KENGO NAKAJIMA, Ph.D
Curriculum Vitae

Nationality: JAPAN
Date of Birth: 14th September, 1962.
Office Address: Information Technology Center, The University of Tokyo
2-11-16 Yayoi, Bunkyo-ku, Tokyo 113-8658, JAPAN.
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RESEARCH INTEREST

- Parallel Numerical Algorithms, High-Performance Computing (HPC)
  - Scalable iterative linear solvers
  - Parallel programming models: OpenMP+MPI Hybrid
  - Parallel finite element method
  - HPC middleware (HPC-MW)
  - Parallel couplers
- Preconditioned Iterative Linear Solvers
  - Scalable preconditioners for ill-conditioned problems
  - Geometric/algebrainc multigrid
- Finite Element Methods (FEM)
  - Fluid mechanics
  - Solid mechanics
  - Heat transfer
  - Groundwater flow/transportation
- Computational Fluid Dynamics (CFD)
  - Unstructured grids
  - Compressible/incompressible flow
- Adaptive Mesh Refinement (AMR)
  - h-type grid adaptation
  - Dynamic load balancing
- Solid earth simulations

LINKS

- Kengo Nakajima's Homepage
  - http://nkl.cc.u-tokyo.ac.jp/
- Homepages of Classes by Kengo Nakajima (in Japanese)
  - http://nkl.cc.u-tokyo.ac.jp/class/
- GeoFEM Project
  - http://geofem.tokyo.rist.or.jp/
- HPC Middleware (HPC-MW) Project
  - http://hpcmw.tokyo.rist.or.jp/
- CREST/JST Project "Integrated Predictive Simulation System for Earthquake & Tsunami Disaster"
  - http://www-solid.eps.s.u-tokyo.ac.jp/~crest/
- Information Technology Center, The University of Tokyo
  - http://www.itc.u-tokyo.ac.jp

EDUCATION

March 2003	Doctor of Philosophy	**Department of Quantum Science and Systems Engineering, The University of Tokyo (Tokyo, Japan)** Supervisor: Professor Genki Yagawa Thesis Title: Parallel Iterative Linear Solvers with Preconditioning for Large Scale Problems
August 1991-May 1993	Master of Science in Engineering	**Department of Aerospace Engineering and Engineering Mechanics, The University of Texas at Austin (Austin, Texas, USA)** Supervisor: Professor John Kallinderis Thesis Title: Incompressible Navier-Stokes Methods with Hybrid Adaptive Grids
April 1981-March 1985	Bachelor of Engineering	**Department of Aeronautics,** **The University of Tokyo (Tokyo, Japan)** Supervisor: Professor Kyohei Kondoh Thesis Title: Active Flutter Suppression Method for a Cantilevered CFRP Wing
April 1978 – March 1981	Diploma	**University of Tsukuba High School at Komaba (Tokyo, Japan)**

EMPLOLOYMENT HISTORY

October 2009 - present	**RIKEN, Japan.** Research Institute for Computational Science RANK: Research Supervisor (Part-Time)

April 2008 - present	**The University of Tokyo, Japan.**
	Supercomputing Division, Information Technology Center
	• Preconditioners for Parallel Iterative Solvers
	  ➢ Ill-conditioned problems
	  ➢ Scalable systems with geometric/algebraic multigrid
	• Adaptive mesh refinement and dynamic load-balancing
	• Parallel Finite-Element Methods for Geomechanics
	• Education on HPC
	• Operation of Supercomputer Resources
	•
	RANK: Professor

April 2008 - present	**Japan Agency for Marine-Earth Science and Technology (JAMSTEC)** Earth Simulator Center RANK: Visiting Research Supervisor (Part-Time)

April 2004 - March 2008	**The University of Tokyo, Japan.**
	The 21st Century Earth Science COE Program, Department of Earth and Planetary Science
	• Preconditioners for Parallel Iterative Solvers
	  ➢ Ill-conditioned problems
	  ➢ Scalable systems with geometric/algebraic multigrid
	• Adaptive mesh refinement and dynamic load-balancing
	• Parallel Finite-Element Methods for Geomechanics
	• Education on HPC
	
	RANK: Associate Professor

October 2006- March 2008	**Chuo University, Japan.** Department of Industrial Systems RANK: Instructor (Part-Time)

July 1999 - March 2004	**Research Organization of Information Science and Technology (RIST), Japan.**
	• GeoFEM Project
	• HPC-MW Project
	  ➢ Parallel data structure
	  ➢ Library for preconditioned iterative solvers for the Earth Simulator
	  ➢ Utilities for parallel computing
	  ➢ Library for parallel visualization
	  ➢ Adaptive mesh refinement and dynamic load-balancing
	
	RANK: Senior Technical Staff, Group Leader (April 2000-March 2004)

May 1993- December 1993	**Texas Institute of Computational Mechanics, The University of Texas at Austin, USA.** • Development of Compressible 3D Navier-Stokes Solvers with Adaptive Hybrid Grids RANK: Researcher

April 1985-
June 1999
	Mitsubishi Research Institute, Inc., Japan.
	• System Development and Safety Evaluation in the area of Nuclear Fuel Cycles
	  ➢ Transportation/storage of spent fuel
	  ➢ Ground disposal of High-Level Radioactive Waste (HLW)
	• Development of Simulation Codes by Finite-Element Methods (FEM)
	  ➢ Fluid mechanics, solid mechanics, heat transfer, groundwater flow
	• Parallel Computing
	
	RANK: Research Associate (1985-1988), Senior Research Associate (1989-1992), Staff Researcher (1993-1995), Senior Staff Researcher (1996-1999), Team Leader (Computational Science) (1997-1999)

TEACHING EXPERIENCES

October 2008 - present	Scientific Programming (University of Tokyo) Graduate Level 2008 Winter, 2009 Summer, 2009 Winter
April 2005 – March 2008	Finite-Element Methods (University of Tokyo) Undergraduate/Graduate Level 2005 Summer, 2006 Summer, 2007 Summer
October 2004 – March 2008	High-Performance Computing II (University of Tokyo) Graduate Level 2004 Winter, 2005 Winter, 2006 Winter, 2007 Winter
April 2004 - present	Parallel Programming (University of Tokyo) Graduate Level 2004 Summer, 2005 Summer, 2006 Summer, 2007 Summer, 2008 Summer, 2009 Summer
April 2004 - present	High-Performance Computing I (University of Tokyo) Graduate Level 2004 Summer, 2005 Summer, 2006 Summer, 2007 Summer, 2008 Summer, 2009 Summer
October 2006- March 2008	Numerical Analysis (Chuo University) Undergraduate Level (Senior) 2006 Winter, 2007 Winter

SHORT COURSES

1. Tutorial of Scientific Programming on Multicore Architectures (Information Technology Center, The University of Tokyo, 2009.9)
2. 2008 Autumn School of Japan Society for Applied Mathematics (JSIAM), Tutorial of Scientific Programming on Multicore Architectures (Tokyo, Japan, 2008.12)
3. Tutorial on Parallel Scientific Programming on T2K Open Supercomputer (Tokyo) (Information Technology Center, The University of Tokyo, 2008.9, 2009.3, 2009.7)
4. Tutorial on Vectorization of Preconditioned Iterative Linear Solvers for Unstructured Grids on the Earth Simulator, (Earth Simulator Center, Japan, 2008.04)
5. An Introduction to Robust and High Performance Software Libraries for Solving Common Problems in Computational Sciences, Tutorial Session of VECPAR 2006 (7th International Meeting High Performance Computing for Computational Science) , (IMPA (Instituto Nacional de Matemática Pura e Aplicada) , Rio de Janeiro, Brazil, 2006.07).
6. Preconditioned Iterative Linear Solvers for Unstructured Grids on the Earth Simulator, (Earth Simulator Center, Japan, 2005.04).
7. 2nd FEM/ITBL Seminar, (JAERI Kansai, Kyoto, Japan, 2004.04).
8. MRCCS/NSF Summer School: High Performance Computing in Finite Element Analysis, (University of Manchester, UK, 2003.09).
9. 4th GeoFEM Seminar (Tokyo, Japan, 2002.07).
10. GEM/ACES Workshop: Tutorial on Computational Technologies for Earthquake Science, MHPCC (Maui High Performance Computing Center) (Kihei, Maui, Hawaii, USA, 2001.07).
11. 3rd GeoFEM Seminar (Tokyo, Japan, 2001.07).
12. 1st GeoFEM Seminar (Tokyo, Japan, 1999.07).

PROJECTS

2005 October - present	Integrated Predictive Simulation System for Earthquake and Tsunami Disaster Japan Science and Technology Agency (JST) CREST/High-Performance Computing for Multi-scale and Multi-physics Phenomena Principal Investigator: Prof. Mistuhiro Matsu'ura (University of Tokyo)
April 2004 - present	Predictability of the Evolution and Variation of the Multi-scale Earth System: An Integrated COE for Observational and Computational Earth Science, University of Tokyo. Ministry of Education, Culture, Sports, Science and Technology. 21st Century COE (Center of Excellence) Program Principal Investigator: Prof. Toshio Yamagata (University of Tokyo)
April 2002 - March 2004	HPC-Middleware: Frontier Simulation Software for Industrial Science Ministry of Education, Culture, Sports, Science and Technology, Japan IT Program of MITI Principal Investigator: Prof. Chisachi Kato (University of Tokyo)
August 1997 - March 2003	GeoFEM: Solid Earth Platform for Large Scale Computation Ministry of Education, Culture, Sports, Science and Technology, Japan Special Promoting Funds of Science & Technology. Principal Investigator: Prof. Genki Yagawa (University of Tokyo)

CURRENT POSITION

April 2008 - Present Professor
Supercomputing Division
Information Technology Center
The University of Tokyo

Kengo Nakajima is originally from industry and has worked for system development and safety evaluation in the area of nuclear fuel cycles. He has been a core member of developing team in GeoFEM and HPC-MW project. He has been working for design of parallel algorithms and parallel programming models used in GeoFEM and HPC-MW. He also developed linear solver library using preconditioned parallel iterative methods for unstructured meshes. GeoFEM and HPC-MW have been implemented and optimized for various types of parallel computers, from PC cluster to the Earth Simulator.

Currently he is a member of Supercomputing Division, Information Technology Center, The University of Tokyo. He has been conducting research works in the area of parallel computing, such as parallel preconditioned iterative solvers and parallel programming modesl. Moreover, he has been teaching classes on High Performance Computing (HPC) to both of graduate and undergraduate students in this earth science department. GeoFEM and HPC-MW are effective materials for learning parallel computation and parallel programming. His class for HPC is a very unique one and very effective for students to learn how to parallelize practical engineering and scientific applications. He is also responsible for HPC education program in the University of Tokyo.

RECENT JOUNAL PAPERS

1. Nakajima, K. (2009), Strategies for Preconditioning Methods of Parallel Iterative Solvers in Finite-Element Applications on Geophysics, Advances in Geocomputing, Lecture Notes in Earth Science 119, 65-118
2. Nakajima, K. (2008), Sparse Approximate Inverse Preconditioner for Contact Problems on the Earth Simulator using OpenMP, International Journal of Computational Methods 5-2, 255-272
3. Nakajima, K. (2007), The Impact of Parallel Programming Models on the Linear Algebra Performance for Finite Element Simulations, Lecture Notes in Computer Science 4395, 334-348.
4. Nakajima, K. (2005), Parallel iterative solvers for finite-element methods using an OpenMP/MPI hybrid programming model on the Earth Simulator, Parallel Computing 31, 1048-1065.
5. Nakajima, K. (2005), Three-Level Hybrid vs. Flat MPI on the Earth Simulator: Parallel Iterative Solvers for Finite-Element Method, Applied Numerical Mathematics 54, 237-255.
6. Chen, L., Fujishiro, I. and Nakajima, K. (2004), Parallel Visualization of Large-Scale Unstructured Geophysical Data for the Earth Simulator, Pure and Applied Geophysics 161, 2245-2263.
7. Nakajima, K. and H.Okuda. (2004), Parallel Iterative Solvers for Simulations of Fault Zone Contact using Selective Blocking Reordering, Numerical Linear Algebra with Applications 11, 831-852.
8. Wang, K., Kim, S-B., Zhang, J., Nakajima, K. and Okuda, H. (2003), Global and localized parallel preconditioning techniques for large scale solid Earth simulations, Future Generation Computer Systems, 19-4, 443-456.
9. Chen, L., Fujishiro, I. and Nakaima, K. (2003) Optimizing parallel performance of unstructured volume rendering for the Earth Simulator, Parallel Computing 29(3), 355-371.
10. Maruyama, Y., Moriyama, K., Nakamura, H., Hirano, M. and Nakajima, K. (2003), Modeling for Evaluation of Debris Coolability in Lower Plenum of Reactor Pressure Vessel, Journal of Nuclear Science and Technology 40-1, 12-21, Atomic Energy Society of Japan.
11. Okuda, H., Ezure, S. and Nakajima, K. (2002), Development of Refining Tool for Large-Scale Parallel FE Analysis (in Japanese), Transactions of the Japan Society for Industrial and Applied Mathematics 12-1, 29-43.
12. Nakajima, K. (2002) Parallel Multilevel Iterative Linear Solvers with Unstructured Adaptive Grids for Simulations in Earth Science, Concurrency and Computation: Practice and Experience 14-6/7, 484-498.
13. Nakajima, K. and Okuda, H. (2002), Parallel Iterative Solvers for Unstructured Grids using Directive/MPI Hybrid Programming Model for GeoFEM Platform on SMP Cluster Architectures", Concurrency and Computation: Practice and Experience 14-6/7, 411-429.
14. Garatani, K., Nakajima, K., Okuda, H. and Yagawa, G. (2001), Three-dimensional elasto-static analysis of 100 million degrees of freedom, Jounal of Advances in Engineering Software 32-7, 511-518.
15. Nakajima, K. and Okuda, H. (1999), Parallel Iterative Solvers with Localized ILU Preconditioning for Unstructured Grids on Workstation Cluster, International Journal for Computational Fluid Dynamics (IJCFD) 12, 315-322.
16. Nakajima, K. and Okuda, H. (1999), Parallel Iterative Solvers with Localized ILU Preconditioning for Unstructured Grids, IMACS SERIES IN COMPUTATIONAL AND APPLIED MATHEMATICS Volume 5 : Iterative Methods in Scientific Computation IV, 85-98.
17. Nakajima, K. and Kallinderis, Y. (1994), Comparison of Finite Element and Finite Volume Methods for Incompressible Viscous Flows, AIAA Journal 32-8, 1090-1093.
18. Kallinderis, Y. and Nakajima, K. (1994), Finite Element Method for Incompressible Viscous Flows with Adaptive Hybrid Grids, AIAA Journal 32-8, 1617-1625.
19. Nakajima, K., Kallinderis, Y., Sibetheros, I., Miksad, R.W. and Lambrakos, K. (1994), A Numerical Study of the Hydrodynamics of Reversing Flows around a Cylinder, Transaction of the ASME Journal of Offshore Mechanics and Arctic Engineering 116, 202-208.

RECENT CONFERENCE PAPERS (with review)

1. Nakajima, K. (2010), Parallel Preconditioners by Extended Hierarchical Interface Decomposition for Ill-Conditioned Problems (in Japanese), IPSJ Proceedings of HPCS2010 (in press) (Tokyo, 2008.1)
2. Nakajima, K. (2009), Flat MPI vs. Hybrid: Evaluation of Parallel Programming Models for Preconditioned Iterative Solvers on "T2K Open Supercomputer", IEEE Proceedings of the 38th International Conference on Parallel Processing (ICPP-09) (Second International Workshop on Parallel Programming Models and Systems Software for High-End Computing (P2S2)), 73-80 (Vienna, Austria, 2009.9)
3. Nakajima, K. (2009), Parallel Multistage Preconditioners by Extended Hierarchical Interface Decomposition for Ill-Conditioned Problems, Proceedings of International Conference on Parallel Computing (ParCo2009) (in press) (Lyon, France, 2009.9)
4. Nakajima, K. (2008), Parallel Multistage Preconditioners by Hierarchical Interface Decomposition on "T2K Open Super Computer (Todai Combined Cluster)" with Hybrid Parallel Programming Models, Proceedings of the 2008 IEEE International Conference on Cluster Computing (Cluster 2008), 298-303 (Tsukuba, Japan, 2008.9)
5. Nakajima, K. (2008), Parallel multigrid method based on a hierarchical graph decomposition (in Japanese), IPSJ Proceedings of HPCS2008, 115-122 (Tokyo, 2008.1)
6. Nakajima, K. (2007), Parallel Multistage Preconditioners based on a Hierarchical Graph Decomposition for SMP Cluster Architectures with a Hybrid Parallel Programming Model, Lecture Notes in Computer Science 4782, 384-395, HPCC'07 (High-Performance Computation Conference 2007) (Houston, Texas, 2007.9)
7. Nakajima, K. (2007), Strategies for automatic selection of parameters in parallel preconditioning methods for ill-conditioned problems in finite-element applications, The Second International Workshop on Automatic Performance Tuning (iWAPT2007) (Tokyo, 2007.9)
8. Nakajima, K. (2007), Parallel Preconditioning Methods with Selective Fill-Ins and Selective Overlapping for Ill-Conditioned Problems in Finite-Element Methods, Lecture Notes in Computer Science 4489, 1085-1092. International Conference on Computational Science (ICCS 2007) (Beijing, China, 2007.5)
9. Nakajima, K. (2006), The Impact of Parallel Programming Models on the Linear Algebra Performance for Finite Element Simulations, International Meeting High Performance Computing for Computational Science (VECPAR 2006) (Rio de Janeiro, Brazil, 2006.7)
10. Nakajima, K. (2006), Parallel Multilevel Method for Heterogeneous Field (in Japanese), IPSJ Proceedings of HPCS2006, 95-102 (Tokyo, 2006.1)
11. Nakajima, K. (2005), Parallel programming models for finite-element method using preconditioned iterative solvers with multicolor ordering on various types of SMP cluster, IEEE Proceedings of 8th International Conference on High Performance Computing and Grid in Asia Pacific Region (HPC Asia 2005), 83-90. (Beijing 2005.12)
12. Nakajima, K. (2005), Performance of large-scale finite-element applications in earth science on BlueGene/L prototype system using parallel iterative solvers of GeoFEM, IPSJ Proceedings of HPCS2005, 17-24. (Tokyo, 2005.1)
13. Nakajima, K. (2004), Preconditioned Iterative Linear Solvers for Unstructured Grids on the Earth Simulator, IEEE Proceedings of 7th International Conference on High Performance Computing and Grid in Asia Pacific Region (HPC Asia 2004), 150-169. (Omiya, 2004.7)
14. Nakajima, K. (2003), Parallel Iterative Solvers of GeoFEM with Selective Blocking Preconditioning for Nonlinear Contact Problems on the Earth Simulator, ACM/IEEE Proceedings of SC2003. (Phoenix, AZ, USA, 2003.11)
15. Nakajima, K. (2003), OpenMP/MPI Hybrid vs. Flat MPI on the Earth Simulator:Parallel Iterative Solvers for Finite Element Method, Lecture Notes in Compute Science 2858, 486-499. Workshop on OpenMP: Experiences and Implementations (WOMPEI 2003) (Tokyo, 2003.10)
16. Okuda, H., Nakajima, K., Iizuka, M., Chen, L. and Nakamura, H. (2003), Parallel Finite Element Analysis Platform for the Earth Simulator: GeoFEM, Lecture Notes in Computer Science 2659, 773-780. International Conference on Computational Science (ICCS 2003)

(Melbourne, Australia, 2003.6)
17. Chen, L., Fujishiro, I. and Nakajima, K. (2002), Parallel Performance Optimization for Large-Scale Unstructured Data Visualization for the Earth Simulator, Proceedings of 4th EUROGRAPHICS Workshop on Parallel Graphics and Visualization, 133-140 (Saarbruecken, Germany, 2002.9)
18. Nakajima, K. and Okuda, H. (2002), Parallel Iterative Solvers for Unstructured Grids using an OpenMP/MPI Hybrid Programming Model for the GeoFEM Platform on SMP Cluster Architectures, Lecture Notes in Computer Science 2327, 437-448, Workshop on OpenMP: Experiences and Implementations (WOMPEI 2002)(Kyoto, 2002.5)
19. Nakajima, K., Fingberg, J. Okuda, H. (2001), Parallel 3D Adaptive Compressible Navier-Stokes Solver in GeoFEM with Dynamic Load-Balancing by DRAMA Library, Lecture Notes in Computer Science 2110, 183-193. HPCN Europe 2001 (Amsterdam, Netherlands, 2001.6)
20. Nakajima, K., Nakamura, H. and Tanahashi, T. (1997), Parallel Iterative Solvers with Localized ILU Preconditioning, Lecture Notes in Computer Science 1225, 342-350. HPCN Europe 1997 (Vienna, Austria, 1997.4)
21. Parthasarathy, V., Kallinderis, Y. and Nakajima, K. (1995), A Navier-Stokes Method with Adaptive Hybrid Prismatic/Tetrahedral Grids, AIAA-95-0670, AIAA Annual Meeting (Reno, NV, 1995.1)

BOOKS
1. Okuda, H. and Nakajima, K. (Ed.), "Parallel Finite-Element Methods (I)", Baifu-Kan Pbulishing, 2004 (Chapters 3, 5, 11 and 12) (in Japanese).
2. Yagawa, G. (Ed.) , "Handbook for Structural Engineering", Maruzen Publishing, 2004 (Chpater 6-11) (in Japanese).
3. Yagawa, G. and Okuda, H. (Ed.), "Computational Mechanics VII – Massively Parallel Methods in Computational Mechanics", Yoken-do Publishing, 2002 (Chpater 7) (in Japanese).

SOFTWARE
1. GeoFEM, http://geofem.tokyo.rist.or.jp
2. HPC-MW（HPC Middleware）, http://hpcmw.tokyo.rist.or.jp/
3. SPEC MPI 2007/GAPgeofem，Standard Performance Evaluation Corporation（SPEC），http://www.spec.org/mpi/，http://www.spec.org/auto/mpi2007/Docs/128.GAPgeofem.html

INVITED TALKS
1. Nakajima, K., Parallel Multigrid Solvers using OpenMP/MPI Hybrid Programming Models on Multi-Core/Multi-Socket Clusters, SIAM 14th Conference on Parallel Processing for Scientific Computing (PP10), MS 55: Joint JSIAM-SIAM Minisymposium: Parallel Programming Models and Algorithms for Multicore Clusters and GPGPUs - Part II of III（Seattle, Washington, USA, 2010.2）
2. Nakajima, K., Framework for Development of Parallel Codes in "Integrated Predictive Simulation System for Earthquake and Tsunami Disaster", SIAM 14th Conference on Parallel Processing for Scientific Computing (PP10), MS 30: Coupling and Regridding Tools for Supporting Parallel Multi-physics Modeling - Part I of II（Seattle, Washington, USA, 2010.2）
3. Nakajima, K., Optimization of Preconditioned Parallel Iterative Solvers for Finite-Element Applications using Hybrid Parallel Programming Models on "T2K Open Supercomputer (Tokyo)", The 11th International Specialist Meeting on Next Generation Models on Climate Change and Sustainability for High Performance Computing Facilities（Oak Ridge, Tennessee, USA, 2009.3）
4. Nakajima, K., Robust and Efficient Parallel Preconditioning Methods with Hierarchical Interface Decomposition for Multicore Architectures, SIAM Conference on Computational Science and Engineering (CSE09), MS115: Current Auto-tuning Challenges: Multicore Architecture and Crucial Algorithms Part-II（Miami, Florida, USA, 2009.3）

5. Nakajima, K., Furumura T., Ichimura, T., Nagashima, T., Okuda, H. and Saito, T., Coupled Simulations in Integrated Predictive Simulation System for Earthquake and Tsunami Disaster, SIAM Conference on Computational Science and Engineering (CSE09), MS107: Multiphysics Modeling: Frameworks and Applications Part-I（Miami, Florida, USA, 2009.3）
6. Nakajima, K., Strategy of Domain Partitioning for Parallel Preconditioned Iterative Solvers in the Multi-Core Era, 5th GSIC International Symposium (Leading Studies on Computational Mechanics), Tokyo Institute of Technology (Tokyo, 2008.12)
7. Nakajima, K., Early Experiences in "T2K Open Super Computer (Todai Combined Cluster)" with AMD Quad-Core Opteron processors, NERSC Scientific Computing Seminar, Lawrence Berkeley National Laboratory（Berkeley, California, USA, 2008.6）
8. Nakajima, K., Hybrid vs. Flat MPI ? : Experiences in Preconditioned Iterative Linear Solvers for Unstructured Grids, SIAM 13th Conference on Parallel Processing for Scientific Computing (PP08), MS 49: Algorithms and Optimizations Targeting Multi-Core Architectures Part-II (Atlanta, Georgia, USA, 2008.3)
9. Nakajima, K., Automatic selection of parameters in parallel preconditioners for ill-conditioned problems, SIAM 13th Conference on Parallel Processing for Scientific Computing (PP08), MS 25: A Auto-tuning on Numerical Libraries and Advanced Computer Systems Part-II (Atlanta, Georgia, USA, 2008.3)
10. Nakajima, K., Hybrid vs. Flat MPI: Parallel Programming Models in Multi-core Era, Second Korea-Japan Workshop on Computational Engineering (Seoul, Korea, 2007.9)
11. Nakajima, K., Parallel Programming Models for Finite-Element Applications on SMP Cluster Architectures, Fourth International Conference of Applied Mathematics and Computing (Plovdiv, Bulgaria, 2007.8) (**Keynote Lecture**)
12. Nakajima, K., Integrated Predictive Simulation System for Earthquake and Tsunami Disaster - Contributions from the HPC Community, 2007 Workshop on Community Finite Element Models for Fault Systems and Tectonic Studies (Golden, CO, 2007.6).
13. Nakajima, K., An Integrated Predictive Simulation System for Earthquake and Tsunami Disasters, NERSC Scientific Computing Seminar, Lawrence Berkeley National Laboratory, Berkeley, CA, (Berkeley, CA, 2006.12).
14. Nakajima, K., The GeoFEM Benchmarks for the Parallel Finite Element Method on NERSC Computers, NERSC Scientific Computing Seminar, Lawrence Berkeley National Laboratory, Berkeley, CA, (Berkeley, CA, 2006.12).
15. Nakajima, K., Performance Evaluation of Parallel FEM Codes on PC Clusters and Future of Multiocore Processors, 45th SMPP (Society of Massive Parallel Processing) Workshop, (Tokyo, 2006.09).
16. Nakajima, K., The Impact of Parallel Programming Models on the Linear Algebra Performance for Finite Element Simulations, Forum on Advanced Scientific Computing 2006 (Fukuoka, Japan, 2006.08).
17. Nakajima, K., Scalability of GeoFEM on BG/L prototype, The 3rd BG/L Systems Software and Applications Workshop (CBRC/AIST, Tokyo, Japan, 2006.04).
18. Nakajima, K., Interface of Sparse Linear Solver Library Optimized for Various Types of Architectures, SIAM 12th Conference on Parallel Processing for Scientific Computing (PP06), MS 46: Adaptive Tools and Frameworks for High Performance Numerical Computations - Part II of III (San Francisco, CA, USA, 2006.02).
19. Nakajima, K., Parallel Multilevel Iterative Linear Solvers for Heterogeneous Field with Adaptive Mesh Refinement, SIAM 12th Conference on Parallel Processing for Scientific Computing (PP06), MS 30: Scalable Preconditioning with Incomplete Factors and Sparse Approximate Inverses (San Francisco, CA, USA, 2006.02).
20. Nakajima, K., The impact of parallel programming models on the performance of preconditioned iterative solvers for finite-element simulations, CSE Colloquia, Pennsylvania State University (State College, PA, USA, 2006.02).
21. Nakajima, K., Earth Simulator and Parallel FEM, Fourth Supercomputing Seminar, Academinc Computing & Communications Center, University of Tsukuba (Tsukuba, Japan, 2005.06).
22. Nakajima, K., Flat MPI and Hybrid Parallel Programming Models for FEM Applications on

SMP Cluster Architectures, First International Workshop on OpenMP (IWOMP 2005) (Eugene, OR, USA, 2005.06). (**Keynote Talk**)

23. Nakajima, K., Benchmarks of FEM-type codes on IBM BlueGege/L (512-node prototype), BlueGene/L Seminar (IBM-Hakozaki, Japan, 2004.04).
24. Nakajima, K. and Okuda, H., HPC Middleware (HPC-MW) Infrastructure for Scientific Applications on HPC Environments", SIAM 11th Conference on Parallel Processing for Scientific Computing (PP04), MS 37: Portable Parallel Numerical Libraries for Various Types of Architectures (San Francisco, CA, USA, 2004.02).
25. Nakajima, K., Performance of Hybrid Parallel Programming Model for Applications with Unstructured Meshes on the Earth Simulator", SIAM 11th Conference on Parallel Processing for Scientific Computing (PP04), MS6: Performance Modeling and Evaluation of Ultra-Scale Systems - Part I of II (San Francisco, CA, USA, 2004.02).
26. Nakajima, K. and Okuda, H., HPC Middleware (HPC-MW): Infrastructure for Scientific Applications on HPC Environments - Overview and Recent Progress, 4th Workshop on ACTS Collection (Berkeley, California, USA, 2003.08).

AWARDS

1. IPSJ Yamashita SIG Research Award (Information Processing Society of Japan), 2008.
2. Selected BEST Papers, ICCS 2003 (International Conference on Computational Science), 2003.
3. BEST Paper Award, HPCN Europe 2001 (High-Performance Computing and Networking), Amsterdam, The Netherlands, June, 2001.

MEMBERSHIP

1. American Institute for Aeronautics and Astronautics (AIAA) : Senior Member
2. Society for Industrial and Applied Mathematics (SIAM)
3. Institute of Electrical and Electronics Engineers (IEEE) Computer Society
4. The Japan Society for Industrial and Applied Mathematics (JSIAM)
5. The Japan Society for Computational Engineering and Science (JSCES)
6. Information Processing Society of Japan (IPSJ)
7. Seismological Society of Japan

PROFESSIONAL ACTIVITIES (Research Society)

1. General Council Member , IACM (International Association for Computational Mechanics) (2009-present)
2. Member of Selection Committee for Best Papers of Issues in 2008, Bulletin of the Japan Society for Industrial and Applied Mathematics (JSIAM) (2009)
3. Council Member, the Japan Society for Industrial and Applied Mathematics (JSIAM) (2008-present)
4. Council Member, The Japan Society for Computational Engineering and Science (JSCES) (2008-present)
5. Member of Editorial Board, Transaction of Advanced Computing Systems, Information Processing Society of Japan (IPSJ) (2007-present)
6. Member of Selection Committee for Best Papers of Issues in 2006, Bulletin of the Japan Society for Industrial and Applied Mathematics (JSIAM) (2007)
7. Member of Editorial Board, Bulletin of the Japan Society for Industrial and Applied Mathematics (JSIAM) (2007-present)
8. Associate Editor, SIAM Journal on Scientific Computing (SISC) (2007-present)
9. Member of Guest Editorial Board, SIAM Journal on Scientific Computing (SISC), Special Issue on Computational Science & Engineering, (2007)
10. Member of Editorial Board, The Japan Society for Industrial and Applied Mathematics (JSIAM)(2002-2004)
11. Member of Editorial Board, The Japan Society for Computational Engineering and Science (JSCES) (1995-1997)

PROFESSIONAL ACTIVITIES (Conference Organization)

1. Application Area Co-Chair of Technical Papers Committee, 2010 IEEE International conference on high performance computing, networking, storage, and analysis (SC10), New Orleans, LA, November 2010
2. Member of Program Committee, 24th International Conference on Supercomputing (ICS'10), Tsukuba, Japan, June 2010
3. Member of Program Committee, The Eighteenth International Parallel and Distributed Processing Symposium (IPDPS10), Atlanta, GA, April 2010
4. Member of Technical Papers Committee, 2009 IEEE International conference on high performance computing, networking, storage, and analysis (SC09), Portland, OR, November 2009
5. Member of Program Committee, Parallel Computing 2009 (ParCo 2009), Lyon, France, September 2009
6. Session Organizer, 13th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Parallel preconditioning methods for large-scale scientific simulations, Tokyo, Japan, May 2009
7. Member of Organizing Committee, The 13th Annual Meeting of the Japan Society for Computational Engineering and Science, Tokyo, Japan, May 2009
8. Member of Program Committee, 2009 IEEE International Workshop on HPC and Grid Applications (IWHGA2009), Hainan, China, April 2009
9. Co-organizer of Mini-Symposium, 15th International Conference in Finite Elements in Flow Problems (FEF 2009), "MS15: Parallel and Hierarchical Algorithms for Accelerating System Matrix Solvers" , Tokyo, Japan, April 2009
10. Member of Organizing Committee, 15th International Conference in Finite Elements in Flow Problems (FEF 2009), Tokyo, Japan, April 2009
11. Co-organizer of Mini-Symposium, 2009 SIAM Conference on Computational Science and Engineering (CSE09), "MS107, 115: Multiphysics Modeling: Frameworks and Applications Part I-II", Miami, FL, March 2009
12. Member of International Program Committee, IASTED International Conference on Parallel and Distributed Computing and Networks (PDCN 2009), Innsbruck, Austria, February, 2009
13. Program Chair, Symposium on HPC and Computational Science 2009 (HPCS 2009), Tokyo, Japan, January, 2009
14. Session Organizer, 22nd Symposium for Computational Fluid Mechanics (CFD2008), Parallel/Grid Computing, Tokyo, Japan, December 2008
15. Member of Technical Papers Committee, 2008 IEEE International conference on high performance computing, networking, storage, and analysis (SC08), Austin, TX, November 2008
16. Member of Organizing Committee, Second International Symposium for "Integrated Predictive Simulation System for Earthquake and Tsunami Disaster", Tokyo, Japan, October 2008
17. Member of Program Committee, The Third International Workshop on Automatic Performance Tuning (iWAPT 2008) Tsukuba, Japan, October 2008
18. Member of Program Committee, 2008 IEEE International Conference on Cluster Computing (Cluster 2008), Tsukuba, Japan, September 2008
19. Member of Organizing Committee, 2008 Annual Meeting of the Japan Society for Applied Mathematics (JSIAM), Kashiwa, Japan, September 2008
20. Member of International Program Committee, The 21st ISCA International Conference on Parallel and Distributed Computing and Communication Systems (PDCCS 2008) （New Orleans, LA, September 2008
21. Technical Committee Member (Scientific and Engineering Computing), 2008 IEEE 11th International Conference on Computational Science and Engineering, Sao Paolo, Brazil, July 2008
22. Co-organizer of Organized Session, 2008 Western Pacific Geophysics Meeting, "U06: Geo-Computing", Cairns, Australia, July 2008
23. Session Organizer, 13th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Parallel preconditioning methods for large-scale scientific simulations,

Sendai, Japan, May 2008
24. Member of Organizing Committee, The 13th Annual Meeting of the Japan Society for Computational Engineering and Science, Sendai, Japan, May 2008
25. Co-organizer of Mini-Symposium, SIAM 13th Conference on Parallel Processing for Scientific Computing (PP08), "MS28,35,43: Multi-physics frameworks and Applications Part I-III", , Atlanta, GA, March 2008
26. Member of Organizing Committee, SIAM 13th Conference on Parallel Processing for Scientific Computing (PP08), Atlanta, GA, March 2008
27. Member of Program Committee, Symposium on HPC and Computational Science 2008 (HPCS 2008), Tokyo, Japan, January, 2008.
28. Member of Program Committee, The 14th International Conference on High Performance Computing (HiPC), India, December 2007.
29. Session Organizer, 21st Symposium for Computational Fluid Mechanics (CFD2007), Parallel/Grid Computing, Tokyo, Japan, December 2007
30. Co-organizer of Mini-Symposium, The 3rd Asian-Pacific Congress on Computational Mechanics (APCOM'07), Future directions of large-scale scientific computing and parallel linear solvers , Kyoto, Japan, December 2007.
31. Member of Local Organizing Committee, The 3rd Asian-Pacific Congress on Computational Mechanics (APCOM'07), Kyoto, Japan, December 2007.
32. Member of International Program Committee, The 19th IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS 2007), Cambridge, MA, USA, November 2007.
33. Member of Program Committee, The Second international Workshop on Automatic Performance Tuning (iWAPT 2007), Tokyo, Japan, September 2007.
34. Member of Program Committee, Parallel Computing 2007 (ParCo 2007), Julich/Aachen, Germany, September 2007.
35. Member of Program Committee, The 2nd International Workshop on Workflow Management and Application in Grid Environments (WAGE07), Urumchi, Xinjiang, China, August 2007.
36. Member of Program Committee, International Workshop on Advances in Computational Geomechanics and Geophysics (IACCG 2007) (in conjunction with International Conference on Computational Science (ICCS2007)) , Beijing, China, May 2007.
37. Session Organizer, 12th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Parallel preconditioning methods for large-scale scientific simulations, Tokyo, Japan, May 2007.
38. Member of Organizing Committee, The 12th Annual Meeting of the Japan Society for Computational Engineering and Science, Tokyo, Japan, May 2007
39. Co-organizer of Workshop, International Workshop for Large-Scale Coupled Simulations: Computation and Physics, Tokyo, Japan, April 2007
40. Co-organizer of Workshop, International Conference on Computational Methods 2007 (ICCM 2007), Innovative Computational Strategies for Parallel/Grid Environments, Hiroshima, Japan, April 2007.
41. Member of Organizing Committee, International Conference on Computational Methods 2007 (ICCM 2007), Hiroshima, Japan, April 2007.
42. Member of Program Committee, The Fifteenth International Parallel and Distributed Processing Symposium (IPDPS07), Long Beach, CA, March, 2007.
43. Member of Program Committee, Symposium on HPC and Computational Science 2007 (HPCS 2007), Tsukuba, Japan, January, 2007.
44. Co-Chair of Organizing Committee, International Workshop on Collaboration between Numerical Methods and Large-Scale Scientific Computation 2006 (iWNMSC'06), Tokyo, Japan, October 2006.
45. Member of Organizing Committee, First International Symposium for "Integrated Predictive Simulation System for Earthquake and Tsunami Disaster", Tokyo, Japan, October 2006.
46. Co-organizer of Mini-Symposium, SIAM 12th Conference on Parallel Processing for Scientific Computing (PP06), San Francisco, CA., Adaptive Tools and Frameworks for High Performance

Numerical Computations, February 2006.
47. Member of Program Committee, Symposium on HPC and Computational Science 2006 (HPCS 2006), Tokyo, Japan, January, 2006.
48. Member of International Program Committee The 17th IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS 2005), Phoenix, AZ, USA, November 2005.
49. Session Organizer, 10th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Large-scale numerical simulation and combinatorial scientific computing, May 2005.
50. Member of Program Committee, Symposium on HPC and Computational Science 2005 (HPCS 2005), Tokyo, Japan, January 2005.
51. Member of International Scientific Committee International Conference on Computation & Information Sciences (CIS'04), Shanghai, China, December 2004.
52. Session Organizer, 9th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Large-Scale Linear Solvers for Advanced HPC Platforms : Strategy in HPC-MW, May 2004.
53. Member of Program Committee, The Fifteenth International Parallel and Distributed Processing Symposium (IPDPS04), Santa Fe, NM, April, 2004.
54. Co-organizer of Mini-Symposium, SIAM 11th Conference on Parallel Processing for Scientific Computing (PP04), San Francisco, CA., MS37: Portable Parallel Numerical Libraries for Various Types of Architectures, February 2004.
55. Member of Organizing Committee, SIAM 11th Conference on Parallel Processing for Scientific Computing (PP04), San Francisco, CA, February, 2004.
56. Session Organizer, 7th Annual Meeting of JSCES (Japan Society of Computational Engineering & Science), Parallel Computing Performance of GeoFEM and Its Application to Solid Earth Problems, May 2002.
57. Member of Local Organizing Committee, SSS2001 (Scalable Solver Software) Workshop, Tokyo, Japan, December 2001.
58. Secretary General, Local Organizing Committee, Second ACES (APEC Cooperation for Earthquake Simulation) Workshop, Japan, October 2000.

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