CURRICULUM VITAE **February 5, 2007**

Joon-Kyung Seong

CONTACT INFORMATION

Address: School of Computing, 50 Central Campus Drive, University of Utah
Salt Lake City, UT84112, USA
Telephone: +1-801-673-6661
Fax: +1-801-581-5843
E-mail: seong@cs.utah.edu

OBJECTIVE

The primary purpose of my research is to enhance the mathematical and scientific foundations of computer graphics and geometric modeling, extending it beyond the discrete problem domain to the point that complex continuous models have great flexibility in geometric processing and interaction with users. A source of motivation or long term goal for the research is the establishment of real-time geometric processing (operations) of a continuous geometry, such as a spline model. Aiming at applications to Computational Biology, the problem of molecular docking and other geometric problems are explored for collaborative researches.

RESEARCH INTERESTS

- Problem Reduction Scheme for Geometric Problems
- Real-Time GPU Processing of Continuous (Spline) Geometries
- Molecular Docking and other Geometric Problems in Computational Biology

EDUCATION

Ph. D., Computer Science *03/2000 - 02/2005*
Thesis title: A Problem Reduction Scheme for Solving Geometric Constraints and Its Applications
Advisor: Prof. Myung-Soo Kim
Seoul National University(SNU), Seoul, Korea.

B. Sc., Computer Science *03/1996 - 02/2000*
Seoul National University, Seoul, Korea.

PROFESSIONAL EXPERIENCES

Postdoctoral Fellow *06/2005 - Current*
School of Computing, University of Utah, USA.
Working on the computation of voronoi diagrams, medial axis, and real-time gpu processing of continuous geometries with Prof. Elaine Cohen.

Visiting Student *03/2002 - 02/2003*
Center for Graphics and Geometric Computing, Technion - Israel Institute of Technology, Haifa, Israel.
Worked on the computatoin of convex hulls and surface-surface intersections under supervision of Prof. Gershon Elber.

Research Assistant *03/2000 - 02/2005*
Seoul National University.
Worked on the problem reduction scheme for solving geometric constraints and its applications in computer graphics under supervision of Prof. Myung-Soo Kim.

Teaching Assistant *03/2000 - 02/2005*
Seoul National University.
Graduate computer graphics, undergraduate computer graphics and undergraduate engineering mathematics.

PUBLICATIONS

- **Journal Publications**

1. Kwanhee Lee, **Joon-Kyung Seong**, Ku-Jin Kim and Sung Je Hong. "Minimum Distance between Two Sphere-swept Surfaces", *Computer-Aided Design*, To Appear 2007.
2. **Joon-Kyung Seong**, Gershon Elber and Elaine Cohen. "Simultaneous Precise Solutions to the Visibility Problem of Sculpured Models", *Lecture Notes on Computer Science*, M.-S. Kim, K. Shimada (Eds), Geometric Modeling and Processing-GMP2006, 4077:451–464, 2006.
3. Gershon Elber, John K. Johnstone, Myung-Soo Kim and **Joon-Kyung Seong**. "The Kernel of Freeform Surfaces and Its Duality with the Convex Hull", *International Journal of Shape Models*, 12(2):129–142, December 2006.
4. **Joon-Kyung Seong**, Gershon Elber and Myung-Soo Kim. "Trimming Local and Global Self-intersections in Offset Curves and Surfaces using Distance Maps", *Computer-Aided Design*, 38:183–193, 2006.
5. **Joon-Kyung Seong**, Ku-Jin Kim, Myung-Soo Kim and Gershon Elber. "Perspective Silhouette of a General Swept Volume", *The Visual Computer*, 22(2):109–116, February 2006.
6. Dae-Eun Hyun, Seung-Hyun Yoon, Jung-Woo Chang, **Joon-Kyung Seong**, Myung-Soo Kim and Bert Juttler. "Sweep Based Human Deformation", *The Visual Computer*, 21(8-10):542–5506, September 2005.
7. Diana Pekerman, **Joon-Kyung Seong**, Gershon Elber and Myung-Soo Kim. "Are Two Curves The Same?", *Computer-Aided Design & Applications*, 2(1-4), 2005.
8. **Joon-Kyung Seong**, Ku-Jin Kim, Myung-Soo Kim and Gershon Elber. "Intersecting a Freeform Surface with a Sweep Surface", *Computer-Aided Design*, 37(5):473–483, April 2005.
9. **Joon-Kyung Seong**, Gershon Elber, John K. Jonestone and Myung-Soo Kim. "The Convex Hull of Freeform Surfaces", *Computing*, 72(1):171–183, March 2004.
10. Hee-Seok Heo, Sung-Je Hong, **Joon-Kyung Seong**, Myung-Soo Kim and Gershon Elber. "The Intersection of Two Ringed Surfaces and Some Related Problems", *Graphical Models*, 63(4):228–244, November 2001.

- **Refereed Conference Publications**

11 **Joon-Kyung Seong**, David E Johnson and Elaine Cohen. "A Higher Dimensional Formulation for Robust and Interactive Distance Queries", *ACM Symposium on Solid and Physical Modeling*, Cardiff, Wales, England, June 6-8, 2006, pp. 197–205.

12 **Joon-Kyung Seong**, Gershon Elber and Myung-Soo Kim. "Contouring 1- and 2-Manifolds in Arbitrary Dimensions", *Shape Modeling and International 2005*, MIT, USA, June 15-17, 2005, pp. 216–225.

13 **Joon-Kyung Seong**, Gershon Elber and Myung-Soo Kim. "Polynomial Decomposition", In *Proc. of* 4^{th} *Israel-Korea Binational Conference on Geometric Modeling and Computer Graphics*, Ramat Aviv, Israel, February 2003, pp 12–14.

14 **Joon-Kyung Seong**, Myung-Soo Kim and Kokichi Sugihara. "The Minkowski Sum of Two Simple Surfaces Generated by Slope-Monotone Closed Curves", In *Proc. of Geometric Modeling and Processing*, Saitama, Japan, 2002, pp 33–42.

15 Myung-Soo Kim, **Joon-Kyung Seong**, Dae-Eun Hyun, Kang-Hoon Lee and Yu-Jin Choi. "A Physical 3D Trackball", In *Proc. of* 9^{th} *Pacific Graphics*, Tokyo, 2001, pp 134–138.

FELLOWSHIPS and PROFESSIONAL ACTIVITIES

National Scholarship *06/2005 - 05/2007*

Information and Telecommunication National Scholarship Program for Postdoctoral Research Fellow.

Best Paper Award *08/2004*

Annual Workshop of Brain Korea21 Project of Korea Research Foundation.

Microsoft Research Asia Fellowship 2003 Award *11/2003*

Microsoft Research Asia (The award was given only to a single Korean student.)

Research Collaboration Fellowship *03/2002 - 02/2003*

SNU-Technion Research Collaboration Program under Brain Korea21 Project of Korea Research Foundation.

SNU Scholarship *1996 - 1999*

Seoul National University.

Professional memberships

ACM, IEEE & IEEE Computer Society

Referee *(including aux. review)*

Computer-Aided Design, Pacific Graphics, EuroGraphics, ACM Symposium on Solid and Physical Modeling, Shape Modeling International, Geometric Modeling and Processing.