

1. Position & Affiliation

Professor, Dr., Department of Systems Innovation, School of Engineering, The University of Tokyo (UTokyo)

Vice Dean, School of Engineering, UTokyo (2014.4-2017.3)

Member, The Education and Research Council, UTokyo (2015.4-2017.3)

7-3-1 Hongo, Bunkyo, Tokyo 113-8656, Japan,

Tel : +81-3-5841-6960, Fax : +81-3-5841-0651

e-mail : yoshi@sys.t.u-tokyo.ac.jp,

<http://save.sys.t.u-tokyo.ac.jp>, <http://adventure.sys.t.u-tokyo.ac.jp>

2. Date of Birth

March, 1959

3. Educational Career

1987.3 Doctor of Eng. received from Dept. Nuclear Eng., School of Eng., UTokyo

1983.3 Master of Eng. received from Dept. Nuclear Eng., School of Eng., UTokyo

1981.3 Bachelor of Eng. received from Dept. Nuclear Eng., School of Eng., UTokyo

4. Academic Career

2015.4-2017.3 Member, The Education and Research Council, UTokyo

2014.4-2017.3 Vice Dean, School of Engineering, UTokyo

2012.4-2014.3 Director of Public Relations Office, UTokyo

2011.4-2012.3, 2014.4-2015.3 Vice Director of Public Relations Office, UTokyo

2009.4-2010.3 Special Staff to the President of UTokyo

2008.4-Present Professor, Dept. Systems Innovation, School of Eng., UTokyo

2005.4-2008.3 Professor, Dept. Quantum Eng. & Systems Science, School of Eng., UTokyo

1999.4-2005.3 Professor, Institute of Environmental Studies, Graduate School of Frontier Sciences, UTokyo

1995.4-1999.3 Associate Professor, Dept. Quantum Eng. & Systems Science, School of Eng., UTokyo

1994.4-1994.10 Visiting Researcher, MPA (State Institute of Materials Testing), University of Stuttgart, Germany

1993.6-1995.5 Associate Professor, RACE (Research into Artifacts, Center for Eng.), UTokyo

1989.4-1993.5 Associate Professor, Dept. Nuclear Eng., UTokyo

1987.4-1989.3 Lecturer, Dept. Nuclear Eng., School of Eng., UTokyo

1985.8-1986.5 Visiting Researcher, Computational Mechanics Center, Georgia Institute of Technology, USA

5. Major Social Activities

President of JACM (Japan Association for Computational Mechanics) (2012.4-2018.3)

Member of General Council of IACM (International Association for Computational Mechanics) (2004.9-Present)

Member of General Council of APACM (Asian-Pacific Association for Computational Mechanics) (2008.8-Present)

IACM Fellow (2014.7-Present)

Associate Member of Science Council of Japan (2006.10-2020.9)

Chair of Committee on Computational Science and Engineering and Its Application to Engineering

Design, Science Council of Japan (2014.12-Present)
 Executive Secretary of Editorial Board of UTokyo Engineering Course (2010.10-Present)
 Associate Editor of International Journal of Computational Methods (2013.4-Present)
 JACM Fellow (2007.12-Present)
 JSME Fellow (2005.3-Present)
 Chair of Atomic Energy Research Committee, The Japan Welding Engineering Society
 (2014.10-Present)
 Vice President and Secretary General of JACM (2002.12-2012.3)
 Chair of Computational Mechanics Division of JSME (Japan Society of Mechanical Engineers)
 (2012.4-2013.3)
 Founding Chair of JSME Certification Program for Computational Mechanics Engineers
 (2002.3-2009.3)
 Chair of Computational Science and Engineering Division of AESJ (Atomic Energy Society of
 Japan) (2009.4-2010.3)
 Director of JSCES (Japan Society of Computational Engineering and Science) (1995.5-1999.4)
 Member of Editorial Board of International Journal of Pressure Vessels and Piping
 Chairman of Steering Committee of IAEA-EBP Project on Seismic Safety of Existing Nuclear Power
 Plants (2007.9-2010.10)
 Co-Chair of COMPSAFE2014 (1st APACM Thematic Conf. & IACM Special Interest Conf.), Sendai,
 Japan, 2014.4
 Secretary General of APCOM'07-EPMESC XI, Kyoto, Japan, 2007.12
 Plenary Lectures at COMPDYN2015 (Crete, Greece, 2015.5), SIAM CSE2015 (Salt Lake, USA,
 2015.3), APCOM-ISCM2013 (Singapore, 2013.12), COMPDYN2013 (Kos, Greece, 2013.6), and
 SMiRT21 (New Delhi, India, 2011.11)
 Semi-plenary Lectures at FEF2015 (Taipei, Taiwan, 2015.3), WCCM-ECCM-ECFD2014 (Barcelona,
 Spain, 2014.7) and COMPDYN2011 (Corfu, Greece, 2011.5)

6. Awards

2015.7 ICCES Distinguished Achievement Medal (ICCES2015(International Conference on
 Computational & Experimental Engineering & Sciences), Reno, Nevada,USA)
 2014.12 1st Place of Best CFD Graphics Award, 28th CFD Conference (CFD2014)(The Japan Society
 of Fluid Mechanics (JSFM))
 2014.11 JSME Computational Mechanics Award (Computational Mechanics Division, JSME)
 2014.7 IACM Fellow Award (International Association for Computational Mechanics), (Barcelona,
 Spain)
 2014.4 JSME Best Paper Award (Japan Society of Mechanical Engineers)
 2014.3 3rd Place for 2014 IEEE Computational Intelligence for Financial Engineering &
 Economics Best Paper (London, UK)
 2013.12 APACM Computational Mechanics Award (Asia-Pacific Association for Computational
 Mechanics), (Singapore)
 2013.6 2012 JSAI SIG Research Award (Japan Society of Artificial Intelligence)
 2013.5 2012 The Most Interesting Reading Award (Japan Society for Design Engineering)
 2013.5, 2010.6 & 2006.5 JSCES Best Paper Awards (Japan Society of Computational Engineering
 and Science)
 2011.7 JACM Computational Mechanics Award (Japan Association for Computational Mechanics)
 2011.3 AESJ Computational Science and Engineering Division Achievements Award (Atomic
 Energy Society of Japan)
 2011.3 & 1998.3 AESJ Best Paper Awards
 2010.6 & 1997.6 JSST Best Paper Awards (Japan Society for Simulation Technology)
 2009.8 AIAA Liquid Propulsion Best Paper Award (45th AIAA/ASME/SAE/ASEE Joint
 Propulsion Conference, Denver, USA)

- 2009.4 MEXT Minister Award of Science & Technology (Ministry of Education, Culture, Sports, Science and Technology, Japan)
- 2008.4 JSME Best Technology Award
- 2008.3 The K. Washizu Medal (ICCES'08(International Conference on Computational & Experimental Engineering & Sciences), Hawaii, USA)
- 2007.12 JACM Fellows Award
- 2007.10 JSME 110 Year Anniversary Service Award
- 2007.6 JSST Best Research Award
- 2006.11 IEEE/ACM Supercomputing 06 Gordon Bell Award finalist (IEEE/ACM, Tampa, USA)
- 2005.2 JSME Fellow
- 2001.11 1st Place of JSME D&S Division Analysis Contest (Design and Systems Division, JSME)
- 2001.3 JCOT Best Paper Award (Japan Coating Technology Association)
- 2000.11 JSME Computational Mechanics Achievements Award (Computational Mechanics Division, JSME)
- 1996.9 JSIAM Best Paper Award (Japan Society for Industrial and Applied Mathematics)
- 1992.4 JSME Excellent Young Researcher Award
- 1991.8 Junior SMiRT Award (11th SMiRT (11th International Conference on Structural Mechanics in Reactor Technology), Tokyo)
- 1990.11 Cray Gigaflops Performance Award (Cray Research Inc., New York)
- 1990.2 Inoue Research Award for Young Scientists (Inoue Science Promotion Foundation)

7. Short Description of Research Areas

Professor Yoshimura has published 228 peer reviewed journal papers, 61 review papers and 6 books. He has been working on High-performance and Intelligent Computational Mechanics with Real World's Applications for 26 years.

Among his wide research activities, the most distinguished and well-recognized achievement is the R&D of the advanced parallel finite element analysis software known as ADVENTURE system (<http://adventure.sys.t.u-tokyo.ac.jp>) since 1997, leading more than 20 investigators. The ADVENTURE system is very unique open source CAE software that enables very precise analyses of practical structures and machines using over 100 million to one billion DOF mesh. Those analyses can be performed very efficiently and easily not only on ordinary PC clusters, but also on latest massively parallel computers such as the Earth simulator, Blue Gene/L and the K-computer. Since Dec. 2002, 40,170 modules of the system have been downloaded by 8,480 registered users worldwide. Its commercial version named ADVENTURECluster has also been widely adopted in automobile, E&E/ICT, heavy, space, material and construction industries.

Furthermore, Professor Yoshimura has been developing a general-purpose platform of parallel partitioned coupling techniques with nonlinear iterations, which ensure accuracy, parallel-efficiency, robustness as well as flexibility. The ADVENTURE's parallel solvers together with the coupling platform enable large-scale parallel coupled analyses of very complicated structures including Fluid-Structure Interaction, Acoustic Fluid-Structure Interaction, Magneto-Structure Interaction and Structure-Structure Interaction.

In summary, his achievements include scientific impacts through the R&D of innovative algorithms, engineering impacts through the R&D of practical software, and social impacts through its dissemination to the society as open source as well as the solutions of never solved real world's problems. The technologies he has developed would become de Facto Standard of large scale coupled finite element analyses for high-performance computing of peta to exa flops scale.

He was also the founding chair of JSME Certification Program for Computational Mechanics Engineers (<http://www.jsme.or.jp/cee/cmnnintei.htm>), which has already certified 6,050 computational mechanics engineers since 2003.

8. Publications (Books et al.)

- (1) "The Finite Element Method", Computational Mechanics and CAE Series, Baifukan, (1991) (G.Yagawa, S.Yoshimura) (in Japanese)

- (2) "Elastic-Plastic Fracture Mechanics in Inhomogeneous Materials and Structures", Special Issue, International Journal of Pressure Vessels and Piping, Vol. 63, No. 3, (1995) (G.Yagawa, S.Yoshimura (Ed.))
- (3) "Application of Neural Networks to Strength of Materials", Computational Mechanics Series V, Youkendo, (1997), (G.Yagawa, S.Yoshimura (Ed.)) (in Japanese)
- (4) "Design with Sensory Information", Intelligent Engineering Series, Baifukan, (1999), (G.Yagawa, S.Yoshimura, A.Matsuda) (in Japanese)
- (5) "Computational Solid Mechanics", Modern Fundamental Engineering Series, Iwanami-Shoten, (2001), (G.Yagawa, S.Yoshimura) (in Japanese)
- (6) "Probabilistic Fracture Mechanics for Risk-Informed Activities – Fundamentals and Applications –", Japan Welding Engineering Society, (2014.3) (S.Yoshimura, Y.Kanto) (in Japanese)

9. Publications (International Journal Papers)

- (1) "Nonlinear and Dynamic Fracture of Cracked Structures under Electromagnetic Force", Nuclear Engineering and Design / Fusion, Vol.2, Nos.1&2, pp.53-63, (1985) (G.Yagawa, S.Yoshimura)
- (2) "Dynamic Fracture Mechanics with Electromagnetic Force and Its Application to Fracture Toughness Testing", Engineering Fracture Mechanics, Vol.23, No.1, pp.265-286, (1986) (G.Yagawa, S.Yoshimura)
- (3) "On the Dynamic Fracture Toughness and Crack Tip Strain Behavior of Nuclear Pressure Vessel Steel : Application of Electromagnetic Force", Nuclear Engineering and Design, Vol.97, No.2, pp.195-209, (1986) (G.Yagawa, S.Yoshimura)
- (4) "A Study of Two Alternate Tangent Modulus Formulations and Attendant Implicit Algorithms for Creep as well as High-Strain-Rate Plasticity", International Journal of Plasticity, Vol.3, pp.391-413, (1987) (S.Yoshimura, K-L.Chen, S.N.Atluri)
- (5) "Dynamic Fracture Mechanics under Electromagnetic Force", Fusion Engineering and Design, Vol.7, pp.269-279, (1989) (G.Yagawa, S.Yoshimura, Y.Akahoshi)
- (6) "Generation and Propagation Analyses of High-Strain-Rate Dynamic Crack Propagation in a Visco-Plastic Solid", Nuclear Engineering and Design, Vol.111, pp.273-289, (1989) (S.Yoshimura, S.N.Atluri, G.Yagawa)
- (7) "Finite Element Analysis of Electromagnetic Field for Multidimensional RF Cavities", Review of Scientific Instruments, Vol.60, No.7, Part2, pp.1740-1743, (1989) (G-W.Ye, Y.Miyauchi, G.Yagawa, S.Yoshimura)
- (8) "A Numerical Integration Scheme for Finite Element Method Based on Symbolic Manipulation", International Journal for Numerical Methods in Engineering, Vol.29, pp.1539-1549, (1990) (G.Yagawa, G-W.Ye, S.Yoshimura)
- (9) "Automation of Thermal and Structural Design Using Artificial Intelligence Techniques", Engineering Analysis with Boundary Elements, Vol.7, No.2, pp.73-77, (1990) (S.Yoshimura, G.Yagawa, Y.Mochizuki)
- (10) "An Artificial Intelligence Approach to Efficient Fusion First Wall Design", Lecture Notes in Computer Science (Computer-Aided Cooperative Product Development), Springer-Verlag, pp.502-521, (1990) (S.Yoshimura, G.Yagawa, Y.Mochizuki)
- (11) "A Large Scale Finite Element Analysis Using Domain Decomposition Method on a Parallel Computer", Computers and Structures, Vol.38, No.5/6, pp.615-625, (1991) (G.Yagawa, N.Soneda, S.Yoshimura)
- (12) "Analysis of Growing Ductile Cracks Using Computer Image Processing", ASTM STP 1131, pp.289-313, (1992) (G.Yagawa, S.Yoshimura, A.Yoshioka, C-R.Pyo)
- (13) "Automatic Two- and Three-Dimensional Mesh Generation Based on Fuzzy Knowledge Processing", Computational Mechanics, Vol.9, No.5, pp.333-346, (1992) (G.Yagawa, S.Yoshimura, N.Soneda, K.Nakao)
- (14) "Development of an Automatic Mesh Generation System for Shell Structures Based on Fuzzy Knowledge Processing", JSAE (Japan Society of Automotive Engineering) Review, Vol.13, No.3, pp.60-64, (1992) (G.Yagawa, S.Yoshimura, K.Nakao, M.Ohji)
- (15) "Probabilistic Fracture Mechanics Analysis Based on Three-dimensional J-Integral Database", Engineering Fracture Mechanics, Vol.44, No.6, pp.887-893, (1993) (G-W.Ye, G.Yagawa, S.Yoshimura)
- (16) "A Parallel Finite Element Method with a Supercomputer Network", Computers and Structures, Vol.47, No.3, pp.407-418, (1993) (G.Yagawa, A.Yoshioka, S.Yoshimura, N.Soneda)

- (17) "Applications of Probabilistic Fracture Mechanics to FBR Components", Nuclear Engineering and Design, Vol.142, pp.43-49, (1993) (K.Hojo, M.Takenaka, H.Kaguchi, G.Yagawa, S.Yoshimura)
- (18) "Finite Element Analysis of Gas-Lubricated Grooved Journal Bearings (Analysis Method)", JSME International Journal, Series C, Vol.39, No.1, pp.123-129, (1996) (K.Kinouchi, K.Tanaka, S.Yoshimura, G.Yagawa)
- (19) "Finite Element Analyses of Three Dimensional Fully Plastic Solutions Using Quasi-nonsteady Algorithm and Tetrahedral Elements", Computational Mechanics, Vol.14, pp. 128-139, (1994) (S.Yoshimura, C-R.Pyo, G.Yagawa, H.Kawai)
- (20) "Development of User-Friendly Structural Design System for Pressure Vessels", JSME International Journal, Series A, Vol.39, No.3, pp.354-361, (1996) (T.Sato, T.Nomoto, K.Kado, G.Yagawa, S.Yoshimura)
- (21) "Simplified Stable Crack Growth Analyses of Welded CT Specimens-Comparison Study of GE/EPRI, Reference Stress and R6 Methods", International Journal of Pressure Vessels and Piping, Vol.63, pp.293-302, (1995) (S.Yoshimura, G.Yagawa, C-R.Pyo, K.Kashima, T.Shimakawa, S.Takamatsu)
- (22) "Neural Network Approach to Estimate Stable Crack Growth in Welded Specimens", International Journal of Pressure Vessels and Piping, Vol. 63, pp.303-313, (1995) (G.Yagawa, A.Matsuda, H.Kawate, S.Yoshimura)
- (23) "Study on Life Extension of Aged RPV Material Based on Probabilistic Fracture Mechanics : Japanese Round Robin", Transactions of ASME, Journal of Pressure Vessel Technology, Vol.117, pp.7-13, (1995) (G.Yagawa, S.Yoshimura, N.Handa, T.Uno, K.Watashi, T.Fujioka, H.Ueda, M.Uno, K.Hojo, S.Ueda)
- (24) "Quantitative Nondestructive Evaluation with Ultrasonic Method Using Neural Networks and Computational Mechanics", Computational Mechanics, Vol.15, pp.521-523, (1995) (A.Oishi, K.Yamada, S.Yoshimura, G.Yagawa)
- (25) "Life Extension Simulation of Aged Reactor Pressure Vessel Material Using Probabilistic Fracture Mechanics Analysis on a Massively Parallel Computer", Nuclear Engineering and Design, Vol.158, pp.341-350, (1995) (S.Yoshimura, M-Y.Zhang, G.Yagawa)
- (26) "Automated Structural Design Based on Knowledge Engineering and Fuzzy Control", Engineering Computations, Vol.12, No.7, pp.593-608, (1995) (S.Yoshimura, Y.Mochizuki, G.Yagawa)
- (27) "Automatic Mesh Generation of Complex Geometries Based on Fuzzy Knowledge Processing and Computational Geometry", Integrated Computer-Aided Engineering, Vol.2, No.4, pp.265-280, (1995) (G.Yagawa, S.Yoshimura, K.Nakao)
- (28) "A CAE System for Micromachines: Its Application to Electrostatic Micro Wobble Actuator", Sensors and Actuators, Ser.A, No.50, pp.209-221, (1995) (J-S.Lee, S.Yoshimura, G.Yagawa, N.Shibaike)
- (29) "Direct Analysis Method for Probabilistic Fracture Mechanics", Nuclear Engineering and Design, Vol.160, pp.347-362, (1996) (H.Akiba, S.Yoshimura, G.Yagawa)
- (30) "Analyses of Possible Failure Mechanisms and Root Failure Causes in Power Plant Components Using Neural Networks and Structural Failure Database", Transactions of ASME, Journal of Pressure Vessel Technology, Vol.118, pp.237-246 (1996) (S.Yoshimura, A.S.Jovanovic)
- (31) "Mesh-Invisible Finite Element Analysis in a Virtual Reality Environment", Computer Modeling and Simulation in Engineering, Vol.1, No.2, pp.289-314, (1996) (G.Yagawa, H.Kawai, S.Yoshimura, A.Yoshioka)
- (32) "New Regularization by Transformation for Neural Network Based Inverse Analyses and Its Application to Structure Identification", International Journal for Numerical Methods in Engineering, Vol.39, pp.3953-3968, (1996) (S.Yoshimura, A.Matsuda, G.Yagawa)
- (33) "Identification of Two Dissimilar Surface Cracks Hidden in Solid Using Neural Networks and Computational Mechanics", Computer Modeling and Simulation in Engineering, Vol.1, pp.477-491, (1996) (S.Yoshimura, Y.Saito, G.Yagawa)
- (34) "Performance Study of the Domain Decomposition Method with Direct Equation Solver for Parallel Finite Element Analysis", Computational Mechanics, Vol.19, pp.84-93, (1996) (G.P.Nikishkov, A.Makinouchi, G.Yagawa, S.Yoshimura)
- (35) "Recursive Distribution Method for Probabilistic Fracture Mechanics", Computational Mechanics, Vol.18, pp.175-185, (1996) (H.Akiba, S.Yoshimura, G.Yagawa)

- (36) "Automated System for Structural Design Using Design Window Search Approach: Its Application to Fusion First Wall Design", *Advances in Engineering Software*, Vol.28, pp.103-113, (1997) (Y.Mochizuki, S.Yoshimura, G.Yagawa)
- (37) "Automated System for Analyzing Stress Intensity Factors of Three-Dimensional Cracks: Its Application to Analyses of Two Dissimilar Semi-Elliptical Surface Cracks in Plate", *Transactions of ASME, Journal of Pressure Vessel Technology*, Vol.119, pp.18-26, (1997) (S.Yoshimura, J-S.Lee, G.Yagawa)
- (38) "A Study on Probabilistic Fracture Mechanics for Nuclear Pressure Vessels and Piping", *International Journal of Pressure Vessels and Piping*, Vol.73, pp.97-107, (1997) (G.Yagawa, S.Yoshimura)
- (39) "Probabilistic Fracture Mechanics Analyses of Nuclear Pressure Vessels under PTS Events", *Nuclear Engineering and Design*, Vol.174, pp.91-100, (1997) (G.Yagawa, S.Yoshimura, N.Soneda, M.Hirano)
- (40) "Neural Network Based Parameter Estimation for Nonlinear Finite Element Analyses", *Engineering Computations*, Vol.15, pp.103-138, (1998) (A.Matsuda, H.Okuda, S.Yoshimura, G.Yagawa)
- (41) "A CAE System for Multidisciplinary Design and Its Interface in Internet", *Internet Journal of Japan Society of Computational Engineering and Science*, No.19980004, (1998) (S.Yoshimura, T.Kowalczyk, Y.Wada, G.Yagawa)
- (42) "Porting the Industrial Sheet Metal Forming Code to Parallel Computer", *Computers and Structures*, Vol.67, pp.439-449, (1998) (G.P.Nikishkov, M.Kawka, A.Makinouchi, G.Yagawa, S.Yoshimura)
- (43) "An Algorithm for Domain Partitioning with Load Balancing", *Engineering Computations*, Vol.16, No.1, pp.120-135, (1999) (G.P.Nikishkov, A.Makinouchi, G.Yagawa, S.Yoshimura)
- (44) "Load Balancing and Tuning the Shur Complement Computations in Parallel Finite Element Analysis", *Computer Modeling and Simulation in Engineering*, Vol.4, No.1, pp.12-18, (1999) (G.P.Nikishkov, N.Makinouchi, G.Yagawa, S.Yoshimura)
- (45) "Automatic Mesh Generation of Quadrilateral Elements Using Intelligent Local Approach", *Computer Methods in Applied Mechanics and Engineering*, Vol.179, pp.125-138, (1999) (S.Yoshimura, Y.Wada, G.Yagawa)
- (46) "Probabilistic Fracture Mechanics of Nuclear Structural Components : Consideration of Transition from Embedded Crack to Surface Crack", *Nuclear Engineering and Design*, Vol.191, pp.263-273, (1999) (G.Yagawa, Y.Kanto, S.Yoshimura)
- (47) "A PC-based System for Evaluation of Three-dimensional Stress Intensity Factors", *International Journal of Pressure Vessels and Piping*, Vol.76, pp.495-501, (1999) (S.Yoshimura, H.Kawate, Y.Wada, G.Yagawa)
- (48) "Risk-Benefit Analyses of SG Tube Maintenance Based on Probabilistic Fracture Mechanics", *Nuclear Engineering and Design*, Vol.207, pp.287-298, (2001) (Y.Isobe, M.Sagisaka, S.Yoshimura, G.Yagawa)
- (49) "Probabilistic Fracture Mechanics Analysis of Nuclear Structural Components : A Review of Recent Japanese Activities", *Nuclear Engineering and Design*, Vol.207, No.3, pp.269-286, (2001) (G.Yagawa, Y.Kanto, S.Yoshimura, H.Machida, K.Shibata)
- (50) "Neural Network Based Inverse Analysis for Defect Identification with Laser Ultrasonics", *Research in Nondestructive Examination*, pp.79-95 (2001) (A.Oishi, K.Yamada, S.Yoshimura, G.Yagawa, S.Nagai, Y.Matsuda)
- (51) "Advanced General-purpose Computational Mechanics System for Large Scale Analysis and Design", *Journal of Computational and Applied Mathematics*, Vol.149, pp.279-296, (2002) (S.Yoshimura, R.Shioya, H.Noguchi, T.Miyamura)
- (52) "Domain Decomposition Based Parallel Contact Algorithm and Its Implementation to Explicit Finite Element Analysis Code", *JSME International Journal*, Vol.45A, No.2, pp.123-130, (2002) (A.Oishi, S.Yoshimura, G.Yagawa)
- (53) "Optimization of Operation and Maintenance of Nuclear Power Plant by Probabilistic Fracture Mechanics", *Nuclear Engineering and Design*, Vol.214, No.1-2, pp.1-12, (2002) (N.Maeda, S.Nakagawa, G.Yagawa, S.Yoshimura)
- (54) "Elastic-Plastic Analysis of Nuclear Structures with Millions of DOFs Using the Hierarchical Domain Decomposition Method", *Nuclear Engineering and Design*, Vol.212, pp.335-355, (2002) (T.Miyamura, H.Noguchi, R.Shioya, S.Yoshimura, G.Yagawa)
- (55) "Hexahedral Mesh Generation of Nuclear Structures Using Intelligent Local Approach", *Nuclear*

- Engineering and Design, Vol.212, pp.321-333, (2002) (Y.Wada, S.Yoshimura)
- (56) "Pareto-based Continuous Evolutionary Algorithms for Multiobjective Optimization", Evolutionary Computation, Vol.19, No.1, pp.22-48, (2002) (M-B.Shim, M-W.Suh, T.Furukawa, G.Yagawa, S.Yoshimura)
- (57) "Automated System of Simulation and Parameter Identification of Inelastic Constitutive Models", Computer Methods in Applied Mechanics and Engineering, Vol.191, pp.2235-2260, (2002) (T.Furukawa, T.Sugata, S.Yoshimura, M.Hoffmann)
- (58) "Direct Design Window Search Method and Its Application to Micro Electrostatic Actuator", Computers and Structures, Vol.80, pp.2469-2481, (2002) (D.Ishihara, M-J.Jeong, S.Yoshimura, G.Yagawa)
- (59) "Probabilistic Fracture Mechanics Analysis of Nuclear Piping Considering Dispersion in Seismic Loading", International Journal of Pressure Vessels and Piping, Vol.79, pp.193-202, (2002) (H.Machida, S.Yoshimura)
- (60) "Thermoelasticity Optimization of 3-D Serpentine Cooling Passages in Turbine Blades", International Journal of Turbo and Jet-Engines, Vol.21, No.1, pp.57-68, (2004) (B.H.Dennis, I.N.Egorov, H.Sobieczky, G.S.Dulikravich, S.Yoshimura)
- (61) "Generalized I/O Data Format and Interface Library for Module-based Parallel Finite Element Analysis System", Advances in Software Engineering, Vol.35, pp.149-159, (2004) (T.Miyamura, S.Yoshimura)
- (62) "A Finite Element Formulation for the Determination of Unknown Boundary Conditions for Three-dimensional Steady Thermoelastic Problems", Transactions of ASME, Journal of Heat Transfer, Vol.126, No.1, pp.110-118, (2004) (B.H.Dennis, G.S.Dulikravich, S.Yoshimura)
- (63) "Multidimensional Clustering Interpretation and Its Application to Optimization of Coolant Passage of Turbine Blade", Transactions of ASME, Journal of Mechanical Design, Vol.127, pp.215-221, (2005) (M.J.Jeong, B.H.Dennis, S.Yoshimura)
- (64) "Discontinuous Boundary Implementation for the Shallow Water Equations", International Journal for Numerical Methods in Fluids, Vol.47, pp.1451-1468, (2005) (S.Bunya, J.J.Westerink, S.Yoshimura)
- (65) "Seismic Response Analysis of Full Scale Nuclear Vessel Model with ADVENTURE System on the Earth Simulator", Journal of the Earth Simulator, Vol.2, pp.41-54, (2005) (M.Ogino, R.Shioya, H.Kawai, S.Yoshimura)
- (66) "A Human-like Numerical Technique for Engineering Design", International Journal for Numerical Methods in Engineering, Vol.64, pp.1915-1943, (2005) (Chen Jian Ken Lee, T.Furukawa, S.Yoshimura)
- (67) "A Monolithic Approach for Interaction of Incompressible Viscous Fluid and an Elastic Body Based on Fluid Pressure Poisson Equation", International Journal for Numerical Methods in Engineering, Vol.64, pp.167-203, (2005) (D.Ishihara, S.Yoshimura)
- (68) "Parallel Process System and Its Application to Steam Generator Structural Analysis", Journal of Mechanical Science and Technology (KSME International Journal), Vol.19, No.11, pp.2007-2015, (2005) (Yoon-Suk Chang, Han-Ok Ko, Jae-Boong Choi, Young-Jin Kim, S.Yoshimura)
- (69) "Seismic Loads for Crack Stability Assessment in a Review of Leak-before-break (LBB) Applicability", Nuclear Engineering and Design, Vol.235, pp.21-31, (2005) (H.Machida, N.Yamashita, S.Yoshimura, G.Yagawa)
- (70) "Virtual Demonstration Tests of Large-Scale and Complex Artifacts Using an Open Source Parallel CAE System, ADVENTURE", Journal of Solid State Phenomena, Vol.110, pp.133-142, (2006) (S. Yoshimura)
- (71) "MATES : Multi-Agent based Traffic and Environmental Simulator – Theory, Implementation and Practical Application ", Computer Modeling in Engineering and Sciences, Vol.11, No.1, pp.17-25, (2006) (S. Yoshimura)
- (72) "Large Scale Drop Impact Analysis of Mobile Phone Using ADVIC on Blue Gene/L", (H.Akiba, T.Ohyama, Y.Shibata, K.Yuyama, Y.Katai, R.Takeuchi, T.Hoshino, S.Yoshimura, H.Noguchi, M.Gupta, J.A.Gunnels, V.Austel, Y.Sabharwal, S.Kato, T.Kawakami, S.Tadokoro, J.Ikeda, Proceedings of IEEE/ACM Supercomputing' 06, CD-ROM, 2006 (2006 Gordon Bell Award finalist)
- (73) "Improvements in Mass Conservation Using Alternative Boundary Implementations for a Quasi-Bubble Finite Element Shallow Water Model", International Journal for Numerical Methods in Fluid, Vol.47, pp.1451-1468, (2006) (S.Bunya, S.Yoshimura, J.J.Westerink)
- (74) "Recent Japanese Probabilistic Fracture Mechanics Researches Related to Failure Probability of

Aged RPV”, *Journal of Solid State Phenomena*, Vol.120, pp.49-67, (2007) (K.Shibata, Y.Kanto, S.Yoshimura, G.Yagawa)

(75) “Economic Evaluation of Maintenance Strategies for Steam Generator Tubes Using Probabilistic Fracture Mechanics and a Financial Method”, *Journal of Solid State Phenomena*, Vol.120, pp.119-126, (2007) (Y.Isobe, M.Sagisaka, S.Yoshimura, G.Yagawa)

(76) “Numerical Prediction of Sound Generated from Flows with a Low Mach Number”, *Computers and Fluids*, Vol.36, No.1, pp.53-68, (2007) (C.Kato, Y.Yamade, H.Wang, Y.Guo, M.Miyazawa, T.Takaishi, S.Yoshimura, Y.Takano)

(77) “Efficient Parallel Analysis of Shell-fluid Interaction Problem by Using Monolithic Method Based on Consistent Pressure Poisson Equation”, *JSME Journal of Computational Science and Technology*, Vol.2, No.1, pp.185-196, (2008) (D.Ishihara, S.Kanei, S.Yoshimura, T.Horie)

(78) “Quantitative Evaluation of Flow-Induced Structural Vibration and Noise in Turbomachinery by Full-Scale Weakly Coupled Simulation”, *Journal of Fluids and Structures*, Vol.23, pp.531-544, (2007) (Y-Y.Jiang, S.Yoshimura, R.Imai, H.Katsura, T.Yoshida, C.Kato)

(79) “A New Local Contact Search Method Using a Multi-layer Neural Network”, *Computer Modeling in Engineering and Sciences*, Vol.21, No.2, pp.93-103, (2007) (A.Oishi, S.Yoshimura)

(80) “An Application of the Domain Decomposition Method to Three-Dimensional Large-Scale Magnetic Field Analyses”, *International Journal of Pure and Applied Mathematics*, Vol.42, No.2, pp.267-273, (2008) (H.Kanayama, S.Sugimoto, S.Yoshimura)

(81) “Vectorization of Polygon Rendering for Off-line Visualization of a Large Scale Structural Analysis with ADVENTURE System on the Earth Simulator”, *Journal of the Earth Simulator*, Vol.9, pp.51-63, (2008.3) (H.Kawai, M.Ogino, R.Shioya, S.Yoshimura)

(82) “Finite Element Analyses of Dynamic Problems Using Graphics Hardware”, *Computer Modeling in Engineering and Science*, Vol.25, No.2, pp.115-132, (2008) (A.Oishi, S.Yoshimura)

(83) “Line Search Partitioned Approach for Fluid-Structure Interaction Analysis of Flapping Wing”, *Computer Modeling in Engineering and Sciences*, Vol.24, No.1, pp.51-60, (2008) (T.Yamada, S.Yoshimura)

(84) “Genetic Approaches to Iteration-free Local Contact Search”, *Computer Modeling in Engineering and Sciences*, Vol.28, No.2, pp.127-146, (2008) (A.Oishi, S.Yoshimura)

(85) “Large Scale Parallel Finite Element Analyses of High Frequency Electromagnetic Field in Commuter Trains”, *Computer Modeling in Engineering and Sciences*, Vol.21, No.1, pp.1-11, (2009) (A.Takei, S.Yoshimura, H.Kanayama)

(86) “Development of Probabilistic Fracture Mechanics Analysis Code for Pipes with Stress Corrosion Cracks”, *JSME Journal of Power and Energy Systems*, Vol.3, No.1, pp.103-113, (2009) (H.Machida, M.Arakawa, N.Yamashita, S.Yoshimura)

(87) “Practical Performances of Non-linear Algorithms for Partitioned Iterative Methods of Fluid-Structure Interaction Problems”, *JSME Journal of Computational Science and Technology*, Vol.3, No.1, pp.396-407, (2009) (S.Minami, S.Yoshimura)

(88) “Large-scale Full Wave Analysis of Electromagnetic Field by Hierarchical Domain Decomposition Method”, *Computer Modeling in Engineering and Sciences*, Vol.40, No.1, pp.63-81, (2009) (A.Takei, S.Yoshimura, H.Kanayama)

(89) “Performance Evaluation on Nonlinear Algorithms with Line-Search for Partitioned Coupling Techniques for Fluid-Structure Interactions”, *International Journal for Numerical Methods in Fluids*, Vol.64, Nos.10-12, pp.1129-1147, (2010) (S.Minami, S.Yoshimura)

(90) “Full Wave Analyses of Electromagnetic Fields with an Iterative Domain Decomposition Method”, *IEEE Transactions on Magnetics*, Vol.46, No.8, pp.2860-2863, (2010) (A.Takei, S.Sugimoto, M.Ogino, S.Yoshimura, H.Kanayama)

(91) “Multi-agent Based Traffic Simulation at Merging Section Using Coordinative Behavior Model”, *Computer Modeling in Engineering and Sciences*, Vol.63, No.3, pp.265-282, (2010) (H.Fujii, S.Yoshimura, K.Seki)

(92) “Virtual Social Experiment of Tram Railway Extension Using Multi-agent-based Traffic Simulator”, *Journal of Advanced Computational Intelligence and Intelligent Informatics*, Vol.15, No.2, pp.226-232, (2011) (H.Fujii, T.Sakurai, S.Yoshimura)

(93) “Large Scale Elasto-Plastic Analysis Using Domain Decomposition Method Optimized for Multi-core CPU Architecture”, *Key Engineering Materials*, Vols.462-463, pp.605-610, (2011) (H.Kawai, M.Ogino, R.Shioya, S.Yoshimura)

(94) “Summary of International PFM Round Robin Analyses among Asian Countries on Reactor Pressure Vessel Integrity during Pressurized Thermal Shock”, *International Journal of Pressure*

- Vessels and Piping, Vol.90-91, pp.46-55, (2012) (Y.Kanto, M-J.Jhung, K.Ting, Y-B.He, K.Onizawa, S.Yoshimura)
- (95) “Benchmark Analysis on PFM Analysis Codes for Aged Piping of Nuclear Power Plants”, JSME Journal of Mechanical Science and Technology, Vol.26, No.7, pp.2055-2058, (2012) (H.Itoh, Y-S.Li, K.Osakabe, K.Onizawa, S.Yoshimura)
- (96) “A Monolithic Approach Based on Balancing Domain Decomposition Method for Acoustic Fluid-Structure Interaction”, Transactions of ASME, Journal of Applied Mechanics, Vol.790, No.1, 010906, (2012), (DOI: 10.1115/1.4005092) (S.Minami, H.Kawai, S.Yoshimura)
- (97) “Parallel BDD based Monolithic Approach for Acoustic Fluid-Structure Interaction”, Computational Mechanics, (2012), DOI 10.1007/s00466-012-0776-9 (S.Minami, H.Kawai, S.Yoshimura)
- (98) “Benchmark Analysis and Numerical Investigation on Probabilistic Fracture Mechanics Analysis Codes for NPPs Piping”, International Journal of Pressure Vessels and Piping, Vol.99-100, pp.61-68, (2012) (H.Itoh, Y-S.Li, K.Osakabe, K.Onizawa, S.Yoshimura)
- (99) “CG-based Subdomain Local Solver with ICT Factorization Preconditioner for Domain Decomposition Method”, JSME Journal of Computational Science and Technology, Vol.6, No.3, pp.157-168, (2012) (Y.Yusa, S.Minami, H.Kawai, S.Yoshimura)
- (100) “Precise Evaluation of Vehicles Emission in Urban Traffic Using Multi-agent-based Traffic Simulator MATES”, Computer Modeling in Engineering and Science, Vol.88, No.1, pp.49-64, (2012) (H.Fujii, S.Yoshimura)
- (101) “Seismic Structural Response Estimates of a Fault-Structure System Model with Fine Resolution Using Multiscale Analysis with Parallel Simulation of Seismic-Wave Propagation”, Bulletin of the Seismological Society of America, Vol.103, No.3, pp.2094-2110 (2013), June 2013, doi:10.1785/0120120216 (Pher Errol Balde Quinay, T.Ichimura, M.Hori, A.Nishida, S.Yoshimura)
- (102) “Investigating the Impact of Trading Frequencies of Market Makers : A Multi-Agent Simulation Approach”, SICE Journal of Control, Measurement, and System Integration, Vol.6, No.3, pp.216-220, (2013) (Chi Wang, K.Izumi, T.Mizuta, S.Yoshimura)
- (103) “Mixed-mode Fracture Mechanics Analysis of Large-scale Cracked Structures Using Partitioned Iterative Coupling Method”, Computer Modeling in Engineering and Science, Vol.91, No.6, pp.445-461, (2013) (Y.Yusa, S.Yoshimura)
- (104) “Design of Financial Market Regulations against Large Price Fluctuations Using by Artificial Market Simulations”, Journal of Mathematical Finance, Vol.3, pp.15-22, (2013) (T.Mizuta, K.Izumi, I.Yagi, S.Yoshimura)
- (105) “Benchmark analysis on probabilistic fracture mechanics analysis codes concerning fatigue crack growth in aged piping of nuclear power plants”, International Journal of Pressure Vessels and Piping, Vol.117-118, pp.56-63, (2014) (J.Katsuyama, H.Itoh, Y.Li, K.Onizawa, S.Yoshimura)
- (106) “Speedup of Elastic-Plastic Analysis of Large-scale Model with Crack Using Partitioned Coupling Method with Subcycling Technique”, Computer Modeling in Engineering & Sciences, Vol.99, No.1, pp.87-104, (2014) (Y.Yusa, S.Yoshimura)
- (107) “A Parallel Iterative Partitioned Coupling Analysis System for Large-Scale Acoustic Fluid-Structure Interactions”, Computational Mechanics, Vol.53, No.6, pp.1299-1310, (2014) (S.Kataoka, S.Minami, H.Kawai, T.Yamada, S.Yoshimura)
- (108) “How Does High Frequency Risk Hedge Activity Have an Effect on Underlying Market ? : Analysis by Artificial Market Model”, Journal of Advanced Computational Intelligence and Intelligent Informatics, Vol.18, No.4, pp.558-566, (2014) (S.Kawakubo, K.Izumi, S.Yoshimura)
- (109) “Hierarchical Domain Decomposition with Parallel Mesh Refinement for Billions-of-DOF Scale Finite Element Analyses”, International Journal of Computational Methods, Vol.11, No.4, 1350061, (2014) DOI: 10.1142/S0219876213500618 (K.Murotani, S.Sugimoto, H.Kawai, S.Yoshimura)
- (110) “MPS-FEM Partitioned Coupling Approach for Fluid-Structure Interaction with Free Surface Flow”, International Journal of Computational Methods, Vol.11, No.4, 1350101, (2014) DOI: 10.1142/S0219876213501016 (N.Mitsume, S.Yoshimura, K.Murotani, T.Yamada)
- (111) “Development of Hierarchical Domain Decomposition Explicit MPS Method and Application to Large-scale Tsunami Analysis with Floating Objects”, Journal of Advanced Simulation in Science and Engineering, Vol.1, No.1, pp.16-35, (2014) (K.Murotani, S.Koshizuka, T.Tamai, K.Shibata, N.Mitsume, S.Yoshimura, S.Tanaka, K.Hasegawa, E.Nagai, T.Fujisawa)
- (112) “Performance Evaluation of Parallel Finite Element Electromagnetic Field Analysis Using Numerical Human Models”, Journal of Advanced Simulation in Science and Engineering, Vol.1, No.1,

- pp.127-140, (2014) (A.Takei, K.Murotani, S.Sugimoto, M.Ogino, T.Yamada, S.Yoshimura)
- (113) “Seismic Response Analysis of Full Scale Boiling Water Reactor Using Three Dimensional Finite Element Method”, Journal of Nuclear Science and Technology, doi10.1080/00223131.2014.963000 (S.Yoshimura, K.Kobayashi, H.Akiba, S.Suzuki, M.Ogino)
- (114) “Improved MPS-FE Fluid-Structure Interaction Coupled Method Applying MPS Polygon Wall Boundary Model”, Computer Modeling in Engineering & Science, Accepted for Publication, (N.Mitsume, S.Yoshimura, K.Murotani, T.Yamada)
- (115) “Explicitly Represented Polygon Wall Boundary Model for the Explicit MPS Method”, Computational Particle Mechanics, Accepted for Publication, (N.Mitsume, S.Yoshimura, K.Murotani, T.Yamada)
- (116) “Understanding the Mechanism of Tsunami-induced Damage to Machines and Structures Based on a Discipline of Mechanics”, Chapter 4 of Lessons Learned from the Great East Japan Earthquake Disaster, Report of the JSME Research Committee on the Great East Japan Earthquake Disaster, pp.24-57 (2014) <http://www.jsme.or.jp/English/> (S. Yoshimura, H. Nakamura, H. Kanayama, T. Aoki, T. Himeno, Y. Sakai, S. Koshizuka, D. Isobe, H. Fujii)