

# 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",  
*8<sup>th</sup> 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", *8<sup>th</sup> 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