

# HENRI CASANOVA

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## EDUCATION

**Ph.D.** – Computer Science, University of Tennessee, Knoxville, Tennessee, U.S.A., **1998**

Dissertation: *Stochastic models for performance analyses of iterative algorithms in distributed environments*

Advisors: Prof. Jack J. Dongarra and Prof. Michael G. Thomason

**M.S.** – Diplôme d’Études Approfondies (DEA) in Parallel Architectures and Applied Mathematics, National Polytechnic Institute of Toulouse, France, **1994**.

Thesis: *A version of PVM for shared- and virtually shared-memory supercomputers*

Advisor: Prof. Michel Daydé

**B.S.** – Diplôme d’Ingénieur in Computer Science and Applied Mathematics, Ecole Nationale Supérieure d’Electronique, d’Electrotechnique, d’Informatique et d’Hydraulique de Toulouse (ENSEEIH), Toulouse, France, **1993**.

## RESEARCH INTERESTS

High performance computing, parallel and distributed computing, parallel application scheduling, simulation of distributed applications and platforms.

## PROFESSIONAL EXPERIENCE

**07/15 - present:** Professor, Information and Computer Sciences Department, University of Hawai‘i at Mānoa.

**04/12 - present:** Visiting Professor, National Institute of Informatics, Tokyo, Japan.

**08/05 - 06/07:** Assistant Professor, Information and Computer Sciences Department, University of Hawai‘i at Mānoa.

**07/04 - 07/05:** Associate Research Scientist, San Diego Supercomputer Center, University of California, San Diego.

**07/02 - 07/05:** Adjunct Assistant Professor, Department of Computer Science and Engineering, University of California, San Diego.

**07/01 - 06/04:** Assistant Research Scientist, San Diego Supercomputer Center, University of California San Diego.

- 07/01 - 07/05:** Director of the Grid Research And Innovation Laboratory (GRAIL), University of California San Diego.
- 12/98 - 06/01:** Assistant Project Scientist, Department of Computer Science and Engineering, University of California, San Diego.
- 03/98 - 11/98:** Postdoctoral Research Associate, Computer Science Department, University of Tennessee, Knoxville.
- 01/95 - 02/98:** Graduate Research Assistant, Computer Science Department, University of Tennessee, Knoxville.
- 11/93 - 11/94:** Computer Science Advisor, French Ministry of Defense (DGA), Paris, France.
- 09/92 - 10/93:** Graduate Research Assistant, Computer Science Research Institute of Toulouse (IRIT), Toulouse, France.

## PUBLICATIONS

### Journal Articles

50. *Checkpointing Strategies for Scheduling Computational Workflows*, G. Aupy, A. Benoit, H. Casanova, Y. Robert, in *International Journal of Networking and Computing*, 6(1), 2–26, **2016**.
49. *Distance Threshold Similarity Searches: Efficient Trajectory Indexing on the GPU*, M. Gowanlock, H. Casanova, in *IEEE Transactions on Parallel and Distributed Systems*, to appear **2016**.
48. *Combining Process Replication and Checkpointing for Resilience on Exascale Systems*, H. Casanova, Y. Robert, F. Vivien, D. Zaidouni, in *Future Generation Computer Systems*, to appear **2015**.
47. *Toward More Scalable Off-Line Simulations of MPI Applications*, H. Casanova, A. Gupta, F. Suter, in *Parallel Processing Letters*, 25(3), **2015**.
46. *Simulation of MPI Applications with Time-Independent Traces*, F. Deprez, S. Markomanolis, F. Suter, H. Casanova, in *Concurrency and Computation: Practice and Experience*, 27(5), 1145–1168, **2015**.
45. *Selecting Linear Algebra Kernel Composition Using Response Time Prediction*, A. Hurault, K. Baek, H. Casanova, in *Software: Practice and Experience*, **2014**.
44. *In-Memory Distance Threshold Similarity Searches on Moving Object Trajectories*, M. Gowanlock, H. Casanova, in *International Journal On Advances in Software*, 7 (3-4), 617–631 **2014**.
43. *Swap-and-randomize: A Method for Building Low-latency HPC Interconnects*, I. Fujiwara, M. Koibuchi, H. Matsutani, H. Casanova, in *IEEE Transactions on Parallel and Distributed Systems*, **2014**.
42. *Versatile, Scalable, and Accurate Simulation of Distributed Applications and Platforms*, H. Casanova, A. Giersch, A. Legrand, M. Quinson, F. Suter, in *Journal of Parallel and Distributed Computing*, 75(10), 2899–2917, **2014**.

41. *Mapping Applications on Volatile Resources*, H. Casanova, F. Dufossé, Y. Robert, F. Vivien, in *International Journal of High Performance Computing Applications (IJHPCA)*, 29(1), 73–91, **2014**.
40. *Using group replication for resilience on exascale systems*, M. Bougeret, H. Casanova, Y. Robert, F. Vivien, D. Zaidouni, in *International journal of High Performance Computing Applications (IJHPCA)*, 28(2), 210–224, **2014**.
39. *On the Validity of Flow-level TCP Network Models for Grid and Cloud Simulations*, P. Velho, L. Mello Schnorr, H. Casanova, A. Legrand, in *ACM Transactions on Modeling and Computer Simulation*, 23(4), **2013**.
38. *Energy-Aware Service Allocation*, D. Borgetto, H. Casanova, G. Da Costa, J.M. Pierson, in *Future Generation Computer Systems (FGCS)*, 28(5), 769–779, **2012**.
37. *Dynamic Fractional Resource Scheduling vs. Batch Scheduling*, M. Stillwell, F. Vivien, H. Casanova, in *IEEE Transactions on Parallel and Distributed Systems*, 23(3), 521–529, **2012**.
36. *Preventive Migration vs. Preventive Checkpointing for Extreme Scale Supercomputers*, F. Cappello, H. Casanova, Y. Robert, in *Parallel Processing Letters*, 21(2), 111–132, **2011**.
35. *Resource Allocation for Multiple Concurrent In-network Stream-processing Applications*, A. Benoit, H. Casanova, V. Rehn-Sonigo, Y. Robert, in *Parallel Computing (ParCo)*, 30, 331–348, **2011**.
34. *On Cluster Resource Allocation for Multiple Parallel Task Graphs*, H. Casanova, F. Desprez, F. Suter, in the *Journal of Parallel and Distributed Computing (JPDC)*, 70(12), 1193–1203, **2010**.
33. *Resource Allocation Algorithms for Virtualized Service Hosting Platforms*, M. Stillwell, D. Schanzenbach, F. Vivien, H. Casanova, in the *Journal of Parallel and Distributed Computing (JPDC)*, 70(9), 962–974, **2010**.
32. *Resource Allocation Strategies for Constructive In-Network Stream Processing*, A. Benoit, V. Rhen-Sonigo, Y. Robert, H. Casanova, in the *International Journal of Foundations of Computer Science (IJFCS)*, 22(3), 621–638, **2010**.
31. *Characterizing Fault Tolerance in Genetic Programming*, D. Lombraa Gonzlez, F. Fernandez de Vega, H. Casanova, in the *Journal of Future Generation Computer Systems (FGCS)*, 26, 847–856, **2010**.
30. *Scheduling Mixed-Parallel Applications with Advance Reservations*, K. Aida, H. Casanova, in the *Cluster Computing Journal*, 12(2), 205–220, **2009**.
29. *Scheduling Parallel Task Graphs on (Almost) Homogeneous Multi-cluster Platforms*, P.-F. Dutot, T. N'takpé, F. Suter, H. Casanova, in *IEEE Transactions on Parallel and Distributed Systems*, 20(7), 940–952, **2009**.
28. *Scheduling Task Parallel Applications for Rapid Application Turnaround on Enterprise Desktop Grids*, D. Kondo, A. Chien, H. Casanova, in the *Journal of Grid Computing*, 5(4), 379–405, **2007**.

27. *Benefits and Drawbacks of Redundant Batch Requests*, H. Casanova, in the *Journal of Grid Computing*, 5(2), 235–250, **2007**
26. *Characterizing Resource Availability in Enterprise Desktop Grids*, D. Kondo, G. Fedak, F. Cappello, H. Casanova, in the *Journal of Future Generation Computer Systems*, 23(7), 888–903, **2007**.
25. *Steady-State Scheduling of Multiple Divisible Load Applications on Wide-Area Distributed Computing Platforms*, L. Marchal, Y. Yang, H. Casanova, Y. Robert, in the *International Journal of High Performance Computing Applications* (IJHPCA), 20(8), 365–381, **2006**.
24. *Interference-Aware Scheduling*, B. Kreaseck, L. Carter, H. Casanova, J. Ferrante, S. Nandy, in the *International Journal of High Performance Computing Applications* (IJHPCA), 20(2), 45–59, **2006**.
23. *New Grid Scheduling and Rescheduling Methods in the GrADS Project*, F. Berman, H. Casanova, A. Chien, K. Cooper, H. Dail, A. Dasgupta, W. Deng, J. Dongarra, L. Johnsson, K. Kennedy, C. Koelbel, B. Liu, X. Liu, A. Mandal, G. Marin, M. Mazin, J. Mellor-Crummey, C. Mendes, A. Olugbile, M. Patel, D. Reed, Z. Shi, O. Sievert, H. Xia, A. Yarkhan, in the *International Journal of Parallel Programming*, 33(2), 209–229, **2005**.
22. *Network Modeling Issues for Grid Application Scheduling*, H. Casanova, in the *International Journal of Foundations of Computer Science (IJFCS)*, 16(2), 145–162, **2005**.
21. *Multi-Round algorithms for Scheduling Divisible Workloads*, Y. Yang, K. van der Raadt, H. Casanova, *IEEE Transactions on Parallel and Distributed Systems*, 16(11), 1092–1102, **2005**.
20. *Scheduling Divisible Loads on Star and Tree Networks: Results and Open Problems*, O. Beaumont, H. Casanova, A. Legrand, Y. Robert, Y. Yang, *IEEE Transactions on Parallel and Distributed Systems*, 16(3), 207–218, **2005**.
19. *The Encyclopedia of Life Project: Grid Software and Deployment*, W. Li, R. Byrnes, J. Hayes, V. Reyes, A. Birnbaum, A. Shabab, C. Mosley, D. Pekurewsky, G. Quinn, I. Shindyalov, H. Casanova, L. Ang, F. Berman, M. Miller, P. Bourne, in the *Journal of New Generation Computing on Grid Systems for Life Sciences*, 22(2), 127–136, **2004**.
18. *A Simple MPI Process Swapping Architecture for Iterative Applications*, O. Sievert, H. Casanova, *The International Journal of High Performance Computing Applications* (IJHPCA), 18(3), 341–352, **2004**.
17. *The Virtual Instrument: Support for Grid-enabled Scientific Simulations*, H. Casanova, et al., *The International Journal of High Performance Computing Applications* (IJHPCA), 18(1), 3–17, **2004**.
16. *Resource Allocation Strategies for Guided Parameter Space Searches*, M. Faerman, A. Birnbaum, F. Berman, H. Casanova, *The International Journal of High Performance Computing Applications* (IJHPCA), 17(4), 383–402, **2003**.
15. *Adaptive Computing on the Grid Using AppLeS*, F. Berman, R. Wolski, H. Casanova, W. Cirne, H. Dail, M. Faerman, S. Figueira, J. Hayes, G. Obertelli, J. Schopf, G.

- Shao, S. Smallen, N. Spring, A. Su, D. Zagorodnov, *IEEE Transactions on Parallel and Distributed Systems*, 14(4), 369–382, **2003**.
14. *A Decoupled Scheduling Approach for Grid Application Development Environments*, H. Dail, F. Berman, H. Casanova, *Journal of Parallel and Distributed Computing* (JPDC), Special issue on Grid Computing, 63(5), 505–524, **2003**.
  13. *Using TOP-C and AMPIC to Port Large Parallel Applications to the Computational Grid*, G. Cooperman, H. Casanova, J. Hayes, T. Witzel, *The International Journal on Future Generation Computer Systems* (FGCS), 19(4), 587–596, **2003**.
  12. *Applying Scheduling and Tuning to On-line Parallel Tomography*, S. Smallen, H. Casanova, F. Berman, *Scientific Programming*, 10(4), **2003**.
  11. *Innovation of the NetSolve Grid Computing System*, D. Arnold, H. Casanova, J. Dongarra, *Concurrency and Computation: Practice and Experience* (CCPE), 14(13-15), 1457–1479, **2002**.
  10. *Middleware for the Use of Storage in Communication*, M. Beck, D. Arnold, A. Bassi, F. Berman, H. Casanova, J. Dongarra, T. Moore, G. Obertelli, J. Plank, M. Swany, S. Vadhiyar, R. Wolski, *Parallel Computing*, 28(12), 1773–1787, **2002**.
  9. *Distributing MCell Simulations on the Grid*, H. Casanova, T. Bartol, J. Stiles, F. Berman, *The International Journal of High Performance Computing Applications* (IJHPCA), Vol. 14(3), 243–257, Fall **2001**.
  8. *The AppLeS Parameter Sweep Template: User-Level Middleware for the Grid*, H. Casanova, G. Obertelli, F. Berman, R. Wolski, *Scientific Programming*, Vol. 8(3), 111–126, **2001**.
  7. *Adaptive Scheduling for Task Farming with Grid Middleware*, H. Casanova, M. Kim, J. Plank, J. Dongarra, *The International Journal of Supercomputer Applications and High Performance Computing* (IJHPCA), Vol. 13, 231–240, **1999**.
  6. *Logistical Quality of Service in NetSolve*, M. Beck, H. Casanova, J. Dongarra, T. Moore, J. Plank, F. Berman, R. Wolski, *Computers and Communications*, Vol. 22, Issue 11, 1034–1044, **1999**.
  5. *Deploying Fault tolerance and Task Migration with NetSolve*, J. Plank, H. Casanova, M. Beck, J. Dongarra, *The International Journal on Future Generation Computer Systems* (FGCS), Vol. 15, 745–755, **1999**.
  4. *Stochastic Performance Prediction for Iterative Algorithms in Distributed Environments*, H. Casanova, M. Thomason, J. Dongarra, *Journal of Parallel and Distributed Computing* (JPDC), Vol. 58(1), 68–91, **1999**.
  3. *Using agent-based software for scientific computing in the NetSolve system*, H. Casanova, J. Dongarra, *Parallel Computing*, Vol. 24, 1777–1790, **1998**.
  2. *Java Access to Numerical Libraries*, H. Casanova, D. Doolin, J. Dongarra, *Concurrency: Practice and Experience* (CPE), Vol. 9(11), 1279–1291, **1997**.
  1. *NetSolve: A Network-Enabled Server for Solving Computational Science Problems*, H. Casanova, J. Dongarra, *The International Journal of Supercomputer Applications and High Performance Computing* (IJHPCA), Vol. 11(3), 212–223, Fall **1997**.

## Refereed Conference and Workshop Proceedings

86. *Computing the expected makespan of task graphs in the presence of silent errors*, H. Casanova, J. Herrmann, Y. Robert, in Proc. of the 9th International Workshop on Programming Models and Systems Software for High-End Computing, Philadelphia, Pennsylvania, Aug **2016**.
85. *Efficient Batched Predecessor Search in Shared Memory on GPUs*, B. Karsin, H. Casanova, N. Sitchinava, in Proc. of the 22nd IEEE International Conference on High Performance Computing (HiPC), Bengaluru, India, December **2016**.
84. *Scheduling computational workflows on failure-prone platforms*, G. Aupy, A. Benoit, H. Casanova, Y. Robert, in Proc. of the 17th Workshop on Advances on Parallel and Distributed Processing Symposium (APDCM), Hyderabad, India, May **2015**.
83. *Indexing of Spatiotemporal Trajectories for Efficient Distance Threshold Similarity Searches on the GPU*, M. Gowanlock, H. Casanova, in Proc. of the 29th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Hyderabad, India, May **2015**.
82. *Augmenting Low-latency HPC Network with Free-space Optical Links*, I. Fujiwara, M. Koibuchi, T. Ozaki, H. Matsutani, H. Casanova, in Proc. of the 21st IEEE International Symposium on High Performance Computer Architecture (HPCA), Bay Area, California, Feb. **2015**.
81. *Distance Threshold Similarity Searches on Spatiotemporal Trajectories using GPGPU*, M. Gowanlock, H. Casanova, in Proc. of the 21st IEEE Conference on High Performance Computing (HiPC), Goa, India, Dec. **2014**.
80. *In-Memory Distance Threshold Queries on Moving Object Trajectories*, M. Gowanlock, H. Casanova, in Proc. of the 6th International Conference on Advances in Databases, Knowledge, and Data Applications (DBKDA), Chamonix, France, Apr. **2014**.
79. *Cost-Optimal Execution of Boolean Query Trees with Shared Streams*, H. Casanova, L. Lim, Y. Robert, F. Vivien, D. Zaidouni, in Proc. of 28th IEEE International Parallel and Distributed Processing Symposium (IPDPS), Phoenix, AZ, May **2014**.
78. *Skywalk: a Topology for HPC Networks with Low-delay Switches*, I. Fujiwara, M. Koibuchi, H. Matsutani, H. Casanova, in Proc. of 28th IEEE International Parallel and Distributed Processing Symposium (IPDPS), Phoenix, AZ, May **2014**.
77. *Scheduling Tightly-Coupled Applications on Heterogeneous Desktop Grids*, H. Casanova, F. Dufossé, Y. Robert, F. Vivien, in Proc. of the 21st International Heterogeneity in Computing Workshop (HCW), Boston, MA, May **2013**.
76. *Layout-conscious Random Topologies for HPC Off-chip Interconnects*, M. Koibuchi, I. Fujiwara, H. Matsutani, H. Casanova, in Proc. of the 19th IEEE International Symposium on High Performance Computer Architecture (HPCA), Shenzhen, China, Feb. **2013**.
75. *Mapping Tightly-Coupled Applications on Volatile Resources*, H. Casanova, F. Dufossé, Y. Robert, F. Vivien, in Proc. of the 21st Euromicro International Conference on Parallel, Distributed, and Network-Based Processing (PDP), Belfast, Northern Ireland,

Feb. **2013**.

- 74. *Cabinet Layout Optimization of Supercomputer Topologies for Shorter Cable Length*, I. Fujiwara, M. Koibuchi, H. Casanova, in Proc. of the 13th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT), Beijing, China, Dec. **2012**.
- 73. *A Case for Random Shortcut Topologies for HPC Interconnects*, M. Koibuchi, H. Matsutani, H. Amano, D. F. Hsu, H. Casanova, in Proc. of the ACM IEEE 39th International Symposium on Computer Architecture (ISCA), Portland, Oregon, Jun. **2012**,
- 72. *Virtual Machine Resource Allocation for Service Hosting on Heterogeneous Distributed Platforms*, M. Stillwell, F. Vivien, H. Casanova, in Proc. of the 26th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Shanghai, China, May **2012**.
- 71. *Checkpointing strategies for parallel jobs*, M. Bougeret, H. Casanova, M. Rabie, Y. Robert, F. Vivien, in Proc. of SC'11, Seattle, WA, Nov. **2011**.
- 70. *On the Utility of DVFS for Power-Aware Job Placement in Clusters*, J.-M. Pierson, H. Casanova, in Proc. of Euro-Par, Bordeaux, France, Aug. **2011**.
- 69. *From Simulation to Experiment: A Case Study on Multiprocessor Task Scheduling*, S. Hunold, H. Casanova, F. Suter, in Proc. of the 13th Workshop on Advances on Parallel and Distributed Processing Symposium (APDCM), Anchorage, Alaska, May **2011**.
- 68. *Single Node On-Line Simulation of MPI Applications with SMP*, P.-N. Clauss, M. Stillwell, S. Genaud, F. Suter, H. Casanova, M. Quinson, in Proc. of the 25th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Anchorage, Alaska, May **2011**.
- 67. *Scheduling Parallel Iterative Applications on Volatile Resources*, H. Casanova, F. Dufosé, Y. Robert, F. Vivien, in Proc. of the 25th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Anchorage, Alaska, May **2011**.
- 66. *Minimizing Stretch and Makespan of Multiple Parallel Task Graphs via Malleable Allocations*, H. Casanova, F. Desprez, F. Suter, in Proc. of the International Conference on Parallel Processing (ICPP), San Diego, California, Sep. **2010**.
- 65. *Checkpointing vs. Migration for Post-Petascale Supercomputers*, F. Cappello, H. Casanova, Y. Robert, in Proc. of the International Conference on Parallel Processing (ICPP), San Diego, California, Sep. **2010**.
- 64. *Non-clairvoyant Scheduling of Multiple Bag-of-tasks Applications*, H. Casanova, M. Gallet, F. Vivien, in Proc. of Euro-Par, Ischia, Italy, Aug. **2010**.
- 63. *Fast and Scalable Simulation of Volunteer Computing Systems Using SimGrid*, B. Donasolo, H. Casanova, A. Legrand, P. Velho, in Proc. of the Workshop on Large-Scale System and Application Performance (LSAP), Chicago, Illinois, Jun. **2010**.
- 62. *Dynamic Fractional Resource Scheduling for HPC Workloads*, M. Stillwell, F. Vivien, H. Casanova, in Proc. of the 24th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Atlanta, Georgia, Apr. **2010**.
- 61. *Resource Allocation for Multiple Concurrent In-network Stream-processing Applications*,

- A. Benoit, H. Casanova, V. Rehn-Sonigo, Y. Robert, in Proc. of the 7th International Workshop on Algorithms, Models and Tools for Parallel Computing on Heterogeneous Platforms (HeteroPar), Delft, The Netherlands, **best paper award**, Aug. **2009**.
60. *Heuristics for Continuity Editing of Cinematic Computer Graphics Scenes*, K. Kardan, H. Casanova, in Proc. of the Games Papers (Sandbox) track of the ACM SIGGRAPH conference, New Orleans, Louisiana, Aug. **2009**.
  59. *Characterizing Fault Tolerance in Genetic Programming*, D. Lombraa F. Fernandez de Vega, H. Casanova, in Proc. of the Workshop on Bio-Inspired Algorithms for Distributed Systems (BADs'09), Barcelona, Spain, Jun. **2009**.
  58. *Resource Allocation using Virtual Clusters*, M. Stillwell, D. Schanzenbach, F. Vivien, H. Casanova, in Proc. of the 9th IEEE Symposium on Cluster Computing and the Grid (CCGrid'09), Shanghai, China, May **2009**.
  57. *Resource Allocation Strategies for Constructive In-Network Stream Processing*, A. Benoit, H. Casanova, V. Rhen-Sonigo, Y. Robert, in Proc. of the 10th Workshop on Advances on Parallel and Distributed Processing Symposium (APDCM), Rome, Italy, May **2009**.
  56. *Virtual Cinematography of Group Scenes using Hierarchical Lines of Actions*, K. Kardan, H. Casanova, in Proc. of the ACM SIGGRAPH Sandbox Symposium, Los Angeles, California, Aug. **2008**.
  55. *Scheduling Mixed-Parallel Applications with Advance Reservations*, K. Aida, H. Casanova, in Proc. of the 17th IEEE International Symposium on High Performance Distributed Computing (HPDC-17), Boston, Massachusetts, Jun. **2008**.
  54. *SimGrid: a Generic Framework for Large-Scale Distributed Experimentations*, H. Casanova, A. Legrand, M. Quinson, in Proc. of Tenth International Conference on Computer Modeling and Simulation (UKSim), Cambridge, U.K., Apr. **2008**.
  53. *Probabilistic Allocation of Synchronous Tasks to Desktop Grid Resources*, J. Wingstrom, H. Casanova, in Proc. of Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid), Miami, Florida, Apr. **2008**.
  52. *Speed and Accuracy of Network Simulation in the SimGrid Framework*, K. Fujiwara, H. Casanova, in Proc. of First International Workshop on Network Simulation Tools (NSTools), Nantes, France, Oct. **2007**.
  51. *Automatic Resource Specification Generation for Resource Selection*, R. Huang, A. Chien, H. Casanova, in Proc. of SC'07, Reno, Nevada, Nov. **2007**.
  50. *A Comparison of Scheduling Approaches for Mixed-Parallel Applications on Heterogeneous Platforms*, T. N'Takpé, F. Suter, H. Casanova, in Proc. of the 6th International Symposium on Parallel and Distributed Computing (ISPDC), Hagenberg, Austria, Jul. **2007**.
  49. *On Resource Volatility in Enterprise Desktop Grids*, D. Kondo, G. Fedak, F. Cappello, H. Casanova, in Proc. of e-Science 2006, Amsterdam, Netherlands, Dec. **2006**.
  48. *Improving Grid Resource Allocation via Integrated Selection and Binding*, Y.-S. Kee, K. Yocum, A. Chien, H. Casanova, in Proc. of SC'06, Tampa, Florida, Nov. **2006**.



47. *Measuring the Performance and Reliability of Production Computational Grids*, O. Khalili, J. He, C. Olschanowsky, A. Snaveley, H. Casanova, in Proc. of the 7th IEEE/ACM International Conference on Grid Computing (Grid'06), Barcelona, Spain, Sep. **2006**.
46. *On the Harmfulness of Redundant Batch Requests*, H. Casanova, in Proc. of the 15th IEEE International Symposium on High Performance Distributed Computing (HPDC-15), Paris, France, Jun. **2006**.
45. *An Evaluation of Job Scheduling Strategies for Divisible Loads on Grid Platforms*, Y. Cardinale, H. Casanova, in Proc. of the High Performance Computing & Simulation Conference (HPCS'06), Bonn, Germany, May **2006**.
44. *Scalable Grid Application Scheduling via Decoupled Resource Selection and Scheduling*, Y. Zhang, A. Mandal, C. Koelbel, K. Kennedy, H. Casanova, A. Chien, in Proc. of the 6th IEEE Symposium on Cluster Computing and the Grid (CCGrid'06), Singapore, May **2006**.
43. *Using Virtual Grids to Simplify Application Scheduling*, R. Huang, H. Casanova, A. Chien, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'06), Rhodes, Greece, Apr. **2006**.
42. *Efficient Resource Description and High Quality Selection for Virtual Grids*, Y.-S. Kee, D. Logothetis, R. Huang, H. Casanova, A. Chien, in Proc. of the 5th IEEE Symposium on Cluster Computing and the Grid (CCGrid'05), Cardiff, U.K., May **2005**.
41. *Models and Modeling Infrastructures for Global Computational Platforms*, R. Wolski, D. Nurmi, J. Brevik, H. Casanova, A. Chien, in Processing of the IPDPS Workshop on Next Generation Software, Denver, Colorado, Apr. **2005**.
40. *Practical Divisible Load Scheduling on Grid Platforms with APST-DV*, K. van der Raadt, Y. Yang, H. Casanova, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'05), Denver, Colorado, Apr. **2005**.
39. *A Realistic Network/Application Model for Scheduling Divisible Loads on Large-Scale Platforms*, L. Marchal, Y. Yang, H. Casanova, Y. Robert, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'05), Denver, Colorado, Apr. **2005**.
38. *On the Feasibility of Running Entity-Level Simulations on Grid Platforms*, A. Su, F. Berman, H. Casanova, in Proc. of the Grid'04 workshop, Pittsburgh, Pennsylvania, Nov. **2004**.
37. *Resource Management for Short-Lived Applications on Enterprise Desktop Grids*, D. Kondo, A. Chien, H. Casanova, in Proc. of SC'04, Pittsburgh, Pennsylvania, Nov. **2004**.
36. *Realistic Modeling and Synthesis of Resources for Computational Grids*, Y.-S. Kee, H. Casanova, A. Chien, in Proc. of SC'04, Pittsburgh, Pennsylvania, Nov. **2004**.
35. *From Heterogeneous Task Scheduling to Heterogeneous Mixed Data and Task Parallel Scheduling*, F. Suter, F. Desprez, H. Casanova, in Proc. of Euro-Par, 230–237, (LCNS volume 3149), Pisa, Italy, Aug. **2004**.

34. *GridSpeed: A Web-based Grid Portal Generation Server*, T. Suzumura, H. Nakada, S. Matsuoka, H. Casanova, in Proc. of the 7th International Conference on High Performance computing and Grid in Asia Pacific Region (HPC Asia), Jul. **2004**.
33. *Grid workflow software for High-Throughput Proteome Annotation Pipeline*, A. Birnbaum, J. Hayes, W. Li, M. Miller, P. Bourne, H. Casanova, in Proc. of the First International Workshop on Life Science Grid (LSGRID2004), Jun. **2004**.
32. *The MicroGrid: Using Emulation to Predict Application Performance in Diverse Grid Network Environments*, H. Xia, H. Dail, H. Casanova, A. Chien, in Proc. of the Workshop on Challenges of Large Applications in Distributed Environments (CLADE'04), Honolulu, Jun. **2004**.
31. *Characterizing and Evaluating Desktop Grids: An Empirical Study*, D. Kondo, M. Taufer, C. L. Brooks, H. Casanova, A. Chien, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'04), Santa Fe, Apr. **2004**.
30. *Recent Experiments with GrADS Software*, K. Cooper, A. Dasgupta, K. Kennedy, C. Koelbel, A. Mandal, G. Marin, M. Mazina, J. Mellor-Crummey, F. Berman, H. Casanova, A. Chien, H. Dail, X. Liu, A. Olugbile, O. Sievert, H. Xia, L. Johnson, B. Liu, M. Patel, D. Reed, W. Deng, C. Mendes, Z. Shi, A. YarKhan, J. Dongarra, in Proc. of the NSF Next Generation Systems Program Meeting, Santa Fe, Apr. **2004**.
29. *On the Interference of Communication on Computation*, B. Kreaseck, L. Carter, H. Casanova, J. Ferrante, in Proc. of the workshop on Performance Modeling, Evaluation, and Optimization of Parallel and Distributed Systems, Santa Fe, Apr. **2004**.
28. *Benchmark Probes for Grid Assessment*, G. Chun, H. Dail, H. Casanova, A. Snavely, in Proc. of the High-Performance Grid Computing Workshop, Santa Fe, Apr. **2004**.
27. *Policies for Swapping MPI Processes*, O. Sievert, H. Casanova, in Proc. of the 12th IEEE Symposium on High Performance and Distributed Computing (HPDC-12), Seattle, Jun. **2003**.
26. *RUMR: Robust Scheduling for Divisible Workloads*, Y. Yang, H. Casanova, in Proc. of the 12th IEEE Symposium on High Performance and Distributed Computing (HPDC-12), Seattle, Jun. **2003**.
25. *Clustering Hosts in P2P and Global Computing Platforms*, A. Agrawal, H. Casanova, in Proc. of the Workshop on Global and Peer-to-Peer Computing on Large Scale Distributed Systems, Tokyo, Japan, Apr. **2003**.
24. *Performance Modeling for Entity-level Simulations*, A. Su, F. Berman, H. Casanova, in Proc. of the Parallel and Distributed Scientific and Engineering Computing with Applications Workshop, Nice, France, Apr. **2003**.
23. *Scheduling Distributed Applications: The SIMGRID Simulation Framework*, A. Legrand, L. Marchal, H. Casanova, in Proc. of the Third IEEE International Symposium on Cluster Computing and the Grid (CCGrid'03), Tokyo, Japan, May **2003**.
22. *Autonomous Protocols for Bandwidth-Centric Scheduling of Independent-task Applications*, B. Kreaseck, L. Carter, H. Casanova, J. Ferrante, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'03), Nice, France, Apr. **2003**.

21. *UMR: A Multi-Round Algorithm for Scheduling Divisible Workloads*, Y. Yang, H. Casanova, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS'03), Nice, France, Apr. **2003**.
20. *Resource Allocation for Steerable Parallel Parameter Searches*, M. Faerman, A. Birnbaum, H. Casanova, F. Berman, in Proc. of the Grid Computing Workshop, Baltimore, 157–169, Nov. **2002**.
19. *An Overview of GridRPC: A Remote Procedure Call API for Grid Computing*, H. Nakada, S. Matsuoka, K. Seymour, J. Dongarra, C. Lee, H. Casanova, in Proc. of the Grid Computing Workshop, 274–279, Baltimore, Nov. **2002**.
18. *A Decoupled Scheduling Approach for the GrADS Environment*, H. Dail, H. Casanova, F. Berman, in Proc. of Super Computing 2002 (SC'02), Baltimore, Nov. **2002**.
17. *Using TOP-C and AMPIC to Port Large Parallel Applications to the Computational Grid*, G. Cooperman, H. Casanova, J. Hayes, T. Witzel, in Proc. of the 2nd IEEE International Symposium on Cluster Computing and the Grid (CCGrid), Berlin, Germany, May **2002**.
16. *Models and Scheduling Mechanisms for Global Computing Applications*, D. Kondo, H. Casanova, E. Wing, F. Berman, in Proc. of the International Parallel and Distributed Processing Symposium (IPDPS), Fort Lauderdale, Apr. **2002**.
15. *Utilizing DAG Scheduling Algorithms for Entity-Level Simulations* A. Su, H. Casanova, F. Berman, in Proc. of the 10th Symposium on High Performance Computing 2002 (HPC'02), San Diego, Apr. **2002**.
14. *Applying Scheduling and Tuning to On-line Parallel Tomography*, S. Smallen, H. Casanova, F. Berman, in Proc. of Super Computing 2001 (SC'01), Denver, **best student paper award**, Nov. **2001**.
13. *A Study of Deadline Scheduling for Client-Server Systems on the Computational Grid*, A. Takefusa, H. Casanova, S. Matsuoka, F. Berman, in Proc. of the 10th IEEE Symposium on High Performance and Distributed Computing (HPDC'01), San Francisco, 406–415, Aug. **2001**.
12. *Logistical Computing and Internetworking: Middleware for the Use of Storage in Communication*, M. Beck, D. Arnold, A. Bassi, F. Berman, H. Casanova, J. Dongarra, T. Moore, G. Obertelli, J. Plank, M. Swany, S. Vadhiyar, R. Wolski, in Proc. of the 3rd Annual International Workshop on Active Middleware Services, San Francisco, Aug. **2001**.
11. *Simgrid: A Toolkit for the Simulation of Application Scheduling*, H. Casanova, in Proc. of the 1st IEEE International Symposium on Cluster Computing and the Grid (CCGrid'01), Brisbane, Australia, 430–437, May **2001**.
10. *Network-Enabled Server Systems: Deploying Scientific Simulations on the Grid*, H. Casanova, S. Matsuoka, J. Dongarra, in Proc. of High Performance Computing 2001 (HPC'01), Seattle, 83–91, Apr. **2001**.
9. *The AppLeS Parameter Sweep Template: User-Level Middleware for the Grid*, H. Casanova, G. Obertelli, F. Berman, R. Wolski, in Proc. of Super Computing 2000 (SC'00), best

paper finalist, Nov. **2000**.

8. *Heuristics for Scheduling Parameter Sweep Applications in Grid Environments*, H. Casanova, A. Legrand, D. Zagorodnov, F. Berman, Proc. of the 9th Heterogeneous Computing Workshop (HCW'00), Cancun, Mexico, 349–363, May **2000**.
7. *NetSolve: A Network Enabled Server, Examples and Users*, H. Casanova, J. Dongarra, Proc. of the Heterogeneous Computing Workshop (HCW'98), Orlando, Florida, 19–28, Mar. **1998**.
6. *The Use of Java in the NetSolve Project*, H. Casanova, J. Dongarra, 791–796. 15th IMACS'97 (International Mathematics and Computer Science) World Congress, Berlin, Vol. 4, *Artificial Intelligence and Computer Science*, Edited by Achin Sydow, Wissenschaft and Technik Verlag, Berlin, 791–796, Aug. **1997**.
5. *Network Enabled Solvers for Scientific Computing Using the NetSolve System*, H. Casanova, J. Dongarra, Proc. of the 3rd International Conference on Algorithms and Architectures for Parallel Processing, Melbourne, Australia, *World Scientific*, Edited by A. Gossinski, M. Hobbs, W. Zhou, Feb. **1997**.
4. *NetSolve: A Network-Enabled Server for Solving Computational Science Problems*, H. Casanova, J. Dongarra, in Proc. of Supercomputing (SC'96), Pittsburgh, Pennsylvania, Nov. **1996**.
3. *Providing Uniform Dynamic Access to Numerical Software*, H. Casanova, J. Dongarra, Vol. 105 of the IMA Volumes in Mathematics and its Applications, Algorithms for Parallel Processing, Edited by M. Heath, A. Ranade, R. Schrieber, 345–355, Springer-Verlag, **1996**.
2. *Providing Access to High Performance Computing Technologies*, H. Casanova, S. Browne, J. Dongarra in Proc. of the 3rd International Workshop PARA'96. *Lecture Notes in Computer Science*, edited by J. Waśniewski, J. Dongarra, K. Madsen, D. Olesen, Springer Verlag #1184, p. 123–133, Aug. **1996**.
1. *The Performance of PVM on MPP Systems*, H. Casanova, J. Dongarra, W. Jiang, Proc. of the PVM User's Meeting, Santa Fe, Feb. **1996**.

## Invited Articles

9. *Models and Modeling Infrastructures for Global Computational Platforms*, R. Wolski, D. Nurmi, J. Brevik, H. Casanova, A. Chien, in Proc. of the Workshop on Next Generation Software, Denver, Colorado, Apr. **2005**.
8. *Modeling Large-Scale Platforms for the Analysis and the Simulation of Scheduling Strategies*, H. Casanova, in Proc. of the 6th Workshop on Advances in Parallel and Distributed Computational Models, Apr. **2004**.
7. *Benchmarks for Grid Computing: A Review of Ongoing Efforts and Future Directions*, A. Snavey, G. Chun, H. Casanova, R. Van der Wijngaart, M. Frumkin, SIGMETRICS Performance Evaluation Review, 30(4), 27–32, Mar. **2003**.
6. *Optimizing Performance and Reliability in Distributed Computing Systems Through*

- Wide Spectrum Storage*, J. Plank, M. Beck, J. Dongarra, R. Wolski, H. Casanova, in Proc. of the Workshop on Next Generation Software, Nice, France, Apr. **2003**.
5. *Algorithms and Software to Schedule and Deploy Independent Tasks in Grid Environments*, H. Casanova, J. Hayes, Y. Yang, in Proc. of the 2002 workshop on Distributed Computing, Metacomputing, and Resource Globalization, Aussois, France, Dec. **2002**.
  4. *Distributed Computing Research Issues for Grid Computing*, H. Casanova, Quarterly Newsletter for the ACM Special Interest Group on Algorithms and Computation Theory (SIGACT News), 33(2), Sep. **2002**.
  3. *Distributing MCell Simulations on the Grid*, H. Casanova, T. Bartol, J. Stiles, F. Berman, in Proc. of the Workshop on Clusters and Computational Grids for Scientific Computing (WCCGSC'00), Lyon France, Sep. **2000**.
  2. *Applying NetSolve's Network Enabled Solvers*, H. Casanova, J. Dongarra, *IEEE Computational Science & Engineering*, Vol. 5(3), 57–67, Jul.-Sep. **1998**.
  1. *Network-Enabled Servers and the NetSolve Project*, H. Casanova, J. Dongarra, K. Moore, in *SIAM News*, Vol. 31(1), Jan. **1998**.

## Books

1. *Parallel Algorithms*, H. Casanova, A. Legrand, Y. Robert, Chapman & Hall, **2008**.

## Book Chapters

6. *Energy-Efficient Job Placement on Clusters, Grids, and Clouds*, D. Borgetto, H. Casanova, G. Da Costa, J.-M. Pierson, in *Energy-Efficient Distributed Computing Systems*, A. Zomaya and Y. C. Lee editors, Wiley Publisher, Inc., **2012**.
6. *Scheduling in the Grid Application Development Software Project*, H. Dail, O. Sievert, F. Berman, H. Casanova, A. Yarkhan, S. Vadhiyar, J. Dongarra, C. Liu, L. Yang, D. Angulo, I. Foster, chapter in *Grid Resource Management, State of the Art and Future Trends*, J. Nabrzyski, J. Schopf, J. Weglarz editors, Kluwer Academic Publishers, **2003**.
5. *Application-Level Tools*, H. Bal, H. Casanova, J. Dongarra, S. Matsuoka, chapter in *Grid 2: Blueprint for a New Computing Infrastructure*, I. Foster, C. Kesselman editors, M. Kaufmann Publishers, Inc., 2nd edition, **2003**.
4. *Parameter Sweeps on the Grid with APST*, H. Casanova, F. Berman, chapter 33 in *Grid Computing: Making the Global Infrastructure a Reality*, F. Berman, G. Fox, T. Hey editors, Wiley Publishers, Inc., **2003**.
3. *Problem-Solving environments*, E. Houstis, A. Catlin, N. Dhanjani, J. Rice, J. Dongarra, H. Casanova, D. Arnold, G. Fox, chapter in *The Parallel Computing Sourcebook*, J. Dongarra, I. Foster, G. Fox, W. Gropp, K. Kennedy, L. Torczon, A. White editors, M. Kaufmann Publishers, Inc., **2002**.
2. *Parallel and Distributed Scientific Computing: A Numerical Linear Algebra Problem Solving Environment Designer's Perspective*, A. Petitet, H. Casanova, J. Dongarra, Y. Robert, R. C. Whaley, chapter in *Handbook on Parallel and Distributed Processing*,

International Handbook on Information Systems Vol. 3, J. Blazewicz, K. Ecker, B. Plateau, D. Trystram Editors, Springer Verlag, **2000**.

1. *Application-Specific Tools*, J. Dongarra, H. Casanova, C. Johnson, M. Miller, chapter in *Computational Grids: Blueprint for a New Computing Infrastructure*, I. Foster, C. Kesselman editors, M. Kaufmann Publishers, Inc., **1999**.

## Misc. Publications and White Papers

5. *Generating Grid Resource Requirement Specifications*, R. Huang, H. Casanova, A. Chien, 2-page poster in Proc. of the 16th IEEE International Symposium on High Performance Distributed Computing (HPDC-16), Monterey, California, Jun. **2007**
4. *Robust Resource Allocation for Large-scale Distributed Shared Resource Environments*, Y.-S. Kee, K. Yocum, A. Chien, and H. Casanova, 2-page poster in Proc. of the 15th IEEE International Symposium on High Performance Distributed Computing (HPDC-15), Paris, France, Jun. **2006**
3. *The SIMGRID Project: Simulation and Deployment of Distributed Applications*, A. Legrand, M. Quinson, H. Casanova, K. Fujiwara, 2-page poster in Proc. of the 15th IEEE International Symposium on High Performance Distributed Computing (HPDC-15), Paris, France, Jun. **2006**
2. *A Brief Overview of the APST Project*, H. Casanova, J. Hayes, F. Berman, Newsletter of the Korean Institute of Science and Technology Information (KISTI), Aug. **2002**.
1. *Network-Enabled Server Systems and the Computational Grid*, S. Matsuoka, H. Casanova, White Paper for the Grid Forum, Jul. **2000**.

## INVITED PRESENTATIONS, TUTORIALS, and COLLOQUIA

- *Scheduling and Simulating Parallel and Distributed Applications*, 6-session seminar series, National Institute for Informatics, Tokyo, Japan, Oct. 2013.
- *Cost-Optimal Execution of Boolean Query Trees with Shared Streams*, INRIA Workshop on Scheduling for Exascale Systems, Dagstuhl Schloss, Germany, Sep. 2013.
- *A Case for Random Topologies in HPC Interconnects*, INRIA Workshop on Scheduling, Pittsburgh, Pennsylvania, Jun. 2012.
- *Challenges and Hopes for Scheduling Parallel Applications on Desktop Grids*, **Keynote Address**, Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid'11), Anchorage, Alaska, May 2011.
- *Flexible Cluster Sharing*, Institut de Recherche en Informatique de Toulouse, Toulouse, France, Nov. 2008.
- *Parallel resource sharing: Shortcomings, Cheats, and Perspectives*, Sept. of Computer Science, University of Bologna, Bologna, Italy, Jun. 2008.
- *Scheduling Mixed-Parallel Applications with Advance Reservations*, INRIA Workshop on scheduling for large scale distributed platforms, Aussois, France, May 2008.

- *Simulation for Large-Scale Distributed Computing Research*, tutorial at the 8th IEEE International Symposium on Cluster Computing and the Grid (CCGrid'08), Lyon, France, May 2008.
- *Grid Computing: Technology and Applications*, invited plenary presentations at Telecom'05, Hawai'i TeleCommunication Association, Honolulu, Hawai'i, Oct. 2005.
- *Scheduling and Deploying Applications on Large-Scale Platforms*, invited lecture at the Departamento de Informática, Centro Universitario de Mérida, Mérida, Spain, Jun. 2005.
- *Simulation for Grid Computing*, **Keynote Address**, 2nd International Grid Performance Workshop, Edinburgh, United Kingdom, Jun. 2005.
- *Grid Computing: Principles, Software, Applications, and Tools*, **Keynote Address**, 2nd Workshop on New Frontiers of Bioinformatics in Latin America – Griding Biology, Merida, Venezuela, Nov. 2004.
- *Grid platform modeling issues for scheduling research*, Workshop on scheduling for large scale distributed platforms, Aussois, France, Aug. 2004.
- *Grid Technology, Application, and Research*, presentation to the IEEE Society, University of California, La Jolla, California, May 2004.
- *Deploying Applications on the Grid: Engineering and Research*, University of San Diego, San Diego, California, Sep. 2003.
- *Divisible Workload Scheduling*, Paris XI University, Orsay, France, Jun. 2003.
- *UMR and RUMR: Algorithms to Schedule Divisible Workloads*, the Tokyo Institute of Technology (TITECH), Tokyo, Japan, May 2003.
- *MCell on the Grid: applications, software, research, and impact*, Plenary presentation at the National Partnership for Advanced Computing Infrastructure All-Hands Meeting (NPACI-AHM), La Jolla, California, Mar. 2003.
- *From Parameter Sweep Applications to Divisible Workloads*, Workshop on Distributed Computing, Metacomputing, and Resource Globalization, Aussois, France, Nov. 2002.
- *An Introduction to Grid Computing*, the Salk Institute, La Jolla, California, Nov. 2002.
- *Processor Swapping for Enterprise Computing*, Workshop on Cluster and Computational Grids for Scientific Computing, Faverges, France, Sep. 2002.
- *Deploying and Scheduling Parameter Sweep Applications*, Entropia Inc., San Diego, California, Mar. 2002.
- *From Grid to Global Computing: Deploying and Scheduling Parameter Sweep Applications*, Organization for Parallel Computing Research (ORAP), Saclay, France, Mar. 2002.
- *The Virtual Instrument Project*, National Science Foundation Workshop on Information Technology Research and Education, Palo Alto, California, Mar. 2002.
- *APST and its Uses on Clusters*, IEEE Cluster 2001 Conference, Cluster Application Panel, Newport Beach, California, Oct. 2001.

- *Promoting the Grid with APST*, 1st US/UK Grid Workshop, San Francisco, California, Aug. 2001.
- *Simulation for Application Scheduling*, Monash University, Melbourne, Australia, May 2001.
- *The AppLeS Parameter Sweep Template: User-Level Middleware for the Grid*, NASA IPG workshop, NASA Ames Research Center, Sep. 2000.
- *Internet-wide Scientific Software Access with NetSolve*, **Keynote Address**, Workshop on Internet Accessible Mathematical Computation, Vancouver, Jul. 1999.
- *Network-enabled Servers*, SIAM Annual Meeting 1999, Atlanta, May 1999.
- *NetSolve: Current and Future Deployment*, Workshop on Global and Cluster Computing, Tsukuba, Japan, Mar. 1998.
- *NetSolve: Concepts and Applications*, Danish Computing Centre for Research and Education, Lungby, Denmark, Dec. 1996.
- *Introduction to the NetSolve Project*, Mathematics and Computer Science Department of Emory University, Atlanta, Georgia, Oct. 1996.

## FUNDING AWARDS

- \$31,764 / 3 years (co-PI), National Science Foundation, 06/09 - 05/12  
*DiRT: A Testbed for Distributed Research*
- \$500,000 / 3 years (co-PI), National Science Foundation, 10/05 - 09/08  
*Designing Large-Scale Distributed Systems for Realistic Failure Models*
- \$5,400,000 / 5 years (co-PI), National Science Foundation, 10/03 - 09/08  
*Virtual Grid Application Development Software (VGrADS)*
- \$500,000 / 3 years (PI), National Science Foundation, 07/03 - 06/06  
*Models to Support Performance-Engineering of Global Computations*
- \$48,000 / 3 years (co-PI), National Science Foundation / Institut National de Recherche en Informatique et en Automatique, 07/03 - 06/06  
*Algorithms and Simulations for Scheduling on Large-Scale Distributed Platforms*
- \$450,000 / 3 years (co-PI), National Science Foundation, 01/03 - 12/05  
*Autonomous Scheduling on Large Distributed Systems*
- \$235,000 / 1 year (PI), National Science Foundation, FY 2004  
*National Partnership for Advanced Computational Infrastructure (NPACI)*
- \$750,000 / 3 years (co-PI), National Science Foundation, 09/02 - 08/05  
*Data Intensive Grid Benchmarks*
- \$792,000 / 3 years (co-PI), National Science Foundation, 10/02 - 09/05  
*Optimizing Performance and Reliability in Distributed Computing Systems Through Wide Spectrum Storage Services*
- \$270,000 / 1 year (PI), National Science Foundation, FY 2003  
*National Partnership for Advanced Computational Infrastructure (NPACI)*



- \$700,000 / 2 years (co-PI), National Science Foundation, 07/02 - 06/04  
*GridSolve: A System for Grid-enabling General Purpose Problem Solving Environments*
- \$280,000 / 1 year (PI), National Science Foundation, FY 2002  
*National Partnership for Advanced Computational Infrastructure (NPACI)*
- \$2,500,000 / 3 years (co-PI), National Science Foundation, 09/00 - 08/03  
*Virtual Instruments: Scalable Software Instruments for the Grid*
- \$1,300,000 / 3 years (co-PI), National Science Foundation, 08/99 - 07/02  
*Logistical QoS through Application-driven Scheduling of Remote Storage*

## ADVISING

**Ph.D. Dissertation Advising and Co-Advising:** Benjamin Karsin (expected 2016); Michael Gowanlock (2015); Mark Stillwell (2010); Joshua Wingstrom (2009); Richard Huang (2007); Derrick Kondo (2005); Yang Yang (2005); Alan Su (2003); Marcio Faerman (2003).

**M.S. Thesis Advising and Co-Advising:** Benjamin Karsin (2012); David Schanzenbach (2011); Kaveh Kardan (2010); Kayo Fujuwara (2007); Krijn van der Raadt (2004); Charles Wurster (2004); Gregory Chun (2003); Otto Sievert (2003); Nadya Williams (2002); Holly Dail (2002); Shava Smallen (2001).

**Postdoctoral Researcher Advising:** Arnaud Legrand (2005); Gilles Fédak (2004); Frédéric Suter (2003); Yudith Cardinale (2003).

## TEACHING

- UHM, ICS312 (UG): Machine-Level and Systems Programming (SP15, SP14, SP10, SP09, FA07)
- UHM, ICS432 (UG): Concurrent and High-Performance Programming (SP15, FA11, FA08, SP07)
- UHM, ICS632 (GR): Principles of High Performance Computing (FA15, FA14, FA08, FA07, FA06, FA05)
- UHM, ICS412/332 (UG): Operating Systems (SP14, SP13, FA12, SP12, SP11, FA09)
- UHM, ICS690 (GR): Graduate Seminar (SP13, FA12, SP12, FA11, SP11, FA10, SP10, FA09, SP09)
- UHM, ICS431 (UG): Computer Architecture (SP08, FA06)
- UHM, ICS491 (UG): Introduction to High Performance Computing (SP06)
- UCSD, CSE130 (UG): Programming Languages (SP05, SP04, SP03)
- UCSD, CSE260 (GR): Parallel Computing (FA04)

## AWARDS / HONORS

- Visiting Associate Professor, National Informatics Institute (NII), Japan, 03/2013-present.

- Chancellor's Citation for Meritorious Teaching, UH Mānoa, 2012.
- Best paper award at HeteroPar, Aug. 2009.
- Best student paper award at SC, Nov. 2001 (M.S. adviser of Shava Smallen).
- R&D 100 Award for designing and developing the NetSolve project, 1999.

## PROFESSIONAL SERVICES

### University Services

- Fall 2015: Associate Chair of the Information and Computer Sciences Department.
- Spring 2009 - Spring 2013: Chair of the Computer Science Graduate Program, University of Hawai'i at Mānoa.

### Conference Chairing

2017

- **Local Arrangement Co-Chair:** IEEE Cluster Computing Conference, Honolulu, Hawai'i, Sep. 2017.

2013

- **Co-organizer:** INRIA *Workshop on Scheduling Algorithms for Exascale*, Dagstuhl Schloss, Germany, Sep. 2013.
- **Publicity Chair:** 42nd International Conference on Parallel Processing (ICPP), Lyon, France, Oct. 2013.

2011

- **Program Vice-Chair:** 11th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Newport Beach, California, May 2011.

2010

- **Program Vice-Chair:** IEEE/ACM Grid Conference, Brussels, Belgium, Oct. 2010.

2009

- **Program Co-Chair:** ACM/IEEE International Symposium on High Performance Distributed Computing (HPDC-18), Garching, Germany, Jun. 2009.
- **Program Vice-Chair:** 9th IEEE Symposium on Cluster Computing and the Grid (CCGrid'09), Shanghai, China, May 2009.

2008

- **Program Co-Chair:** 9th IEEE/ACM International Conference on Grid Computing (Grid 2008), Tokyo, Japan, Nov. 2008.
- **Co-organizer:** NSF/INRIA *Workshop on Scheduling Algorithms for Large-Scale Distributed Platforms*, Aussois, France, May 2008.
- **Publicity Chair:** 8th IEEE Symposium on Cluster Computing and the Grid (CC-

Grid'08), Lyon, France, May 2008.

- **General Chair:** Heterogeneous Computing Workshop (HCW'08), Miami, Florida, Apr. 2008.

2007

- **Program Topic Chair:** Euro-Par 2007 (Scheduling and Load Balancing topic), Rennes, France, Aug. 2007.
- **Program Chair:** Heterogeneous Computing Workshop (HCW'07), Long Beach, California, Mar. 2007.

2005

- **Program Vice-Chair:** 6th International Workshop on Grid Computing (Grid'05), Seattle, Washington, Nov. 2005.
- **Co-organizer:** NSF/INRIA *Workshop on Scheduling Algorithms for Large-Scale Distributed Platforms*, San Diego, California, Nov. 2005.

2004

- **General Chair:** *IEEE Conference on Cluster Computing (Cluster'04)*, San Diego, Sep. 2004.
- **Co-organizer:** NSF/INRIA *Workshop on Scheduling Algorithms for Large-Scale Distributed Platforms*, Aussois, France, Aug. 2004.

2003

- **Invited Speaker Chair:** International Conference for High Performance Computing and Communications (SC'03), Phoenix, Arizona, Nov. 2003.

1999

- **Organizer:** Mini-symposium on Network-enabled Servers, SIAM Annual Meeting 1999, Atlanta, Georgia, May 1999.

## Journals

- 2012-2016: **Subject Area Editor** for the *Parallel Computing* journal.
- 2004-2009: Member of the **Editorial Board** of the *Future Generation Computer Systems* journal.
- 2006: **Guest Editor** for a special issue of the *International Journal of High Performance Computing and Applications*.
- 2005: **Guest Editor** for a special issue of the *IEEE Transactions on Parallel and Distributed Systems (TPDS)*.

## Conference Program Committees

2017

- 31st IEEE International Parallel and Distributed Processing Symposium (IPDPS), Or-

lando, Florida, May 2017.

- 17th IEEE International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Madrid, Spain, May 2017.

2016

- Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP), Hyderabad, Chicago, Illinois, May 2016.
- 1st Workshop on Fault Tolerance for Extreme Scale Computing, Kyoto, Japan, May 2016.
- 30th IEEE International Parallel and Distributed Processing Symposium (IPDPS), Chicago, Illinois, May 2016.
- 45th International Conference on Parallel Processing (ICPP), Philadelphia, Pennsylvania, Aug. 2016.

2015

- Workshop on Scheduling for Parallel Computing, Krakow, Poland, Sep. 2015.
- EuroPar Conference, Scheduling and Load Balancing track, Vienna, Austria, Aug. 2015.
- Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP), Hyderabad, India, May 2015.
- 29th IEEE International Parallel and Distributed Processing Symposium (IPDPS), Hyderabad, India, May 2015.
- 44th International Conference on Parallel Processing (ICPP), Paris, France, Mar. 2015.
- 9th ACM Richard Tapia Celebration of Diversity in Computing (Tapia2015), Boston, Massachusetts, Feb. 2015.

2014

- Workshop on Reproducible Parallel Computing, Porto, Portugal, Aug. 2014.
- Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP), Phoenix, Arizona, May 2014.
- International Conference for High Performance Computing, Networking, Storage, and Analysis (SC), New Orleans, Louisiana, Nov. 2014.

2013

- 42nd International Conference on Parallel Processing (ICPP), Lyon, France, Oct. 2013.
- 1st conference on Energy Efficiency on Large Scale Distributed Systems (EE-LSDS), Vienna, Austria, Apr. 2013.
- 17th Workshop on Job Scheduling Strategies for Parallel Processing, Boston, Massachusetts, May 2013.
- Workshop on Scheduling for Parallel Computing, Warsaw, Poland, Sep. 2013.
- 13th IEEE International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Delft, The Netherlands, May 2013.

- IEEE Computer Society’s Technical Committee on Parallel Processing’s Ph.D. Forum at IPDPS, Boston, Massachusetts, May 2013.
- 27th International Parallel and Distributed Processing Symposium (IPDPS), Boston, Massachusetts , May 2013.
- 22nd IEEE Symposium on High-Performance Distributed Computing (HPDC-22), New York, New York, Jun. 2013.

2012

- IEEE Cluster Conference, Beijing, China, Sep. 2012.
- 3rd Workshop on Scientific Cloud Computing, Delft, The Netherlands, Jun. 2012.
- 41st International Conference on Parallel Processing (ICPP), Pittsburgh, Pennsylvania, Sep. 2012.
- 25th IEEE International Symposium on Computer-Based Medical Systems (CBMS), Rome, Italy, Jun. 2012.
- 26th International Parallel and Distributed Processing Symposium (IPDPS), Shanghai, China, May 2012.
- IEEE Computer Society’s Technical Committee on Parallel Processing’s Ph.D. Forum at IPDPS, Shanghai, China, May 2012.
- 12th IEEE International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Ottawa, Canada, May 2012.
- 16th Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP), Shanghai, China, May 2012.

2011

- IEEE Cluster Conference, Austin, Texas, Sep. 2011.
- Workshop on Scheduling for Parallel Computing, Torun, Poland, Sep. 2011.
- 40th International Conference on Parallel Processing (ICPP), Taipei, Taiwan, Sep. 2011.
- 2nd Workshop on Scientific Cloud Computing (ScienceCloud), San Jose, California, Jun. 2011.
- IEEE Computer Society’s Technical Committee on Parallel Processing’s Ph.D. Forum at IPDPS, Anchorage, Alaska, May 2011.
- 5th Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid), Anchorage, Alaska, May 2011.
- 25th International Parallel and Distributed Processing Symposium (IPDPS), Anchorage, Alaska, May 2011.

2010

- 17th IEEE International Conference on High Performance Computing (HiPC), Goa, India, Dec. 2010.
- International Conference for High Performance Computing, Networking, Storage, and Analysis (SC), New Orleans, Louisiana, Nov. 2010.

- 3rd Workshop on Many-Task Computing on Grids and Supercomputers, (MTAGS), New Orleans, Louisiana, Nov. 2010.
- 4th International Workshop on HealthGrid & Cloud Computing, Perth, Australia, Oct. 2010.
- 1st Workshop on Scientific Cloud Computing (ScienceCloud), Chicago, Illinois, Jun. 2010.
- 19th IEEE Symposium on High-Performance Distributed Computing (HPDC-19), Chicago, Illinois, Jun. 2010.
- IEEE Computer Society’s Technical Committee on Parallel Processing’s Ph.D. Forum at IPDPS, Atlanta, Georgia, May 2010.
- 4th Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid), Melbourne, Australia, May 2010.
- 10th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid), Melbourne, Australia, May 2010.
- 15th Workshop on Job Scheduling Strategies for Parallel Processing (JSSPP), Atlanta, Georgia, Apr. 2010.

#### 2009

- International Conference for High Performance Computing, Networking, Storage, and Analysis (SC), Portland, Oregon, Nov. 2009.
- Workshop on Scheduling for Parallel Computing, Krakow, Poland, Sep. 2009.
- 8th International Symposium on Parallel and Distributed Computing (ISPDC), Lisbon, Portugal, Jun. 2009.
- Workshop on Grids, Clouds and Virtualization (WGCV), Geneva, Switzerland, May 2009.
- Fourth Workshop on System Management Tools for Large-Scale Parallel Systems (SMTPS), Rome, Italy, May 2009.
- 8th IEEE International Symposium on Cluster Computing and the Grid (CCGrid), Shanghai, China, May 2009.
- 3rd Workshop on Desktop Grids and Volunteer Computing Systems (PCGrid), Rome, Italy, May 2009.
- IEEE Computer Society’s Technical Committee on Parallel Processing’s Ph.D. Forum at IPDPS, Rome, Italy, May 2009.
- 2009 ACM Symposium on Applied Computing (SAC), Honolulu, Hawaii, U.S.A., Mar. 2009.

#### 2008

- High Performance Data Grid (HPDataGrid’08) workshop, Dunedin, New Zealand, Dec. 2008.
- 1st International Workshop on Robust Scheduling (RobShed’08), Melbourne, Australia,

Dec. 2008.

- 14th IEEE International Conference on Parallel and Distributed Systems (ICPADS'08), Melbourne, Australia, Dec. 2008.
- International Symposium on Parallel and Distributed Processing and Applications (ISPA'08), Sydney, Australia, Sep. 2008.
- 17th IEEE Symposium on High-Performance Distributed Computing (HPDC-17), Boston, Massachusetts, Jun. 2008.
- 1st Workshop on Assessing Models of Networks and Distributed Computing Platforms, Lyon, France, May 2008.
- 8th IEEE Symposium on Cluster Computing and the Grid (CCGrid'08), Lyon, France, May 2008.
- International Symposium on Parallel Algorithms, Architectures, and Networks (ISPAN), Sidney, Australia, May 2008.
- Third Workshop on System Management Tools for Large-Scale Parallel Systems (SMTPS), Miami, Florida, Apr. 2008.
- 41st Hawai'i International Conference on System Sciences (HICSS), Software Technology Mini-Track on Grid Computing: Adaptive Software, Tools and Applications, O'ahu, Hawaii, Jan. 2008.

2007

- International Conference on Parallel Processing (ICPP), Xi'an, China, Sep. 2007.
- 1st Workshop on Scheduling for Parallel Computing, Gdansk, Poland, Sep. 2007.
- 16th International Conference on Computer and Networks (ICCCN), O'ahu, Hawai'i, Aug. 2007.
- International Conference on Distributed Computing Systems (ICDCS), Toronto, Canada, Jun. 2007.
- 16th IEEE Symposium on High Performance and Distributed Computing (HPDC-16), Monterey, California, Jun. 2007.
- 7th workshop on Global and Peer-to-Peer Computing (GP2PC), Rio de Janeiro, Brazil, May 2007.
- Proposal Reviewer and Panel Participant, National Science Foundation, Washington D.C., Apr. 2007.
- Third Workshop on System Management Tools for Large-Scale Parallel Systems (SMTPS), Long Beach, California, Mar. 2007.

2006

- 12th IEEE International Conference on Parallel and Distributed Systems (ICPADS'06), Minneapolis, Minnesota, Jul. 2006.
- 15th IEEE Symposium on High Performance and Distributed Computing (HPDC-15), Paris, France, Jun. 2006.

- Proposal Reviewer and Panel Participant, National Science Foundation, Washington D.C., Apr. 2006.
- Third High Performance Grid Computing Workshop (HPGCW'06), Rhodes, Greece, Apr. 2006.
- Heterogeneous Computing Workshop (HCW'06), Rhodes, Greece, Apr. 2006.
- Second Workshop on System Management Tools for Large-Scale Parallel Systems (SMTPS), Rhodes, Greece, Apr. 2006.
- 5th Workshop on Global and Peer-to-Peer Computing (WGP2PC'06), Singapore, Apr. 2006.

#### 2005

- International Conference for High Performance Computing and Communications (SC'05), Seattle, Washington, Nov. 2005.
- Program Committee for the 1st International Workshop on Parallel Bioinspired Algorithms, Oslo, Norway, Jun. 2005
- IEEE International Conference on Pervasive Services (ICPS 2005), Santorini, Greece, Jun. 2005.
- 4th Workshop on Global and Peer-to-Peer Computing (WGP2P'05), Cardiff, U.K., May 2005.
- First Workshop on System Management Tools for Large-Scale Parallel Systems, Denver, Colorado, Apr. 2005.
- Heterogeneous Computing Workshop (HCW'05), Denver, Colorado, Apr. 2005.
- High Performance Grid Computing Workshop, Denver, Colorado, Apr. 2005.

#### 2004

- International Conference for High Performance Computing and Communications (SC'04), Pittsburgh, Pennsylvania, Nov. 2004.
- 17th International Conference on Parallel and Distributed Computing Systems (PDCS 2004), San Francisco, California, Sep. 2004.
- 13th IEEE Symposium on High Performance and Distributed Computing (HPDC-13), Honolulu, Hawai'i, Jun. 2003.
- 3rd Workshop on Global and Peer-to-Peer Computing (WGP2P'04), Chicago, Illinois, Apr. 2004.

#### 2003

- International Conference for High Performance Computing and Communications (SC'03), Phoenix, Arizona, Nov. 2003.
- Proposal Reviewer and Panelist, National Science Foundation, Washington, DC., Oct. 2003.
- Program Committee member for Euro-Par 2003, Klagenfurt, Austria, Aug. 2003.
- Workshop on Innovative Solutions for Grid Computing (InnoGrid'03), Melbourne, Aus-



tralia, Jun. 2003.

- 12th IEEE Symposium on High Performance and Distributed Computing (HPDC-12), Seattle, Washington, Jun. 2003.
- ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP), San Diego, California, Jun. 2003.
- 3rd IEEE Symposium on Cluster Computing and the Grid (CCGrid'03), Tokyo, Japan, May 2003.
- 3rd Workshop on Global and Peer-to-Peer Computing (WGP2P'03), Tokyo, Japan, May 2003.
- International Parallel and Distributed Processing Symposium (IPDPS'03), Nice, France, Apr. 2003.

2002

- 3rd International Workshop on Grid Computing (Grid'02), Baltimore, Maryland, Nov. 2002.
- International Conference for High Performance Computing and Communications (SC'02), Baltimore, Maryland, Nov. 2002.
- 11th IEEE Symposium on High Performance and Distributed Computing (HPDC-11), Edinburgh, U.K., Aug. 2002.
- 2nd Workshop on Global and Peer-to-Peer Computing (WGP2P'02), Berlin, Germany, May 2002.

2001

- 2nd International Workshop on Grid Computing (Grid'01), Denver, Colorado, Nov., 2001.
- Metacomputing Systems and Applications Workshop (MSA'01), Valencia, Spain, Sep. 2001.
- Euro-Par'01 Conference, Manchester, U.K., Aug. 2001.
- High Performance Computing (HPC'01) Conference, Seattle, Washington, Apr. 2001.