202. "Inversion Detection Using PacBio Long Reads," with S. Zhu and S.J. Emrich, a regular paper in the *Proc. of the 2017 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, Kansas City, Missouri, November 2017, pp. 237-242. (79 out of 414 full paper submissions were accepted as regular papers, 19.0% acceptance rate.)

203. "moDNN: Memory Optimal DNN Training on GPUs," with X. Chen and X.S. Hu, accepted to the *21st Design, Automation and Test in Europe Conference and Exhibition (DATE)*, Dresden, Germany, March 2018.

204. "A New Registration Approach for Dynamic Analysis of Calcium Signals in Organs," with P. Liang, J. Chen, P.A. Brodskiy, Q. Wu, Y.C. Zhang, Y. Zhang, L. Yang, and J.J. Zartman, accepted to the *15th IEEE International Symposium on Biomedical Imaging (ISBI)*, Washington, D.C., April 2018.

205. "Quantization of Fully Convolutional Networks for Accurate Biomedical Image Segmentation," with X. Xu, Y. Shi, Q. Lu, L. Yang, and X.S. Hu, accepted to the *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Salt Lake City, Utah, June 2018.

Research Grants and Contracts

1. "Computer-aided Cancer Diagnosis Approaches Using Ultrasound Images of Cervical Lymph Nodes," the Global Collaboration Initiative (GCI) Program, Notre Dame International Office, University of Notre Dame, $20,000, July 1, 2017 – June 30, 2018.

2. "Exploiting TrueNorth for Biomedical Image Analysis Applications Based on New Deep Neural Network Models," IBM, $60,000 (plus a TrueNorth hardware system), January 15, 2017 – January 14, 2018. This is a joint grant with Xiaobo S. Hu (PI), Michael Niemier, and Yiyu Shi.

3. "E2CDA: Type I: Extremely Energy Efficient Collective Electronics (EXCEL)," the National Science Foundation (NSF) and Semiconductor Research Corporation (SRC), Grant CCF-1640081, $4,419,225, October 3, 2016 – October 2, 2019. This is a joint grant with Suman Datta (LPI), Zoltan Toroczkai, Justin Romberg (Georgia Institute of Technology), Narayanan Vijay (Penn State University), Xiaobo S. Hu, Arijit Raychowdhury (Georgia Institute of Technology), Gert Cauwenberghs (University of California San Diego), Emre Neftci (University of California, Irvine), Supratik Guha (University of Chicago), Wolfgang Porod, Michael Niemier, and Santosh S. Vempala (Georgia Institute of Technology).

4. "II-New: Infrastructure for Supporting Biomedical Application Algorithms, Runtime Development and Resource Management," the National Science Foundation (NSF), Grant CNS-1629914, $500,000, August 1, 2016 – July 31, 2019. This is a joint grant with X.S. Hu (LPI), N. Chawla, W. Scheirer, and C. Wang.

5. "AF: Small: Algorithms in Computational Geometry and Medical Applications," the National Science Foundation (NSF), Grant CCF-1617735, $450,000, September 1, 2016 – August 31, 2019.

6. "Unified Culex Assemblies for Improved Population-level Analysis," NIH Grant R21AI123967, The National Institute of Allergy and Infectious Diseases, the National Institutes of Health (NIH), $396,371, February 15, 2016 – January 31, 2018. This is a joint grant with Scott Emrich (PI) and Maria Sharakhova at Virginia Polytechnic Institute and State University.

7. "From Cells to Societies: Mechanisms by Which Microbial Parasites Control Host Phenotypes," NIH Grant R01 GM116927-01, the National Institute of General Medical Sciences (NIGMS), the National Institutes of Health (NIH), $1,776,000, February 1, 2016 – January 31, 2021. This is a joint grant with David P. Hughes (LPI), Ephraim Hanks, Francesco Costanzo, and Tony J. Huang at Penn State University.

8. "(PQD-3) Spatiotemporal Molecular Interrogation of Early Metastatic Evolution *In Situ*," NIH Grant R01CA194697, the National Cancer Institute (NCI), the National Institutes of Health (NIH), $1,390,800, June 1, 2015 – May 31, 2019. This is a joint grant with Siyuan Zhang (LPI), Jun Li, and Fang Liu.

9. "Multiscale Modeling and Empirical Study of a Mechanism Limiting Blood Clot Growth," NIH Grant 1U01-HL116330-01, the National Institutes of Health (NIH), $3,513,606, July 25, 2014 – June 30, 2019. This is a joint grant with Mark Alber (PI), Holly Goodson, Oleg Kim, and Zhiliang Xu.

10. "Development of Quantitative Intravital Imaging Methods for the Assessment of Radiation- and Drug-induced Bone Marrow Toxicity in Pre-clinical Models," the Indiana Clinical and Translational Sciences Institute (ICTSI) under NIH/NCRR Grant UL1TR001108, $20,000, July 1, 2014 – June 30, 2016. This is a joint grant with Nadia Carlesso, Indiana University School of Medicine.

11. "AF: Small: Applied and Theoretical Algorithm Problems in Computational Geometry" (plus a supplemental grant), the National Science Foundation (NSF), Grant CCF-1217906, $460,000, September 1, 2012 – February 28, 2017.

12. "Combined Multiscale Modeling and Experimental Study of Bacterial Swarming," NIH Grant 1R01-GM095959, the National Institutes of Health (NIH), $1,139,164, April 1, 2012 – December 31, 2016. This is a joint grant with Mark Alber (PI), Joshua Shrout, and Zhiliang Xu.

13. "Algorithm-Architecture Codesign for Exascale Computing," Sandia National Laboratories, Department of Energy, $442,587, April 19, 2012 – April 30, 2015 (with Xiaobo S. Hu (PI) and Michael T. Niemier).

14. "Study of the Interplay of Motility Mechanisms during Swarming of *Myxococcus xanthus*," NIH Grant 1R01-GM100470, the National Institute of General Medical Sciences (NIGMS), the National Institutes of Health (NIH), $769,609, September 15, 2011 – May 31, 2014. This is a joint grant with Mark Alber (PI), Joshua Shrout, and Zhiliang Xu.

15. "Multiscale Biomedical Imaging for Autoimmune Disease," the National Academies Keck Futures Initiatives (NAKFI), which is a program of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine, $50,000, May 1, 2011 – April 30, 2013. This is a joint grant with John MacKenzie (PI) and Rageshree Ramachandran at University of California, San Francisco and Frank Chuang at University of California, Davis.

16. "Codesign for Exascale Computing," Sandia National Laboratories, Department of Energy, $75,000, March 15, 2011 – September 30, 2011 (with Xiaobo S. Hu (PI) and Michael T. Niemier).

17. "AF: Small: Algorithmic Problems in Applied Computational Geometry," the National Science Foundation, Grant CCF-0916606, $439,999, July 15, 2009 – June 30, 2012.

18. "Developing Algorithms and Software for a New Radiosurgery Approach to Breast Cancer Treatment," Faculty Research Program, University of Notre Dame, $10,000, January 31, 2009 – December 31, 2009.

19. "Developing New Algorithms and Software for a Radiosurgery Cancer Treatment Problem," Xcision Medical Systems, $36,814, April 1, 2008 – February 28, 2009 (a subcontract of NIH Grant R44-CA132354).

20. "Four-dimensional IMAT Planning Using Graph Algorithms," NIH Grant R01-CA117997-01A2, the National Cancer Institute (NCI), the National Institutes of Health (NIH), $1,239,953, June 1, 2007 – April 30, 2011. This is a joint grant with Cedric Yu (PI) at University of Maryland School of Medicine and Shuang Luan at University of New Mexico.

21. "Development of an FPGA Based System for Accelerating Radiation Dose Calculation," Prowess, Inc., Chico, California, $85,567, November 1, 2006 – February 28, 2008 (with Xiaobo S. Hu (PI)).

22. "REU Supplement to Grant CCF-0515203: Computational Geometry Algorithms for Medical Problems in Radiation Therapy and Medical Imaging," the National Science Foundation, Grant CCF-0515203-02, $6,000, June 1, 2006 – May 31, 2007.

23. "Graph-Based Medical Image Segmentation in 3D and 4D," NIH NIBIB Grant R01-EB004640-01A2, the National Institute of Biomedical Imaging and Bioengineering, the National Institutes of Health (NIH), $1,071,540, April 1, 2006 – January 31, 2009. This is a joint grant with Milan Sonka (PI), Xiaodong Wu, and Andreas Wahle at University of Iowa.

24. "Computational Geometry Algorithms for Medical Problems in Radiation Therapy and Medical Imaging," the National Science Foundation, Grant CCF-0515203, $276,949, June 1, 2005 – May 31, 2008.

25. "Algorithmic, Automata and Complexity in Quantum Computing," The Shanghai Key Laboratory of Intelligent Information Processing, Fudan University, Shanghai, China. Yuan 20,000 (Yuan is the dollar unit of the Chinese currency RBM; 1 Yuan is for about $0.12), January 1, 2005 – December 31, 2006.

26. "New Algorithms and Software Systems for Radiotherapy and Radiosurgery," Faculty Research Program, University of Notre Dame, $10,000, April 1, 2004 – March 31, 2005.

27. "System-Level Approaches to Reducing Energy Consumption in Real-Time Embedded System Design," the National Science Foundation, Grant CCR-0208992, $119,973, September 1, 2002 – August 31, 2004 (with Xiaobo S. Hu (PI) and Joerg Henkel).

28. "Autonomous Network Systems," Lockheed Martin Corporation, $50,000, April 1, 2002 – March 31, 2003 (co-PI: Panos Antsaklis).

29. "Instrumentation for Multidimensional Imaging and Applications," the National Science Foundation, Grant EIA01-30839, $166,007, October 1, 2001 – September 30, 2003 (with Patrick J. Flynn (PI), Kevin W, Bowyer, and Robert L. Stevenson).

30. "Advanced Spinal Instrumentation," the 21st Century Research and Technology Fund, the State of Indiana, $1,998,987, March 1, 2001 – February 28, 2003 (with James J. Mason (PI), Steven R. Schmid, Davide A. Hill, and John E. Renaud).

31. "e-Systems: Algorithms and Architectures," Lockheed Martin Corporation, $50,000, March 1, 2001 – February 28, 2002 (with Panos Antsaklis).

32. "Geometric Problems in Radiosurgery, Radiation Therapy, and Other Medical Applications," the National Science Foundation, Grant CCR-9988468, $263,589, May 1, 2000 – April 30, 2003 (co-PI: Xiaobo S. Hu).

33. "Advanced Routing Concepts," Lockheed Martin Corporation, $25,000, May 1999 – June 2000.

34. "Advanced Routing Technology," Lockheed Martin Corporation, $25,000, January 1999 – December 1999.

35. The NSF Faculty Early Career Development (CAREER) Award, "Theoretical and Practical Solutions for Geometric Path Planning and Related Problems," the National Science Foundation, Grant CCR-9623585, $200,000, 1996 – 2000.

36. "Pursuing a Petaflop: Point Designs for 100 TF Computers Using PIM Technologies," the National Science Foundation, Grant NSF-ASC96-12028, $100,000, 1996 – 1997 (with Peter M. Kogge (PI), Steven C. Bass, Jay B. Brockman, and Edwin H.-M. Sha).

37. "High Speed Image Retrieval Techniques," NEC Research Institute, Inc., $30,000, 1996 – 1997 (with Peter M. Kogge (PI)).

38. The Clark Equipment Assistant Professorship of the Department of Computer Science and Engineering, University of Notre Dame, $42,250, 1994 – 1995.

Patents and Technology Licensing

1. "Segmentation Algorithmic Approach to Step-and-Shoot Intensity Modulated Radiation Therapy," with S. Luan, X.S. Hu, C. Wang, X. Wu, and C.X. Yu, US utility patent 7,283,611, October 16, 2007.

2. "Error Control Algorithmic Approach to Step-and-Shoot Intensity Modulated Radiation Therapy," with S. Luan, X.S. Hu, C. Wang, X. Wu, and C.X. Yu, US utility patent 7,466,797, December 16, 2008.

3. "System and Methods for Image Segmentation in N-dimensional Space," with K. Li, X. Wu, and M. Sonka, US utility patent 7,995,810, August 9, 2011. Licensed to Medical Imaging Applications LLC (MIA), Coralville, Iowa.

4. "Single-Arc Dose Painting for Precision Radiation Therapy," with C.X. Yu, S. Luan, M.A. Earl, and C. Wang, US utility patent 8,014,494, September 6, 2011. Licensed to Varian Medical Systems, Inc., Palo Alto, CA.

5. "Methods and Apparatus for Hardware Based Dose Calculation," with X.S. Hu, C.X. Yu, B. Zhou, and K.M. Whitton, US utility patent 8,494,115, July 23, 2013. Licensed to Prowess, Inc., Chico, California.

6. "Identification of Inflammation in Tissue Images," with J. Wang, J.D. MacKenzie, and R. Ramachandran, US patent application, filed on 9/14/2016, Application Number 15/264,836.

7. "A Method for Fast and Accurate Removal of Background Noise in 3D Microscopy Images," with S. Zhang, L. Yang, Y. Zhang, and I.H. Guldner, US Provisional patent application, filed on 9/5/2016, Application Number 62/383,556.

8. "A New Method for Segmentation of Glial Cells in 3D Microscopy Images," with S. Zhang, L. Yang, Y. Zhang, and I.H. Guldner, US Provisional patent application, filed on 10/10/2016, Application Number 62/406,366.

9. "Segmenting Ultrasound Images," with Y. Zhang, M. T.-C. Ying, L. Yang, and A.T. Ahuja, US Provisional patent application, filed on 12/12/2016, Application Number 62/432,849.

Software Development

1. SLS: The static leaf sequencing (SLS) software for "step-and-shoot" intensity-modulated radiation therapy (IMRT). This software has been used since 2003 for clinical cancer treatment in the Department of Radiation Oncology, University of Maryland Medical Center, Baltimore, MD and the Helen P. Denit Center for Radiation Therapy, Montgomery General Hospital, Olney, MD.

2. "Iris Recognition Based on Human-Interpretable Features," with J. Chen, F. Shen, and P.J. Flynn, Office of Technology Transfer, University of Notre Dame, August 2, 2016.

   http://ott.nd.edu/software-available-for-license/iris-recognition-based-on-human-intrepretable-features/

3. "CMARK: A Matlab Toolbox for Segmentation and Tracking of Cells in Time-lapse Images," with J. Chen and M. Alber, Office of Technology Transfer, University of Notre Dame, May 4, 2017.

   http://ott.nd.edu/software-available-for-license/cmark-cell-segmentation-and-tracking/

Journal Editorial Activities

- Editorial Board of *International Journal of Computational Geometry and Applications (IJCGA)*, 2008 — present.
- Editorial Board of *Journal of Computer Science and Technology (JCST)*, 2007 — 2010.
- Guest editor of *Algorithmica*, 2009.
- Guest editor of the *International Journal of Computational Geometry and Applications*, 2009.

Professional Activities

- Program Committee Member, the *29th Annual International Symposium on Algorithms and Computation (ISAAC)*, Jiaoxi, Yilan County, Taiwan, December 16-19, 2018.
- Program Committee Member, the *15th Workshop on Approximation and Online Algorithms (WAOA)*, Vienna, Austria, September 7-8, 2017.
- Program Committee Member, the *33rd Annual Symposium on Computational Geometry (SoCG)*, Brisbane, Australia, July 4-7, 2017.
- Program Committee Member, the *3rd IEEE International Conference on Smart Computing (SMARTCOMP)*, Hong Kong, May 29-31, 2017.
- Program Committee Member, the *25th Fall Workshop on Computational Geometry (FWCG)*, the State University of New York at Buffalo, NY, October 23-24, 2015.
- Program Committee Member, the *14th Bi-annual International Symposium on Algorithms and Data Structures (WADS)*, Victoria, British Columbia, Canada, August 5-7, 2015.
- Program Committee Member, the *1st International Conference on Applied Algorithms (ICAA)*, Kolkata, India, January 13-15, 2014.
- Program Committee Member, the *13rd Bi-annual International Symposium on Algorithms and Data Structures (WADS)*, London, Ontario, Canada, August 12-14, 2013.
- Program Committee Member, the *28th Annual Symposium on Computational Geometry (SoCG)*, Chapel Hill, North Carolina, June 17-20, 2012.
- Program Committee Member, the *Fifth International Frontiers of Algorithmics Workshop (FAW)*, Jinhua, China, May 28-31, 2011.
- Program Committee Member, the *Eighth Annual Conference on Theory and Applications of Models of Computation (TAMC)*, Tokyo, Japan, May 23-25, 2011.
- Program Committee Member, the *Twenty-First Annual International Symposium on Algorithms and Computation (ISAAC)*, Jeju Island, Korea, December 15-17, 2010.

- Program Committee Co-Chair, the *Fourth International Frontiers of Algorithmics Workshop (FAW)*, Wuhan, China, August 11-13, 2010.
- Steering Committee Chair, the *Third International Frontiers of Algorithmics Workshop (FAW)*, Hefei, Anhui, China, June 20-23, 2009.
- Program Committee Member, the *Third International Frontiers of Algorithmics Workshop (FAW)*, Hefei, Anhui, China, June 20-23, 2009.
- Program Committee Member, the *Fifth International Conference on Algorithmic Aspects in Information and Management (AAIM)*, San Francisco, CA, June 16-18, 2009.
- Program Committee Member, the *Fourteenth Annual International Computing and Combinatorics Conference (COCOON)*, Dalian, China, June 27-29, 2008.
- Steering Committee Member, the *Second International Frontiers of Algorithmics Workshop (FAW)*, Changsha, China, June 19-21, 2008.
- Program Committee Member, the *Eighteenth Annual International Symposium on Algorithms and Computation (ISAAC)*, Sendai, Japan, December 17–19, 2007.
- Program Committee Member, the *Third International Symposium on Visual Computing (ISVC)*, Lake Tahoe, Nevada/California, November 26–28, 2007.
- Program Committee Member, the *10th International Conference on CAD/Graphics (CAD/Graphics)*, Beijing, China, October 15–18, 2007.
- Program Committee Member, the *10th International Workshop on Algorithms and Data Structures (WADS)*, Halifax, Nova Scotia, Canada, August 15–17, 2007.
- Advising Committee Chair, the *International Frontiers of Algorithmics Workshop (FAW)*, Lanzhou, China, August 1–5, 2007.
- Steering Committee Member, the *International Conference on Algorithmic Aspects in Information and Management (AAIM)*, 2006 — present.
- Program Committee Co-Chair, the *Twelfth Annual International Computing and Combinatorics Conference (COCOON)*, Taipei, Taiwan, August 15–18, 2006.
- Program Committee Member, the *Ninth International Conference on Computer-Aided Design and Computer Graphics (CAD/CG)*, Hong Kong, Dec. 7–10, 2005.
- Program Committee Member, the *18th International Conference on Parallel and Distributed Computing Systems (PDCS)*, Las Vegas, Nevada, September 12–14, 2005.
- Program Committee Member, the *First International Conference on Algorithmic Applications in Management (AAIM)*, Xi'an, China, June 22–24, 2005.
- Program Committee Member, the *10th Annual International Computing and Combinatorics Conference (COCOON)*, Jeju Island, Korea, August 17–20, 2004.
- Program Committee Member, the *First Workshop on Approximation and Online Algorithms (WAOA)*, co-located with the *Eleventh Annual European Symposium on Algorithms (ESA)*, Budapest, Hungary, September 15–20, 2003.
- Program Committee Member, the *Fourteen Annual International Symposium on Algorithms and Computation (ISAAC)*, Kyoto, Japan, December 15–17, 2003.

- One of the two organizers of the *DIMACS Workshop on Medical Applications in Computational Geometry* (sponsored by NSF), Rutgers University, Piscataway, New Jersey, April 2–4, 2003.

- Program Committee Member, *Workshop on Algorithms and Computational Molecular Biology*, the *International Computer Symposium (ICS)*, Taiwan, December 18–21, 2002.

- Program Committee Member, the *Seventh Annual International Computing and Combinatorics Conference (COCOON)*, Guiling, China, August 20–22, 2001.

- Program Committee Member, *Workshop on Algorithms and Theory of Computation*, the *International Computer Symposium (ICS)*, Taiwan, December 6–8, 2000.

- Program Committee Member, the *Thirteenth International Conference on Parallel and Distributed Computing Systems (PDCS)*, Las Vegas, Nevada, August 8–10, 2000.

- Video Committee Member, the *Eighth Annual Video Review of Computational Geometry*, presented at the *Fifteenth Annual ACM Symposium on Computational Geometry (SCG)*, Miami Beach, Florida, June 13–16, 1999.

- Program Committee Member, the *Thirteenth IEEE International Parallel Processing Symposium & 10th IEEE Symposium on Parallel and Distributed Processing (IPPS/SPDP)*, San Juan, Puerto Rico, April 12–16, 1999.

- Program Committee Member, the *Seventh IEEE Symposium on the Frontiers of Massively Parallel Computation (Frontiers)*, Annapolis, Maryland, February 21–25, 1999.

- Panelist, on review panels of the Numeric, Symbolic, and Geometric Computation (NSGC) Program, May 1997 and December 1997, the Theory of Computing (TOC) Program, March 2005 and May 2007, the Algorithmic Foundations (AF) Program, March 2010, and the Information & Intelligent Systems Division (IIS), June 2016, in the Directorate for Computer and Information Science and Engineering (CISE), the National Science Foundation (NSF).

- Publicity Co-Chair, the *Seventh Annual International Symposium on Algorithms and Computation (ISAAC)*, Osaka, Japan, December 16–18, 1996.

- Program Committee Member, the *Sixth IEEE Symposium on the Frontiers of Massively Parallel Computation (Frontiers)*, Annapolis, Maryland, October 27–31, 1996.

- Invited Member, the Computational Geometry Working Group at the *ACM Workshop on Strategic Directions in Computing Research*, MIT Laboratory for Computer Science, Cambridge, MA, June 14–15, 1996.

- Program Committee Member, the *10th IEEE International Parallel Processing Symposium (IPPS)*, Honolulu, Hawaii, April 15–19, 1996.

- Program Committee Member, the *First Annual International Computing and Combinatorics Conference (COCOON)*, Xi'an, China, August 24–26, 1995.

- Organizer, *Midwest Theory Day*, Notre Dame, Indiana, April 3, 1993.

  – This is a one-day mini-conference in theoretical computer science for researchers and students in the Midwest area. Seven papers were presented, including two invited papers. Over 65 participants attended from 15 institutions in Illinois, Indiana, Michigan, Ohio, and Wisconsin, and two invited speakers attended from Rhode Island and Ontario.

Plenary Talks

- The *2015 International Conference on Orange Technologies (ICOT)*, Hong Kong, December 19-22, 2015. Title: "Computational Medicine: When Computer Science Meets Modern Health Care."
- The *6th Annual Meeting of the Asian Association for Algorithms and Computation (AAAC)*, Matsushima, Japan, April 19-21, 2013. Title: "A Survey of Algorithmic Problems and Solutions in Medical Informatics."
- The *9th National Conference on Mathematical Programming of China*, Hangzhou, China, April 20-24, 2012. Title: "Computational Geometry: Fundamental Problems, Algorithms, and New Developments."
- The *1st International Frontiers of Algorithmics Workshop (FAW)*, Lanzhou, China, August 1-5, 2007. Title: "Algorithmic Issues in Computer-Assisted Radiation Cancer Treatment."

Service to Governments

- Served on National Science Foundation (NSF) review panels of the Numeric, Symbolic, and Geometric Computation (NSGC) Program, May 1997 and December 1997, and the Theory of Computing (TOC) Program, March 2005 and May 2007, the Algorithmic Foundations (AF) Program, March 2010, and the Information & Intelligent Systems Division (IIS), June 2016, in the Directorate for Computer and Information Science and Engineering (CISE).
- Reviewed proposals for the National Science Foundation.
- Reviewed proposals for the Natural Sciences and Engineering Research Council (NSERC) of Canada.
- Reviewed proposals for the United States-Israel Binational Science Foundation (BSF), Jerusalem, Israel.
- Reviewed proposals for the Research Grants Council (RGC) of the Hong Kong government.

Media Coverage of Research Work

1. "Single-arc IMRT: Variations on a Theme," MedicalPhysicsWeb, November 25, 2008, Institute of Physics Publishing.

   http://medicalphysicsweb.org/cws/article/research/36809,

2. "Researchers Chip away at Smale's 7th Unsolved Problem in Mathematics," feature article online, Phys.org, a science and technology news website, July 15, 2016.

   http://phys.org/news/2016-07-chip-smale-7th-unsolved-problem.html

3. "Update on Smale's 7th problem," "Math in the Media" of American Mathematical Society, September 2016.

   http://www.ams.org/news/math-in-the-media/math-in-the-media#two

4. "Notre Dame Researchers Develop Software for Potential Use by Law Enforcement," online, *Notre Dame Research*, University of Notre Dame, October 26, 2016.

   https://research.nd.edu/news/developing-biometric-identification-for-the-eye/

5. "Researchers Develop Iris-recognition Software," front page, *The Observer*, the newspaper of University of Notre Dame and Saint Mary's College, November 11, 2016.

   http://ndsmcobserver.com/2016/11/print-edition-friday-november-11-2016/

6. "Notre Dame Researchers Develop Iris Recognition Software using New Method," online, *Biometric Update*, November 16, 2016.

   https://www.biometricupdate.com/201611/notre-dame-researchers-develop-iris-recognition-software-using-new-method

7. "Zombie Ant' Brains Left Intact by Fungal Parasite," *Penn State News*, November 7, 2017.

   http://news.psu.edu/story/492948/2017/11/07/research/zombie-ant-brains-left-intact-fungal-parasite

8. "Zombie Ants Are Scarier Than You Ever Imagined," *Fox News*, November 14, 2017.

   http://www.foxnews.com/science/2017/11/14/zombie-fungus-is-scarier-than-ever-imagined.html

9. "Zombie Fungus Is Even Scarier Than We Thought," *The New York Post*, November 13, 2017.

   http://nypost.com/2017/11/13/zombie-fungus-is-even-scarier-than-we-thought/

10. "See What's Controlling These Zombie Ants," *National Geographic*, November 10, 2017.

    https://news.nationalgeographic.com/2017/11/controlling-zombie-ants-fungus-spd/

11. "What Makes Zombie Ants Obey," *EarthSky*, November 9, 2017.

    http://earthsky.org/earth/research-zombie-ant-fungus-doesnt-invade-ants-brains

12. "The Fungus That Turns Ants Into Zombies Is More Diabolical Than We Realized," *Gizmodo*, November 9, 2017.

    https://gizmodo.com/the-fungus-that-turns-ants-into-zombies-is-more-diaboli-1820301538

13. "Puppeteer Parasite That Creates Zombie Ants Hijacks Their Bodies-Not Brains," *Newsweek*, November 10, 2017.

    http://www.newsweek.com/parasite-zombie-ants-hijacks-bodies-not-brains-707816

14. "Biological Clock Found in Fungal Parasite Sheds More Light on 'Zombie Ants' Phenomenon," *Phys.org*, November 6, 2017.

    https://phys.org/news/2017-11-biological-clock-fungal-parasite-zombie.html

15. "Scientists Were All Wrong About That Zombie Ant Fungus on 'Planet Earth'," *Inverse*, November 9, 2017.

    https://www.inverse.com/article/38278-zombie-cordyceps-fungus-ant-brains

16. " 'Zombie Ant' Fungus Found to Leave Its Victim's Brains Uneaten," *New Atlas*, November 10, 2017.

    https://newatlas.com/zombie-ant-fungus-brain/52143/

17. "This Nightmare Fungus Turns Ants into Zombies and Controls Their Every Movement," *Techly*, Australia, November 13, 2017.

    https://www.techly.com.au/2017/11/14/nightmare-fungus-turns-ants-zombies-controls-every-movement/

18. "Scientists Discover 'Zombie Fungus' Which Controls Ants' Behaviour, Infects Brain," *Deccan Chronicle*, November 13, 2017.

    http://www.deccanchronicle.com/lifestyle/pets-and-environment/131117/scientists-discover-zombie-fungus-which-controls-ants-behaviour-infects-brain.html

19. "How the Zombie Fungus Takes Over Ants' Bodies to Control Their Minds," *The Atlantic*, November 14, 2017.

    https://www.theatlantic.com/science/archive/2017/11/how-the-zombie-fungus-takes-over-ants-bodies-to-control-their-minds/545864/

20. "This Fungus Turns Ants into Zombies!", *India Today*, India, November 15, 2017.

    http://indiatoday.intoday.in/education/story/zombie-ants/1/1090111.html

21. "OMG! This Fungus Turns Ants into 'Zombies' and Its More Terrifying Than You Thought," *India TV*, India, November 16, 2017.

    http://www.indiatvnews.com/buzz/news-it-s-true-there-s-a-fungus-which-turns-ants-into-zombies-and-its-more-terrifying-that-you-thought-412280

22. "Close Collaboration Sheds Light on Collective Behaviors," Press Release, College of Engineering, University of Notre Dame, November 21, 2017.

    https://engineering.nd.edu/news-publications/pressreleases/close-collaboration-sheds-light-on-collective-behaviors

Advanced Research Experience

- Invited lecturer to the Center for Applied Science and Engineering and Institute of Information Science, Academia Sinica, Nankang, Taiwan, June 21 – July 17, 1996. Conducting research in computational geometry and parallel computation with several world leading experts in these fields and with researchers at the Academia Sinica.

- Invited to visit the Max-Planck-Institut (MPI) fur Informatik in Saarbrucken, Germany, June 1 – July 31, 1994. Conducting research in computational geometry and parallel computation with leading researchers at the MPI.

- Accepted for participation in the Course on Computational Geometry and Its Applications, Leonardo Fibonacci Institute, Trento, Italy, June 15–19, 1992, and selected for the Research Experience at the Institute, June 15 – July 10, 1992.

  – This was a seminar course on the state of the art in Computational Geometry offered by the Leonardo Fibonacci Institute, a division of the Istituto Per La Ricerca Scientifica E Tecnologica, Trento, Italy, June 15–19, 1992. About thirty participants were selected from applicants worldwide, and five participants were chosen to stay for one month in the Fibonacci Institute to conduct research with several experts in Computational Geometry.