

## CURRICULUM VITAE ET STUDIORUM

### Valerio Pascucci

**Name:** Valerio Pascucci.  
**Rank:** Project Leader, Computer Scientist, CASC, LLNL.  
Adjunct Professor, Computer Science Department, UC Davis.  
Associate Editor, IEEE TVCG.  
**Office:** CASC, LLNL, PO Box 808, L-560, Livermore, CA 94551. Phone: (925) 423-9422  
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**Professional Interest:** Leadership in data analysis, management, and visualization activities in support of science discovery and information understanding.

**Research Interests:** Efficient Data Layouts, Streaming Techniques, Cache Oblivious Algorithms, Data Analysis and Exploration, Multi-resolution Methods, Combinatorial Topology, Geometric Compression, Computer Graphics, Computational Geometry, Geometric Programming, Solid Modeling, and Molecular Modeling.

### Education

**May 2000** – PhD in Computer Science, Purdue University, West Lafayette, IN, U.S.A. Thesis title: “Multi-Dimensional and Multi-Resolution Geometric Data-Structures for Scientific Visualization”. Advisor: Prof. C.L. Bajaj.

**January 1995** – Qualification for the membership to the Italian Order of Engineers.

**December 1993** – Laurea Degree (Master) in Electrical Engineering, University of Rome “La Sapienza”, grade 110/110. Thesis title: “An Approach to geometric modeling based on polyhedral complexes”. Advisor: Prof. A. Paoluzzi.

### Professional Experience

#### Current Professional Activities:

- Livermore Principal Investigator for the “Visualization and Analytics Center for Enabling Technologies” (VACET), SciDAC2 project. October 2006 - present.
- Principal Investigator and Project Leader for the TechBase research project on “Embedded Geospatial Intelligence. April 2007 - present.
- Principal Investigator and Project Leader for the LDRD research project “Efficient and Reliable Data Exploration via Multi-Scale Morse Analysis and Combinatorial Information Visualization”. October 2004 - present.
- Principal Investigator for the “Data Representation” component of the project for “Streaming techniques for image processing” supported by NGA. March 2005 - present.
- Computer Scientist, ASC PPPE Project (ASCI VIEWS), CASC, LLNL. May 2000 – Present.
- Adjunct Professor, CS Department, UC Davis. July 2005 – Present.
- Associate Editor, IEEE Transactions on Visualization & Computer Graphics.

**Other Experiences:**

- Principal Investigator and Project Leader for the LDRD research project “ViSUS: Visualization Streams for Ultimate Scalability”. October 2001 - September 2004.
- Visiting Scholar, Computer Science Department, Duke University, Durham, NC, U.S.A. October-November 2002.
- Senior Research Associate, Center for Computational Visualization, Computer Science and TICAM Departments, University of Texas at Austin, TX, U.S.A. January 1998 – May 2000.
- Secretary of the Purdue Chapter of the Upsilon Pi Epsilon honor soc. June 1997 – June 1998.
- Research Assistant, Computer Science Department, Purdue University, Indiana U.S.A. July 1995 – December 1998.
- Lecturer, undergraduate courses in Computer Graphics and Solid Modeling, CUD, University of Rome “La Sapienza” and at the University of Frosinone. January 1994 – June 1995.
- Research consultant, CAD Group, Computer Science Department, University of Rome “La Sapienza”. October 1991 – June 1995.

**Program Committee Chair:**

- Co-Chair and Organizer of TopoInVis 2008, International Workshop on Topological Methods in Data Analysis and Visualization.
- Program Co-Chair for the Computer Graphics area of the International Symposium on Visual Computing (ISVC) 2006.

**Program Committee Member:**

- Eurographics 2008.
- IEEE conference on “Visualization” (VIS) 2007.
- ACM Symposium on “Computational Geometry” (SoCG) 2007.
- IEEE Conference on “Shape Modeling and Applications” (SMI) 2007.
- International Symposium on Visual Computing (ISVC) 2007.
- IASTED Conference on “Graphics and Visualization in Engineering” (VGE) 2007
- IASTED Conference on “Visualization, Imaging, and Image Processing” (VIIP) 2007
- IEEE conference on “Visualization” (VIS) 2006.
- ACM symposium on “Solid and Physical Modeling” (SPM) 2006.
- Eurographics/IEEE TCVG “Symposium on Visualization” (EuroVis) 2006.
- IEEE Conference on “Shape Modeling and Applications” (SMI) 2006.
- IASTED Conference on “Visualization, Imaging, and Image Processing” (VIIP) 2006
- IEEE conference on “Visualization” (VIS) 2005.
- ACM symposium on “Solid and Physical Modeling” (SPM) 2005.
- Eurographics/IEEE TCVG “Symposium on Visualization” (EuroVis) 2005.
- IEEE Conference on “Shape Modeling and Applications” (SMI) 2005.
- IASTED Conference on “Visualization, Imaging, and Image Processing” (VIIP) 2005
- ACM symposium on “Solid Modeling” (SM) 2004.
- IASTED Conference on “Visualization, Imaging, and Image Processing” (VIIP) 2004
- SCS symposium on “High Performance Computing” (HPC) 2004.
- Eurographics/IEEE TCVG “Symposium on Visualization” (VisSym) 2004.
- IEEE/ACM conf. on “3D Data Processing Visualization and Transmission” (3DPVT) 2004.
- ACM symposium on “Solid Modeling” (SM) 2003.
- IEEE/ACM conf. on “3D Data Processing Visualization and Transmission” (3DPVT) 2002.

**Panel member:**

- DOE Panel on the Status of Required Computational and Applied Math Tools for Fusion Simulation, February-May, 2007.
- NSF Panel on Computational Geometry, April, 2004.

**Memberships:** Upsilon Pi Epsilon honor society, Association for Computing Machinery, American Mathematical Society, IEEE Computer Society, Society for Industrial and Applied Mathematics.

**Grants:**

- (co-PI) Topology-based Methods for Analysis and Visualization of Noisy Data: \$300,000 granted for a three years NSF project started in August 2007.
- (co-PI and Livermore Lead) Visualization and Analytics Center for Enabling Technologies (VACET): \$2,200,000 granted for the first year of a five years SciDAC project started in October 2006.
- (PI) Cache-Oblivious Image Processing Algorithms: \$82,000 granted for a six months project started in March 2007.
- (PI) Topology Based Data Exploration LDRD research grant: \$1,140,000 total granted for a three project started in October 2004.
- (co-PI) Streaming techniques for image processing, NGA research grant: \$1,400,000 for a two years project.
- (PI) VISUS LDRD research grant: three year project October 2001-September 2004, \$1,245,000 total granted.

**Awards:**

- IEEE Visualization 2006 award for “Best Application Paper”, October 2006.
- DNT award “In recognition of Outstanding Technical Achievement”, May 2002.
- Upsilon Pi Epsilon Honor Society award for “Best Student Research”, May 2000.

**Patent:** “Encoding Images of 3D Objects with Improved Rendering Time and Transmission Process”. US patent 6,438,266.

**Postdocs advised and supported full time at LLNL:**

Ming Jiang,  
Ajith Mascarenhas.

**PhD Students advised and supported full time at LLNL employee:**

Janine Bennett,  
Attila Gyulassy,  
Peer-Timo Bremer.

**Other Students advised and supported at LLNL:**

Rita Borgo (PhD),  
Steven Callahan (PhD),  
Min Chen (PhD),  
Kree Cole-McLaughlin (PhD),  
Scott Dillard (PhD),  
Dmitriy Morozov (PhD),  
Amit Patel (Ph.D.),  
Anna Majkowska (PhD),  
Ajith Mascarenhas (PhD),  
Vijay Natarajan (PhD),  
Issam Safa (PhD),

Carlos Scheidegger (PhD),  
Alexander Sherman (PhD),  
John Schreiner (PhD),  
Shantanu Singh (PhD),  
Huy Vo (PhD),  
Kenneth Weiss (PhD),  
W. Taylor Holliday (MS),  
Jonathan Strasser (MS),  
Valerie Szudziejka (MS),  
Garrett A. Aldrich (BS).

**Tutorial courses organized:**

- Multi-resolution modeling, visualization, compression and streaming of volumetric data, Presented at Eurographics 2004.
- Multi-resolution modeling, visualization and compression of volumetric data, Presented at IEEE Visualization 2003 (<http://www.pascucci.org/VIS03-tutorial/index.html>).

**Advanced Graduate Course Organized at UC Davis:**

- Morse Theory for Data Analysis and Visualization.

**Lecture Series Given at Summer Schools:**

- Écoles D'Été on "Advanced Methods in Scientific Visualization", organized by INRIA, CEA, EDF. Centre Port-Royal, Saint-Lambert-des-Bois, France, 2007
- "Proteomes and Proteins" organized by The International School of Advanced BioMedicine and BioInformatics and by The Lipari International School for Computer Science Researchers. Lipari, Italy, 2006.

**Conference Presentations and Invited Talks**

- The University of Nevada Reno, Department of Computer Science & Engineering and The Northern Nevada IEEE, Reno, NV, September 28, 2007.
- Nashville 2007 Fall Creek Falls: Key Challenges in Modeling and Simulation, Nashville, TN, September 26, 2007.
- Battelle briefing by Industrial Partnerships and Commercialization (IPAC) Office and the Deputy Director for Science and Technology, Livermore, September 25, 2007.
- 2007 Fall Creek Falls: Key Challenges in Modeling and Simulation, Nashville, TN, September 2007.
- SIGGRAPH 2007, San Diego, CA, August 8, 2007.
- FET 2007, IUSV Workshop on Feature Extraction and Tracking, Computer Science Department UC Davis, CA, August 1, 2007.
- Third University of Rome, Computer Science Department, July, 9, 2007.
- Dagstuhl seminar on Scientific Visualization, July, 2007.
- DOE/ASCR Visualization and Analytics Workshop, Salt Lake City, Utah, June 7-8, 2007.
- Directorate Review Committee (ranked in the best three presentations), Livermore, CA, April 19, 2007.
- Simulation and Modeling at the Exascale for Energy, Ecological Sustainability and Global Security (E3SGS) Town Hall Meeting, group co-chair for Integrate large, complex, and possibly distributed software systems with components derived from multiple applications domains and

with distributed data gathering and analysis tools, Berkeley, CA, April 18, 2007.

- Ultra-Scale Visualization workshop, Supercomputing 2006, Tampa, FL, November 13, 2006.
- APDEC all hands meeting, Berkeley, CA, October, 2006.
- 2006 NGA Academic Research Program Symposium, National Academy of Sciences, Keck Center, Washington DC, September 13-15, 2006.
- Office of Science briefing, Livermore, CA, August 21, 2006.
- Lawrence Berkeley National Laboratory, September 28, 2005.
- IMA/MCIM Industrial Problems Seminar, October 28, 2005.
- The National Forum for Geoscience Information Technology (FGIT), Washington, D.C., October 6, 2005.
- Dagstuhl seminar on Scientific Visualization: Challenges for the Future, Dagstuhl International Conference And Research Center For Computer Science, June, 9, 2005.
- Third University of Rome, Computer Science Department, June, 9, 2005.
- University of Padova, Computer Science Department, June, 9, 2005.
- University of Genova, Computer Science Department, June, 9, 2005.
- National Research Council, Pisa, IT, Computer Science Department, June, 9, 2005.
- TORCSS Workshop with Schlumberger, Exxon Mobil, Saudi ARAMCO and ARAMCO Services, Chevron, Texaco, and Shell, Livermore, CA, May 19, 2006.
- DOE Computer Graphics Forum, April 27, 2004, Santa Fe, NM.
- DOE MICS Headquarters, February 11, 2004, Germantown, MD.
- University of California Riverside, Computer Science Dept., Feb.2, 2004, Riverside, CA.
- University of Maryland, Computer Science Dept., Dec. 12, 2003, College Park, MD.
- SIAM Conference on Geometric Design and Computing, Nov. 13, 2003, Seattle, WA .
- IEEE Symp. on Parallel and Large-Data Visualization and Graphics, Oct. 20, 2003, Seattle, WA.
- IEEE Conference on Visualization, Oct. 20, 2003, Seattle, WA.
- UNC Chapel Hill, Computer Science Dept., Nov. 25, 2002, Chapel Hill, NC.
- IEEE Conference on Visualization, Oct. 31, 2002, Boston, MA.
- Eurographics Sept. 6, 2002, Saabruken, Germany.
- SIGGRAPH 2002, July 25, 2002, San Antonio, TX.
- Directorate Review Committee presentation, Livermore, CA, April 11, 2002.
- Supercomputing 2001, Nov. 15, 2000, Denver, CO.
- IEEE Conference on Visualization, Oct. 26, 2000, San Diego, CA.
- NSF/DoE Workshop on Hierarchical Approximation and Geometrical Methods for Scientific Visualization, Oct. 16, 2000, Lake Tahoe, CA.
- ACM Symp. on Volume Visualization and Graphics, Oct. 10, 2000, Salt Lake City, Utah.
- IEEE Conference on Visualization, Oct. 13, 2000, Salt Lake City, Utah.
- Lawrence Livermore National Laboratories, Aug. 24, 1999, Livermore, CA.
- Python Conference at the Open Source Convention, Aug., 1999, Monterey, CA.
- IEEE Conference on Visualization, Oct. 22, 1998, Research Triangle Park, NC.
- IEEE Symp. on Volume Visualization, Oct. 20, 1998, Research Triangle Park, NC.
- Workshop on Multi-Resolution Representation of 3D Geometry for Progressive Transmission, Oct. 17, 1998, Research Triangle Park, NC.
- Computational Mathematics Institute, National Research Council, Feb. 5, 1998, Pisa, Italy.
- University of Padova, Department of Computer Engineering, Feb. 3, 1998, Padova, Italy.
- IEEE Conference on Visualization, Oct. 23, 1997, Phoenix, AZ.
- SIGGRAPH'97, Aug. 7, 1997, Los Angeles, CA, U.S.A.
- Voronoi Workshop, Feb. 21, 1997, Arizona State University, AZ, U.S.A.
- Twelfth ACM Annual Symp. on Computational Geometry, May 25, 1996, Philadelphia , PA.
- I.CO.Graphics '93, Mar., Milano, Italy, 1993.

## Publications

### Proceedings edited

- [1] G. Bebis, R. Boyle, B. Parvin, D. Koracin, P. Remagnino, A. V. Nefian, M. Gopi, V. Pascucci, J. Zara, J. Molineros, H. Theisel, and T. Malzbender, editors. *Advances in Visual Computing, Second International Symposium, ISVC 2006, Lake Tahoe, NV, USA, November 6-8, 2006 Proceedings, Part I*, volume 4291 of *Lecture Notes in Computer Science*. Springer, 2006.
- [2] G. Bebis, R. Boyle, B. Parvin, D. Koracin, P. Remagnino, A. V. Nefian, M. Gopi, V. Pascucci, J. Zara, J. Molineros, H. Theisel, and T. Malzbender, editors. *Advances in Visual Computing, Second International Symposium, ISVC 2006 Lake Tahoe, NV, USA, November 6-8, 2006. Proceedings, Part II*, volume 4292 of *Lecture Notes in Computer Science*. Springer, 2006.

### Referred Journal Articles

- [1] G. H. Weber, P.-T. Bremer, and V. Pascucci. Topological landscapes: A terrain metaphor for scientific data. *IEEE Transactions on Visualization and Computer Graphics*, 2007. To appear.
- [2] A. Gyulassy, V. Natarajan, B. Hamann, and V. Pascucci. Efficient computation of morse-smale complexes for three-dimensional scalar functions. *IEEE Transactions on Visualization and Computer Graphics*, 2007. To appear.
- [3] A. Gyulassy, V. Natarajan, B. Hamann, M. Duchaineau, V. Pascucci, E. Bringa, and A. Higginbotham. Topologically clean distance fields. *IEEE Transactions on Visualization and Computer Graphics*, 2007. To appear.
- [4] V. Pascucci, G. Scorzelli, P.-T. Bremer, and A. Mascarenhas. Robust on-line computation of reeb graphs: Simplicity and speed. *ACM Transactions on graphics: ACM SIGGRAPH 2007 Papers*, 2007. To appear.
- [5] H. Edelsbrunner, J. Harer, A. Mascarenhas, V. Pascucci, and J. Snoeyink. Time-varying reeb graphs for continuous space-time data. *Computational Geometry: Theory and Applications*, 2007. To appear.
- [6] G. H. Weber, S. Dillard, H. Carr, V. Pascucci, and B. Hamann. Topology-controlled volume rendering. *IEEE Transactions on Visualization and Computer Graphics*, 13(2):330–341, 2007.
- [7] D. Laney, P.-T. Bremer, A. Mascarenhas, P. Miller, and V. Pascucci. Understanding the structure of the turbulent mixing layer in hydrodynamic instabilities. *IEEE Transactions on Visualization and Computer Graphics*, 13(1):1053–1060, 2007.
- [8] S. P. Callahan, L. Bavoil, V. Pascucci, and C. T. Silva. Progressive volume rendering of large unstructured grids. *IEEE Transactions on Visualization and Computer Graphics*, 13(1):1307–1314, 2007.
- [9] H. T. Vo, S. P. Callahan, P. Lindstrom, V. Pascucci, and C. T. Silva. Streaming simplification of tetrahedral meshes. *IEEE Transactions on Visualization and Computer Graphics*, 13(1):145–155, 2006.

- [10] S. Dong, P.-T. Bremer, M. Garland, V. Pascucci, and J. C. Hart. Spectral surface quadrangulation. *ACM Transactions on graphics: ACM SIGGRAPH 2006 Papers*, pages 1057–1066, 2006.
- [11] A. Gyulassy, V. Natarajan, V. Pascucci, P.-T. Bremer, and B. Hamann. A topological approach to simplification of three-dimensional scalar functions. *IEEE Transactions on Visualization and Computer Graphics*, 12(4):474–484, 2006.
- [12] V. Natarajan, Y. Wang, P.-T. Bremer, V. Pascucci, and B. Hamann. Segmenting molecular surfaces. *Computer Aided Geometric Design (special issue on Applications of Geometric Modeling in the Life Sciences)*, 23(6):495–509, 2006.
- [13] S.-E. Yoon, P. Lindstrom, V. Pascucci, and D. Manocha. Cache-oblivious mesh layouts. *ACM Transactions on graphics: ACM SIGGRAPH 2005 Papers*, 24(3):886–893, 2005.
- [14] C. Guerra and V. Pascucci. Line-based object recognition using hausdorff distance: from range images to molecular secondary structure. *Image and Vision Computing*, 23(4):405–415, April 2005.
- [15] P.-T. Bremer, H. Edelsbrunner, B. H. Edelsbrunner, and V. Pascucci. A topological hierarchy for functions on triangulated surfaces. *IEEE Transactions on Visualization and Computer Graphics*, 10(4):385–396, July/August 2004.
- [16] K. Cole-McLaughlin, H. Edelsbrunner, J. Harer, V. Natarajan, and V. Pascucci. Loops in reeb graphs of 2-manifolds. *Discrete and Computational Geometry*, 32(2):231–244, July 2004.
- [17] L. Linsen, B. Hamann, K. I. Joy, V. Pascucci, and M. A. Duchaineau. Wavelet-based multiresolution with n-th-root-of-2. *Computing*, 72(1-2):129–142, April 2004.
- [18] V. Pascucci and K. Cole-McLaughlin. Parallel computation of the topology of level sets. *Algorithmica*, 38(1):249–268, October 2003.
- [19] C. L. Bajaj, V. Pascucci, A. Shamir, R. J. Holt, and A. N. Netravali. Dynamic maintenance and visualization of molecular surfaces. *Discrete Applied Mathematics*, 127(1):23–51, April 2003.
- [20] P. Lindstrom and V. Pascucci. Terrain simplification simplified: A general framework for view-dependent out-of-core visualization. *IEEE Transactions on Visualization and Computer Graphics*, 8(3):239–254, July-September 2002.
- [21] C. Guerra and V. Pascucci. Finding line segments with tabu search. *IEICE Transactions on Information & Systems*, E84-D(12):1739–1744, December 2001.
- [22] B. S. Duerstock, C. L. Bajaj, V. Pascucci, D. R. Schikore, K. Lin, and R. B. Borgens. Advances in three-dimensional reconstruction of the experimental spinal cord injury. *Computerized Medical Imaging and Graphics*, 24(6):389–406, 2000.
- [23] C. L. Bajaj, C. Baldazzi, S. Cutchin, A. Paoluzzi, V. Pascucci, and M. Vicentino. A programming approach for complex animations. *Computer Aided Design*, 31(11):695–710, 1999.
- [24] C. L. Bajaj, V. Pascucci, and G. Zhuang. Single resolution compression of arbitrary triangular meshes with properties. *Computational Geometry: Theory and Applications*, 14(1-3):167–186, 1999.

- [25] V. Pascucci, V. Ferrucci, and A. Paoluzzi. Dimension-independent convex-cell based hpc: Skeletons and product. *International Journal of Shape Modeling*, 2:37–67, 1996.
- [26] A. Paoluzzi, V. Pascucci, and M. Vicentino. Geometric programming: A programming approach to geometric design. *ACM Transactions on Graphics*, 14(3):266–306, July 1995.

#### Refereed Publications in Edited Books

- [1] P.-T. Bremer and V. Pascucci. A Practical Approach to Two-dimensional Scalar Topology, Chapter in: *Topology-Based Methods In Visualization (2006)*. Number 1. Springer Verlag, 2006. In Press.
- [2] P.-T. Bremer, V. Pascucci, and B. Hamann. Mathematical Foundations of Scientific Visualization, Computer Graphics, and Massive Data Exploration, volume 6 of *Trends in Software*, Chapter in: *Maximizing adaptivity in hierarchical topological models*, pages 121–130. Springer, January 2004. To appear.
- [3] V. Pascucci. 8: Topology Diagrams in Scientific Visualization, Chapter in: *Topological Data Structures for Surfaces: An Introduction for Geographical Information Science*, pages 121–130. John Wiley & Sons, May 2004.
- [4] M. J. van Kreveld, R. van Oostrum, C. L. Bajaj, V. Pascucci, and D. R. Schikore. 5: Efficient contour tree and minimum seed set construction, Chapter in: *Topological Data Structures for Surfaces: An Introduction for Geographical Information Science*, pages 71–86. John Wiley & Sons, May 2004.
- [5] A. Paoluzzi, with contributions from, V. Pascucci, M. Vicentino, C. Baldazzi, and S. Protuesi. Geometric programming for computer aided design. John Wiley & Sons, June 2003.
- [6] L. Linsen, J. T. Gray, V. Pascucci, M. A. Duchaineau, B. Hamann, and K. I. Joy. Hierarchical Large-scale Volume Representation with 3rd-root-of-2 Subdivision and Trivariate B-spline Wavelets, Chapter in: *Geometric Modeling for Scientific Visualization*, pages 259–378. Mathematics and Visualization. Springer-Verlag, Heidelberg, Berlin, February 2004.
- [7] V. Pascucci and R. J. Frank. Hierarchical Indexing for Out-of-Core Access to Multi-Resolution Data, Chapter in: *Hierarchical and Geometrical Methods in Scientific Visualization*, pages 225–241. Mathematics and Visualization. Springer-Verlag, Berlin, 2002.
- [8] C. L. Bajaj, V. Pascucci, and D. R. Schikore. 3: Accelerated IsoContouring of Scalar Fields, volume 6 of *Trends in Software*, Chapter in: *Data Visualization Techniques*, pages 31–47. John Wiley & Sons, 1999.

#### Refereed Publications in Conference Proceedings

- [1] J. Bennett, V. Pascucci, and K. Joy. Genus oblivious cross parameterization: Robust topological management of intersurface maps. In *Proceedings of Pacific Graphics 2007*, 2007. To appear.



- [2] P.-T. Bremer, E. Bringa, M. Duchaineau, A. Gyulassy, D. Laney, A. Mascarenhas, and V. Pascucci. Topological Feature Extraction and Tracking. In *Proceedings of SciDAC 2007 – Scientific Discovery Through Advanced Computing*, volume 78, page 012032 (5pp). Journal of Physics Conference Series, June 2007.
- [3] E. W. Bethel, C. Johnson, K. Joy, S. A. V. Pascucci, H. Childs, J. Cohen, M. Duchaineau, B. Hamann, C. Hansen, D. Laney, P. Lindstrom, J. Meredith, G. Ostrouchov, S. Parker, C. Silva, A. Sanderson, and X. Tricoche. SciDAC visualization and analytics center for enabling technology. In *Proceedings of SciDAC 2007 – Scientific Discovery Through Advanced Computing*, volume 78, page 012032 (5pp). Journal of Physics Conference Series, June 2007.
- [4] S. E. Dillard, V. Natarajan, G. H. Weber, V. Pascucci, and B. Hamann. Tessellation of quadratic elements. In *ISAAC*, pages 722–731, 2006.
- [5] H. Edelsbrunner, D. Morozov, and V. Pascucci. Persistence-based simplification of real-valued functions on 2-manifolds. In *Proceedings of the 22nd International Annual Symposium on Computational Geometry*, 2006. To appear.
- [6] J. Strasser, V. Pascucci, and K.-L. Ma. Multi-layered image caching for distributed rendering of large multiresolution datasets. In B. Raffin, A. Heirich, and L. P. Santos, editors, *Eurographics Symposium on Parallel Graphics and Visualization*, pages 171–177, Braga, Portugal, 2006. Eurographics Association.
- [7] P.-T. Bremer, W. Cabot, A. Cook, D. Laney, A. Mascarenhas, P. Miller, and V. Pascucci. Understanding the structure of the turbulent mixing layer in hydrodynamic instabilities. In *Proceedings of SciDAC 2006 – Scientific Discovery Through Advanced Computing*, volume 46, pages 556–560. Journal of Physics Conference Series, June 2006.
- [8] E. W. Bethel, C. Johnson, C. Hansen, S. Parker, A. Sanderson, C. Silva, X. Tricoche, V. Pascucci, H. Childs, J. Cohen, M. Duchaineau, D. Laney, P. Lindstrom, S. Ahern, J. Meredith, G. Ostrouchov, K. Joy, and B. Hamann. VACET: Proposed SciDAC2 Visualization and Analytics Center for Enabling Technologies. In *Proceedings of SciDAC 2006 – Scientific Discovery Through Advanced Computing*, volume 46, pages 561–569. Journal of Physics Conference Series, June 2006.
- [9] P. Miller, P.-T. Bremer, W. Cabot, A. Cook, D. Laney, A. Mascarenhas, and V. Pascucci. Application of morse theory to analysis of rayleigh-taylor topology. In *10th International Workshop on the Physics of Compressible Turbulent Mixing*, 2006.
- [10] A. Gyulassy, V. Natarajan, V. Pascucci, P.-T. Bremer, and B. Hamann. Topology-based simplification for feature extraction from 3d scalar fields. In *Proceedings of the IEEE Conference on Visualization (VIS-05)*, pages 275–280, October 2005.
- [11] P.-T. Bremer, V. Pascucci, and B. Hamann. Maximizing adaptivity in hierarchical topological models. In A. Belyaev, A. Pasko, and M. Spagnuolo, editors, *Proceedings of the International Conference Shape Modeling and Applications*, pages 298–307. IEEE Computer Society, June 2005.
- [12] V. Natarajan and V. Pascucci. Volumetric data analysis using morse-smale complexes. In A. Belyaev, A. Pasko, and M. Spagnuolo, editors, *Proceedings of the International Conference Shape Modeling and Applications*, pages 320–325. IEEE Computer Society, June 2005.

- [13] H. Edelsbrunner, J. Harer, V. Natarajan, and V. Pascucci. Local and global comparison of continuous functions. In *Proceedings of the IEEE Conference on Visualization (VIS-04)*, pages 275–280, October 2004.
- [14] S. Pesco, P. Lindstrom, V. Pascucci, and C. Silva. Implicit occluders. In *Proceedings of the IEEE/SIGGRAPH Symposium on Volume Visualization and Graphics*, pages 47–54, October 2004.
- [15] A. Mascarenhas, M. Isenburg, V. Pascucci, and J. Snoeyink. Encoding volumetric meshes for streaming isosurface extraction. In *Proceedings of the International Symposium on 3D Data Processing, Visualization, and Transmission (3DPVT)*, pages 293–300, September 2004.
- [16] D. Laney and V. Pascucci. Progressive compression of volumetric subdivision meshes. In *Proceedings of the International Symposium on 3D Data Processing, Visualization, and Transmission (3DPVT)*, pages 293–300, September 2004.
- [17] K. Cole-McLaughlin and V. Pascucci. Multiresolution representation of topology. In *Proceedings of the 4th IASTED International Conference on Visualization, Imaging, And Image Processing (VIIP 2004)*, pages 282–289, Marbella, Sapin, September 2004.
- [18] R. Borgo, V. Pascucci, and R. Scopigno. Massive data pre-processing with a cluster based approach. In D. Bartz, B. Raffin, and H.-W. Shen, editors, *Proceedings of the 2004 Eurographics Symposium on Parallel Graphics and Visualization (EG-PGV-04)*, pages 67–74, Aire-la-Ville, Switzerland, June 10–11 2004. Eurographics Association.
- [19] H. Edelsbrunner, J. Harer, A. Mascarenhas, and V. Pascucci. Time-varying reeb graphs for continuous space-time data. In *SCG '04: Proceedings of the twentieth annual symposium on Computational geometry*, pages 366–372. ACM Press, 2004.
- [20] V. Pascucci. Isosurface computation made simple: Hardware acceleration, adaptive refinement and tetrahedral stripping. In *Proceedings of the Joint Eurographics - IEEE TVCG Symposium on Visualization (VisSym)*, pages 293–300, May 2004.
- [21] A. Paoluzzi, V. Pascucci, and G. Scorzelli. Progressive bsp representation and boolean operations for dimension-independent polyhedra. In *ACM Symposium on Solid Modeling*, pages 203–211. ACM, June 2004.
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