

BONG-SOO SOHN

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RESEARCH INTERESTS

My main research interests are in *Computer Graphics* and *Computational Bioengineering*. I am particularly interested in multi-scale visualization, geometric modeling (mesh generation), and image processing from 3D/4D volumetric imaging data with emphases on bio-molecular and medical applications.

EDUCATION

- 1999.8 – 2005.8 **University of Texas at Austin**
Ph.D. in Computer Sciences
Advisor : Prof. Chandrajit L. Bajaj
Dissertation : Topological Analysis of Level Sets and Its Use in Data Visualization
- 1999.8 – 2001.12 **University of Texas at Austin**
M.S. in Computer Sciences
- 1995.3 – 1999.2 **Seoul National University, Seoul, Korea**
B.S. *cum laude* in Computer Science

JOURNAL PUBLICATIONS

1. Heewon Kye, Bong-Soo Sohn, Jeongjin Lee
"Interactive GPU-based maximum intensity projection of large medical data sets using visibility culling based on the initial occluder and the visible block classification",
[SCI-E] Computerized Medical Imaging and Graphics [SCI-E], 36(5), pages 366-374, 2012
2. Bong-Soo Sohn
"Hybrid Parallel Extraction of Isosurface Components from 3D Rectilinear Volume Data",
[SCI-E] IEICE Transactions on Information and Systems, 94-D(12), pages 2553-2556, 2011
3. Byung-Woo Hong, Bong-Soo Sohn
"Segmentation of Regions of Interest in Mammograms in a Topographic Approach",
[SCI] IEEE Transactions on Information Technology and Biomedicine, 14(1), pages 129-139, 2010

4. Bong-Soo Sohn
"Topology Preserving Tetrahedral Decomposition Applied To Trilinear Interval Volume Tetrahedrization",
[SCI-E] KSII Transactions on Internet and Information Systems, 3(6), pages 667-681, 2009
5. Jeehyun Kim, Bong-Soo Sohn, Thomas E. Milner
"Real Time Retinal Imaging with Parallel OCT using a CMOS Smart Array Detector",
[SCI] Journal of the Korean Physical Society, Vol. 51, No. 5, November, pages 1787-1791, 2007
6. Bong-Soo Sohn, Chandrajit Bajaj
"Time-Varying Contour Topology"
[SCI] IEEE Transactions on Visualization and Computer Graphics, 12 (1), pages 14-25, 2006
7. Yongjie Zhang, Chandrajit Bajaj, Bong-Soo Sohn
"3D Finite Element Meshing from Imaging Data"
[SCI] Computer Methods in Applied Mechanics and Engineering, 194(48-49), pages 5083-5106, 2005
8. Bong-Soo Sohn, Chandrajit Bajaj, Vinay Siddavanahalli
"Volumetric Video Compression for Interactive Playback"
[SCI] Computer Vision and Image Understanding, 96 (3), pages 435-452, 2004

CONFERENCE PUBLICATIONS

1. Bong-Soo Sohn
"Topology Preserving Tetrahedral Decomposition of Trilinear Cell"
LNCS 4487(Part I), International Conference on Computational Sciences (ICCS), Pages 350-357, Springer-Verlag, 2007
2. Mary K. O'Connell, Bong-Soo Sohn, Chengpei Xu, JoAnn A. Buchanan, Winfried Denk, Christopher K. Zarins, Charles A. Taylor
"Arterial Nanostructure Of The Healthy Rat Abdominal Aorta Studied By Serial Block-Face Scanning Electron Microscopy"
Proceedings of ASME 2006 Summer Bioengineering Conference, June 21-25, Florida, USA, 2006
3. Bong-Soo Sohn
"Simulation and Visualization of Interacting Deformable Interfaces",
8th US National Congress on Computational Mechanics (Abstract, Minisymposium on Scientific Visualization in the Computational Sciences and Engineering), Austin, USA, July, 2005
4. Yongjie Zhang, Chandrajit Bajaj, Bong-Soo Sohn
"Adaptive and Quality Meshing from Imaging Data"
Proceedings of 8th ACM Symposium on Solid Modeling and Applications pages 286-291, Seattle, WA, June, USA, 2003
5. Bong-Soo Sohn, Chandrajit Bajaj, Vinay Siddavanahalli
"Feature Based Volumetric Video Compression for Interactive Playback "
Proceedings of IEEE/ACM Symposium on Volume Visualization and Graphics, pages 89-96, Boston, MA, USA, 2002

TECHNICAL REPORTS

1. Chandrajit Bajaj, Ariel Shamir, Bong-Soo Sohn
"Progressive Tracking of Isosurfaces in Time-Varying Scalar Fields"
Technical Report, Dept. of Computer Sciences, University of Texas at Austin, 2002

ACTIVITIES

WORK EXPERIENCE

- *Associate Professor (Mar. 2012 – Present), Assistant Professor (Mar. 2008 – Feb. 2012)*
School of Computer Science and Engineering, Chung-Ang University
Main responsibilities include teaching classes and performing top quality research.
- *Full-Time Lecturer (Mar. 2006 – Feb. 2008)*
Department of Computer Engineering, Kyungpook National University
Main responsibilities include teaching classes and performing top quality research.
- *Faculty Research Fellow (June. 2006 – Aug. 2006)*
Institute for Computational and Engineering Sciences (ICES), University of Texas at Austin
Collaborating with ICES faculties and students on advanced research in computational visualization.
- *Postdoctoral Scholar (Sep. 2005 – Feb. 2006)*
Department of Bioengineering, Stanford University
Working with Prof. Charles A. Taylor on developing image-based geometric modeling methods for simulating blood flow and vessel motion in patients with cardiovascular disease.
- *Graduate Research Assistant (Jan. 2000 – Aug. 2005)*
Computational Visualization Center, ICES, University of Texas at Austin
Worked with Prof. Chandrajit Bajaj on multi-resolution and multi-dimensional volumetric data visualization. Developed a Contour Tree based tool for topological analysis of 3D volumetric data, and extended benefits of Contour Tree to time-varying (4D) volumetric data. Also developed interactive volumetric video player for raw/compressed time-varying volumetric data. Other researches include quality 2D/3D meshing from imaging data, surface extraction and simplification without geometric interference, and graphics hardware (GPU) programming.
- *Graduate Teaching Assistant (Aug. 1999 – Dec. 1999, Jan. 2001 – May. 2001)*
Department of Computer Sciences, University of Texas at Austin
TA for sophomore-level undergraduate courses "CS336 : Analysis of Programs" and "CS372 : Introduction to Operating Systems". Duties include giving lectures during absence of instructor, holding office hours for one-to-one discussions, designing and maintaining class webpage, and grading assignments.
- *Undergraduate Researcher (Mar. 1997 – July 1999)*
Computer Graphics Laboratory, Seoul National University
Worked with Dr. Yeong Gil Shin on developing "Virtual Lego Blocks", an educational computer game for children, and "Volume Based 3D Interactive Atlases" to build a PC-based interactive musculoskeletal anatomic atlas using Visible Man data set.

REVIEWER SERVICE

- IEEE Visualization Conference, 2005, 2006, 2007
- IEEE Transactions on Visualization and Computer Graphics
- 18th ACM Symposium on Computational Geometry, 2002
- Joint Eurographics - IEEE TCVG Symposium on Visualization 2004 , 2005
- Eurographics 2004, the Annual Conference of the European Association for Computer Graphics
- Advanced Simulation Technologies Conference 2004 (ASTC'04)

PUBLIC TALKS

- "Modeling, Visualization and Quantitative Analysis from Imaging Data", Invited Talk at KAIST, June 24, 2009
- "Modeling and Visualization from Imaging Data", Supercomputing Korea (Workshop), November 21, 2006
- "Modeling and Visualization from 3D and 4D Volumetric Data", Invited Talk at KISTI (Korea Institute of Science and Technology Information), September 8, 2006
- "Topological Analysis of Level Sets and Its Applications to Data Visualization", Invited Talk at Stanford University, July 5, 2005
- "Simulation and Visualization of Interacting Deformable Interfaces", 8th US National Congress on Computational Mechanics (Minisymposium), Austin, July, 2005
- "Feature Based Volumetric Video Compression for Interactive Playback", IEEE/SIGGRAPH Symposium on Volume Visualization and Graphics, Boston, October 2002
- "Volumetric Video Compression", Third Annual TEXGRAPH, Austin, May 11, 2002

COURSES TAUGHT (at Chung-Ang University)

- Advanced Computer Graphics (Fall 2011) [Graduate Course]
- Computational Geometry : Theory and Applications (Spring 2010) [Graduate Course]
- Volume Graphics (Spring 2008, 2012) [Graduate Course]
- C Programming (Spring 2010, 2011, 2012)
- Object Oriented Programming and Design (Fall 2008, 2009, 2010, 2011)
- Design of Data Structures (Fall 2008)
- LINUX System (Spring 2008, Spring 2009)

COURSES TAUGHT (at Kyungpook National University)

- Computer Game Programming (Fall 2007, Fall 2006)
- Fundamental Design of Software (Fall 2007, Fall 2006)
- Operating Systems (Spring 2007)
- Web Programming Lab. (Spring 2007, Spring 2006)
- Computer Application Actual Training I (Spring 2006)

SKILLS

- Programming Language : C/C++, JAVA, Perl, LISP, Assembly Language
- Tools : Matlab, Visual Studio (MFC) Object Oriented Programming, OpenGL, DirectX, QT Library GUI Programming, CORBA, CUDA/MPI/PVM Parallel Programming, SQL
- Operating Systems : UNIX/LINUX, Windows NT/XP, DOS

HONORS

- J. Tinsley Oden Faculty Research Fellowship in the Institute for Computational Engineering and Sciences (ICES) at the University of Texas at Austin, 2006
- Selected for front/back cover images in proceedings of VolVis 2002
- Travel Award, Dept. of Computer Sciences, University of Texas at Austin, 2002
- Graduated with honor, Seoul National University, 1999
- Seoul National University Outstanding Student Scholarship, 1995 – 1999