

Paul R. Brenner, PhD, PE

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PROFESSIONAL PREPARATION

University of Notre Dame, Notre Dame, IN 2007
Ph.D. Computer Science and Engineering
Field of Research: Computational Biophysics and High Throughput Distributed Systems

The Ohio State University, Columbus, OH 2000
M.S. Materials Science and Engineering
Field of Research: Intermetallic Mechanical Behavior and Dislocation Mechanisms

University of Notre Dame, Notre Dame, IN 1998
B.S. Civil Engineering – Cum Laude

APPOINTMENTS: RESEARCH, ENGINEERING, AND MANAGEMENT

Center for Research Computing, The University of Notre Dame, Indiana 2007 - Present
Associate Director, High Performance Computing
Research Assistant Professor, Department of Computer Science and Engineering

- Advance computation based research through HPC system design, deployment, operation, and support
- Conduct HPC research and grant development to grow computational infrastructure and capabilities
- HPC user training: hands-on instruction, collaborative documentation, & operational communications

U.S. Air Force Reserves, Engineering Officer (Traditional Reservist) 1998 - Present
434th Air Wing Civil Engineering Squadron, Grissom ARB, Indiana 2009 - Present
Engineering Squadron Commander

- Command 145 USAF engineers and technicians to meet operational engineering tasks

U.S. DSRC High Performance Computing Center, Wright Patterson AFB, Ohio 2005 - Present
HPC Infrastructure Planning and Design Consultant

- Research and evaluate developing HPC technologies with multi megawatt infrastructure impacts

445th Air Wing Civil Engineering Squadron, Wright Patterson AFB, Ohio 1998 - 2009
Engineering, Mobility, & Training Officer

- Directed analysis, design, & execution; OIC of Operations (\$85 million) Bagram, Afghanistan

McGill AirClean Corporation, Columbus, Ohio 2000 - 2003
Manager Civil/Structural Engineering

- Managed structural engineers, designers, and manufacturing planners for efficient project completion

APPOINTMENTS: TEACHING

University of Notre Dame, Notre Dame, IN 2003 – Present
Research Assistant Professor (2007 – 2009), Graduate Research Assistant (2003 – 2007)

- Instructor – Data Structures, Undergraduate Research, CSE Service Learning (CBR)

Columbus State Community College, Columbus, Ohio 2001 - 2003
Adjunct Faculty – Core Physics Sequence

PROFESSIONAL CERTIFICATION/ORGANIZATIONS

Registered Professional Engineer, Ohio
Member - Association for Computing Machinery (ACM)
Member - American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE)

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RECENT PUBLICATIONS

M. Lammie, P. Brenner, D. Thain
Scheduling Grid Workloads on Multicore Clusters to Minimize Energy and Maximize Performance
Accepted, 10th IEEE/ACM International Conference on Grid Computing (Grid 2009)

P. Brenner, D. Thain, D. Latimer
Grid Heating Clusters: Transforming Cooling Constraints into Thermal Benefits
Uptime Institute – IT Lean, Clean, & Green Symposium, Green Enterprise IT Awardee, 2009

P. Brenner, J. M. Wozniak, D. Thain, A. Striegel, J.W. Peng, and J. A. Izaguirre
Biomolecular Commitor Probability Calculation Enabled by Processing in Network Storage
Journal of Parallel Computing, 2008

P. Brenner, J. M. Wozniak, D. Thain, A. Striegel, and J. A. Izaguirre
Biomolecular Path Sampling Enabled by Processing in Network Storage
Sixth IEEE International Workshop on High-Performance Computational Biology, 2007

J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre
Making the Best of a Bad Situation: Prioritized Storage Management in GEMS
Journal of Future Generation Computer Systems, 2007

P. Brenner, C. R. Sweet, D. VonHandorf, and J. A. Izaguirre
Accelerating the Replica Exchange Method Through an Efficient All-pairs Exchange
Journal of Chemical Physics, 2007

J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre
Access Control for a Replica Management Database
Proc Workshop on Storage Security and Survivability, ACM, 2006

J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre
Applying Feedback Control to a Replica Management System
Proc. Southeastern Symposium on System Theory, IEEE Control Systems Society, 2006

D. Thain, S. Klous, J. Wozniak, P. Brenner, A. Striegel, J. Izaguirre
Separating Abstractions from Resources in a Tactical Storage System
Supercomputing, 2005

S. Hampton, P. Brenner, A. Wenger, S. Chatterjee, J. Izaguirre
Biomolecular Sampling: Algorithms, Test Molecules, and Metrics
Lecture Notes in Computational Science and Engineering, 2005

RECENT AWARDS FOR SYNERGISTIC ACTIVITIES

Uptime Institute – IT Lean, Clean, & Green Symposium, Green Enterprise IT Awardee	2009
• Paper: “Grid Heating Clusters: Transforming Cooling Constraints into Thermal Benefits”	
Notre Dame Rev. William A. Toohy Award for Service and Social Justice	2008
Notre Dame CSC Ganey Research Grant Recipient	2006
National Engineering Week – New Faces in Engineering Nominee	2004

CURRENT RESEARCH

- Transformative technology for energy efficient high performance computing & data center operation
- Novel utilization of autonomous and heterogeneous resources for high performance computing
- Accelerated parallel sampling algorithms for Monte Carlo based simulation methods