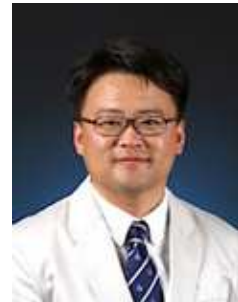


## Résumé

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**Born** on April 3rd, 1973 in Daegu, Korea,  
**married**, two sons.

### Research Interest

I am interested in most areas of computational geometry, the study of design and analysis of algorithms on geometry and optimization problems. Computational geometry has evolved from a sub-discipline of theoretical computer science, but it has developed in several directions and forged links with other application areas with interest in geometric computing, such as computer aided (geometric) design (CAD), computer aided manufacturing (CAM), robotics, computer graphics, virtual reality, computer vision, bioinformatics (computational biology) and geographic information systems (GIS).

Geometric problems that I have studied lately include fundamental problems from the area of *computer-aided design* (CAD) and *computer-aided manufacturing* (CAM), such as verification of manufacturability of a given CAD-model. Due to the geometric nature of manufacturing processes, this research tends to lead to interesting geometric questions.

Besides the work on manufacturing, I have been working on *approximation algorithms* for geometric optimization problems, that is, an interesting paradigm for the design of algorithms that returns near-optimal solutions efficiently. Most natural optimization problems, including those arising in important application areas, are NP-hard, therefore, their exact solution is prohibitively time consuming and research into approximability of these problems becomes a compelling subject in computer science. Approximation algorithms are often surprisingly simple yet practical and efficient.

I also have a keen interest in *shape matching*. Shape matching is an important ingredient in shape retrieval, recognition and classification, alignment and registration, and approximation and simplification. In a typically large database of shapes, for example, shape retrieval searches for all shapes similar to a query shape. Recently I have been working on the design of algorithms to compute the similarity between shapes, which lead to papers in journals and conferences including ACM Symposium on Computational Geometry.

### Educational Qualifications

**Ph.D.** in Computer Science with a topic in Theoretical Computer Science

December 2001 at Utrecht University in the Netherlands

Title of thesis : *Geometric Aspects of the Casting Process*

Dissertation committee : Professors Jan van Leeuwen(chair), Mark Overmars (advisor), Otfried Cheong (co-advisor), Mark de Berg, Prosenjit Bose, Siu-Wing Cheng, Peter van Emde Boas, Doaitse Swierstra, Arno Siebes

**Master of Science** in Computer Science

February 1998 at Pohang University of Science & Technology (POSTECH) in Korea

Title of thesis : *Casting with two-part cast: Opposite and Non-opposite cast removal*

Dissertation committee : Professors Otfried Schwarzkopf (advisor), Mark de Berg, Myung-Soo Kim

**Bachelor of Engineering** in Computer Engineering  
February 1996 at Kyungpook National University in Korea

## **Awards**

- Best Paper Award at 11th International Symposium on Spatial and Temporal Databases (2009)
- Research Fellowship(AIO) from Utrecht University (2000-2001)
- Postgraduate Scholarships from Hong Kong University of Science & Technology (1997-2000) and Pohang University of Science & Technology (1996-1997)
- Scholarship for academic excellence from Kyungpook National University (1992-1995)

## **Professional experience**

**Since July 2007**, I have been assistant professor at the Department of Computer Science & Engineering, POSTECH in Korea.

**From March 2006 to July 2007**, I was assistant professor at the Department of Computer Science & Engineering, Sejong University in Korea.

**From February 2004 to February 2006**, I was research assistant professor at Computer Science Division, Korea Advanced Institute of Science & Technology in Korea, as a replacement of military service.

**From October 2001 to January 2004**, I was scientific researcher at Imaging Media Research Center, Korea Institute of Science & Technology in Korea, as a replacement of military service.

**From September 2000 to December 2001**, I was a graduate student (Ph.D. candidate) and Research Assistant ('AIO') at Institute of Information and Computing Sciences, Utrecht University in the Netherlands

**From September 1997 to August 2000**, I was a graduate student (Ph.D. candidate) and Research/Teaching Assistant at Department of Computer Science, Hong Kong University of Science and Technology (HKUST) in Hong Kong

**From March 1996 to August 1997**, I was a graduate student and Research/Teaching Assistant at Department of Computer Science, Pohang University of Science and Technology (POSTECH) in Korea

**Research visits.** I have visited research groups on Computational Geometry for periods of one to four weeks. So far, I have visited the following universities:

- Hong Kong University of Science and Technology (2005, 2007, and 2008), on invitation by Prof. Dr. Siu-Wing Cheng
- Freie Universität Berlin (2004 and 2006), on invitation by Dr. Christian Knauer
- Japan Advanced Institute of Science and Technology (2004), on invitation by Prof. Dr. Tetsuo Asano.
- Korea Advanced Institute of Science and Technology (2000), on invitation by Dr. Chan-Su Shin
- Freie Universität Berlin (1999 and 2001), on invitation by Prof. Dr. Helmut Alt
- Carleton University (1999), on invitation by Prof. Dr. Prosenjit Bose
- Utrecht University (1998), on invitation by Dr. René van Oostrum

## Invitations and Talks

- Invited talk at Discrete Math Seminar of Dept. Mathematical Sciences, KAIST (2009)
- Invited talk at Colloquium of Dept. Mathematics, POSTECH (2009)
- Dagstuhl Seminar on Geometric Networks, Germany (2009)
- Invited talk at Colloquium of Dept. Computer Science & Engineering, Chonbuk Univ. (2009)
- Talk at PMI Phylogenetic Combinatorics Seminar, POSTECH (2009)
- International Workshop on Discrete and Computational Geometry (2009)
- Talk at The 30th PNU-PMI Algebraic Combinatorics Seminar, PNU (2009)
- Invited talk at Colloquium of Dept. Computer Science & Engineering, POSTECH (2006/2007)
- Workshop on Computational and Combinatorial Line Geometry (2006) in France(Ouessant Island)
- Invited talk at School of Computational Sciences, KIAS (2005)
- International Workshop on Discrete and Computational Geometry (2005) in Japan
- Colloquium of Dept. Computer Science & Engineering in POSTECH (2004)
- Dagstuhl Workshop on Computational Geometry and Geometric Networks (2004) in Germany
- Invited talk at Voronoi diagram Research Center in Hanyang University (2004)
- Invited talk at Dept. Computer Engineering in Kyungpook National University (2004)
- Korean Workshop on Computational Geometry (2002 – 2009)
- Dagstuhl Seminar on Computational Geometry (2001 and 2003) in Germany
- Utrecht Workshop on Computational Geometry (2000) in The Netherlands
- Workshop on Computational Geometry at HKUST (1997) in Hong Kong

**Languages** I am fluent in Korean (my first language) and English.

## Professional service

**Board members.** I am currently a board member of Asian Association for Algorithms and Computation (AAAC)

**Journal editorship.** I am currently a editorial board member of Journal of Computational Geometry (JoCG).

**Program committees.** I'm currently a PC member of SoCG 2010 (26th Annual Symposium on Computational Geometry). SoCG is the only top conference in computational geometry. I served as a PC member of AAAC 2009 / 2008, FAW 2009, ISAAC 2006 (17th Annual International Symposium on Algorithms and Computation), and AAIM 2006 / 2007 (Annual International Conference on Algorithmic Aspects in Information and Management). ISAAC is one of the premier theoretical computer science conferences.

**Refereeing.** I have been a referee for several journals, mainly in the field of computational geometry, including Computational Geometry: Theory and Applications, International Journal of Computational Geometry and Applications, Journal of Discrete Algorithms, Algorithmica, Information Processing Letters, Computer Aided Geometric Design, IEEE Transactions on Computers, Computers & Graphics, Mathematics of Operations Research, International Journal on Foundations of Computer Science, and European Journal of Operational Research. I have also acted as a sub-referee for conferences, including the ACM Symposium on Computational Geometry (SoCG), ACM-SIAM Symposium on Discrete Algorithms (SODA), European Symposium on Algorithms (ESA), International Symposium on Algorithms and Computation (ISAAC), International Computing and Combinatorics Conference (COCOON), IFIP International Conference on Theoretical Computer Science (IFIP TCS), and AAAC Annual Meeting (AAAC).

**Organization.** I was a member of the organizing committee of the 23rd ACM Symposium on Computational Geometry (SoCG), which was held in June 2007. I started and organized an international workshop on Computational Geometry in Jeju island in August 2002, and in Seoul in August 2003 (together with Dr. Chan-Su Shin). Since then it became an annual event under the name "Korean workshop on computational

geometry". In August 2004, I organized a Dagstuhl Workshop on Computational Geometry and Geometric Networks in Germany with Alexander Wolff, Christian Knauer, René van Oostrum and Chan-Su Shin. In June 2008, I organized 11th Korean Workshop on Computational Geometry at POSTECH with Otfried Cheong and Antoine Vigneron.

## Research projects

I am currently involved in

- **Korea Research Foundation** - GEnKO : Korea–Germany Partnership Program *Geometric Shape Approximation* (2008/1/1 - 2010/12/31).
- **KOSEF** *Adaptive algorithms for fundamental geometric problems* (2009/5/1 - 2012/4/30).
- **Postech BSRI** *Combinatorial and Computational Aspects of Geometric Graphs* (2009/9/1 - 2010/2/28)
- **KIPA** *Product Line Based Platform for Industrial Software Development* (2009/8/1 - )

I was research director of

- **KOSEF** - Korea–Germany binational grant *Measuring the Similarity of Geometric Graphs* (2006/9/1 - 2008/8/31).
- **Korea Research Foundation** *Geometric Shape Matching in 3D: Design of efficient matching algorithms under rigid motions* (2007/8/1 - 2009/7/31).
- **Postech BSRI** *Geometric Shape Approximation and Matching* (2008/5/1 - 2009/2/28)
- **Postech BSRI** *Geometric Shape Matching* (2007/9/1 - 2008/2/28)
- **Korea Research Foundation** *Approximation algorithms for shape matching in 3 dimensional space* (2006/7/1 - 2007/6/30).

**KAIST** I was involved in

- **KOSEF** - Korea France **STAR grant** *Combinatorial Geometry of Lines in Space* (2005/8/1 - 2007/7/31).
- **Korea Research Foundation** *Event-driven Online Crowd Simulation* (2004/9/1 to 2006/2/28)
- **Korea Science & Engineering Foundation** *Design of Algorithms for Distributed Networks* (2004/2/1 to 2006/2/28)

**KIST** I was involved in

- **MIC Research Grant** *3D Cyber Museum Technology* (2001/10/1 to 2003/2/28)
- **MOST Research Grant** *Evaluation of Car Prototypes using CAVE-like Systems* (2001/12/1 to 2002/11/30) and *Interactive Immersive Virtual Environment Technology* (2002/1/1 to 2004/7/31)
- **MCT Research Grant** *Virtual Heritage Experience Platform* (2002/12/1 to 2003/10/31)
- **KIST Research Grant** *Responsive Cyber Space Technology* (2002/1/1 to 2003/12/31)

**HKUST** I was involved in

- **DAAD/RGC Germany/Hong Kong Joint Research Scheme** *Geometric shape matching and Chinese character recognition* (1999/4/1 to 2000/3/31).
- **RGC Competitive Earmarked Research Grant** *Efficient Algorithms for Measuring the Similarity of Graph Drawings* (1999/9/1 to 2001/8/31), *Feasibility of randomized geometric algorithms* (1998/8/1 to 2001/7/31)

**POSTECH** I was involved in

- **POSCO fund grant** *A Geometric Basis for Manufacturing* (1996/5/1 to 1997/4/30).
- **KME Korean/US Joint Research Grant** *Algorithms for Industrial Part Handling and Manufacturing* (1996/8/1 to 1997/7/31)

## Teaching experience

**POSTECH.** List of courses that I have taught so far:

- *Discrete Geometry* EECE701B (2009)
- *Algorithms* CSED 331 (2009)
- *Computational Geometry* EECE701A (2008)
- *Research Project A/II* CSED499 (2008)
- *Algorithm Design and Analysis* CSED431 (2007/2008)

**Sejong Univ.** List of courses that I have taught so far:

- *Data Structures* (2007)
- *Advanced Algorithms* (graduate course, 2006)
- *Algorithms* (2006)
- *Discrete Mathematics* (2006)
- *C Programming* (2006/2007)
- *Programming Languages* (2006)

**HKUST** I was a teaching assistant of the following courses:

- *Introduction to Object-Oriented Programming* COMP151 (1999/2000)
- *Computational Geometry* COMP573 (1998)
- *Design and Analysis of Algorithms* COMP271 (1998)

**POSTECH** I was a teaching assistant of the following courses:

- *Programming Practice* COMP231 (1997)
- *Computational Geometry* COMP632 (1997)
- *Data Structures and Algorithms* COMP233 (1996)
- *Algorithm Analysis* COMP531 (1996)