

Vita

Charles D. Hansen

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Professional Employment

7/1 2005 to present	University of Utah	Professor (School of Computing)
9/1/2003 to present	University of Utah	Associate Director Scientific Computing and Imaging Institute
7/1/2008 to 6/30/2010	University of Utah	Associate Director School of Computing
8/15 2004 to 7/30 2005	INRIA Rhone-Alpes	Visiting Scientist
9/1 1998 to 6/30 2005	University of Utah	Associate Professor (School of Computing)
7/1 2001 to 6/03 2003	University of Utah	Associate Director School of Computing
2/1 1997 to 8/31 1998	University of Utah	Research Associate Professor (Dept. of Computer Science)
9/18 1989 to 1/31 1997	Los Alamos National Lab	Technical Staff Member Advanced Computing Laboratory
9/1 1994 to 1/31 1997	Univ. of New Mexico	Visiting Research Assistant Professor
9/1 1990 to 1/31 1997	New Mexico Tech	Adjunct Professor
8/1 1988 to 7/31 1989:	University of Utah	Visiting Assistant Professor
7/5 1987 to 7/31 1988:	INRIA	Postdoctoral Research Scientist (Vision and Robotics)
1/1 1987 to 7/5 1987:	University of Utah	Research Assistant (Vision Group)
9/15 1986 to 12/31 1986:	University of Utah	Teaching Assistant (Computer Science Dept)
9/1 1986 to 9/14 1986:	University of Utah	Research Assistant (Vision Group)
9/1 1983 to 8/31 1986:	ARO Research Fellow	
6/16 1983 to 8/31 1983:	University of Utah	Research Assistant (Very Large Text Retrieval Project)
9/15 1982 to 6/15 1983:	University of Utah	Teaching Assistant (Computer Science Dept)
8/1 1979 to 8/31 1982	Fred P. Gattas Co. Memphis, Tn.	Systems Programmer
6/1 1977 to 7/31 1979	D and S Systems, Memphis, Tn.	Systems Analyst

Education

AS	Computer Science Technology	State Technical Institute at Memphis	1977
BS	Applied Computer Science	Memphis State University	1981
PhD	Computer Science	University of Utah	June 1987

Dissertation title "CAGD-based Computer Vision"

Areas of Interests

Large Scale Scientific Visualization, Rendering Techniques and Computer Graphics, Parallel Algorithms, Distributed Computation, 3D Shape representation

Research Grants and Contracts

Current Grants

NSF, \$848k, Co-PI,

“Enabling Transformational Science and Engineering Through Integrated Collaborative Visualization and Data Analysis for the National User Community”,

August 2009 - July 2012,

Dr. Valerio Pascucci, PI.

Exxon/Mobil, \$270k, Co-PI,

“Earth Sciences Center,

October 2006 - September 2011,

co-PI with Drs. Chris Johnson, Valerio Pascucci, Claudio Silva, and Dr. Ross Whitaker, PI.

KAUST (subcontract from TAMU), \$1.67M, Co-PI,

“Institute for Applied Mathematics and Computational Science”,

June 2008 - June 2013,

co-PI with Dr. Chris Johnson, PI.

NSF, \$430k, Co-PI,

“CRI: A Hierarchical Data Storage System for Large Data Simulation, Comparison”,

March 2006-February 2010,

co-PI with Dr. Steve Parker, PI, and Dr. Chris Johnson, Co-PI.

Past Grants

DOE ASCI/ASAP, \$20M total - responsible portion: \$714k, **Senior Investigator**,

“Center for Simulation of Fires and Explosions”,

Oct 2002-Sept 2010,

Senior Investigator for Scientific Visualization.

NSF, \$250k, **PI**,

“Advanced Volume Visualization”,

February 2006-January 2010,

PI with Dr. Sarah Creem-Regehr Co-PI.

NSF, \$178k, **PI**,

“An Advanced Interactive Multifield, Multisource Atmospheric Visual Analysis Environment”,

July 2005-June 2009.

Sandia, \$250k, **Co-PI**,

“Visualization Research for Multicore Processors,

June 2009 - June 2010,

co-PI with Dr. Claudio Silva, PI.

DOE/LANL, \$200k, **Co-PI**,

“Advanced Visualization Research,

August 2007 - September 2008,

co-PI with Claudio Silva, PI.

DOE-LLNL, \$675k, **PI**,

“Advanced Visualization Technology Center”,

October 2003-September 2006,

PI with Dr. Claudio Silva Co-PI.

NSF, \$191k, **PI**,

“Advanced Weather Data Visualization”,

October 2002-September 2006.

NIH, \$245k, **co-PI**,

“CRCNS: Assembling Visible Neurons for Simulation”,

September 2002-August 2006,

co-PI with Dr. Ross Whitaker, PI.

DOE-LANL, \$13.5k, **PI**,

“GPU Based Data Analysis and Exploration”,

May 2004-Sept 2004.

NVIDIA, \$300k, **PI**,

“Equipment gift for undergraduate education”,

January 2004.

NIH, \$3.7M, co-PI,

“Center for the Modeling, Simulation, and Visualization of Bioelectric Fields”,

Sept 1999- Oct 2004

Co-PI with Dr. Chris Johnson, PI and Dr. Rob MacLeod, Co-PI.

DOE, \$660k, co-PI,

“Sci-DAC Fusion, A National Collaboratory to Advance the Science of High Temperature Plasma Physics for Magnetic Fusion”,

Oct 2001-Sept 2004

co-PI with Dr. Chris Johnson, PI.

DOE-LLNL, \$275k, PI,

“Advanced Visualization Technology Center renewal”,

August 2002-Sept 2003,

PI with Dr. Chris Johnson and Dr. Steve Parker, Co-PI.

DOE-LLNL, \$500k, co-PI,

“Advanced Visualization Technology Center renewal”,

August 2001-July 2002,

Co-PI with Dr. Chris Johnson, PI and Dr. Steve Parker, Co-PI.

DOE-LLNL, \$98k, PI,

“Parallel Time-dependent Visualization”,

October 2000-August 2001,

PI with Dr. Steve Parker co-PI.

UofU Research Instrumentation, \$45k, PI,

“Proposal for a Video-Switching System”,

July 2000.

DOE-ANL, \$598k, co-PI,

“Advanced Visualization Technology Center renewal”,

March 2000-Feb 2001,

Co-PI with Dr. Chris Johnson, PI.

SNL, \$30k, PI,

“Undergraduate Experience in Research”,

Nov 1999-Sept 2000.

NSF, \$485k, co-PI,

“Interactive Flow Visualization using Haptics”,

Jan 2000-Dec 2002,

NSF-ARC, Co-PI with Dr. Chris Johnson PI and Dr. John Hollerbach co-PI.

NSF, \$527k, PI,

“Interactive Ray Tracing for Visualization”,

Sept 1999-Aug 2002,
NSF-ARC, PI with Drs. Pete Shirley, Brian Smits, and Bill Thompson co-PIs.

NSF, \$872k, (NSF: \$610k, UofU match: \$262k), **PI**,
“Acquisition of an Experimental Testbed for Computer Graphics”,
Aug 1999-July 2002,
NSF-MRI, PI with Drs. Bill Thompson, Chris Johnson, Pete Shirley, and Elaine Cohen, co-PIs.

NIH, \$3.2M, **co-PI**,
“Center for the Modeling, Simulation, and Visualization of Bioelectric Fields”,
Sept 1999-Sept 2003
Co-PI with Dr. Chris Johnson, PI and Dr. Rob MacLeod, Co-PI.

DOE, \$1.5M, **co-PI**,
“CorridorOne: An Integrated Distance Visualization Environment for SSI and ASCI”,
July 1999-July 2002,
co-PI with Dr. Chris Johnson, co-PI.

UofU Seed Grant, \$35k, **co-PI**,
“Medical Imaging Problems for Magnetic Encephalography”,
Feb 1999-Feb 2000,
co-PI with Dr. Jeff Lewine(Radiology), PI.

LLNL, \$60k, **PI**,
“Rapid Extraction of Isosurfaces from Time-Varying Data”,
Feb 1999-Feb 2000.

SNL, \$30k, **PI**,
“Undergraduate Experience in Research”,
Nov 1998-Sept 1999.

DOE-ANL, \$1.425M, **co-PI**,
“Advanced Visualization Technology Center”,
Feb 1998-Feb 2000,
Co-PI with Dr. Chris Johnson, PI.

DOE ASCI/ASAP, \$20M total - responsible portion: \$914k, **Senior Investigator**,
“Center for Simulation of Fires and Explosions”,
Oct 1997-Sept 2002,
Senior Investigator for Scientific Visualization.

NSF, \$410k, **co-PI**,
“User-directed hybrid deterministic and Monte Carlo parallel light transport algorithms”,
Oct 1997-Sept 2000,
Co-PI with Dr. Peter Shirley, PI.

DOE ASCI, \$1.2M, **PI**,

“PSE Visualization for Accelerated Strategic Computing Initiative”,
Oct 1996 - Sept 1997,
Principal Investigator, Tri-Laboratory coordinator.

DOE ASCI, \$600k, **PI**,
“PSE Visualization for Accelerated Strategic Computing Initiative”,
Oct 1995 - Sept 1996.

DOE HPCC, \$500K, **PI**,
“Parallel and Distributed Visualization”,
Oct 1995 - Sept 1996.

DOE HPCC, \$500K, **PI**,
“Visualization Component of GRACCE”,
Oct 1994 - Sept 1995.

DOE HPCC, \$750K, **PI**,
“Visualization Component of GRACCE”,
Oct 1993 - Sept 1994.

DOE HPCC, \$640K, **PI**,
“Visualization Component of GRACCE”,
Oct 1992 - Sept 1993.

DOE HPCC, \$200K, **co-PI**,
“High Performance Computation and Communication”,
Jan 1992 - Sept 1992,
Co-Investigator, Dr. Andy White, PI.

DARPA, \$300K, **co-PI**, “iWARP: High-Speed Networking and Visualization”,
Oct 1991 - Sept 1992,
Co-Principal Investigator.

DOE AMS, \$100K, **co-PI**,
“SIMD Rendering Techniques”,
Oct 1990 - Sept 1991,
Co-Investigator, Dr. Andy White, PI.

LANL ISRD, \$214K, **PI**,
“Distributed Visualization”,
Oct 1990 - Sept 1993.

Reviewer

International Conference on Pattern Recognition
IEEE Conference on Robotics and Automation
IEEE Conference on Computer Vision and Pattern Recognition
IEEE Conference on Visualization
International Conference on Computer Vision
ACM SIGGRAPH
National Science Foundation
DOE Energy Research Programs
IEEE Pattern Analysis and Machine Intelligence
IEEE Transactions on Visualization and Computer Graphics
IEEE Computer Graphics and Applications
ACM Transactions on Graphics
Journal for Graphics Tools

Editorial Duties:

Guest Editor: IEEE Transactions on Visualization and Computer Graphics, Vol. 14, No. 6, November/December 2008
Guest Editor: IEEE Transactions on Visualization and Computer Graphics, Vol. 13, No. 6, November/December 2007
Guest Editor: IEEE Computer Graphics and Applications, Vol. 23, No. 2, March 2003
Guest Editor: IEEE Computer Graphics and Applications, Vol. 14, No. 4, July 1994
Guest Editor: IEEE Parallel and Distributed Technology, Vol. 2, No. 2, Summer 1994
Editorial Board: International Journal of High Performance Computer Graphics, Multimedia and Visualization,
February 1997 - 1999
Editorial Board: IEEE Transactions on Visualization and Computer Graphics, January 2003 - January 2007
Associate Editor-in-Chief: IEEE Transactions on Visualization and Computer Graphics, August 2003 - January 2007

Fellowships and Honors

Best Paper Award “Physically-Based Interactive Schlieren Flow Visualization,” IEEE Pacific Visualization 2010, March 2010.
IEEE Computer Society Technical Achievement Award “For Seminal Work on Tools for Understanding Large-Scale Scientific Data Sets”, October 2005, The IEEE VGTC Visualization Technical Achievement Award was established in 2004. It is given every year to recognize an individual for a seminal technical achievement in visualization.
Best Paper Award “Non-Photorealistic Volume Rendering Using Stippling Techniques”, IEEE Visualization 2002, Oct. 2002
Best Paper Nomination “Interactive Translucent Volume Rendering and Procedural Modeling”, IEEE Visualization 2002, Oct. 2002
Best Paper Award “Interactive Volume Rendering Using Multi-Dimensional Transfer Functions and Direct Manipulation Widgets”, IEEE Visualization 2001, Oct. 2001
Best Paper Award “Interactive Ray Tracing for Isosurface Extraction”, IEEE Visualization '98, Oct. 1998
Best Panel Award “Tera-Scale Visualization: issues and approaches”, IEEE Visualization '97, October 1997
Bourse Chateaubriand Postdoctoral Research Fellowship, INRIA Rocquencourt France, July 1987 to July 1988
NSF Travel Award NATO Advanced Study Institute on Pattern Recognition Theory and Applications, Spa Belgium June 14 - June 22, 1986
ARO Fellowship Reliable Robotic Architectures, Army Research Office, September 1, 1983 to August 31, 1986
Phi Kappa Phi Member University of Utah

Selected Professional Activities

Executive Committees:

IEEE Technical Committee on Computer Graphics: Board Member, 1995-2002
IEEE Transactions on Visualization and Computer Graphics: Editor-in-Chief Search Committee Chairman, 2002
SIGGRAPH: Small Conference Coordinator, 1995 - 2000
SIGGRAPH: Executive Committee: Director at Large, July 1995 - June 1998
SIGGRAPH: Vice-Chair Rio Grande SIGGRAPH Local Chapter, July 1995- June 1996

Conference Organization:

Conference Co-Chair: Eurographics and IEEE-CS, Symposium on Volume Graphics 2010, 2010
Papers Co-Chair: IEEE Visualization 2008, 2008
Papers Co-Chair: IEEE Visualization 2007, 2007
Short Papers Co-Chair: Eurographics 2006, Vienna Austria
IEEE Visualization Conference Steering Committee: 2001-2004
Conference Co-Chair: 2004 EUROGRAPHICS/IEEE-CS Symposium on Visualization
Workshop Co-Chair: 2003 ACM/SIGGRAPH/Eurographics Campfire, "Visualization Meets Visual Effects"
Conference Co-Chair: 2003 EUROGRAPHICS/IEEE-CS Symposium on Visualization
Conference Co-Chair: IEEE Visualization 2001 Conference, 2001
Conference Co-Chair: IEEE Visualization 2000 Conference, 2000
Program Co-Chair: IEEE Visualization '99 Conference, 1999
Program Co-Chair: IEEE Visualization '97 Conference, 1997
Symposium Co-Chair: ACM-SIGGRAPH/IEEE Volume Rendering Symposium, 1996
Symposium Co-Chair: ACM-SIGGRAPH/IEEE 1st Parallel Rendering Symposium, 1993
Workshop Co-Chair: Scientific Visualization Environments, IEEE Visualization 1991

Program Committees:

Program Committee: EuroGraphics 2011
Program Committee: TopoinVis, 2011
Program Committee: VMV 2010
Program Committee: Pacific Vis, 2010
Program Committee: VMV 2009
Program Committee: Pacific Vis, 2009
Program Committee: ACM Super Computing , 2009
Program Committee: TopoVis: Topological Methods for Visualization, 2009
Program Committee: ACM I3D, 2009
Program Committee: Pacific Vis, 2008
Program Committee: IEEE/Eurographics Eurovis, 2008
Program Committee: Eurographics Workshop on Parallel Graphics and Visualization, 2008
Program Committee: IEEE/Eurographics Eurovis, 2007
Program Committee: TopoVis: Topological Methods for Visualization, 2007
Program Committee: Eurographics Workshop on Parallel Graphics and Visualization, 2007
Program Committee: IEEE/Eurographics Eurovis, 2006
Program Committee: Eurographics Workshop on Parallel Graphics and Visualization, 2006
Program Committee: 4th International Workshop on Volume Graphics (VG '05)
Program Committee: 10th Conference on Vision, Modeling, and Visualization (VMV'05)
Program Committee: ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games, 2005
Program Committee: IEEE/Eurographics Eurovis, 2005
Program Committee: 9th Conference on Vision, Modeling, and Visualization (VMV'04)
Program Committee: EUROGRAPHICS Workshop on Parallel Graphics and Visualization, 2004
Program Committee: IEEE Visualization 2004 Conference, 2004
Program Committee: IEEE Visualization 2003 Conference, 2003
Program Committee: IEEE Visualization 2002 Conference, 2002
ACM SIGGRAPH Emerging Technologies Jury: 2002
ACM SIGGRAPH Sketches Jury: 2002
Program Committee: 2002 EUROGRAPHICS/IEEE-CS Symposium on Visualization
Program Committee: 4th International Symposium on High Performance Computing 2002
Program Committee: 2002 EUROGRAPHICS Workshop on Parallel Graphics and Visualization
Program Committee: IEEE 2001 Symposium on Parallel and Large-Data Visualization and Graphics
Program Committee: International Workshop on Volume Graphics 2001
Program Committee: 2001 EUROGRAPHICS/IEEE-CS Symposium on Visualization
Program Committee: 2000 EUROGRAPHICS Workshop on Parallel Graphics and Visualization
SIGGRAPH Papers Committee: SIGGRAPH 2000
SIGGRAPH Papers Committee: SIGGRAPH 1999
Program Committee: EG - IEEE TCCG Symposium on Visualization, Vienna 1999
Program Committee: 1999 EUROGRAPHICS/IEEE-CS Symposium on Visualization
Papers Committee: IEEE Visualization '98 Conference, 1998
Case Studies Committee: IEEE Visualization '98 Conference, 1998
Program Committee: 1998 EUROGRAPHICS Workshop on Parallel Graphics and Visualization
Program Committee: International Workshop on Volume Graphics, Swansea 1998
Case Studies Committee: IEEE Visualization '98 Conference, 1998
Program Committee: 1997 Parallel Rendering Symposium
SIGGRAPH Sketches Jury: 1997
SIGGRAPH Applications Jury: 1996
Program Committee: First EUROGRAPHICS Workshop on Parallel Graphics and Visualization 1996
Program Committee: 1995 Parallel Rendering Symposium
SIGGRAPH Panel Jury: 1994
SIGGRAPH Panel Jury: 1990

Selected Professional Activities, continued

Review Panels:

LLNL: Advisory Board, Computation Division, 2011
KAUST: External Advisory Board, Geometric Modeling and Visualization Center, 2011
UNC: CISMM External Advisory Board 2010
DOE: 2010
NSF: 2010
LLNL: Advisory Board, Computation Division, 2009
RENCI: Advisory Board, 2009
DOE: 2009
NSF: 2009
UNC: CISMM External Advisory Board 2009
NSF: 2008
UNC: CISMM External Advisory Board 2007
Netherlands Organization for Scientific Research: 2009
Netherlands Organization for Scientific Research: 2007
Netherlands Organization for Scientific Research: 2006
University of Bergen: Search Committee for Chair in Visualization, 2006
NIH: UCSF Site Visit 2006
UNC: CISMM External Advisory Board 2006
eScience: E-Viz External Advisory Committee 2006
NSF: CISE Panel 2006
NIH-NSF: NIH-NSF Workshop for the Future of Visualization 2005
DHS: Department of Homeland Security Taskforce for National Visual Analytics 2005
NIH-NSF: NIH-NSF Workshop for the Future of Visualization 2004
DHS: Department of Homeland Security Taskforce for National Visual Analytics 2004
LLNL: Computing Research Directorate LDRD Review 2004
NSF: CISE Panel 2003
NSF: CISE Panel2002
NSF: STC site visit, 2001
NSF: CISE Panel2001
Ohio Supercomputing Center : External Review Board, 2001
LLNL: Computing Directorate Research Review Board, 2001
DOE: LLNL LDRD External Review Board, 2000
NSF: CISE Panel1999
DOE: ASCI Level 2 Panel, 1998
NSF: CISE Panel1998
IDA: ISAT Study Group on Visualization of Information Spaces, 1997
NSF: Division of Mathematical Sciences, Institute Site Visit Panel, 1997
NSF: STC Site Visit Panel, 1996

Miscellaneous:

Member: ACM, ACM-SIGGRAPH
Senior Member: IEEE

Selected Professional Activities, continued University Departmental and College Committees

Department: Research Grants Review 2011
Associate Director, School of Computing, 2009-2010
Research Grants Review 2010
Research Grants Review 2009
Associate Director, School of Computing, 2008-2009
Graduate Admissions Committee 2008
Research Grants Review 2008
Graduate Admissions Committee 2007
Research Grants Review 2007
Computer Facilities Committee Fall 2003
Associate Director of the School of Computing 2002-2003
Associate Director of the School of Computing 2001-2002
Associate Director of the School of Computing 2000-2001
Systems Comprehensive Committee 2001
Computer Facilities Committee (chair) 2001
Graduate Studies Committee 1999-2000 (Chair)
Graduate Studies Committee 1998-1999 (Chair)
Computer Policy Committee 1998-1999
Facility Faculty Liaison 1997-1998
Computer Policy Committee 1997-1998 (Chair)

College: Dean Search Committee 2003
New Building Committee 2001-2002
College Computing Resources 1997-1998

Selected Professional Activities, continued University Committees, continued

University: Associate Director of the Scientific Computing and Imaging Institute 2010-2011
IT Council 2010-2011
Associate Director of the Scientific Computing and Imaging Institute 2009-2010
IT Council 2009-2010
Associate Director of the Scientific Computing and Imaging Institute 2008-2009
IT Council 2008-2009
Leadership Workshop 2008-2009
Associate Director of the Scientific Computing and Imaging Institute 2007-2008
IT Council 2007-2008
University Seed Grant Committee 2007-2008
Associate Director of the Scientific Computing and Imaging Institute 2006-2007
University Seed Grant Committee 2006-2007
IT Council 2006-2007
Associate Director of the Scientific Computing and Imaging Institute 2005-2006
University Seed Grant Committee 2005-2006
Associate Director of the Scientific Computing and Imaging Institute 2003-2004
University Seed Grant Committee 2003-2004
CHPC Faculty Advisory Board 2002-2003
Graduate Research Fellowship Selection Committee 2002
University Seed Grant Committee 2002-2003
ITEC 2001-2002
University Seed Grant Committee 2001-2002
CHPC Faculty Advisory Board 2001-2002
CHPC Faculty Advisory Board 2000-2001
CHPC Faculty Advisory Board 1999-2000
Network Technical Advisory Committee 1999-2000
Network Technical Advisory Committee 1998-1999
CHPC Faculty Advisory Board 1998-1999
EGI Director Search Committee 1998-1999
Network Technical Advisory Committee 1997-1998

Keynote or Distinguished Lecturer

1. “Parallel Visualization: Has It Come Of Age?”, Keynote, Eurographics Parallel Graphics and Visualization, Norrköping, May 2010.
2. “Interactive Texture-based Flow Visualization”, Distinguished Lecture, Fraunhofer Institute for Graphics and Interaction”, Darmstadt, June 2009.
3. “Advanced Visualization in CSAFE”, Capstone Talk, CUIC, Bordeaux, June 2007.
4. “Interdisciplinary Research”, Keynote, Norway Workshop on Visualization, University of Bergen, May 2007.
5. “Large-Scale Scientific Visualization”, Distinguished Lecture Series, University of Nebraska, Lincoln, April 2007.
6. “Large-Scale Scientific Visualization”, Keynote, Theory and Practice of Computer Graphics 2006, Middlesbrough, UK.
7. “Advanced Visualization Techniques”, Distinguished Lecture Series, Technical University of Graz, Austria, June 2006.
8. “Future of Large-Scale Scientific Visualization”, Symposium on the Future of Visualization, UNCC, Keynote Address.
9. “Suppose the World was Piecewise Plastic”, Distinguished Lecture Series, Technical University of Vienna, The Institute of Computer Graphics and Algorithms, June 2005.
10. “Visualization Research: What’s Next?”, l’Association Aristote, l’Universite Paris-Sud-Orsay, March 2005.
11. “Techniques for Advanced Visualization”, Les Seminaires de l’INRIA Rhone-Alpes, INRIA, Grenoble, November 2004.
12. “Leveraging PC Graphics Cards for Advanced Visualization”, Keynote Lecture for Fachbereich Graphische Datenverarbeitung (FB-GDV), Gesellschaft für Informatik, the Computer Graphics Section of the German Computer Science Association, Konstanz Germany, May 2004.
13. “High Performance Visualization: So much data, so little time...”, Keynote Address, Intl. Conference on Parallel Computing (ParCo2003), Dresden Germany, September 2003.
14. “Large-Scale Biomedical Visualization using BioPSE and Star-Ray”, SGI Technical Users’ Conference, Mountain View, CA, June 2003.
15. “Advanced Methods for Visualization”, Distinguished Lecture, Purdue University, February 2003.
16. “Large Scale Scientific Visualization”, Distinguished Lecture, University of Manchester, GB, February 2003.
17. “Interactive Biomedical Computing”, SGI Visualization Summit, Paris, February 2003.
18. “Advanced Rendering Methods for Visualization”, Keynote Address, Vision, Modeling and Visualization (VMV2002), Erlangen Germany, November, 2002.
19. “Parallel Methods for Scientific Visualization and Computer Graphics”, Keynote Address, SIAM Symposium on Parallel Processing, March 2001.
20. “Is There a Future for Parallel Graphics and Visualization?”, Keynote Address, Eurographics Workshop on Parallel Graphics and Visualization, September 2000.
21. “High Performance Visualization and the ASCI Program”, Keynote Address, Chevron Petroleum Research, Vis-Expo, May 4, 1998.

Invited Talks

- “Biomedical Computing and Visualization at SCI”, University of Kaiserslautern, May 2010.
- “VACET: Visualization and Analytics Center for Enabling Technologies”, International Supercomputing Conference, Hamburg, June 2009.
- “Interactive Texture-based Flow Visualization”, University of Kaiserslautern, June 2009.
- “Multi-Field Volume Visualization”, IAMCS Spring Symposium, May 2009
- “Large-scale Scientific Visualization”, IAMCS Colloquium, TAMU, May 2009
- “Multidimensional Transfer Functions and other GPU Methods”, Exxon-Mobile, August 2008.
- “Interactive Texture-based Flow Visualization”, LANL, August 2008.
- “Physically Correct Flow Visualization”, Curves and Surfaces 2008, Norway.
- “CSAFE: Large Scale Scientific Computation”, University of Kaiserslautern, May 2008.
- “On Visualization and Graphics”, IRISA, Rennes, May 2007.
- “Recent Visualization at Utah”, Center for Applied Scientific Computing, LLNL, April 2007.
- “Is Seeing Really Believing?”, Conference on Visualization in Medicine and Life Sciences, Ruegen, Germany, July 2006.
- “Visualization Research: What’s Next?”, SISMA Visualisation haute performance, CEA, Paris, March 2005.
- “The Future Visualization Platform”, Panel Participant, Visualization 2004.
- “On the Use of Commodity Clusters for Large-Scale Scientific Applications”, Invited presentation, ARL Commodity Cluster Symposium, July 2003.
- “Cluster-based Methods for Visualization”, Center for Applied Scientific Computing, LLNL, June 2003.
- “Leveraging PC Graphics Cards for Advanced Visualization”, Centre Energie Atomic, Department Sciences de la Simulation et de l’Information, May 2003.
- “Leveraging PC Graphics Cards for Advanced Visualization”, Simon Fraiser University, May 2003.
- “Methods for Advanced Visualization”, University of Stuttgart, March 2003.
- “Leveraging PC Graphics Cards for Advanced Visualization”, University of Kaiserslautern, March 2003.
- “Leveraging PC Graphics Cards for Advanced Visualization”, Computer Science Colloquia Series, University of Alabama, February 2003.
- “Volume Rendering: Aren’t we done yet?”, Dagstuhl Workshop on Scientific Visualization, 2003
- “Advanced Volume Visualization”, Center for Applied Scientific Computing, LLNL, October 2002.
- “Leveraging PC Graphics Cards for Advanced Visualization”, Advanced Computing Laboratory Colloquia Series, LANL, August 2002.
- “Visualization Research at the University of Utah”, Department of Computer Science, Ohio State University, November 2000.

“Large Scale Visualization”, Dagstuhl Workshop on Scientific Visualization, 2000

“Effective Methods for Large Scale Visualization, Dagstuhl Workshop on Scientific Visualization, May 2000

“Interactive TeraScale Visualization: An Oxymoron”, Invited Lecture, NSF/DOE Workshop on Large-scale Visualization and Data Management, May 1999

“Real-Time Ray Tracing”, Colloquium Speaker, University of New Mexico, Department of Computer Science, December 1998.

“View Dependent Visualization”, Colloquium Speaker, Center for Applied Scientific Computing, LLNL, October 1998.

“Tera-Scale Visualization”, Colloquium Speaker, University of New Mexico, Department of Computer Science, March 1998.

“Visualization for Tera-Scale Computing”, Colloquium Speaker, University of California, Davis , February 1998.

“Visualization for the ASCI Program”, Colloquium Speaker, Scientific Computing and Communications Department, LLNL, February, 1998.

“Tera-Scale Visualization: issues and approaches”, Panel Participant, Visualization '97

“Simulation Steering”, Dagstuhl Workshop on Scientific Visualization, 1997

“Advanced Methods for Volume Visualization” NRO Workshop, Phoenix, Az. February 1996

“Volume Visualization in Hardware and Software”, Panel Organizer, Volume Visualization Workshop 1996

“Parallel Rendering: Which is better, HW or SW?”, Panel Participant, Parallel Rendering Symposium 1995

“Data Parallel Rendering”, Dagstuhl Workshop on Scientific Visualization, 1994

“Parallel Rendering Practices”, Panel Participant Parallel Rendering Symposium 1993

“Scientific Visualization Environments” Co-chair. IEEE Visualization 1991, San Diego, Ca. October 1991

“HIPPI for High-Speed Distributed Visualization” SIGGRAPH/SIGCOMM Workshop on Highspeed Graphics, Boulder, Co. Jan 1991

“High Performance Distributed Visualization” SIGGRAPH Workshop on High-speed Graphics and Networking, Las Vegas, Nv. August 1991

“Data Structures for Scientific Visualization: The Los Alamos National Laboratory Position”, SIGGRAPH Workshop on Data Structures and Access Methods for Scientific Visualization, Dallas, Tx., August 1990

Students Graduated

- Siddarth Shankar, MS Advisor, Large-Scale Visualization School of Computing, University of Utah, Fall 2009.
- Jianrong Shu, MS Advisor, Multi-Field Visualization School of Computing, University of Utah, Fall 2009.
- Joshua Stratton, MS Advisor, Interactive Volume Rendering” School of Computing, University of Utah, Fall 2008.
- Aaron Knoll, PhD Advisor, Large Scale Visualization Dissertation: “Ray Tracing Implicit Surfaces For Interactive Visualization”, School of Computing, University of Utah, Fall 2008.
- Guo-Shi Li, PhD Advisor, Interactive Flow Visualization Dissertation: “Interactive Flow Visualization”, School of Computing, University of Utah, Spring 2008.
- Milan Ikits, PhD Advisor, Dissertation: “Interactive Exploration of Volumetric Data Sets with a Combined Visual and Haptic Interface”, School of Computing, University of Utah, Fall 2006.
- Joe Kniss, PhD Advisor, Dissertation: “Multi-field Volume Rendering”, School of Computing, University of Utah, Summer 2006.
- James Bigler, MS Advisor, Thesis: “Use of Silhouette Edges and Ambient Occlusion in Particle Visualization”, School of Computing, University of Utah, Summer 2004.
- Shaun Ramsey, PhD Advisor, Computer Graphics, Dissertation: “Rendering Transitions in a Geometric Level of Detail Framework”, School of Computing, University of Utah, Summer 2004.
- Chris Wyman, PhD Advisor, Dissertation: “Fast Local Approximation to Global Illumination”, School of Computing, University of Utah, Summer 2004.
- John McCorquodale, MS Advisor, Non-thesis option, Graduated May 2003.
- Charles Schmidt, MS Advisor, Thesis: “Simulating Refraction Using Geometric Transforms”, School of Computing, University of Utah, Graduated May 2003.
- Joe Kniss, MS Advisor, Thesis: “Interactive Volume Rendering Techniques”, School of Computing, University of Utah, Graduated August 2002.
- Eric Luke, MS Advisor, Thesis: “SEMOTUS VISUM: A Flexible Remote Visualization Framework”, School of Computing, University of Utah, Graduated May 2002.
- Ashutosh S. Mehndiratta, MS Advisor, Thesis: “Multiresolution Techniques for Volume Visualization”, School of Computing, University of Utah, Graduated May 2002.
- Phil Sutton, MS Advisor, Thesis: “Isosurface Extraction in Time-Varying Fields”, Dept of Computer Science, University of Utah, Graduated May 2000.
- Tushar Udeshi, MS Advisor, Thesis: “Towards Interactive Photorealistic Rendering, A Hybrid Approach”, Dept of Computer Science, University of Utah, Graduated December 1999.
- Mark Schelzenback, ME Advisor, Project: “Real-Time Ray Tracing”, Dept of Computer Science, University of Utah, December 1999.
- Michelle Miller ME Advisor, Project: “Distributed Simulation Steering”, Dept of Computer Science, University of Utah, Graduated Spring 1998.

Pat McCormick MS Advisor, Thesis: “Deferred Shading Techniques”, Dept of Computer Science, University of New Mexico, Graduated 1996.

Paul Hinker PhD Advisor, Dissertation: “Massively Parallel Geometry Extraction”, Dept of Computer Science, New Mexico Tech, Graduated 1993.

Students Advising

Mathias Schott, PhD Advisor, Volume Shading School of Computing, University of Utah, Expected 2011.

Mark Kim, PhD Advisor, GPU Flow Visualization School of Computing, University of Utah, Expected 2012.

Yong Wan, PhD Advisor, Confocal Visualization School of Computing, University of Utah, Expected 2012.

Liang Zhou, PhD Advisor, Statistical Volume Rendering School of Computing, University of Utah, Expected 2012.

Carson Brownlee, PhD Advisor, Large-Scale Visualization School of Computing, University of Utah, Expected 2012.

Students Committee Member

- Jonathan Broullat PhD Committee (external Examiner), University Rennes I, France, November 2009.
- Bruno Raffin, Habilitation Committee (external Examiner), INRIA-Rhone Alps, March 2009.
- Christian Boucheny, PhD Committee (external Examiner), University Joseph Fourier, Grenoble, France, February 2009.
- Guillaume Francois, PhD Committee (external Examiner), University Rennes I, France, November 2008
- Simon Walton, PhD Committee (external Examiner), Department of Computer Science, University of Wales Swansea, Graduated December 2007.
- Younis Hijazi, PhD Committee (external Examiner), Department of Computer Science, University of Kaiserslautern, Graduated December 2007.
- Lee Meyers, MS Committee, School of Computing, University of Utah, Expected Completion 2008.
- Anastasia Mirinova, MS Committee, School of Computing, University of Utah, Expected Completion 2008.
- Wei Guo, PhD Committee, School of Computing, University of Utah, Expected Completion 2008.
- Keming Zhang, PhD Committee, School of Computing, University of Utah, Expected Completion 2008.
- Laurent Castanie, PhD Committee, Institute National Polytechnique de Lorraine, Ecole Nationale Supérieure de Geologie, Nancy, France, Graduated 2006.
- Christiaan Gribble, PhD Committee, School of Computing, University of Utah, Graduated 2006.
- Ivan Viola, PhD Committee, Technical University of Vienna, Graduated 2005.
- Kirk Riley, PhD Committee, Electrical and Computer Engineering, Purdue University, Graduated 2005.
- Aidon Lu, PhD Committee, Electrical and Computer Engineering, Purdue University, Graduated 2005.
- Robert L. Van Uitert, PhD Committee, School of Computing, University of Utah, Graduated 2005.
- Gordon Kindlmann, PhD Committee, School of Computing, University of Utah, Graduated 2004.
- David Weinstein, PhD Committee, School of Computing, University of Utah, Graduated 2003.
- Juergen Scholze-Doebold, PhD Committee, Department of Computer Science, Institute for Visualization and Interactive Systems, Technical University of Stuttgart, Graduated 2003.
- Helen Hu, PhD Committee, School of Computing, University of Utah, Graduated 2003.
- Vidya Elangovan, MS Committee, Dept of Computer Science, University of Utah, Graduated 2001.
- Yu Chen, MS Committee, Dept of Bioengineering, University of Utah, Graduated 2000.
- Yarden Livnat, PhD Committee, Optimized Isosurface Extraction, Dept of Computer Science, University of Utah, Graduated 1999.
- Steve Parker, PhD Committee, Steering of Scientific Computations, Dept of Computer Science, University of Utah, Graduated 1999.
- A.J. Preetham, MS Committee, Dept of Computer Science, University of Utah, Graduated 1999.

Chen-Chi Kuo, PhD Committee, Dept of Computer Science, University of Utah, Graduated 1999.

Pat Crossno PhD Committee, Particle Systems for Scientific Visualization, Dept of Computer Science, University of New Mexico, Graduated 1998.

Todd Frost PhD Committee, Parallel Rendering and CAGD, Dept of Computer Science, Arizona State University, Graduated 1995.

Undergraduate Theses

Joshua Andersen, BS Thesis Advisor, Thesis: “Implementing and Comparing Different Lighting Models and Procedural Fire Using Cg”, School of Computing, University of Utah, Graduated 2004.

Cameron Christensen, BS Thesis Advisor, Thesis: “Parallel Image Composition for Shared Memory Multiprocessors”, Dept of Computer Science, University of Utah, Graduated 2000.

Postdoctoral Supervision

Xavier Tricoche February 2004 - June 2006.

Xavier Cavin October 2001 - October 2002, Current Position: Research Scientists, INRIA-Lorraine.

Erik Reinhard February 2000 - May 2002, Current Position: Assistant Professor, University of Central Florida.

Courses

CS 5600 Introduction to Computer Graphics, Univ of Utah, Spring 2011
KAUST WEP Introduction to Scientific Visualization, KAUST, Winter 2011
CS 5610/6610 Interactive Computer Graphics, Univ of Utah, Fall 2010
KAUST WEP Introduction to Scientific Visualization, KAUST, Winter 2010
CS 5610/6610 Interactive Computer Graphics, Univ of Utah, Fall 2009
CS 6962 Advanced Shader Programming, Univ of Utah, Spring 2009
CS 5600 Introduction to Computer Graphics, Univ of Utah, Spring 2009
CS 5610/6610 Interactive Computer Graphics, Univ of Utah, Fall 2008
CS 5600 Introduction to Computer Graphics, Univ of Utah, Spring 2008
CS 5610/6610 Interactive Computer Graphics, Univ of Utah, Fall 2007
CS 5630/6630 Scientific Visualization”, Univ of Utah, Fall 2006
CS 5610/6610 Computer Graphics II, Univ of Utah, Fall 2006
CS 5630/6630 Scientific Visualization”, Univ of Utah, Fall 2005
CS 5610/6610 Computer Graphics II, Univ of Utah, Fall 2005
CS 5610/6610 Computer Graphics II, Univ of Utah, Fall 2003
Independent Studies, Advanced Graphics HW Programming 6 students, Univ of Utah, Spring 2003
CS 5610/6610 Computer Graphics II, Univ of Utah, Fall 2002
CS 5320/6320 Computer Vision I, Univ of Utah, Spring 2002
CS 5610/6610 Computer Graphics II, Univ of Utah, Fall 2001
CS 6937 Seminar: Advanced Computer Graphics Architectures, Univ of Utah, Fall 2001
CS 5610/6610 Computer Graphics II, Univ of Utah, Spring 2001
CS 5600/6600 Computer Graphics I, Univ of Utah, Fall 2000
CS 5961/6960 Computer Graphics II, Univ of Utah, Spring 2000
CS 5610/6610 Computer Graphics II, Univ of Utah, Spring 2000
CS 5600/6600 Computer Graphics I, Univ of Utah, Fall 1999
CS 6937 Computer Graphics Seminar”, Univ of Utah, Spring 2000
CS 5630/6630 Scientific Visualization”, Univ of Utah, Spring 1999
CS 6938 Scientific Computing and Imaging Seminar”, Univ of Utah, Spring 1999
CS 6937 Computer Graphics Seminar”, Univ of Utah, Spring 1999
“Distributed Computing with MPI”, Univ of Utah, Winter 1998, (Undergraduate Independent Study)
“Deferred Shading Rendering”, Univ of NM-Los Alamos, Fall 1996, (Graduate Independent Study)
“Scientific Visualization”, Short Course at KTH, Stockholm, Sweden, Summer 1996
“Advanced Scientific Visualization Techniques”, SIGGRAPH 1995, August 1995, (with Roger Crawfis LLNL)
“Distributed Computing”, Univ of NM-Los Alamos, Spring 1995, (Undergraduate Independent Study)
“Introduction to Scientific Visualization, Supercomputing 1994, November 1994, (with Mike Bailey SDSC)
“Introduction to Scientific Visualization, Visualization 1994, October 1994, (with Mike Bailey SDSC)
“Advanced Scientific Visualization Techniques”, SIGGRAPH 1994, August 1994, (with Roger Crawfis LLNL)
“Introduction to Scientific Visualization Tools and Techniques”, SIGGRAPH 1993, July 1993, (with Mike Bailey SDSC)
“Introduction to Graphics and Scientific Visualization”, Tutorial Supercomputing ’92, Nov. 1992 (with Prof Ed Angel UNM)
“Introduction to Scientific Visualization Tools and Techniques”, SIGGRAPH 1992, July 1992
“Volumetric Rendering”, Univ of NM-Los Alamos, Spring 1992, (Independent Study)
“Introduction to Graphics and Scientific Visualization”, Tutorial Supercomputing ’91, Nov. 1991 (with Prof Ed Angel UNM)
“High-Performance Computational Science”, Univ of NM, Summer 1991
“Introduction to Robotics”, Univ of Utah, Spring 1989 (graduate level).
“Advanced Computer Vision”, Univ of Utah, Winter 1989 (graduate level)
“Introduction to Computer Vision”, Univ of Utah, Fall 1988 (graduate level)

Professional Publications Student co-authors are underlined.

Published Papers: Books

1. “Direktes Volumen-rendering”, Sebastian Thelen, Achim Ebert, Hans Hagen, Charles Hansen, Aaron Knoll, Michael Papka, Ingo Wald, *Neues aus der Region: Kunst und Technik III*, Ministry of Education, Science, Youth and the Arts of the State of the Rhineland-Palatine, Germany, Pages 52-54, ISBN: 978-3-936036-34-3, 2011.
2. “Visualization for Data-Intensive Science”, Charles Hansen, Chris R. Johnson, Valerio Pascucci, Claudio T. Silva, *The Fourth Paradigm: Data-Intensive Scientific Discovery*, Microsoft Research, Edited by Tony Hey, Stewart Tansley, and Kristin Tolle, ISBN: 978-0-9825442-0-4, pages 153-164, 2009.
3. “Visualization of Coherent Structures in Transient Flows”, Christoph Garth, Guo-Shi Li, Xavier Tricoche, Charles D. Hansen and Hans Hagen, *Topology-Based Methods in Visualization II*, Springer, Mathematics and Visualization Series, ISBN: 978-3-540-88605-1, pages 1-13, 2009.
4. “Illuminating the Path: Research and Development Agenda for Visual Analytics”, James Thomas and Kristin Cook Editors, co-authored by panel.
5. Charles Hansen and Chris Johnson, editors. *Visualization Handbook*, Elsevier Press, ISBN: 0-12-387582-x, 984 pages, 2004.
6. “Multi-Dimensional Transfer Functions for Volume Rendering”, Joe Kniss, Gordon Kindlemann, Charles Hansen, *The Visualization Handbook*, Elsevier Press, 2004.
7. “Volume Rendering Techniques”, Milan Ikits, Joe Kniss, Aaron Lefohn, Charles Hansen, *GPU Gems*, pp. 667-692, Addison Wesley, 2004.
8. “Known and Potential High Performance Computing Applications in Computer Graphics and Visualization,” Charles Hansen, *High Performance Computing for Computer Graphics and Visualization*, M. Chen, P. Townsend, J.A. Vince (Eds.), Proceedings of the International Workshop on High Performance Computing for Computer Graphics and Visualization, pp. 23-29, Springer-Verlag, 1995.
9. “High Speed Trinocular Stereo for Mobile Robot Navigation,” Charles Hansen, Nicholas Ayache, Francis Lustman, *Highly Redundant Sensor Systems in Robotics*, J. T. Tou (Ed.), NATO-ASI Series, Springer-Verlag, pp. 127-146, 1990.
10. “CAD-based Computer Vision,” Charles Hansen and Tom Henderson, *CAD-based programming for Sensor-based Robotics*, R. Ravani (Ed.), NATO-ASI Series, Springer-Verlag, pp. 275-298, 1989.
11. “Multisensor Knowledge Systems,” Tom Henderson and Charles Hansen, *Real-Time Object Measurement and Classification*, A. K. Jain (Ed.), NATO-ASI Series, Springer-Verlag, pp. 375-390, 1988.
12. “Intrinsic Characteristics as the Interface between CAD and Machine Vision Systems,” Tom Henderson, Charles Hansen, Bir Bhanu, *Pattern Recognition Theory and Applications*, (eds. P. Devijver and J. Kittler), NATO-ASI Series, Springer-Verlag, pp. 461-470, 1987.

Published Papers: Journals

1. "Design of 2D Time-Varying Vector Fields" Guoning Chen, Konstantin Mischaikow, Vivek Kwatra, Li-Yi Wei, Charles D. Hansen, Eugene Zhang, IEEE Transactions on Visualization and Computer Graphics, Volume nn, Number x, 2011, major revision
2. "Similarity Measures for Enhancing Interactive Streamline Seeding", Tony McLoughlin, Mark Jones, Robert Laramee, Charles D. Hansen, IEEE Transactions on Visualization and Computer Graphics, Volume nn, Number x, 2011, submitted
3. "Visualization of Flow Past a Marine Turbine: the Information-Assisted Search for Sustainable Energy", Zhenmin Peng, Zhao Geng, Robert Laramee, Nick Croft, Rami Malki, Ian Masters, Charles D. Hansen, IEEE Transactions on Visualization and Computer Graphics, Volume nn, Number x, 2011, submitted
4. "Direct Feature Visualization Using Morse-Smale Complexes". Attila Gyulassy, Natallia Kotava, Mark Kim, Charles Hansen, Hans Hagen, Valerio Pascucci, IEEE Transactions on Visualization and Computer Graphics, Volume nn, Number x, 2012, To Appear.
5. "Visual Comparison for Information Visualization", Michael Gleicher, Jonathan C. Roberts, Ilir Jusufi, Danielle Albers, Rick Walker, Charles D. Hansen, Journal of Information Visualization, Volume 10, Number 4, October 2011, pp. 271-288.
6. "Depth of Field Effects for Interactive Direct Volume Rendering", Mathias Schott, Pascal Rosset, Tobias Martin, Vincent Pegoraro, Sean Smith, and Charles Hansen, Computer Graphics Forum Journal, Volume 30, Number 3, June 2011, pp. 941-950.
7. "RTSAH Traversal Order for Occlusion Rays", Thiago Ize and Charles Hansen, Computer Graphics Forum Journal (proceedings of EuroGraphics), Volume 30, Number 2, April 2011, pp. 297-305.
8. "Physically-Based Interactive Flow Visualization Based on Schlieren and Interferometry Experimental Techniques", Carson Brownlee, Vincent Pegoraro, Siddharth Shankar, Patrick S. McCormick, and Charles D. Hansen, IEEE Transactions on Visualization and Computer Graphics, Volume 17, Number 11, 2011, pp. 1574-1586.
9. "A Bayesian Monte Carlo Approach to Global Illumination", Jonathan Brouillat, Christian Bouville, Brad Loos, Charles Hansen, Kadi Bouatouch Computer Graphics Forum Journal, Volume 28 Issue 8, Pages 2315 - 2329, October 2009.
10. "Occam's razor and petascale visual data analysis", E. W. Bethel, C. Johnson, S. Ahern, J. Bell, P.-T. Bremer, H. Childs, E. Cormier-Michel, M. Day, E. Deines, T. Fogal, C. Garth, C. G. R. Geddes, H. Hagen, B. Hamann, C. Hansen, J. Jacobsen, K. Joy, J. Kreuger J. Meredith, P. Messmer, G. Ostrouchov, V. Pascucci, K. Potter, Prabhat, D. Pugmire, O. Reubel, A. Sanderson, C. Silva, D. Ushizima, G. Weber, B. Whitlock, K. Wu, Journal of Physics: Conference Series, vol. 180, 2009.
11. "Volume Ray Casting with Peak Finding and Differential Sampling", Aaron Knoll, Younis Hijazi, Rolf Westerteiger, Mathias Schott, Charles Hansen, Hans Hagen, IEEE Transactions on Visualization and Computer Graphics, Volume 15, Number 6, 2009, pp. 1571-1578.
12. "An Interactive Visualization Tool for Multi-channel Confocal Microscopy Data in Neurobiology Research", Yong Wan, Hideo Otsuna, Chi-Bin Chien, and Charles Hansen, IEEE Transactions on Visualization and Computer Graphics, Volume 15, Number 6, 2009, pp. 1489-1496.
13. "A Directional Occlusion Shading Model for Interactive Direct Volume Rendering", Mathias Schott, Vincent Pegorara, Charles Hansen, Kevin Boulanger, Kadi Bouatouch, Computer Graphics Forum Journal, Volume 28, Number 3, 2009, pp. 855-862.

14. “Fast Ray Tracing of Arbitrary Implicit Surfaces with Interval and Affine Arithmetic”, Aaron Knoll, Younis Hijazi, Andrew Kensler, Mathias Schott, Charles Hansen, and Hans Hagen, *Computer Graphics Forum Journal*, Volume 28, Number 1, 2009, pp. 26-40.
15. “Coherent Multiresolution Isosurface Ray Tracing”, Aaron Knoll, Ingo Wald and Charles Hansen *The Visual Computer*, Volume 25, Number 3, 2009, pp. 209-225.
16. “Physically-based Dye Advection for Flow Visualization”, Guo-Shi Li, Charles Hansen, Xavier Tricoche, *Computer Graphics Forum Journal*, Volume 27, Number 3, 2008, pp. 727-73.
17. “Flow Charts: Visualization of Vector Fields on Arbitrary Surfaces”, Guo-Shi Li, Xavier Tricoche, Daniel Weiskopf, Charles Hansen, *IEEE Transactions on Visualization and Computer Graphics*, Volume 14, Number 5, 2008, pp. 1067-1080.
18. “Interactive Isosurface Ray Tracing of Time-Varying Tetrahedral Volumes”, Ingo Wald, H. Friedrich, Aaron Knoll, Charles Hansen, In *IEEE Transactions on Visualization and Computer Graphics 2007* Volume 13, Number 6, 2007 pp. 1727–1734.
19. “SciDAC Visualization and Analytics Center for Enabling Technologies – Strategy for Petascale Visual Data Analysis Success,” E.W. Bethel, C. Johnson, C. Aragon, Prabhat, O. Ruebel, G. Weber, V. Pascucci, H. Childs, P.-T. Bremer, B. Whitlock, S. Ahern, J. Meredith, G. Ostrouchov, K. Joy, B. Hamann, C. Garth, M. Cole, C. Hansen, S. Parker, A. Sanderson, C. Silva, X. Tricoche. *CTWatch Quarterly*, Volume 3, Number 4, November 2007.
20. “SciDAC Visualization and Analytics Center for Enabling Technology”, E.W. Bethel, C.R. Johnson, K. Joy, S. Ahern, V. Pascucci, H. Childs, J. Cohen, M. Duchaineau, B. Hamann, C. Hansen, D. Laney, P. Lindstrom, J. Meredith, G. Ostrouchov, S.G. Parker, C.T. Silva, A. Sanderson, X. Tricoche, *Journal of Physics: Conference Series*, vol. 78, 2007.
21. “Ray-Driven Dynamic Working Set Rendering For Complex Volume Scene Graphs Involving Large Point Clouds”, David Chisnall, Min Chen ,Charles Hansen, *The Visual Computer*, Vol.23 (3), 2007, 167-179.
22. “VACET: Proposed SciDAC2 Visualization and Analytics Center for Enabling Technologies”, 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, *Journal of Physics: Conference Series* Vol. 46, 2006, 561-569.
23. “Soft Shadow Maps: Efficient Sampling of Light Source Visibility”, Lionel Atty, Nicolas Holzschuch, Marc Lapiere, Jean-Marc Hasenfratz, Charles Hansen, Francois X. Sillion, *Computer Graphics Forum* Vol. 25 (4), 2006, 725-741.
24. “Interactive Display of Isosurfaces with Global Illumination”, Chris Wyman, Steve Parker, Peter Shirley, Charles Hansen *IEEE Transactions on Visualization and Computer Graphics*, Vol. 12 (2), 2006, pp 186-196.
25. “Reconstruction and Visualization of Planetary Nebulae”, Marcus Magnor, Gordon Kindlmann, Charles Hansen, Neb Durie *IEEE Transactions on Visualization and Computer Graphics*, Vol. 11 (5), 2005, pp 485-496.
26. “Ray Bilinear Patch Intersections”, Shaun Ramsey, Kristie Potter, Charles Hansen *Journal for Graphics Tools*, Vol. 9 (3) 2004, pp 41-47.
27. “A Streaming Narrow-Band Algorithm: Interactive Computation and Visualization of Level Sets”, Aaron E. Lefohn, Joe M. Kniss, Charles D. Hansen, Ross T. Whitaker, *IEEE Transactions on Visualization and Computer Graphics*, Vol. 10 (4), July 2004, pp 422-433

28. "Illustrative Interactive Stipple Rendering", Aidong Lu, Christopher J. Morris, Joe Taylor, David S. Ebert, Charles Hansen, Penny Rheingans, and Mark Hartner *IEEE Transactions on Visualization and Computer Graphics*, Vol. 9 (2), April 2003, pp 127-138
29. "A Model for Volume Lighting and Modeling", Joe Kniss, Simon Premoze, Charles Hansen, Peter Shirley, and Allen McPherson *IEEE Transactions on Visualization and Computer Graphics*, Vol. 9 (2), April 2003, pp 150-162
30. "Multi-Dimensional Transfer Functions for Interactive Volume Rendering", Joe Kniss, Gordon Kindlmann, and Charles Hansen, *IEEE Transactions on Visualization and Computer Graphics*, Vol. 8 (3), July 2002, pp 270-285
31. "TRex, Texture-based Volume Rendering for Extremely Large Datasets", Joe Kniss, Patrick McCormick, Al McPherson, James Ahrens, Jamie Painter, Alan Keahey, and Charles Hansen, *IEEE Computer Graphics and Applications*, Vol. 21 (4), 2001, pp 52-61
32. "Accelerated Isosurface Extraction in Time-varying Fields", Philip Sutton and Charles Hansen, *IEEE Transactions on Visualization and Computer Graphics*, Vol. 6 (2), 2000, pp 98-107
33. "The Deferred Accumulation Buffer", Patrick McCormick, Charles Hansen, and Ed Angel, *Journal for Graphics Tools*, Vol. 4 (3), 1999, pp 35-46
34. "Interactive Computing and Visualization", Christopher Johnson, Steven Parker, Charles Hansen, Gordon Kindlmann, and Yarden Livnat, *IEEE Computer*, Vol. 32 (12), 1999, pp 59-65
35. "Interactive Ray Tracing for Volume Visualization", Steven Parker, Michael Parker, Yarden Livnat, Peter-Pike Sloan, Charles Hansen, and Peter Shirley, *IEEE Transactions on Visualization and Computer Graphics*, Vol. 5 (3), 1999, pp 238-250
36. "Parallel Sphere Rendering", Michael Krogh, James Painter, Charles Hansen, *Parallel Computing*, Vol. 23 (7), 1997, pp 961-974
37. "Parallel Volume Rendering Using Binary-Swap Compositing", Kwan-Liu Ma, James Painter, Charles Hansen, Michael Krogh, *IEEE Computer Graphics and Applications*, Vol. 14, No. 4, July 1994, pp 59-68
38. "The Impact of Gigabit Network Research on Scientific Visualization", Charles Hansen and Stephen Tenbrink, *The Visual Computer*, Vol. 9, No. 6, 1993, pp 318-323
39. "Parallel Path Consistency," Steve Susswein, Thomas C. Henderson, Joe Zachary, Chuck Hansen, Paul Hinker, Gary Marsden, *International Journal of Parallel Programming*, Vol. 20, No. 6., 1991 pp 453-473
40. "High-speed Networks, Visualization and Massive Parallelism in the Advanced Computing Laboratory", Dave Forslunk, Paul Hinker, Charles Hansen, W. St. John, S. Tenbrink, J. Brewton, *Computing Systems in Engineering*, Vol 3, Nos 1-4, 1992
41. "CAGD-Based Computer Vision", Charles Hansen and Tom Henderson, *IEEE Pattern Recognition and Machine Intelligence*, Vol. 11, No. 10, pp. 1181-1193, November 1989
42. "Multisensor Knowledge Systems: Interpreting 3-D structure," Thomas C. Henderson, Amar Mitiche, Eliot Weitz, Chuck Hansen, *International Journal of Robotics Research*, Special Issue on Multisensor Integration, Vol. 7, No. 6, pp. 114-137, December 1988
43. "Apparent Symmetries in Range Data," Rod Grupen, Charles Hansen, Tom Henderson, *Pattern Recognition Letters*, Vol. 7, pp. 107-111, February 1988

44. "The Specification of Distributed Sensing and Control," Tom Henderson, Charles Hansen, Bir Bhanu, *Journal of Robotic Systems*, Vol. 2. No. 4, pp. 387-396, 1986
45. "Organizing Spatial Data for Robotics Systems," Thomas C. Henderson, Chuck Hansen, Wu So Fai, *Computers in Industry*, Vol. 6, No.5, pp. 331-344, October 1985
46. "MKS: A Multi-sensor Kernel System," Tom Henderson, Wu So Fai, Charles Hansen, *IEEE Trans. on Systems, Man and Cybernetics*, Vol. SMC-14, No. 5, pp. 784-791, September/October 1984

Published Papers: Conference Proceedings (refereed papers)

1. “FluoRender: An Application of 2D Image Domain Methods for 3D and 4D Confocal Microscopy Data Visualization in Neurobiology Research”, Yong Wan, Hideo Otsuna, Chi-Bin Chien and Charles Hansen, IEEE Pacific Visualization 2012 (accepted)
2. “Volume Rendering with Multidimensional Peak Finding”, Natallia Kotava, Aaron Knoll, Christoph Garth, Mathias Schott, Christoph Kessler, Elaine Cohen, Michael E. Papka, Xavier Tricoche, Charles Hansen and Hans Hagen, IEEE Pacific Visualization 2012 (accepted)
3. “Combined Surface and Volumetric Occlusion Shading”, Mathias Schott, Tobias Martin, A.V. Pascal Grosset, Thomas Hoellt, Sean T. Smith, Charles D. Hansen, IEEE Pacific Visualization 2012 (accepted)
4. “Real-Time Ray Tracer for Visualizing Massive Models on a Cluster”, Thiago Ize, Carson Brownlee, Charles Hansen, Eurographics Symposium on Parallel Graphics and Visualization April 2011, pp. 61-69.
5. “Full-Resolution Interactive CPU Volume Rendering with Coherent BVH Traversal”, Aaron Knoll, Sebastian Thelen, Michael Papka, Ingo Wald, Hans Hagen, Charles Hansen, IEEE Pacific Vis 2011, pp. 3-9.
6. “CSG Operations of Arbitrary Primitives with Interval Arithmetic and Real-Time Ray Casting”, Younis Hijazi, Aaron Knoll, Mathias Schott, Andrew Lensler, Charles Hansen and Hans Hagen, DFU: Dagstuhl Followups: Scientific Visualization, Advanced Concepts, Edited by Hans Hagen, 2010, pp. 78-89.
7. “Fast Volumetric Data Exploration with Importance-Based Accumulated Transparency Modulation,” Yong Wan, Charles Hansen, IEEE/EG Symposium on Volume Graphics 2010, pages 61-68, Norrkoping, Sweden, 2010.
8. “Physically-Based Interactive Schlieren Flow Visualization,” Carson Brownlee, Vincent Pegoraro, Siddharth Shankar, Patrick McCormick, Charles Hansen, IEEE Pacific Vis 2010, pages 145-152, Taipei, Taiwan, 2010.
9. “Interactive Ray Tracing of Arbitrary Implicits with SIMD Interval Arithmetic,” Aaron Knoll, Younis Hijazi, Charles Hansen, Ingo Wald, Hans Hagen, 2nd IEEE/EG Symposium on Interactive Ray Tracing 2007, pages 11-17, Ulm, Germany, 2007.
10. “Visualization of Coherent Structures in Transient Flows”, Christoph Garth, Guo-Shi Li, Xavier Tricoche, Charles D. Hansen and Hans Hagen TopoInVis 2007, Grimma, Germany.
11. “Interactive Isosurface Ray Tracing of Large Octree Volumes”, Aaron Knoll, Ingo Wald, Steven Parker, and Charles Hansen IEEE Symposium on Interactive Ray Tracing 2006, pp. 115-124, Salt Lake City, UT.
12. “Knowledge-Based Out-of-Core Algorithms for Data Management in Visualization”, Min Chen, David Chisnall, Charles Hansen, Eurographics/IEEE-VGTC Symposium on Visualization 2006, pp. 107-114, Portugal.
13. “GPUFLIC: Interactive and Accurate Dense Visualization of Unsteady Flows”, Guo-Shi Li, Xavier Tricoche, Charles Hansen, Eurographics/IEEE-VGTC Symposium on Visualization 2006, pp. 29-34, Portugal.
14. “A Case Study: Visualizing Material Point Method Data”, James Bigler, James Guilkey, Christiaan Gribble, Charles Hansen, Steven Parker, Eurographics/IEEE-VGTC Symposium on Visualization 2006, pp. 299-306, Portugal.

15. "The Proxy Chain Algorithm and Its Application to Scientific Visualization", Milan Ikits and Charles Hansen, 14th Symposium on Haptic Interfaces for Virtual Environment and Teleoperator Systems 2006, pp. 525-532, Arlington, VA.
16. "Statistically Quantitative Volume Visualization", Joe Kniss, Robert Van Uitert, Abraham Stephens, Guo-Shi Li, Tolga Tasdizen, Charles Hansen, IEEE Visualization 2005, pp. 287-294, Minneapolis, MN.
17. "Interactive Caustics Using Local Precomputed Irradiance", Chris Wyman, Charles Hansen, Peter Shirley, Pacific Graphics 2004, pp. 143-151, Korea.
18. "Visualization of Intricate Flow Structures for Vortex Breakdown Analysis", X. Tricoche, C. Garth, G. Kindlmann, E. Deines, G. Scheuermann, M. Ruetten, C. Hansen, IEEE Visualization 2004, pp. 187-194, Austin, TX.
19. "Constrained Inverse Volume Rendering for Planetary Nebulae" Marcus Magnor, Gordon Kindlmann, Charles Hansen, Neb Duric IEEE Visualization 2004, pp. 83-90, Austin, TX.
20. "Scout: A Hardware-Accelerated System for Quantitatively Driven Visualization and Analysis", Patrick McCormick, Jeff Inman, James Ahrens, Greg Roth and Charles Hansen IEEE Visualization 2004, pp.171-178, Austin, TX.
21. "Adaptive Temporal Tone Mapping" Shaun D. Ramsey, Tom Johnson and Charles Hansen Computers, Graphics, and Imaging 2004 (CGIM 2004), pp. 124-128, Hawaii.
22. "Efficient Rendering of Atmospheric Phenomena", Kirk Riley, David Ebert, Martin Kraus, Jerry Tessendorf, and Charles Hansen 2004 Eurographics Symposium on Rendering, pp. 375-386, Norrkoping, Sweden.
23. "Medical Applications of Multi-field Volume Rendering", Joe Kniss, Juegen P. Schulze, Uwe Wossner, Peter Winkler, Ulrich Lang, Charles Hansen , VisSym 2004, Joint EUROGRAPHICS - IEEE TCCG Symposium on Visualization, pp. 249-254, Konstanz, Germany.
24. "Interactive Deformation and Visualization of Level Set Surfaces Using Graphics Hardware", Aaron E. Lefohn, Joe M. Kniss, Charles D. Hansen, Ross T. Whitaker, IEEE Visualization 2003, pp. 75-82, Seattle.
25. "Visually Accurate Multi-Field Weather Visualization", Kirk Riley, David Ebert, Charles Hansen, Jason Levit, IEEE Visualization 2003, pp. 279-286, Seattle.
26. "Gaussian Transfer Functions for Multi-Field Volume Visualization", Joe Kniss, Simon Premoze, Milan Ikits, Aaron Lefohn, Charles Hansen, Emil Praun IEEE Visualization 2003, pp. 497-504, Seattle.
27. "A Constraint-Based Technique for Haptic Volume Exploration", Milan Ikits, J. Dean Brederson, Charles D. Hansen, Christopher R. Johnson, IEEE Visualization 2003, pp. 263-270, Seattle.
28. "Distributed Interactive Ray Tracing for Large Volume Visualization", David E DeMarle, Steven Parker, Mark Hartner, Christiaan Gribble, Charles Hansen, IEEE Parallel Visualization and Graphics 2003, pp. 87-94, Seattle.
29. "Simplification of Arbitrary Polyhedral Meshes", Shaun D. Ramsey, Martin Bertram, Charles Hansen, IASTED Computer Graphics and Imaging 2003 (CGIM 2003), pp. 117-222, Honolulu.
30. "Penumbra Maps: Approximate Soft Shadows in Real-Time", Chris Wyman, Charles Hansen, Eurographics Rendering Symposium 2003, pp. 202-207, Leuven, Belgium.

31. "A Real-Time Cloud Modeling, Rendering, and Animation System", Joshua Schpok, Joseph Simons, David S. Ebert, Charles Hansen, ACM Symposium on Computer Animation, 2003 pp. 160 - 166, San Diego.
32. "A Comprehensive Calibration and Registration Procedure for the Visual Haptic Workbench", Milan Ikits, Charles D. Hansen and Christopher R. Johnson, Eurographics Workshop on Virtual Environments 2003, pp. 247-254, Zurich, Switzerland.
33. "Hardware-Accelerated Interactive Illustrative Stipple Drawing of Polygonal Objects", Lu, A., Taylor, J., Hartner, M., Ebert, D., Hansen, C., VMV2002: Vision, Modeling, and Visualization, November 2002, pp. 61-68, Erlangen, Germany
34. "Interactive Ray Tracing of Time Varying Data", Erik Reinhard, Charles Hansen and Steve Parker, EUROGRAPHICS Workshop on Parallel Graphics and Visualization 2002, September 2002, Germany
35. "Semotus Visum: A Flexible Remote Visualization Framework", Eric Luke and Charles Hansen, IEEE Visualization 2002, pp. 61-68, Boston, MA.
36. "Interactive Translucent Volume Rendering and Procedural Modeling", Joe Kniss, Simon Premoze, Charles Hansen, and David Ebert, IEEE Visualization 2002, pp. 109-116, Boston, MA. (**Nominated for 'Best Paper' award**)
37. "Non-Photorealistic Volume Rendering Using Stippling Techniques", Aidong Lu, Christopher J. Morris, David Ebert, Penny Rheingans, Charles Hansen, IEEE Visualization 2002, pp. 211-218, Boston, MA. (**Awarded 'Best Paper' at the conference**)
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3. “EUROGRAPHICS ’97 Conference Report”, Charles Hansen , *Computer Graphics Quarterly*, Vol. 32, No. 1, February 1998, pp 39.

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Community Service

1. "Member, Oakridge Elementary Community Council", August 2000-May 2004
2. "President Oakridge Elementary Community Council", May 2002-May 2003
3. "Board of Directors, Brighton Competition Team, August 2003-present

Consulting

1. Lawrence Livermore Laboratories, 1998-present
2. Ohio State Supercomputing Center, 2001