Kenneth Chiu

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Johnson City, NY 13790
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607-777-7320 (Office)
607-729-1432 (Home)

Education

2001 Ph.D. in Computer Science, Indiana University. (Advisor Randall Bramley.)
1988 A.B. in Computer Science, Princeton University.

Research Interests

My primary research is in the area of distributed systems, with a focus on grid computing, scientific computing, component architectures, and web services as it relates to these. I also have a concentration in XML processing, especially parallel XML processing, and integrating sensors and instruments into a grid environment.

Positions Held

State University of New York at Binghamton
Assistant Professor, Computer Science
September 2004 to present

University of Southampton
Visiting Fellow, Department of Computer Science
July 23-August 23, 2005

Indiana University
Research Scientist
September 2003 to August 2004

NSF Instrument Middleware project.

Indiana University
Post-doctoral Fellow
September 2001 to August 2003

DOE Common Component Architecture project.

Indiana University
Research Assistant
May 1999 to May 2001

NSI Software
Software Engineer
May 1996 to December 1997

Indiana University
Research Assistant
January 1993 to May 1996

Indiana University
Teaching Assistant
December 1991 to December 1992

External Funding

1. *CDI-Type II: Collaborative Research: New knowledge from the Global Lake Ecological Observatory Network (GLEON).* PI: Kenneth Chiu. NSF Award 0941573. $228,000. October 1, 2009-September 30, 2013. Lead computer science PI, in research on high-performance coupling of sequential and parallel simulations and system architecture.

2. *NUE: Nanotechnology for Manufacturing Flexible Electronics*. PIs: Howard Wang (lead), Kenneth Chiu, Daryl Santos, Alok Rastogi, Changhong Ke. NSF Award 0836667. $199,971 (approximately $75,000 share). September 1, 2008-August 31, 2010. Lead computer science PI. Responsible for research and development of information retrieval web site and student projects.

3. *Collaborative Research: CI-Team Demonstration: Developing a Model for Engagement of Citizen Scientists: Lake Associations*. PI: Kenneth Chiu. NSF Award 0753178. $53,928. May 1, 2008-October 31, 2010. Lead computer science PI. Research and development of cyberinfrastructure and e-science to present and visualize sensor data. Developed course to train and educate students in their engagement with scientists.

4. Travel Supplement to *The CrystalGrid Framework*. PI: Kenneth Chiu. NSF Award 0628969. $6678. September 1, 2006-August 31, 2008.

5. Research Experience for Undergraduates (REU) Supplement to *The CrystalGrid Framework*. PI: Kenneth Chiu. NSF Award 0626101. $12,000. September 1, 2006-August 31, 2008.

6. *Center for Technology for Advanced Scientific Component Software (TASCS)*. PIs: Madhusudhan Govindaraju (lead), Kenneth Chiu, Michael J. Lewis. DOE Award number DE-FG02-07ER25803. $463,225 ($231,612 share). November 15, 2006–Nov 14, 2011. Responsible for multiprotocol communications infrastructure.

7. *The CrystalGrid Framework*. PI: Kenneth Chiu. NSF Award IIS-0513687. $162,073. September 1, 2005–August 31, 2009. Responsible for research in XML and Semantic Web techniques for scientific data management.

8. *Efficient Transfer of Data Between Distributed CCA Components using XCAT-C++/Proteus*. PIs: Madhusudhan Govindaraju (lead) and Kenneth Chiu. Northrup-Grumman. October, 2005-October 2006. $10,000. Responsible for multiprotocol communications using Proteus.

9. *Scientific Instruments as ICT Components in Building a GrEMLIN for e-Research*. A/Prof CJ Kepert, Prof David A. Abramson, Dr. Kenneth Chiu, Dr N Hauser, Prof MB Hursthouse, Dr DF McMullen, Prof BA Pailthorpe, Dr P Turner, Prof Albert Y Zomaya. Australian Research Council, Award SR0567533, $120,000 AUD (only funded collaborative travel). 2005-2006. Responsible for advice on design of grid-enabled remote instrumentation.

10. *The Integration of Scientific Instruments into the Grid: Building Infrastructure for the Construction of a GrEMLIN*. David Abramson, Kenneth Chiu, Rick McMullen, Peter Turner, Albert Zomaya. Funded by GrangeNet (Grid and Next Generation Network), Australia.

$50,000 AUD (only funded collaborative travel), 2005-2006. Responsible for design of grid-enabled remote instrumentation.

11. *Automating Scaling and Extending of Data Flow in a Network of Sensors: Towards a Global Network of Lakes*. PIs: Donald R. McMullen (lead) and Kenneth Chiu (at Indiana University). NSF Award DBI-0446298. $299,168. March 1, 2005–February 2008. Responsible for high-performance XML communications, multi-protocol communications.

12. *Instruments and Sensors as Network Services*. PIs: Donald R. McMullen (lead), Kenneth Chiu, Randall Bramley, and John Huffman. NSF Award ANI-0330568. $1,587,299 ($170,000 subcontract share to Binghamton). August 15, 2003–July 31, 2006. Responsible for security model, high-performance XML communications, multi-protocol communications.

Internal Funding

1. *Advancing the Study of Human and Machine Learning Through Grid Computing*. Kenneth Kurtz, Kenneth Chiu, Madhusudhan Govindaraju, Michael J. Lewis. Interdisciplinary Collaboration Grants (ICG), Research Foundation at SUNY Binghamton. $10,000. 5/15/2005–12/31/2005. Along with Lewis and Govindaraju, responsible for computer science role in research on neural networks.

2. *Distributed Cyberinfrastructure for Cardiac Modeling*. PIs: Kenneth Chiu (lead), Jacques Beaumont. Interdisciplinary Collaboration Grants (ICG). Research Foundation at SUNY Binghamton. $10,000 (approximately $8000 share). May 15, 2007-February 26, 2009.

Book Chapters

1. David Allenotor, Ruppa K. Thulasiram, Kenneth Chiu, Sameer Tilak. “A Fuzzy Real Option Model to Price Grid Compute Resources”. *Handbook of Research on Scalable Computing Technologies*. Kuan-Ching Li, Ching-Hsien Hsu, Laurence Tianruo Yang, Jack Dongarra, Hans Zima, eds. Pages 471-484, IGI Global, 2009.
2. Yibo Sun, Sameer Tilak, Ruppa K. Thulasiram, and Kenneth Chiu . “Markets, Mechanisms, Games and their Implications in Grids”. In *Market-Oriented Grid and Utility Computing*. Rajkumar Buyya and Kris Bubendorfer, eds. Wiley Press, Hoboken, New Jersey, USA, Aug. 2009.
3. D. F. McMullen, R. Bramley, K. Chiu, H. Davis, T. Devadithya, J. C. Huffman, K. Huffman, T. Reichherzeri, “The Common Instrument Middleware Architecture: Experiences and Future Directions”, *Grid-Enabled Remote Instrumentation*, pp. 393-407, Springer, 2009. [4 citations.]
4. Kenneth Chiu, Peter Shirley, and Changyaw Wang. Multi-Jittered Sampling. In *Graphics Gems IV*. Paul Heckbert, ed. Academic Press, Boston, 1994. [9 citations.]

Journal Guest Editorship

Kenneth Chiu and Geoffrey Fox, editors. “Special Section: Third IEEE International Conference on e-Science and Grid Computing”. *Future Generation Comp. Syst.* 25(4): (2009).

Journal Publications

1. Langman, O.C., P.C. Hanson, S.R. Carpenter, K. Chiu, and Y.H. Hu. “Control of dissolved oxygen in northern temperate lakes over scales ranging from minutes to days”. *Aquatic Biology*. Accepted with revisions.
2. Kenneth Chiu and Geoffrey Fox. “Editorial for Special Section: Third IEEE International Conference on e-Science and Grid Computing”. *Future Generation Comp. Syst.* 25(4): 444-445 (2009).
3. Suraj Pandey, William Voorsluys, Mustafizur Rahman, Rajkumar Buyya, James Dobson, and Kenneth Chiu. “A Grid Workflow Environment for Brain Imaging Analysis on Distributed Systems”. In *Concurrency and Computation: Practice and Experience*, Volume 21, Number 16, Pages 2118-2139, Wiley Press, New York, November 2009.
4. M. Govindaraju, M. J. Lewis, and K. Chiu, “Design and Implementation Issues for Distributed CCA Framework Interoperability”. Concurrency and Computation: Practice and Experience, Volume 19, Issue 5, pp. 651-66, April 2007.
5. Randall Bramley, Kenneth Chiu, Tharaka Devadithya, Nisha Gupta, Charles Hart, John C. Huffman, Kianosh Huffman, Yu Ma, and Donald F. McMullen. “Instrument Monitoring, Data Sharing and Archiving Using Common Instrument Middleware Architecture (CIMA)”. *Journal of Chemical Information and Modeling*. 2006; 46(3), pp. 1017-1025. [11 citations.]
6. Felipe Bertrand, Yongquan Yuan, Kenneth Chiu, Randall Bramley. “An Approach to Parallel MxN Communication”. *International Journal of High Performance Computing Applications*, Vol. 19, No. 4, 399-407 (2005). [12 citations.]
7. Bernholdt, D.E., et al., “A Component Architecture for High Performance Scientific Computing,” *International Journal of High Performance Computing Applications, ACTS Collection Special Issue*, Vol. 20, No. 2, 163-202 (2006). [50 citations.]
8. D. Gannon, K. Chiu, M. Govindaraju, and A. Slominski. “A Revised Analysis of the Open Grid Services Infrastructure”. *Journal of Computing and Informatics*, Volume 21, 2002, 321-332. [8 citations.]
9. Dennis Gannon, et al. “Programming the Grid: Distributed Software Components, P2P and Grid Web Services for Scientific Applications”. *Cluster Computing*, 5(3), July 2002, pp. 325-336. [About 75 citations.]
10. Peter Shirley and Kenneth Chiu. “A Low Distortion Map Between Disk and Square”. *Journal of Graphics Tools 2*, 3, 1997, pp. 45-52. [36 citations.]

Peer-Reviewed Conference Publications

1. Yibo Sun, Beilan Wang, and Kenneth Chiu. “A Graph Clustering Approach to Computing Network Coordinates”. Forthcoming in *Proceedings of the 18th Euromicro International Conference on Parallel, Distributed and Network-Based Computing (PDP 2010)*, February 17-19, 2010. (Acceptance rate 37%.)
2. Ying Zhang, Yinfei Pan, and Kenneth Chiu. “Speculative p-DFAs for Parallel XML Parsing”. In *Proceedings of the 16th International Conference on High Performance Computing (HiPC-2009)*, Kochi, December 2009. (Acceptance rate 19%.)

3. Suraj Pandey, William Voorsluys, Mustafizur Rahman, Rajkumar Buyya, James Dobson, and Kenneth Chiu, "Brain Image Registration Analysis Workflow for fMRI Studies on Global Grids", *Proceedings of the 23rd IEEE International Conference on Advanced Information Networking and Applications (AINA 2009)*, pp. 435-442, Bradford, UK, May 26-29, 2009. (Acceptance rate 33%.)
4. Yinfei Pan, Ying Zhang, and Kenneth Chiu. "Parsing XML Using Parallel Traversal of Streaming Trees". In *Proceedings of the 15th International Conference on High Performance Computing (HiPC-2008)*, Bangalore, India, December 17-20, 2008, pp 142-156. (Acceptance rate 14%.)
5. Yinfei Pan, Ying Zhang, and Kenneth Chiu. "Hybrid Parallelism for XML SAX Parsing". In *Proceedings of the 2008 IEEE International Conference on Web Services (ICWS 2008) (Industry track)*, September 23-26, 2008, Beijing, China. IEEE Computer Society 2008, pp. 505-512. (Acceptance rate 18%.)
6. Winslow, L. A., B. J. Benson, K. E. Chiu, P. C. Hanson, and T. K. Kratz. "Vega: a flexible data model for environmental time series data". In *Proceedings of the Environmental Information Management Conference 2008*. Albuquerque, NM, September 10-11, 2008, pp. 166-171.
7. Owen Langman, Paul Hanson, Steve Carpenter, Kenneth Chiu, and Yu Hen Hu. "Detecting Sensor Failures in Ecological Sensor Networks". In *Proceedings of the Environmental Information Management Conference 2008*. Albuquerque, NM, September 10-11, 2008, pp. 83-89.
8. Yinfei Pan, Ying Zhang, and Kenneth Chiu. "Simultaneous transducers for data-parallel XML parsing. In *Proceedings of the IEEE International Symposium on Parallel and Distributed Processing, 2008, (IPDPS 2008*), April 14, 2008, pp. 1-12. (Acceptance rate 25.6%.) [1 citation.]
9. T. Devadithya and K. Chiu. "Index Structures for Efficient Querying with Distributed Triplestores". In *Proceedings of the Third IEEE International Conference on e-Science and Grid Computing*, pp. 171-178, Bangalore, India, December 10-13, 2007. (Acceptance rate 29%.)
10. D. du Boulay, C. Chee, K. Chiu, R. Leow, D. McMullen, R. Quilici, and P. Turner. "Portal Services for Collaborative Remote Instrument Control, Monitoring and Data Access". In *Proceedings of the Third IEEE International Conference on e-Science and Grid Computing*, pp. 328-335, Bangalore, India, December 10-13, 2007. (Acceptance rate 29%.)
11. Y. Pan, Y. Zhang, K. Chiu, and W. Lu. "Parallel XML Parsing Using Meta-DFAs". In *Proceedings of the Third IEEE International Conference on e-Science and Grid Computing*, pp. 237-244, Bangalore, India, December 10-13, 2007. (Acceptance rate 29%.) [5 citations.]
12. Z. Gao, Y. Pan, Y. Zhang, and K. Chiu. "A High Performance Schema Specific XML Parser". In *Proceedings of the Third IEEE International Conference on e-Science and Grid Computing*, pp. 245-252, Bangalore, India, December 10-13, 2007. (Acceptance rate 29%.) [1 citation.]
13. K. Kulkarni, S. Tilak, K. Chiu, and T. Fountain, "Engineering challenges in Building Sensor Networks for Real-World Applications", In *Proceedings of the Third International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP 2007)*, Melbourne, Australia, December 3-6, 2007.

14. S. Tilak, P. Arzberger, D. Balsiger, B. Benson, R. Bhalerao, K. Chiu, T. Fountain, D. Hamilton, P. Hanson, T. Kratz, F. P. Lin, T. Meinke, and L. Winslow, "Conceptual Challenges and Practical Issues in Building The Global Lake Ecological Observatory Network", In *Proceedings of the Third International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP 2007)*, Melbourne, Australia, December 3-6, 2007.
15. T. Devadithya and K. Chiu, "Fast Binary Serialization for Grid Systems with XBS", *Proceedings of Parallel and Distributed Computing and Systems (PDCS 2007)*, Cambridge, MA, USA, November 19-21, 2007. [1 citation.]
16. Y. Pan, W. Lu, Y. Zhang, K. Chiu. "A Static Load-Balancing Scheme for Parallel XML Parsing on Multicore CPUs". In *Proceedings of the Seventh IEEE International Symposium on Cluster Computing and the Grid (CCGrid 2007)*, pp. 351-362, Rio de Janeiro, May 2007. (Acceptance rate 33%.) [9 citations.]
17. W. Lu, K. Chiu, S. Shirasuna, and D. Gannon, "A Hybrid Decomposition Scheme for Building Scientific Workflows". In *Proceedings of High Performance Computing Symposium (HPC 2007)*, Norfolk, VA, March 2007. [1 citation.]
18. T. Devadithya, K. Chiu, and W. Lu. "C++ Reflection for High Performance Problem Solving Environments". In *Proceedings of High Performance Computing Symposium (HPC 2007)* Norfolk, VA, March 2007.
19. T. Devadithya, Z. Liu, N. Abu-Ghazaleh, W. Lu, K. Chiu, and S. Ethier, "BXSA for Fast Processing of Scientific Data". In *Proceedings of High Performance Computing Symposium (HPC 2007)*, Norfolk, VA, March 2007.
20. Ian Atkinson, Douglas du Boulay, Clinton Chee, Kenneth Chiu, Paul Coddington, Andrea Gerson, Tristan King, Donald McMullen, Romain Quilici, Peter Turner, Andrew Wendelborn, Mathew Wyatt, and Donglai Zhang. "Developing CIMA based Remote Access for Collaborative e-Research". In *5th Australasian Symposium on Grid Computing and e-Research (AusGrid 2007)*. Ballarat, January, 2007.
21. John Skovronski, Kenneth Chiu. "Ontology-Based Publish Subscribe Framework". In *8th International Conference on Information Integration and Web-based Applications & Services (iiWAS2006)*. Jakarta, December, 2006. [3 citations.]
22. Yinfei Pan, Nobuaki Kimura, Kenneth Chiu, Chin Wu. "A Real-Time Forecasting System for Lake Circulation". In *Proceedings of the 7th International Conference on Hydroscience and Engineering (ICHE-2006)*, Philadelphia, September 10-13, 2006. [1 citation.]
23. Sameer Tilak, Kenneth Chiu, Tony Fountain, Tim Kratz, Peter Arzberger, Barbara Benson. "Towards Automated Instrument Management for Lake Monitoring Systems". In *Proceedings of the 7th International Conference on Hydroscience and Engineering (ICHE-2006)*, Philadelphia, September 10-13, 2006.
24. Wei Lu, Kenneth Chiu, and Dennis Gannon, "Building Generic SOAP Framework over Binary XML for Scientific Applications". The *15th IEEE International Symposium on High Performance Distributed Computing*. Paris, France. June 2006. (Acceptance rate 15.3%.) [5 citations.]
25. Wei Lu, Yinfei Pan, Kenneth Chiu, "A Parallel Approach to XML Parsing". *The 7th IEEE/ACM International Conference on Grid Computing*. Barcelona, Spain. September 28-29, 2006. (Acceptance rate 20%.) [15 citations.]

26. Ian M. Atkinson, Douglas du Boulay, Clinton Chee, Kenneth Chiu, Tristan King, Donald F. McMullen, Romain Quilici, Peter Turner, Mathew Wyatt, “Common Instrument Middleware Architecture: Extensions for the Australian e-Research Environment”. In *Proceedings of the UK e-Science All Hands Meeting*. Nottingham, UK, September 18-21, 2006.

27. Madhusudhan Govindaraju, Michael R. Head, Kenneth Chiu, “XCAT-C++: Design and Performance of a Distributed CCA Framework,” *The 12th Annual IEEE International Conference on High Performance Computing (HiPC) 2005*, pp. 270-279, December 18-21, 2005. Goa, India. (Acceptance rate 14%.) [4 citations.]

28. K. Chiu, T. Devadithya, W. Lu, A. Slominski. “A Binary XML for Scientific Applications”. In *Proceedings of the IEEE International Conference on e-Science and Grid Computing (e-Science 2005)*. Pp. 336-343, December 5-8, 2005. Melbourne, Australia. (Acceptance rate 31.6%.) [11 citations.]

29. Michael R. Head, Madhusudhan Govindaraju, Aleksander Slominski, Pu Liu, Nayef Abu-Ghazaleh, Robert van Engelen, Kenneth Chiu, Michael J. Lewis, “A Benchmark Suite for SOAP-based Communication in Grid Web Services," In *SC|05 (Supercomputing): International Conference for High Performance Computing, Networking, and Storage*, Seattle WA, November 2005. (Acceptance rate 24%.) [23 citations.]

30. D.F. McMullen, T. Devadithya, K. Chiu, “Integrating Instruments and Sensors into the Grid with CIMA Web Services.” *Proceedings of the Third APAC Conference on Advanced Computing, Grid Applications and e-Research (APAC’05)*. September 25-30, 2005. Gold Coast, Australia. [15 citations.]

31. Wei Lu, Kenneth Chiu, Aleksander Slominski, and Dennis Gannon. “A streaming validation model for soap digital signature”. In *14th IEEE International Symposium on High Performance Distributed Computing (HPDC-14)*, 2005. (Acceptance rate 18%.) [8 citations.]

32. Sameer Tilak, Kenneth Chiu, Nael B. Abu-Ghazaleh, Tony Fountain, “Dynamic Resource Discovery for Wireless Sensor Networks,” *IFIP International Symposium on Network-Centric Ubiquitous Systems (NCUS 2005)*. (Acceptance rate 36%.) [12 citations.]

33. Kenneth Chiu. “XBS: A Streaming Binary Serializer for High Performance Computing”. In *Proceedings of the High Performance Computing Symposium 2004*, April 2004. [4 citations.]

34. Felipe Bertrand, Yongquan Yuan, Kenneth Chiu, and Randall Bramley. “An Approach to Parallel MxN Communication”. In *Proceedings of the 4th LACSI Symposium*, October 2003.

35. Madhusudhan Govindaraju, Sriram Krishnan, Kenneth Chiu, Aleksander Slominski, Dennis Gannon, and Randall Bramley. “Merging the CCA Component Model with the OGSI Framework”. In *Proceedings of the 3rd IEEE/ACM International Symposium on Cluster Computing and the Grid (CCGrid 2003)*, Tokyo, Japan, May 12-15, 2003. (Acceptance rate 34.2%.) [43 citations.]

36. Kenneth Chiu, Madhusudhan Govindaraju, and Dennis Gannon. “The Proteus Multiprotocol Library”. In *Proceedings of the 2002 Conference on Supercomputing*, November 2002. (Acceptance rate 29%.) [8 citations.]

37. Kenneth Chiu, Madhusudhan Govindaraju, and Randall Bramley. “Investigating the Limits of SOAP Performance for Scientific Computing”. In *Proceedings of the Eleventh IEEE International Symposium on High Performance Distributed Computing (HPDC’02)*, July 2002. (Acceptance rate 30%.) [About 200 citations.]

38. Randall Bramley, Kenneth Chiu, Shridhar Diwan, Dennis Gannon, Madhusudhan Govindaraju, Nirmal Mukhi, Benjamin Temko, and Madhuri Yechuri. “A Component-Based Services Architecture for Building Distributed Applications”. In *Proceedings of the Ninth IEEE International Symposium on High Performance Distributed Computing*, 2000. [About 70 citations.]
39. Kenneth Chiu, et al. “Spatially-Nonuniform Scaling Functions for High-Contrast Images”. In *Proceedings of Graphics Interface ‘93*. 1993. [About 100 citations.]

Peer-Reviewed Workshop Publications

1. Russ Miller, Jonathan J. Bednasz, Kenneth Chiu, Steven M. Gallo, and Madhusudhan Govindaraju. “Grid-based research, development, and deployment in New York State”. In *Proceedings of the 22nd IEEE International Symposium on Parallel and Distributed Processing (IPDPS 2008), HPGC Workshop*, April 14, 2008, pp. 1-8.
2. D. du Boulay, C. Chee, K. Chiu, R. Leow, D. F. McMullen, R. Quilici, and P. Turner, “Remote Instrument Control with CIMA Web Services and Web 2.0 Technology”, *Workshop on Remote control of Devices (WoRD) (in conjunction with IEEE ICDIM'07)*, Lyon, France, October 28--31, 2007. [1 citation.]
3. Donald F. McMullen, Ian M. Atkinson, Kenneth Chiu, Peter Turner, Romain Quilici, Mathew Wyatt. Toward Standards for Integration of Instruments into Grid Computing Environments. *Workshop on Collaborative Remote Laboratories* (In conjunction with *e-Science 2006*).
4. I.A. Atkinson, D. du Boulay, C. Chee, K. Chiu, T. King, D.F. McMullen, R. Quilici, P. Turner, M. Wyatt. CIMA based Remote Instrument and Data Access: An Extension into the Australian e-Science Environment. *Workshop on Collaborative Remote Laboratories* (In conjunction with *e-Science 2006*).
5. Sameer Tilak, Kenneth Chiu, Gregory Quinn, Tony Fountain, Chaitan Baru. The Case for Mobile Devices in Environmental Observing Systems. *Workshop on World-Sensor-Web (WSW'2006)* (In conjunction with SenSys 2006). October, 2006. [2 citations.]
6. T. Devadithya, K. Chiu, K. Huffman, D. F. McMullen. “The Common Instrument Middleware Architecture: Overview of Goals and Implementation.” *Proceedings of IEEE Workshop on Instruments and Sensors on the Grid*. December 5-8, 2005. Melbourne, Australia. [10 citations.]
7. Michael J. Lewis, Madhusudhan Govindaraju, and Kenneth Chiu, “Exploring the Design Space for CCA Framework Interoperability Approaches,” In proceedings of *Workshop on Component Models and Frameworks in High Performance Computing*, Atlanta, GA, June 22-23, 2005. [1 citation.]
8. Deger Cenk Erdil, Kenneth Chiu, Madhusudhan Govindaraju, and Michael J. Lewis, “A Proteus-Mediated Communications Substrate for LegionCCA and XCAT-C++,” In *Proceedings of Workshop on Component Models and Frameworks in High Performance Computing*, Atlanta, GA, June 22-23, 2005.
9. S. Tilak, B. Pisupati, K. Chiu, G. Brown and N. B. Abu-Ghazaleh. “A File-system Abstraction for Sensor Networks”, *Energy Efficient Sense and Response System Workshop (EESR '05)*. Held with MobiSys 2005. [9 citations.]

10. Kenneth Chiu and Wei Lu. A Compiler-Based Approach to Schema-Specific XML Parsing. *First International Workshop on High Performance XML Processing* (Held with WWW2004). April 2004. [26 citations.]
11. Kenneth Chiu, Kurt Zimmerman, Peter Shirley. The Light Volume: An Aid to Rendering Complex Environments. In *Proceedings of the 7th Eurographics Workshop On Rendering*, 1996. [5 citations.]
12. Kenneth Chiu, Peter Shirley. Rendering, Complexity, and Perception. In *Proceedings of the 5th Eurographics Workshop On Rendering*, 1994. [16 citations.]
13. Madhusudhan Govindaraju, Aleksander Slominski, Kenneth Chiu, Pu Liu, Robert van Engelen, Michael J. Lewis, "Toward Characterizing the Performance of SOAP Toolkits". In the proccedings of the *5th IEEE/ACM International Workshop on Grid Computing* (short paper), pp. 365-372, November 8th, 2004, Pittsburgh, USA. [26 citations.]

Other Publications

1. Ian M. Atkinson, Douglas de Boulay, Clinton Chee, Kenneth Chiu, Tristan King, Donald F. McMullen, Romain Quilici, Nigel G. Sim, Peter Turner, Mathew J. Wyatt. "The Humble Web Browser as a Responsive Interface to Remote Instruments and Data". Poster at the *2007 Conference of American Crystallographic Association 2007*, Salt Lake City, Utah.
2. Tharaka Devadithya, Kenneth Chiu. Fast Binary Serialization for Grid Systems with XBS. Poster at *Supercomputing 2006*. [1 citation.]
3. Timothy K. Kratz, Peter Arzberger, Barbara J. Benson, Chih-Yu Chiu, Kenneth Chiu, Longjiang Ding, Tony Fountain, David Hamilton, Paul C. Hanson, Yu Hen Hu, Fang-Pang Lin, Donald F. McMullen, Sameer Tilak, Chin Wu. "Toward a Global Lake Ecological Observatory Network" In *Proceedings of the Karelian Institute (Invited)*, University of Joensuu, Finland, 2006. [1 citation.]
4. Kenneth Chiu. A Compiler-Based Approach to Schema-Specific XML Parsing. Indiana University Computer Science Technical Report 592. February 2004.
5. Kenneth Chiu. Web Services Performance: A Survey of Issues and Solutions. In *Proceedings of the 7th World Conference on Systemics, Cybernetics and Informatics*, July 2003. (Invited.) [3 citations.]
6. Kenneth Chiu, et al. Instruments and Sensors as Web Services. Unpublished whitepaper.
7. Kenneth Chiu. An Architecture for Concurrent, Peer-To-Peer Components. Ph.D. Thesis, Indiana University.
8. Randall Bramley, Kenneth Chiu, Shridhar Diwan, Dennis Gannon, Madhusudhan Govindaraju, Nirmal Mukhi, Benjamin Temko, and Madhuri Yechuri. CCAT: A Component Architecture for Building Distributed Scientific Applications. Published abstract. *First SIAM Conference on Computational Science and Engineering*, 2000.
9. Kenneth Chiu. *Rendering Extremely Complex Scenes*. Peer-reviewed technical sketch, SIGGRAPH '94, 1994.
10. Peter Shirley and Kenneth Chiu. Notes on Adaptive Quadrature on the Hemisphere. Technical Report No. 411, Indiana University, 1994.

Patents

A Technique to Enable Parallel XML Parsing by Generating an Outline of the XML Document Using a Preparsing Pass. (USPTO Ser. No. 12/238,351, published on 4-2-09 as US-2009-0089658-A1.)

Parallel XML Parsing using Meta-DFAs. (Non-provisional filed: USPTO Ser. Nr. 12/636,342)

Invited Talks

1. *Addressing the Challenges of the Scientific Data Deluge*, Wayne State University, September 2008.
2. *e-Science for Instruments and Sensors*. Australian National University Supercomputer Facility, March 2006.
3. *A Nowcasting System for Lake Circulation*, Global Lake Ecological Observatory Network (GLEON) Workshop, James Cook University, Australia, March 2006.
4. *An Instrument Management System for Sensor Networks*. Global Lake Ecological Observatory Network (GLEON) Workshop, James Cook University, Australia, March 2006.
5. *Binary XML for Scientific Applications*, Australian Commonwealth Scientific and Research Organization (CSIRO), December 2005.
6. *The Common Instrument Middleware Architecture*. Remote Access and Automation Workshop Instruments E-Science Workshop, Marysville, Australia, March 2005.
7. *An Agent Architecture for Sensor Networks*. Global Lake Ecological Observatory Network Workshop, Wisconsin, August 2005.
8. *CIMA and e-Science*. CrystalGrid Workshop, U. Southampton, Sept. 2004 (This helped result in an awarded NSF grant.)
9. *Web Services Performance Aspects*, Invited Panel, GlobusWorld, Februrary, 2005.
10. *The Proteus Multiprotocol Library*. Eleventh SIAM Conference on Parallel Processing for Scientific Computing (PP04), February 2004.
11. *A C++ Reflection Library*. Lawrence Livermore National Labs, Center for Advanced Scientific Computation, October 2003.
12. *Non-Blocking Synchronization*. University of Tennessee at Knoxville, August 2002.
13. *Proteus*. University of Utah, 2001.
14. *A Non-Blocking Algorithm for Linked-Lists*. SunLabs, Boston, December, 2000.

Other Talks

1. Instruments and Sensors on the Grid: Issues and Challenges. Globusworld, February 2005.
2. An Approach to MxN Communication using MPI-IO. LACSI Symposium, October 2003.
3. Web Services Performance: A Survey of Issues and Solutions. SCI 2003, July 2003.
4. The Proteus Multiprotocol Library. Supercomputing, November 2002.

5. Investigating the Limits of SOAP Performance for Scientific Computing. Eleventh IEEE International Symposium on High Performance Distributed Computing (HPDC'02), July 2002.
6. The Light Volume: An Aid to Rendering Complex Environments. 7th Eurographics Workshop On Rendering, 1996.
7. Rendering Extremely Complex Scenes. SIGGRAPH '94, 1994.

Professional Activities

SWE amit sheth
HICSS Verela
ica3pp 2008
ica3pp 2009

Conference Leadership

Workshops Chair, e-Science 2008.

Program Committee Co-chair, e-Science 2007.

Program Committee

CloudCom 2009.
Ubisafe 2009.
HPDC 2009.
Grid 2007, 2008, 2009.
Applied Computing 2007.
Supercomputing 2006.

Conference Sessions Chaired

Grid Allocation and Reservation, SC|06, Supercomputing 2006.

Workshops Chaired or Organized

Automatic Scaling of Sensor Networks in Ecological Observatories. At Long Term Ecological Research All Scientists Meeting, September 2006.

Instruments and Sensors on the Grid. At e-Science 2005. Proceedings peer-reviewed and published by IEEE.

Web Services Performance: Issues and Research. At GGF 15, October 2005.

Globusworld: Instruments and Sensors on the Grid: Issues and Challenges, February 2005.

Proposal Review Panelist

NSF IIS Review Panel, January, 2008.
NSF IIS Review Panel, March, 2006.
NSF ITR Review Panel, June, 2004.
NSF Medium ITR Review Panel. Washington D.C., April, 2003.

Reviewer

Future Generation Computer Systems

Supercomputing
HPDC
IBM Systems Journal.
SIGGRAPH
Software Practice and Experience

University
CS Graduate Committee.
CS Instructional Labs.
Watson Strategic Plan Committee.
Academic Computing and Educational Technology Committee.
Served on faculty recruitment committee.
Served on computer labs committee.
Served on Distinguished Dissertation Committee.

Student Advising

Advisor

Yibo Sun, PhD., ABD, Graduation expected in 2010.
Ying Zhang, PhD. Graduation expected in 2010.
Dai-Hee Kim, Ph.D. Graduation expected in 2011.
Rui Wang, Ph.D. Graduation expected in 2011.
Sumit Ray, Ph.D.
John Skovronski, PhD.

Yinfei Pan, PhD. Graduated in 2009, at Bloomberg.
Tharaka Devadithya, PhD (Indiana University). Graduated in 2008, at Microsoft.

Gopal Biyani, MS.
Vivek Singh, MS.
Chaitali Pandit, MS.
Sandesh Krishnan, MS.
Aasim Malladi, MS.
Saurabh Mantri, MS/PhD.
Aseem Belsare, MS.

Xiang Gao, MS. Graduated in 2008, at Bloomberg.
Zongde Liu, MS. Graduated in 2007.
Siddika Chowdhury, MS. Graduated in 2007.
Devendran Deiveegam, MS. Graduated in 2007.
Narendhiran Giridharan, MS. Graduated in 2007.
John Skovronski, MS, Graduation in 2007.
Xiaosong Zhang, MS. Graduated in 2007.
Milind Renapurkar, Graduated.
Rohit Bhalerao, MS. Graduation in May 2007, at Bloomberg
Richard Lee, MS. Graduated in May 2006, at Intel.
Vinay Solanki, MS. Graduated in Aug 2006.
Sameer Railkar, MS. Graduated in May 2006, at Bloomberg.

Zhenghong Gao, MS. Graduated in May 2006, at Microsoft.
Senthilkumar Mehalingam, MS. Graduated in August 2006.

Committee Member
Umesh Deshpande, Dec. 2009. MS thesis.
Xiaoshuang Wang, Ph.D.
Ruiqi Luo, Ph.D.
Michael Hines, Ph.D.
Michael Head, Ph.D.
Brent Rood, Ph.D.
Adnan Majeed, Ph.D.
Ruiqi Luo, Ph.D.
Xiaoshuang Wang, Ph.D.
Jun Yu, Ph.D. (external)
Nayef Abu-Ghazaleh, PhD.
Pu Liu, PhD.
Paul Rogers, PhD.
Sameer Tilak, PhD.
Bhanu Nagendra Pisupati, PhD. Indiana University.
Vinay Kolar, Ph.D.
Ke Liu, Ph.D.
Deger Erdil, Ph.D.

External Thesis Examiner
Alex Ng. *Challenges to data transport in supporting heterogeneous Web Services protocol stacks*. Macquarie University, Sydney, Australia.

Courses

Taught

Operating Systems (CS 552), Fall 2004.
Advanced Topics in Object-Oriented Programming (CS 580C), Spring 2005.
Operating Systems (CS 552), Fall 2005.
Operating Systems (CS 552), Spring 2006.
Distributed Systems (CS 654), Fall 2006.
Advanced Topics in Object-Oriented Programming (CS 540/480C), Spring 2007.
Distributed Systems (CS 557), Fall 2007.
Object Oriented Analysis and Design (CS 340), Fall 2007.
Topics in Event-Based, P2P, and Workflow Systems (CS 680E), Spring 2008.
Distributed Systems (CS 557/457), Fall 2008.
Advanced Topics in Object-Oriented Programming (CS 540), Fall 2008.
Topics in Event-Based, P2P, and Workflow Systems (CS 680E), Spring 2009.
Cyberinfrastructure for Environmental Observatories (CS 580Q), Spring 2009.

Enhanced Significantly

Distributed Systems (457/557): This course was originally a 600-level course. The course was changed and additional material on P2P systems was introduced.

Developed

Advanced Topics in Object-Oriented Programming (440/540): This course was developed to introduce students to recent developments in OOP, such as generic programming.

Cyberinfrastructure for Environmental Observatories (580Q): This course was developed as part of an NSF grant. The goal of the course is to engage students with scientists together in using modern computer developments such as Web 2.0, Google Maps, etc.

Honors and Awards

Patricia Roberts Harris Fellowship, 1988-91
National Merit Scholar