SAMPLE NSF-style bio-sketch

Mark Stalzer

Data Science Fellow, Gordon and Betty Moore Foundation Visiting Faculty, Computing and Mathematical Sciences, Caltech *email address and phone number*

Professional Preparation

1993 Ph.D. Computer Science, University of Southern California

1988 M.S. Computer Science, University of Southern California

1984 B.S. Mathematical Physics & Computer Science, California State University, Northridge

1999 Certificate in Executive Management, UCLA Anderson School of Management

Appointments

2013- *Gordon and Betty Moore Foundation* Fellow of Data Science

California Institute of Technology

- 2010- Visiting Faculty (Faculty Associate), Computing and Mathematical Sciences
- 2008-2014 Executive Director and co-Investigator, NNSA/Caltech Predictive Science Center
- 2006-2012 co-Director, Center for Integrative Study of Cell Regulation (Cell Center)
- 2004-2013 Executive Director, Center for Advanced Computing Research
 - Hughes Research Labs, Malibu, California
- 1999-2004 Director, Information Sciences Laboratory
- 1998-1999 Manager, Computational Physics Department
- 1998-2004 Senior Scientist
- 1991-1998 Staff Scientist, and Senior Staff Scientist

Trace Instruments, Canoga Park, California

1981-1991 Senior Programmer, Principal Engineer and Manager of Software Engineering

Awards

AAAS Fellow, 2013. ACM Distinguished Scientist, 2008.

Synergistic Activities

- Led Caltech's center for computational science. Worked with research groups in over a dozen domains including applied math, astronomy, biology, engineering, and geophysics.
- Co-leader of the NNSA/Caltech Predictive Science Center that is applying novel uncertainty quantification methods to the simulation of hyper-velocity impact experiments.
- Led a computer science research lab with a staff of 55 for Boeing, Hughes, General Motors, and Raytheon. Responsible for budget, schedule, and deliverables on over 50 programs.
- Principal Investigator on a large DARPA program that advanced the state of the art in electromagnetic scattering calculations by over nine orders of magnitude. To achieve this result, significant attention was given to algorithmic convergence, time/space complexity, and verification against experiments from Air Force labs.
- Inventor on US Patents #5,126,953, #5,933,794, and #6,175,815. One patent pending.

Papers and Projects

A.A. Kidane, A. Lashgari, B. Li, M. McKerns, M. Ortiz, H. Owhadi, G. Ravichandran, M. Stalzer, and T.J. Sullivan. Rigorous model-based uncertainty quantification with application to terminal ballistics. Part I: Systems with controllable inputs and small scatter. Journal of the Mechanics and Physics of Solids, 60(5):983-1001, 2012. DOI 10.1016/j.jmps.2011.12.001.

M. Adams, A. Lashgari, B. Li, M. McKerns, J. Mihaly, M. Ortiz, H. Owhadi, A.J. Rosakis, M. Stalzer, and T.J. Sullivan. Rigorous model-based uncertainty quantification with application to terminal ballistics. Part II: Systems with uncontrollable inputs and large scatter. Journal of the Mechanics and Physics of Solids, 60(5):1002-1019, 2012. DOI 10.1016/j.jmps.2011.12.002.

Sean Mauch and Mark Stalzer. Efficient formulations for exact stochastic simulation of chemical systems. IEEE/ACM Transactions on Computational Biology and Bioinformatics, 8(1):27-35, 2011 (electronic Apr 2009). DOI 10.1109/TCBB.2009.47. <u>This paper describes the Cain software system that has been downloaded over 20,000 times from cain.sourceforge.net</u>.

John J. Ottusch, Mark A. Stalzer, John L. Visher, and Stephen M. Wandzura. Scalable electromagnetic scattering calculations for the SGI Origin 2000. In Proceedings ACM/IEEE Supercomputing 99, Portland, OR, Nov 1999.

Mark Stalzer, John Visher, and John Ottusch. FastScat (software system). Hughes Research Labs (proprietary), Malibu, CA, 1991-1999.

Other Works

Sean Mauch and Mark Stalzer. An efficient method for computing steady state solutions with Gillespie's direct method. Journal of Chemical Physics, 133:144108, 2010. DOI 10.1063/1.3489354.

Lawrence S. Canino, John J. Ottusch, Mark A. Stalzer, John L. Visher, and Stephen M. Wandzura. Numerical solution of the Helmholtz equation in 2d and 3d using a high-order Nystrom discretization. Journal of Computational Physics, 146:627-663, 1998.

Mark F. Gyure and Mark A. Stalzer. A prescription for the multilevel Helmholtz FMM. IEEE Computational Science & Engineering, 5(3):39-47, Jul 1998.

Mark A. Stalzer. A parallel fast multipole method for the Helmholtz equation. Parallel Processing Letters, 5(2):263-274, 1995.

Lisa Hamilton, Mark Stalzer, R. Steven Turley, John Visher, and Stephen Wandzura. FastScat: an object-oriented program for fast scattering computation. Scientific Programming, 2(4):171-178, 1993.

Collaborators

Vicki Chandler, Moore Foundation; Mathieu Desbrun, Caltech; George Djorgovski, Caltech; Matthew Graham, Caltech; Mike Hucka, Caltech; Mary Kennedy, Caltech; Bo Li, Caltech; Andrew Lucas, Harvard; Richard Murray, Caltech; Harvey Newman, Caltech; Michael Ortiz, Caltech; Vladimir Rokhlin, Yale. (No co-editors.)