

VITA
Myung-Soo Kim

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GENERAL INFORMATION

Birth: Born on August 2, 1957 in Pusan, Korea
Address: School of Computer Science and Engineering
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Marital Status: Married, 2 children
Citizenship: Korea

EDUCATION

Ph.D. 1988 Computer Science, Purdue University
M.S. 1987 Computer Science, Purdue University
M.S. 1985 Applied Mathematics, Purdue University
M.S. 1982 Mathematics, Seoul National University
B.A. 1980 Mathematics Education, Seoul National University

PROFESSIONAL EXPERIENCE

1989 – 1993 Assistant Professor, Dept. of Computer Science, POSTECH
1993 – 1999 Associate Professor, Dept. of Computer Science, POSTECH
1999 – 2001 Associate Professor, School of Computer Science and Engineering,
Seoul National University
2001 – Professor, School of Computer Science and Engineering, SNU
2003 – 2005 Director, Institute of Computer Technology, SNU
2005 – 2006 Head, School of Computer Science and Engineering, SNU
2007 – 2008 CIO, Seoul National University
2007 – 2008 Director, University Computer Center, SNU
2007 – 2008 Director, Korea Education Network

RESEARCH INTERESTS

Computer Graphics and Animation; Geometric Modeling and Processing
Human Modeling, Animation, and Deformation; Geometric Algorithms

COURSES TAUGHT (at SNU)

ENG001 Engineering Mathematics I
CSE206 Discrete Mathematics
CSE313 Linear and Nonlinear Computation Models
CSE410 Interactive Computer Graphics
CSE504 Advanced Computer Graphics
CSE667 Geometric Modeling

PROFESSIONAL SERVICE

On Editorial Board:

- Computer-Aided Design (1996–)
- Computer Aided Geometric Design (2001–)
- Computer Graphics Forum (2000–2007)
- Int'l J. of Shape Modeling (1999–)

Co-Editor:

- Handbook of Computer Aided Geometric Design, ISBN:0-444-51104-0, North-Holland, 2002 (with G. Farin and J. Hoschek)

Guest Co-Editor:

- The Journal of Visualization and Computer Animation, Vol. 8, No. 2, 1997. (Special Issue of Pacific Graphics '95; with S.Y. Shin and T.L. Kunii)
- Computer-Aided Design, Vol. 31, No. 3, 1999. (Special Issue on Offsets, Sweeps, and Minkowski Sums; with G. Elber)
- Computer-Aided Design, Vol. 31, No. 1, 1999. (Special Issue of Geometric Modeling and Processing '98; with R. Martin)
- The Journal of Visualization and Computer Animation, Vol. 11, No. 5, 2000. (Special Issue of Pacific Graphics '99; with H.-P. Seidel)
- The Visual Computer, Vol. 16, No. 3–4, 2000. (Special Issue of Shape Modeling and Processing; with Y. Shinagawa)
- Graphical Models (formerly CVGIP), Vol. 11, No. 5, 2000. (Special Issue of Pacific Graphics '99; with H.-P. Seidel)
- Int'l Journal of Shape Modeling, Vol. 6, No. 2, 2000. (Special Issue of The First Korea-UK Joint Workshop; with R. Martin)
- Computer-Aided Design, Vol. 36, No. 14, 2004. (Special Issue of CAD Education; with N. Sapidis)
- Computer-Aided Design, Vol. 39, No. 5, 2007. (Special Issue of Geometric Modeling and Processing 2006; with K. Shimada)
- Computer Aided Geometric Design, Vol. 24, 2007. (Special Issue of Geometric Modeling and Processing 2006; with K. Shimada)
- Computer-Aided Design, Vol. 43, No. 10, 2011. (Special Issue of ACM Symposium on Solid and Physical Modeling 2010; with J. Keyser)
- Computer Aided Geometric Design, Vol. 28, No. 8, 2011. (Special Issue of ACM Symposium on Solid and Physical Modeling 2010; with J. Keyser)
- Computer-Aided Design, Vol. 43, No. 11, 2011. (Special Issue of SIAM Conference on Geometric and Physical Modeling 2011; with C. Bajaj and S. Hahmann)

Program Co-Chair:

- 1998 Israel-Korea Bi-National Conference on Geometric Modeling, Tel-Aviv, Israel
- 1998 Workshop on Diff./Top. Techniques in Geometric Modeling and Processing, Pohang, Korea
- 1999 Pacific Conference on Computer Graphics and Applications, Seoul, Korea
- 2000 Korea-UK Joint Workshop on Geometric Modeling, Seoul, Korea

2003 Pacific Workshop on Geometric Modeling, Calgary, Canada
2006 Geometric Modeling and Processing, Pittsburgh, Pennsylvania, USA
2010 ACM Symposium on Solid and Physical Modeling, Haifa, Israel
2011 SIAM Conference on Geometric and Physical Modeling, Orlando, FL, USA

Program Committee:

ACM Symposium on Physical and Solid Modeling 2001–2012
Computer Graphics International 1996–2006
Eurographics 2001–2003
Eurographics Symposium on Geometry Processing 2003–2007
Geometric Modeling and Processing 2000–2012
IEEE Int'l Conf. on Robotics and Automation 2001
Israel-Korea Binational Conference on Geometric Modeling 1998–2007
Pacific Graphics 1993–2011
Shape Modeling International 1999–2006
International Symposium on 3DPVT 2004

Referee for (since 1997):

ACM Transactions on Graphics
ASME Transactions: Journal of Computing and Information Science in Engineering
ASME Transactions: Journal of Manufacturing Science and Engineering
Computer-Aided Design
Computer Aided Geometric Design
Computers & Graphics
Graphical Models and Image Processing (formerly CVGIP)
IEEE Computational Science and Engineering
IEEE Computer Graphics and Applications
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Visualization and Computer Graphics
SIAM Journal on Computing
The International Journal of Computational Geometry and Applications
The International Journal of Shape Modeling
The Journal of Visualization and Computer Animation
The Visual Computer
ACM SIGGRAPH
ACM Symposium on Computational Geometry
ACM Symposium on Solid Modeling
Computer Graphics International
Eurographics
Geometric Modeling and Processing
Graphics Interface
Israel-Korea Binational Conference
Pacific Graphics
Shape Modeling International
Symposium on Geometry Processing

RESEARCH PUBLICATIONS

Publications in Refereed Journals:

- [1] “Generation of Configuration Space Obstacles: The Case of a Moving Sphere,” *IEEE J. of Robotics and Automation*, Vol. 4, No. 1, pp. 94–99, 1988, (with C. Bajaj).
- [2] “Generation of Configuration Space Obstacles: The Case of Moving Algebraic Curves,” *Algorithmica*, Vol. 4, No. 2, pp. 157–172, 1989, (with C. Bajaj).
- [3] “Generation of Configuration Space Obstacles: The Case of Moving Algebraic Surfaces,” *The Int’l J. of Robotics Research*, MIT Press, Vol. 9, No. 1, pp. 92–112, 1990, (with C. Bajaj).
- [4] “Convex Hulls of Objects Bounded by Algebraic Curves,” *Algorithmica*, Vol. 6, No. 4, pp. 533–553, 1991, (with C. Bajaj).
- [5] “An Algebraic Approach to Collision-Avoidance Trajectory Planning for Dual-Robot Systems: Formulation and Optimization,” *Robotica*, Vol. 10, pp. 173–182, 1992, (with S.H. Suh).
- [6] “Approximate General Sweep Boundary of a 2D Curved Object,” *CVGIP: Graphical Models and Image Processing*, Vol. 55, No. 2, pp. 98–128, 1993, (with J.W. Ahn and S.B. Lim).
- [7] “An Algebraic Algorithm to Compute the Exact General Sweep Boundary of a 2D Curved Object,” *Information Processing Letters*, Vol. 47, No. 5, pp. 221–229, 1993, (with J.W. Ahn and S.B. Lim).
- [8] “Approximation of Variable Radius Offset Curves and its Application to Bézier Brush Stroke Design,” *Computer-Aided Design*, Vol. 25, No. 11, pp. 684–698, 1993, (with E.J. Park and S.B. Lim).
- [9] “Modeling and Animation of Generalized Cylinders with Variable Radius Offset Space Curves,” *The J. of Visualization and Computer Animation*, Vol. 5, No. 4, pp. 189–207, 1994, (with E.J. Park and H.Y. Lee).
- [10] “Oriental Character Font Design by a Structured Composition of Stroke Elements,” *Computer-Aided Design*, Vol. 27, No. 3, pp. 193–207, 1995, (with S.B. Lim).
- [11] “Interpolating Solid Orientations with Circular Blending Quaternion Curves,” *Computer-Aided Design*, Vol. 27, No. 5, pp. 385–398, 1995, (with K.W. Nam).
- [12] “A General Construction Scheme for Unit Quaternion Curves with Simple High Order Derivatives,” *Computer Graphics (SIGGRAPH ’95)*, pp. 369–376, 1995, (with M.J. Kim and S.Y. Shin).
- [13] “A Compact Differential Formula for the First Derivative of a Unit Quaternion Curve,” *The J. of Visualization and Computer Animation*, Vol. 7, No. 1, pp. 43–57, 1996, (with M.J. Kim and S.Y. Shin).
- [14] “Hermite Interpolation of Solid Orientations with Circular Blending Quaternion Curves,” *The J. of Visualization and Computer Animation*, Vol. 7, No. 2, pp. 95–110, 1996, (with K.W. Nam).
- [15] “Planar Curve Offset Based on Circle Approximation,” *Computer-Aided Design*, Vol. 28, No. 8, PP. 617–630, 1996, (with I.K. Lee and G. Elber).

- [16] “A New Approach to Through-the-Lens Camera Control,” *Graphical Models and Image Processing* (formerly *CVGIP*), Vol. 58, No. 3, pp. 262–285, 1996, (with M.H. Kyung and S.J. Hong).
- [17] “Comparing Offset Curve Approximation Methods,” *IEEE Computer Graphics and Applications*, Vol. 17, No. 3, pp. 62–71, 1997, (with G. Elber and I.K. Lee).
- [18] “Ruled Tracing,” *The Visual Computer*, Vol. 13, No. 2, pp. 78–94, 1997, (with G. Elber and J.J. Choi).
- [19] “Geometric Shape Recognition of Freeform Curves and Surfaces,” *Graphical Models and Image Processing* (formerly *CVGIP*), Vol. 59, No. 6, pp. 417–433, 1997, (with G. Elber).
- [20] “The Bisector Surface of Freeform Rational Space Curves,” *ACM Trans. on Graphics*, Vol. 17, No. 1, pp. 32–49, 1998, (with G. Elber).
- [21] “Torus/Sphere Intersection Based on a Configuration Space Approach,” *Graphical Models and Image Processing* (formerly *CVGIP*), Vol. 60, No. 1, pp. 77–92, 1998, (with K.J. Kim and K. Oh).
- [22] “Polynomial/Rational Approximation of Minkowski Sum Boundary Curves,” *Graphical Models and Image Processing* (formerly *CVGIP*), Vol. 60, No. 2, pp. 136–165, 1998, (with I.K. Lee and G. Elber).
- [23] “Direct Manipulation of Generalized Cylinders Based on B-spline Motion,” *The Visual Computer*, Vol. 14, No. 5, pp. 228–239, 1998, (with T.I. Chang, J.H. Lee, and S.J. Hong).
- [24] “Bisector Curves of Planar Rational Curves,” *Computer-Aided Design*, Vol. 30, No. 14, pp. 1089–1096, 1998, (with G. Elber).
- [25] “The Intersection of Two Ruled Surfaces,” *Computer-Aided Design*, Vol. 31, No. 1, pp. 33–50, 1999, (with H.S. Heo and G. Elber).
- [26] “Computing Rational Bisectors,” *IEEE Computer Graphics and Applications*, Vol. 19, No. 6, pp. 76–81, 1999, (with G. Elber).
- [27] “Polygonal Boundary Approximation for a 2D General Sweep Based on Envelope and Boolean Operations,” *The Visual Computer*, Vol. 16, Nos 3–4, pp. 208–240, 2000, (with J.H. Lee and S.J. Hong).
- [28] “The Intersection of Two Ringed Surfaces and Some Related Problems,” *Graphical Models* (formerly *CVGIP*), Vol. 63, No. 4, 2001, (with H.S. Heo, S.J. Hong, J.K. Seong, and G. Elber).
- [29] “The Convex Hulls of Rational Plane Curves,” *Graphical Models* (formerly *CVGIP*), Vol. 63, No. 3, pp. 151–162, 2001, (with G. Elber and H.S. Heo).
- [30] “Bisectors and α -Sectors of Rational Varieties,” *Computing*, Supplement Vol. 14, pp. 73–88, 2001, (with G. Elber and G. Barequet).
- [31] “An Algebraic Condition for the Separation of Two Ellipsoids,” *Computer Aided Geometric Design*, Vol. 18, No. 6, pp. 531–539, 2001, (with W. Wang, J. Wang).

- [32] “Minkowski Sum of Axis-Parallel Surfaces of Revolution Defined by Slope-Monotone Closed Curves,” *IEICE Transactions on Information and Systems*, E84-D(11), pp. 1540-1547, 2001, (with K. Sugihara).
- [33] “Minimizing the Distortion of Affine Spline Motions,” *Graphical Models*, Vol. 64, No. 2, pp. 128–144, 2002, (with D.-E. Hyun and B. Jüttler).
- [34] “Efficient Collision Detection for Moving Ellipsoids Using Simple Algebraic Test and Separating Planes,” *Computing*, Vol. 71, Nos 1–2, pp. 171–183, 2004, (with W. Wang, Y.-K. Choi, B. Chan, and J. Wang).
- [35] “The Convex Hull of Freeform Surfaces,” *Computing*, Vol. 71, Nos 1–2, pp. 235–246, 2004, (with J.-K. Seong, G. Elber, and J. Johnstone).
- [36] “Intersecting a Freeform Surface with a General Swept Surface,” *Computer-Aided Design*, Vol. 37, No. 5, pp. 473–483, 2005, (with J.-K. Seong, K.-J. Kim, G. Elber, and R. Martin).
- [37] “Are Two Curves the Same?,” *Computer-Aided Design and Applications*, Vol. 2, Nos 1–4, pp. 85–94, 2005, (with D. Pekerman, J.-K. Seong, and G. Elber).
- [38] “Computing the Minimum Enclosing Circle of a Set of Planar Curves,” *Computer-Aided Design and Applications*, Vol. 2, Nos 1–4, pp. 301–308, 2005, (with G. Barequet and G. Elber).
- [39] “Precise Global Collision Detection in Multi-axis NC-machining,” *Computer-Aided Design*, Vol. 37, No. 9, pp. 909–920, 2005, (with O. Ilushin, G. Elber, D. Halperin, and R. Wein).
- [40] “Sweep-based Human Deformation,” *The Visual Computer*, Vol. 21, Nos 8–10, pp. 542–550, 2005, (with D.-E. Hyun, S.-H. Yoon, J.-W. Chang, J.-K. Seong, and B. Jüttler).
- [41] “Continuous Collision Detection for Two Moving Elliptic Disks,” *IEEE Transactions on Robotics*, Vol. 22, No. 2, pp. 213–224, 2006, (with Y.-K. Choi, W. Wang, and Y. Liu).
- [42] “Perspective Silhouette of a General Swept Volume,” *The Visual Computer*, Vol. 22, No. 2, pp. 109–116, 2006, (with J.-K. Seong, K.-J. Kim, and G. Elber).
- [43] “Trimming Local and Global Self-intersections in Offset Curves/Surfaces using Distance Maps,” *Computer-Aided Design*, Vol. 38, No. 3, pp. 183–193, 2006, (with J.-K. Seong and G. Elber).
- [44] “Realistic Human Hand Deformation,” *Computer Animation and Virtual Worlds*, Vol. 17, Nos 3–4, pp. 479–489, 2006, (with J. Lee and S.-H. Yoon).
- [45] “Sweep-based Freeform Deformations,” *Computer Graphics Forum*, Vol. 25, No. 3, 2006, (with S.-H. Yoon).
- [46] “The Kernel of a Freeform Surface and its Duality with the Convex Hull of its Tangential Surface,” *International Journal of Shape Modeling*, Vol. 12, No. 2, pp. 129–142, 2006, (with G. Elber, J. Johnstone, and J.-K. Seong).
- [47] “Human Hand Adaptation using Sweeps: Generating Animatable Hand Models,” *Computer Animation and Virtual Worlds*, Vol. 18, No. 4–5, pp. 505-516, 2007, (with J. Lee).

- [48] “Variational 3D Shape Segmentation for Bounding Volume Computation,” *Computer Graphics Forum*, Vol. 26, No. 3, pp. 329–338, 2007, (with L. Lu, Y.-K. Choi, and W. Wang).
- [49] “Precise Voronoi Cell Extraction of Free-form Rational Planar Closed Curves,” *International Journal of Computational Geometry and Applications*, Vol. 17, No. 5, pp. 453–486, 2007, (with I. Hanniel, R. Muthuganapathy, and G. Elber).
- [50] “Self-Intersection Detection and Elimination in Freeform Curves,” *Computer-Aided Design*, Vol. 40, No. 2, pp. 152–159, 2008, (with E. Pekerman and G. Elber).
- [51] “Sweep-Based Plausible Elastic Deformations,” *ETRI Journal*, Vol. 30, No. 1, pp. 152–154, 2008, (with Seung-Hyun Yoon and Choong-Gyoo Lim).
- [52] “A Construction of Rational Manifold Surfaces of Arbitrary Topology and Smoothness from Triangular Meshes,” *Computer Aided Geometric Design*, Vol. 25, No. 9, pp. 801–815, 2008, (with Giovanni Della Vecchia and Bert Juttler).
- [53] “Continuous Collision Detection for Ellipsoids,” *IEEE Transactions on Visualization and Computer Graphics*, Vol. 15, No. 2, pp. 311–324, 2009, (with Yi-King Choi, Jung-Woo Chang, Wenping Wang, and Gershon Elber).
- [54] “Efficient Triangle-triangle Intersection Test for OBB-based Collision Detection,” *Computers & Graphics*, Vol. 33, No. 3, pp. 235–240, 2009, (with Jung-Woo Chang).
- [55] “Patches: Character Skinning with Local Deformation Layer,” *Computer Animation and Virtual Worlds*, Vol. 20, Nos 2–3, pp. 321–331, 2009, (with Jieun Lee and Seung-Hyun Yoon).
- [56] “Surface Self-intersection Computation via Algebraic Decomposition,” *Computer-Aided Design*, Vol. 41, No. 12, pp. 1060–1066, 2009, (with Gershon Elber and Tom Grandine).
- [57] “Efficient Collision Detection using a Dual OBB-sphere Bounding Volume Hierarchy,” *Computer-Aided Design*, Vol. 42, No. 1, pp. 50–57, 2010, (with Jung-Woo Chang and Wenping Wang).
- [58] “Precise Hausdorff Distance Computation for Planar Freeform Curves using Biarcs and Depth Buffer,” *The Visual Computer*, Vol. 26, Nos. 6–8, pp. 1007–1016, 2010, (with Yong-Joon Kim, Young-Taek Oh, Seung-Hyun Yoon, and Gershon Elber).
- [59] “Precise Hausdorff Distance Computation between Polygonal Meshes,” *Computer Aided Geometric Design*, Vol. 27, No. 8, pp. 580–591, 2010, (with Michael Barton, Iddo Hanniel, and Gershon Elber).
- [60] “Computing the Minimum Enclosing Sphere of Free-form Hypersurfaces in Arbitrary Dimensions,” *Computer-Aided Design*, Vol. 43, No. 3, pp. 247–257, 2011, (with Ramanathan Muthuganapathy, Gershon Elber, and Gill Barequet).
- [61] “Computation of the Minimum Distance between Two Bézier Curves/Surfaces,” *Computers & Graphics*, Vol. 35, No. 3, pp. 677–684, 2011 (with Jung-Woo Chang, Yi-King Choi, and Wenping Wang).
- [62] “Efficient Convex Hull Computation for Planar Freeform Curves,” *Computers & Graphics*, Vol. 35, No. 3, pp. 698–705, 2011 (with Yong-Joon Kim, Jieun Lee, and Gershon Elber).

- [63] “Coons BVH for Freeform Geometric Models,” *ACM Trans. on Graphics (SIGGRAPH Asia)*, Vol. 30, No. 6, Article 169, 2011, (with Yong-Joon Kim, Young-Taek Oh, Seung-Hyun Yoon, and Gershon Elber).
- [64] “Continuous Point Projection to Planar Freeform Curves,” *The Visual Computer*, Vol. 28, No. 1, pp. 111–123, 2012, (with Young-Taek Oh, Yong-Joon Kim, Jieun Lee, and Gershon Elber).
- [65] “Efficient Point Projection to Freeform Curves and Surfaces,” *Computer Aided Geometric Design*, Vol. 29, No. 5, pp. 242–254, 2012, (with Young-Taek Oh, Yong-Joon Kim, Jieun Lee, and Gershon Elber).
- [66] “Volumetric Boolean Sum,” *Computer Aided Geometric Design*, Vol. 29, No. 7, pp. 532–540, 2012, (with Yong-Joon Kim and Gershon Elber).
- [67] “Efficient Offset Trimming for Planar Rational Curves using Biarc Trees,” *Computer Aided Geometric Design*, Vol. 29, No. 7, pp. 555–564, 2012, (with Yong-Joon Kim, Jieun Lee, and Gershon Elber).
- [68] “Efficient Hausdorff Distance Computation for Freeform Geometric Models in Close Proximity,” *Computer-Aided Design*, Vol. 45, No. 2, pp. 270–276, 2013, (with Yong-Joon Kim, Young-Taek Oh, Seung-Hyun Yoon, and Gershon Elber).

Publications in Fully Refereed Conference Proceedings:

- [69] “Generation of Configuration Space Obstacles: The Case of Moving Algebraic Curves,” *Proc. 1987 IEEE Int’l Conf. on Robotics and Automation*, North Carolina, pp. 979–984, (with C. Bajaj).
- [70] “Compliant Motion Planning with Geometric Models,” *Proc. Third ACM Symposium on Computational Geometry*, Waterloo, Canada, pp. 171–180, 1987, (with C. Bajaj).
- [71] “Algorithms for Planar Geometric Models,” *Proc. 15th Int’l Colloquium on Automata, Languages and Programming (ICALP)*, (Tampere, Finland, July 1988), *Lecture Notes in Computer Science*, Springer-Verlag, pp. 67–81, (with C. Bajaj).
- [72] “Rotational Sweep Volumes of Objects Bounded by Algebraic Curves,” *Proc. 1990 IEEE Int’l Conf. on Robotics and Automation*, Cincinnati, Ohio, pp. 311–316, (with S.R. Moon).
- [73] “Gaussian Approximations of Objects Bounded by Algebraic Curves,” *Proc. 1990 IEEE Int’l Conf. on Robotics and Automation*,
- [74] “Motion Planning with Planar Geometric Models,” *Proc. 1991 IEEE Int’l Conf. on Robotics and Automation*, Sacramento, California, pp. 1015–1020, (with S.R. Moon and K.H. Lee).
- [75] “Primitive Geometric Operations on Planar Algebraic Curves with Gaussian Approximations,” *Visual Computing*, T.L. Kunii (ed.), Springer-Verlag, Tokyo, (*Proc. of CG International ’92*, Tokyo, June 22–26), pp. 449–468, 1992, (with I.K. Lee).
- [76] “Approximate General Sweep Boundary of 2D Object,” *Visual Computing*, T.L. Kunii (ed.), Springer-Verlag, Tokyo, (*Proc. of CG International ’92*, Tokyo, June 22–26), pp. 547–566, 1992, (with J.W. Ahn and S.B. Lim).

- [77] “Interpolating Solid Orientations with Circular Blending Quaternion Curves,” *Communicating with Virtual Worlds*, N.M. Thalmann (ed.), Springer-Verlag, Tokyo, (*Proc. of CG International '93*, Lausanne, Switzerland, June 21–25), pp. 258–269, 1993, (with K.W. Nam).
- [78] “Modeling Generalized Cylinders with Variable Radius Offset Space Curves,” *Computer Graphics and Applications*, S.Y. Shin and T.L. Kunii (eds.), World-Scientific, Singapore, (*Proc. of Pacific Graphics '93*, Seoul, Korea, Aug. 30–Sept. 2), pp. 20–34, 1993, (with E.J. Park).
- [79] “A C^2 -continuous B-spline Quaternion Curve Interpolating a Given Sequence of Solid Orientations,” *Proc. of Computer Animation '95*, pp. 72–81, Geneva, Switzerland, April 19–21, 1995, (with M.J. Kim and S.Y. Shin).
- [80] “Through-the-Lens Camera Control with a Simple Jacobian Matrix,” *Proc. of Graphics Interface '95*, pp. 171–178, Québec City, Canada, May 15–19, 1995, (with M.H. Kyung and S.J. Hong).
- [81] “Hermite Interpolation of 3D Orientations Using Geodesic Quaternion Curves,” *Computer Graphics: Development in Virtual Environments*, R. Earnshaw and J. Vince (eds.), Academic Press, pp. 171–183, (*Proc. of CG International '95*, Leeds, UK, June 25–30), 1995, (with K.W. Nam).
- [82] “Pseudo Dynamic Keyframe Animation with Motion Blending on the Configuration Space of a Moving Mechanism,” *Computer Graphics and Applications*, S.Y. Shin and T.L. Kunii (eds.), World-Scientific, Singapore, (*Proc. of Pacific Graphics '95*, Seoul, Korea, August 21–24), pp. 118–132, 1995, (with J.H. Lee).
- [83] “New Approximation Methods of Planar Offset and Convolution Curves,” *Theory and Practice of Geometric Modeling*, W. Strasser, R. Klein, and R. Rau (eds.), Springer-Verlag, Berlin, 1997, pp. 83–101, (*Proc. of Blaubeuren II*, Univ. of Tübingen, Germany, October 14–18), 1996, (with I.K. Lee and G. Elber).
- [84] “The Bisector Surface of Freeform Rational Space Curves,” *Proc. the 13th Annual ACM Symposium on Computational Geometry*, Video Paper, Nice, France, June 4–6, pp. 473–474, 1997, (with G. Elber).
- [85] “Computing All Conics Sections in Torus and Natural Quadric Intersections,” *Proc. Israel-Korea Bi-National Conference on New Themes in Computer Aided Geometric Modeling*, Tel Aviv, Israel, February 18–19, 1998, pp. 11–20, (with K.-J. Kim).
- [86] “Rational Bisectors of Rational Varieties,” *Proc. Israel-Korea Bi-National Conference on New Themes in Computer Aided Geometric Modeling*, Tel Aviv, Israel, February 18–19, 1998, pp. 21–27, (with G. Elber).
- [87] “The Minkowski Sum of 2D Curved Objects,” *Proc. Israel-Korea Bi-National Conference on New Themes in Computer Aided Geometric Modeling*, Tel Aviv, Israel, February 18–19, 1998, pp. 155–164, (with I.-K. Lee and G. Elber).
- [88] “Direct Manipulation of Generalized Cylinders,” *Proc. Geometric Modeling and Processing '98*, Pohang, Korea, April 7–8, 1998, pp. 205–214, (with T.I. Chang, J.-H. Lee, and S.J. Hong).

- [89] “A Simple Algorithm for Torus/Sphere Intersection,” *Proc. Geometric Modeling and Processing '98*, Pohang, Korea, April 7–8, 1998, pp. 205–214, (with K.-J. Kim).
- [90] “Ruled/Ruled Surface Intersection,” *Proc. Geometric Modeling and Processing '98*, Pohang, Korea, April 7–8, 1998, pp. 215–223, (with H.-S. Heo and G. Elber).
- [91] “Intersecting Surfaces of Special Types,” *Proc. of Shape Modeling International '99*, Univ. of Aizu, Japan, March 1–4, 1999, pp. 122–128.
- [92] “Rational Bisectors of CSG Primitives,” *Proc. of ACM Symp. on Solid Modeling and Applications*, Ann Arbor, Michigan, June 9–11, 1999, (with G. Elber).
- [93] “A Computational Model for Nonrational Bisector Surfaces: Curve–Surface and Surface–Surface Bisectors,” *Proc. of Geometric Modeling and Processing 2000*, Hong Kong, April 10–12, 2000, (with G. Elber).
- [94] “Convex Hull of Rational Plane Curves,” *Proc. of The First Korea-UK Workshop on Geometric Modeling and Computer Graphics 2000*, pp. 197–206, Seoul, Korea, April 6–7, 2000, (with G. Elber and H.-S. Heo).
- [95] “The Intersection of Two Ringed Surfaces,” *Proc. of Pacific Graphics 2000*, pp. 146–153, Hong Kong, China, October 3–5, 2000, (with H.-S. Heo, S. Hong, and G. Elber).
- [96] “The Intersection of Simple Sweep Surfaces,” *Proc. of Geometric Processing for Innovative Applications*, pp. 1–17, Riken, Japan, July 21, 2000.
- [97] “An Algebraic Condition for the Separation of Two Ellipsoids,” *Proc. of Geometric Processing for Innovative Applications*, pp. 85–91, Riken, Japan, July 21, 2000, (with W. Wang, J. Wang).
- [98] “Problem Reduction to Parameter Space,” *The Mathematics of Surfaces IX*, pp. 82–98, Cambridge, UK, September 4–7, 2000, (with G. Elber).
- [99] “Degree Reduction for Geometric Constraints,” *Proc. of Japan-Korea Joint Workshop on Algorithms and Computation*, pp. 103–109, Tokyo, Japan, July 21–22, 2000.
- [100] “Minimizing the Distortion of Affine Spline Motions,” *Proc. of Pacific Graphics 2001*, pp. 50–59, Tokyo, Japan, October 16–18, 2001, (with D.-E. Hyun and B. Jüttler).
- [101] “A Physical 3D Trackball,” *Proc. of Pacific Graphics 2001*, pp. 134–138, Tokyo, Japan, October 16–18, 2001, (with J.-K. Seong, D.-E. Hyun, K.-H. Lee, and Y.-J. Choi).
- [102] “The Convex Hull of Rational Surfaces,” *Proc. of Israel-Korea Binational Conference on Geometric Modeling and Computer Graphics*, pp. 171–175, Seoul, Korea, October 11–12, 2001, (with J.-K. Seong and G. Elber).
- [103] “Geometric Constraint Solver using Multivariate Rational Spline Functions,” *Proc. of The 6th ACM Symposium on Solid Modeling and Applications*, pp. 1–10, Ann Arbor, Michigan, USA, June 4–8, 2001, (with G. Elber).
- [104] “The Minkowski Sum of Two Simple Surfaces Generated by Slope-Monotone Closed Curves,” *Proc. of Geometric Modeling and Processing 2002*, pp. 33–42, Saitama, Japan, July 10–12, 2002, (with J.-K. Seong and K. Sugihara).

- [105] “Computing Distances Between Surfaces Using Line Geometry,” *Proc. of Pacific Graphics 2002*, pp. 236–245, Beijing, China, October 9–11, 2002, (with K.-A. Sohn, B. Jüttler, and W. Wang).
- [106] “Polynomial Decomposition,” *Proc. of 4th Israel-Korea Binational Conference on Geometric Modeling and Computer Graphics*, pp. 34–39, Ramat Aviv, Israel, February 12–14, 2003, (with J.-K. Seong and G. Elber).
- [107] “A Problem Reduction Scheme for Solving Geometric Constraints,” *Proc. of 4th Israel-Korea Binational Conference on Geometric Modeling and Computer Graphics*, pp. 34–39, Ramat Aviv, Israel, February 12–14, 2003, (with G. Elber).
- [108] “Modeling and Animation of Arms and Legs Based on Ellipsoidal Sweeping,” *Proc. of Pacific Graphics 2003*, pp. 204–212, Canmore, Canada, October 8–10, 2003, (with D.-E. Hyun, S.-H. Yoon, and B. Jüttler).
- [109] “Intersecting a Freeform Surface with a Ruled or a Ringed Surface,” *Proc. of Geometric Modeling and Processing 2004*, pp. 38–45, Beijing, China, April 13–15, 2004, (with J.-K. Seong, K.-J. Kim, and G. Elber).
- [110] “Analyzing and Enhancing the Robustness of Implicit Representations,” *Proc. of Geometric Modeling and Processing 2004*, pp. 131–140, Beijing, China, April 13–15, 2004, (with M. Aigner and B. Jüttler).
- [111] “Perspective Silhouette of a General Swept Volume,” *Proc. of The 5th Korea-Israel Binational Conference on Geometric Modeling and Computer Graphics*, pp. 97–101, Seoul, Korea, October 11–12, 2004, (with J.-K. Seong, K.-J. Kim, and G. Elber).
- [112] “The Kernel of Freeform Surfaces and its Duality with the Convex Hull,” *Proc. of The 6th Israel-Korea Bi-National Conference on New Technologies and Visualization Methods for Product Development on Design and Reverse Engineering*, pp. 26–30, Haifa, Israel, November 8–9, 2005, (with G. Elber, J.-K. Seong, and J.K. Johnstone).
- [113] “Approximate Rational Parameterization of Implicitly Defined Surfaces,” *Proc. of Mathematics of Surfaces XI*, University of Loughborough, UK, September 5–7, 2005, (with E. Wurm and B. Jüttler).
- [114] “Precise Voronoi Cell Extraction of Free-form Rational Planar Closed Curves,” *Proc. of ACM Symposium on Solid and Physical Modeling 2005*, pp. 51–59, MIT, USA, June 13–15, 2005, (with I. Hanniel, R. Muthuganapathy, and G. Elber).
- [115] “Contouring 1- and 2-Manifolds in Arbitrary Dimensions,” *Proc. of International Conference on Shape Modeling and Applications 2005*, pp. 216–225, MIT, USA, June 15–17, 2005. (with J.-K. Seong and G. Elber).
- [116] “Geometric Computations in Parameter Space,” *Proc. of Spring Conference on Computer Graphics 2005*, Budmerice Castle, Slovak Republic, May 12–14, 2005, (with G. Elber and J.-K. Seong).

RESEARCH GRANTS

(US\$1.00 \approx 800–900 Won until Oct. 1997; US\$1.00 \approx 1100 Won in 2010)

- [1] Principal Investigator, “Motion Planning with Planar Geometric Models,” RIST Grant R92353, 8,459,000 Won, 3/1/89–2/28/90.
- [2] Principal Investigator, “Geometric Modeling on Symbolics 3650 Lisp Machine,” POSTECH Grant P92303, 13,895,000 Won, 4/1/89–2/28/90.
- [3] Principal Investigator (with S.H. Suh), “Geometric Reasoning for Robust CAD/CAM Systems,” Ministry of Education, H92386, 5,000,000 Won, 8/1/89–7/31/90.
- [4] Principal Investigator, “Graphics Animation for Direct-Drive Robots,” RIST Grant RF0244, 15,590,000 Won, 1/1/90–12/31/90.
- [5] Principal Investigator, “General Sweep Volume Computation for Planar Geometric Models,” RIST Grant R90041, 5,406,000 Won, 3/1/90–2/28/91.
- [6] Principal Investigator, “Meta Font Design System,” Human Computer Inc., I90104, 7,000,000 Won, 7/1/90–2/28/91.
- [7] Principal Investigator, “Outline Approximation for Meta Fonts,” Human Computer Inc., I91094, 5,000,000 Won, 3/1/91–8/31/91.
- [8] Principal Investigator, “Algorithms for Korean Decorative Fonts,” Human Computer Inc., I91185, 5,000,000 Won, 9/1/91–2/28/92.
- [9] Co-Investigator (with C.M. Park), “Graphics Animation Software System,” RIST Grant F91209, 117,283,000 Won, 2/1/91–2/28/93.
- [10] Co-Investigator (with C.M. Park), “Continuous System Simulation Language and Application Softwares for PC,” TriGem Computer Inc., I91077, 68,000,000 Won, 3/1/91–2/28/92.
- [11] Principal Investigator, “Flexible Object Modeling and Animation Systems,” KOSEF Grant K91160, 37,000,000 Won, 9/1/91–8/31/94.
- [12] Co-Investigator (with C.M. Park), “Animation Movies for POSCO Advertisement,” POSCO Grant A2125, 660,468,651 Won, 1/1/92–12/31/93.
- [13] Principal Investigator, “Computer Animation for POSCO Rolling Process,” PIRL Grant B93908, 30,000,000 Won, 3/1/93–2/28/94.
- [14] Principal Investigator, “Light Simulation for Automobile Headlamp Design (I),” Samdo Inc., I93923, 40,000,000 Won, 5/1/93–6/1/94.
- [15] Co-Investigator (with C.M. Park), “Animation Movies for POSCO High-Tech Research and Development,” POSCO Grant A94903, 448,217,848 Won, 1/1/94–12/31/94.
- [16] Principal Investigator, “Virtual Camera Control,” KAIST, N94953, 30,000,000 Won, 9/1/94–8/31/95.
- [17] Principal Investigator, “Light Simulation for Automobile Headlamp Design (II),” Samdo Inc., I94953, 20,000,000 Won, 12/1/94–8/31/95.

- [18] Principal Investigator, “Light Simulation for Automobile Headlamp Design (III),” Samdo Inc., I95912, 20,000,000 Won, 9/1/95–2/28/96.
- [19] Principal Investigator, “Surface/Surface Intersection (I),” SERI, N95921, 25,000,000 Won, 9/1/95–8/31/96.
- [20] Principal Investigator, “3D User Interface with Multiple Devices,” ETRI, N96057, 38,500,000 Won, 4/1/96–12/31/96.
- [21] Principal Investigator, “Approximation Methods for Freeform Surfaces,” PIRL, 96F502, 20,000,000 Won, 3/1/96–2/28/97.
- [22] Principal Investigator, “Surface/Surface Intersection (II),” SERI, N96918, 30,000,000 Won, 1/1/97–7/31/97.
- [23] Principal Investigator, “Geometric Representation and Processing of Engineering Problemns in Constraint Spaces,” KOSEF, K96295, 55,000,000 Won, 1/1/97–12/31/98.
- [24] Principal Investigator, “Modeling and Animation of Generalized Cylinders,” ETRI, N97915, 30,000,000 Won, 4/1/97–11/30/97.
- [25] Principal Investigator, “Surface/Surface Intersection (III),” SERI, N97929, 30,000,000 Won, 1/1/98–7/31/98.
- [26] Principal Investigator, “Geometric Modeling Based on B-spline Motion,” ETRI, N98043, 18,000,000 Won, 4/1/98–10/31/98.
- [27] Principal Investigator, “Flexible Shape Modeling and Animation Based on B-spline Motions,” MOE, 30,000,000 Won, 12/1/98–11/30/00.
- [28] Principal Investigator, “Merging Two Polygonal Meshes,” ETRI, 15,000,000 Won, 4/16/99–11/30/99.
- [29] Principal Investigator, “Convex Hulls of Freeform Plane Curves,” SNU, 7,000,000 Won, 6/1/99–5/31/00.
- [30] Principal Investigator, “Rendering Module for Ha-Hoe System,” ETRI, 25,000,000 Won, 6/22/99–11/30/99.
- [31] Principal Investigator, “Volume-Based B-spline Modeling,” MIC, 35,000,000 Won, 7/1/99–6/30/00.
- [32] Principal Investigator, “Shape Modeling and Processing Based on 3D Painting,” MIC, 43,500,000 Won, 7/1/99–6/30/01.
- [33] Principal Investigator, “3D Graphics-Based GIS Components,” ETRI, 30,000,000 Won, 6/1/00–11/30/00.
- [34] Principal Investigator, “Measurement on 3D Human Models,” MOCIE, 90,000,000 Won, 6/1/01–5/31/03.
- [35] Co-Investigator, “3D Modeling and Control Techniques,” ITRC, 112,000,000 Won, 8/1/01–7/31/03.

- [36] Co-Investigator, “3D Human Modeling and Deformation,” ITRC, 80,000,000 Won, 9/1/03–7/31/04.
- [37] Co-Investigator, “Freeform Shape Modeling,” NRL, 175,000,000 Won, 9/1/99–8/31/04.
- [38] Co-Investigator, “Real-time Computer Graphics,” KOSEF, 81,000,000 Won, 9/1/02–8/31/05.
- [39] Principal Investigator, “Computational Geometry for Geometric Modeling and Computer Graphics,” KISTEP, 68,000,000 Won, 12/1/02–11/30/04.
- [40] Principal Investigator, “Network 3D Graphics Interface for Remote Maintenance of Industrial Equipments,” RIST, 20,000,000 Won, 8/1/04–7/31/06.
- [41] Co-Investigator, “3D Human Modeling and Deformation,” ITRC, 70,000,000 Won, 9/1/04–8/31/05.
- [42] Co-Investigator, “Sweep-Based Freeform Deformation,” ITRC, 70,000,000 Won, 9/1/05–8/31/06.
- [43] Co-Investigator, “Collision Detection for Sweep-Based Geometric Models,” ITRC, 70,000,000 Won, 9/1/06–8/31/07.
- [44] Principal Investigator, “3D Data Processing Paradigm for Spline-Based Geometry Engine,” Ministry of Education, 98,928,000 Won, 12/1/05–11/30/06.
- [45] Principal Investigator, “Graphics Interface for Remote Education System,” KOSEF, 24,800,000 Won, 3/1/06–2/28/07.
- [46] Principal Investigator, “Multi-User Interface for Manipulating 2D/3D Data over Network,” Microsoft, 30,000,000 Won, 4/1/06–3/31/07.
- [47] Principal Investigator, “Sweep-Based Muscle Deformation Techniques for 3D Game Characters,” ETRI, 27,000,000 Won, 9/1/06–2/28/07.
- [48] Principal Investigator, “Pen-Stroke Sketch Interface for Drawing 2D/3D Figures by Collaborative Multi-Users over the Network for Applications in e-Education,” Microsoft, 18,868,000 Won, 4/1/07–3/31/08.
- [49] Principal Investigator, “Distance and Voronoi Analysis for Freeform Shapes,” Korea Foundation for International Cooperation of Science & Technology, 56,250,000 Won, 12/1/07–2/28/10.
- [50] Principal Investigator, “Sketch Interface for Searching and Drawing Figures for Mathematics Education,” Microsoft, 18,518,000 Won, 5/8/08–5/7/09.
- [51] Principal Investigator, “Efficient Trimming Techniques for Geometric Processing of Freeform Shapes,” Ministry of Education, 49,200,000 Won, 11/1/08–10/30/09.
- [52] Principal Investigator, “Efficient Geometric Processing System for Mobile 3D Applications,” National Research Foundation of Korea, 300,000,000 Won, 5/1/10–4/30/13.
- [53] Principal Investigator, “Accelerating and Stabilizing Geometric Algorithms for Freeform Shapes,” Korea Foundation for International Cooperation of Science & Technology, 50,000,000 Won, 1/1/11–12/31/12.

- [54] Principal Investigator, “Development of Computational Human Organ Model for Biomechanical Deformation Simulation,” Seoul National University, 30,000,000 Won, 3/1/11-8/31/12.
- [55] Principal Investigator, “Sweep-based Plant Modeling,” ETRI, 150,000,000 Won, 4/1/11-3/31/13.

Ph.D. STUDENTS

- [1] In-Kwon Lee, “New Approximation Methods for 2D Curve Offset and Convolution,” Department of Computer Science, POSTECH, *Awarded* February 1997.
- [2] Jung-Ju Choi, “Local Canonical Cubic Curve Tracing along Surface/Surface Intersections,” Department of Computer Science, POSTECH, *Awarded* February 1997.
- [3] Ku-Jin Kim, “Torus and Simple Surface Intersection Based on a Configuration Space Approach,” Department of Computer Science, POSTECH, *Awarded* February 1998.
- [4] Kee-Won Nam, “Spherical Blending Algorithms for Interpolating Unit Quaternions,” Department of Computer Science, POSTECH, *Awarded* February 1999.
- [5] Joo-Haeng Lee, “General Sweep Boundary Construction Based on Envelope and Set Operations,” Department of Computer Science, POSTECH, *Awarded* August 1999.
- [6] Hee-Seok Heo, “The intersection of Two Ruled and/or Ringed Surfaces,” Department of Computer Science, POSTECH, *Awarded* February 2000.
- [7] Tae-Ick Chang, “Interactive Design of Swept Objects,” Department of Computer Science, POSTECH, *Awarded* February 2000.
- [8] Jaewoo Ahn, “Approximating 2D and 3D General Sweep Boundary,” Department of Computer Science, POSTECH, *Awarded* August 2003.
- [9] Kwan-Hee Lee, “A Study on the Optimal Moving Path and the Collaborative Mobile Maintenance of Reclaimer,” Department of Computer Science, POSTECH, *Awarded* February 2007.
- [10] Dae-Eun Hyun, “Three-Dimensional Shape Modeling Based on Affine Spline Motions,” School of Computer Science and Engineering, Seoul National University, *Awarded* August 2004.
- [11] Joon-Kyung Seong, “A Problem Reduction Scheme for Solving Geometric Constraints and Its Applications,” School of Computer Science and Engineering, Seoul National University, *Awarded* February 2005.
- [12] Seung-Hyun Yoon, “Sweep-based Approach to Three-Dimensional Deformation,” School of Computer Science and Engineering, Seoul National University, *Awarded* February 2007.
- [13] Jieun Lee, “Shape Modeling and Deformation with Layered Geometric Representation,” School of Computer Science and Engineering, Seoul National University, *Awarded* February 2007.

- [14] Dae-Hyun Ko, “Efficient Rendering of Surfaces Based on Programmable Graphics Hardware,” School of Computer Science and Engineering, Seoul National University, *Awarded* August 2007.
- [15] Jung-Woo Chang, “Efficient Collision Detection Algorithms for 3D Moving Objects,” School of Computer Science and Engineering, Seoul National University, *Awarded* August 2008.
- [16] Young-Taek Oh, “Efficient Point Projection to Freeform Geometric Models,” School of Computer Science and Engineering, Seoul National University, *Awarded* August 2011.
- [17] Yong-Joon Kim, “Accelerating Geometric Operations for Freeform Models,” School of Computer Science and Engineering, Seoul National University, *Awarded* February 2012.