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Education

University of Kentucky	<i>Computer Science</i>	PhD	2007
Tennessee Technological University	<i>Mechanical Engineering</i>	PhD	2003

Appointments

Aug. 2007 – present: Assistant Professor
Dept. of Computational Science, SUNY College at Brockport
Apr. 1996 – July 1999: Assistant Professor
Chemical Engineering Institute, South China University of Technology
July 1990 – July 1993: Engineer
Maanshan Iron & Steel Inc. China

Research Interest

Computational biology, computational physics, computational fluid dynamics, iterative and parallel computing, scientific visualization, medical imaging

Publications

1. W. Shen, C. Zhang, and J. Zhang, Relaxation method for unsteady convection-diffusion equations, *Computers and Mathematics with Applications*, 61, 908 – 920, 2011.
2. W. Shen, K. Forsten-Williams, M. Fannon, C. Zhang, and J. Zhang, Multigrid finite volume method for FGF-2 transport and binding, in *Machine Learning and Systems Engineering, Lecture Notes in Electrical Engineering*, 68, 297-310, 2010.
3. W. Shen, L. Little, and L. Hu, Anti-diffusive methods for hyperbolic heat transfer, *Computer Methods in Applied Mechanics and Engineering*, 199, 1231-1239, 2010.
4. W. Shen, C. Zhang, J. Zhang, and X. Ma, Newton method for dynamic nonlinear systems with adaptive time stepping, *Journal of Universal Computer Science*, 16(6), 891-902, 2010.
5. W. Shen, K. Forsten-Williams, M. Fannon, C. Zhang, and J. Zhang, Multigrid accelerated computation of growth factor-receptor interactions under flow condition, *Proceedings of World Congress on Engineering and Computer Science 2009*, pp. 949-954, Berkeley, CA, Oct. 20-22, 2009
6. C. Zhang, W. Shen, B. Zhao, M. Fannon, K. Forsten-Williams, J. Zhang, A numerical study of pulsatile flow through a hollow fiber cartridge: growth factor-receptor binding and dissociation analysis, *Proceedings of Int'l Conf. on Bioinformatics, System Biology and Intelligent Computing (IJCBS09)*, pp 435-441, Shanghai, China, Aug.3-6, 2009.
7. W. Shen, C. Zhang, M. Fannon, K. Forsten-Williams, and J. Zhang, A computational model of FGF-2 binding and HSPG regulation under flow, *IEEE Transactions on Biomedical Engineering*. 56(9): 2147-2155, 2009.
8. C. Zhang, W. Shen, K. Forsten-Williams, M. Fannon, and J. Zhang, Simulation of FGF-2 binding with receptors on cell surface on the wall in a bioreactor system, *Proceedings of the 2008 International Conference on Bioinformatics and Computational Biology*, pp. 724-727, Las Vegas, NV, July 14-17, 2008.

9. W. Shen, C. Zhang, and J. Zhang, Multiscale simulation of ligand-receptor binding and dissociation in circulation, *Proceedings of the 45th ACM Southeast Conference*, ACM, Winston-Salem, NC, pp. 519-520, 2007.
10. W. Shen, J. Zhang, and F. Yang, Newton's Method for Steady and Unsteady Reacting Flows, *Proceedings of the 2006 ACM Symposium of Applied Computing*, ACM, Melbourne, FL, pp. 756-757, 2006.
11. W. Shen, J. Zhang, and F. Yang, Three-dimensional model on thermal response of skin subject to laser heating, *Computer Methods in Biomechanics and Biomedical Engineering*, 8(2): 115-125, 2005.
12. W. Shen, J. Zhang, and F. Yang, Performance of ILUT Preconditioners in modeling bioheat and mass transfer in skin thermal injury, *Proceedings of the Third M.I.T. Conference on Computational Fluid and Solid Mechanics*, editor: K.J. Bathe, 1175-1178, Elsevier, 2005.
13. W. Shen, J. Zhang, and F. Yang, Modeling and numerical simulation of bioheat transfer and biomechanics in soft tissue, *Mathematical and Computer Modelling*, 41(11-12):1251-1265, 2005.
14. W. Shen, J. Zhang, and F. Yang, Skin thermal injury prediction with strain energy, *International Journal of Nonlinear Science and Numerical Simulation*, 6(3):317-328, 2005.
15. W. Shen and S. Han, Two-dimensional hyperbolic heat conduction with temperature-dependent properties, *AIAA Journal of Thermophysics and Heat Transfer*, 18(2):285-287, 2004.
16. W. Shen and S. Han, An explicit TVD scheme for hyperbolic heat conduction in complex geometry, *Numerical Heat Transfer (Part B)*, 41:565-590, 2002.
17. W. Shen and S. Han, Numerical solution of two-dimensional axisymmetric hyperbolic heat conduction, *Computational Mechanics*, 29:122-128, 2002.
18. W. Shen and S. Han, A numerical solution of two-dimensional hyperbolic heat conduction with non-linear boundary conditions, *Heat and Mass Transfer*, 39:499-507, 2003.
19. W. Shen and S. Han. Hyperbolic heat conduction in composite materials, *8th AIAA/ASME Joint Thermophysics and Heat Transfer Conference*, 24-26 June 2002, St. Louis, Missouri (AIAA-2002-3003).
20. W. Shen, X. Ma, and L. Chen, The relativity of coal quality to boiler and its influence on power plant operation, *Power System Engineering*, 16, 42-44 (48), 2000. (in Chinese)
21. W. Shen, X. Ma, and L. Chen, Properties of NO_x formation in recirculation flow zone inside a single pulverized coal furnace, *Boiler Technology*, 30, 1-5, 1999. (in Chinese).
22. X. Ma, W. Shen, M. Li, et al., Analyses on heat transfer between ambience inside furnace and input waste in waste incineration furnace and input waste in waste incineration, *Power System Engineering*, 15, 45-48, 1999. (in Chinese)

Presentations

1. W. Shen, L. Little, and L. Hu, Anti-diffusive methods for hyperbolic heat transfer, Miami, FL, Dec. 7-10, 2009.
2. W. Shen, K. Forsten-Williams, M. Fannon, C. Zhang, and J. Zhang, Multigrid accelerated computation of growth factor-receptor interactions under flow condition, Berkeley, CA, Oct. 20-22, 2009
3. W. Shen, J. Zhang, and F. Yang, Computer modeling of perlecan regulationon growth factor binding, *Joint SMB-SIAM Conference on the Life Science*, July 31 – August 4, 2006, Raleigh, North Carolina

4. W. Shen, J. Zhang, and F. Yang, Simulation of burn injury: heat transfer, water evaporation, strain energy, and protein denaturation, *Third Annual Kentucky Innovation & Enterprise Conference*, March 30, 2005, Louisville, Kentucky
5. W. Shen and J. Zhang, Modeling and simulation of heat transfer and biomechanics in soft tissue, SIAM Conference on the Life Science, July 11-14, 2004, Portland, Oregon
6. W. Shen, Y. Hong, J. Zhang, and F. Yang, Computer modeling of biomechanics in soft tissue, *Second Annual Kentucky Innovation & Enterprise Conference*, March 3, 2004, Louisville, Kentucky

Invited Talk

PDE-Based Modeling and Its Applications in Physics and Biology, Donghua University, Shanghai, China, July 28, 2008

Referee

- Computers and Mathematics with Applications, 2008
- Medical & Biological Engineering & Computing, 2007
- Journal of Computational and Applied Mathematics, 2006
- Journal of Applied Numerical Mathematics, 2006
- Third International Symposium on Parallel and Distributed Processing and Applications, 2005
- Second International Symposium on Parallel and Distributed Processing and Applications, 2004
- International Symposium on Computational and Information Science, 2004

Honors and Awards

- Thaddeus B. Curtz Memorial Scholarship Award, 2006
- President Fellowship Award, Graduate School, University of Kentucky, 2006-2007
- Kentucky Opportunity Fellowship Award, Graduate School, University of Kentucky, 2005-2006
- Young Researcher Fellowship Award, Third MIT Conference on Computational Fluid and Solid Mechanics, Cambridge, MA
- SIAM Student Travel Award, 2004

Collaborators & Other Affiliations

Collaborators

Michael Fannon (Department of Ophthalmology and Visual Sciences, University of Kentucky)

Kimberly Forsten-Williams (Department of Chemical Engineering, Virginia Polytechnic Institute & State University)

Jun Zhang (Department of Computer Science, University of Kentucky)

Ying Zhang (Tennessee Technological University)

Xiaoqian Ma (South China University of Technology)

Liangjian Hu (Donghua University)

Graduate Advisors

Jun Zhang, University of Kentucky

Sam Han, Tennessee Technology University