

Curriculum Vitae

Sung Woo Choi

Address:

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Korea Institute for Advanced Study
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Education

Ph.D. in Mathematics, February 1999, Seoul National University, Seoul, Korea

Thesis: Minkowski Sum of Semi-convex Domains in \mathbb{R}^2
Supervisor: Prof. Hyeong In Choi

M.S. in Mathematics, February 1993, Seoul National University, Seoul, Korea

Thesis: A Proof of the Second Shannon Theorem

B.S. in Physics, February 1991, Seoul National University, Seoul, Korea

Professional Experience

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| 2003.3 – | Research Fellow, Korea Institute for Advanced Study, Seoul, Korea |
| 2002.9 – 2003.2 | Senior Researcher, Digital Media Institute
Sejong University, Seoul, Korea |
| 2000.3 – 2002.8 | Postdoctoral Fellow, Max Planck Institute for Computer
Science, Saarbrücken, Germany |
| 1999.3 – 2000.2 | Research Assistant Professor, Center for Artificial
Vision Research, Korea University, Seoul, Korea |
| 1992.3 – 1999.2 | Research Associate, Department of Mathematics
Seoul National University, Seoul, Korea |

Awards

High Impact Paper (or Citation Classic) in 2000 from Institute for Scientific Information, the publisher of Science Citation Index, for the following paper:

H.I. Choi, S. W. Choi and H.P. Moon, "Mathematical Theory of Medial Axis Transform," *Pacific Journal of Mathematics*, Vol. 181, No. 1, pp. 57–88, 1997.

Post-Graduate Scholarship from Daewoo Foundation, 1996.

Pre-Doctoral Scholarship from Korea Research Foundation, 1994.

Research Interests

Applied Differential Geometry, Geometric and Solid Modeling, Computer Graphics/Vision, Image Processing, Computational Geometry

Publications

Journals and Refereed Conference Proceedings:

S. W. Choi and H.-P. Seidel, "Linear One-sided Stability of MAT for Weakly Injective 3D Domains," to appear in *Computer-Aided Design*.

S. W. Choi, "Minkowski Sum of Semi-convex Domains in \mathbb{R}^2 ," *Dissertationes Mathematicae*, Vol. 411, pp. 1–55, 2002.

S. W. Choi and H.-P. Seidel, "Linear One-sided Stability of MAT for Weakly Injective Domain," *Journal of Mathematical Imaging and Vision*, Vol. 17, No. 3, pp. 237–247, 2002.

S. W. Choi and H.-P. Seidel, "Linear One-sided Stability of MAT for Weakly Injective 3D Domains," *7th ACM Symposium on Solid Modeling and Applications 2002*, Saarbrücken, Germany, June 17–21, 2002.

S. W. Choi and Hans-Peter Seidel, "Hyperbolic Hausdorff Distance for Medial Axis Transform," *Graphical Models*, Vol. 63, No. 5, pp. 369–384, 2001.

S. W. Choi and H.-P. Seidel, "One-sided Stability of MAT and its Applications," *Vision, Modeling, and Visualization 2001*, Stuttgart, Germany, pp. 291–298, November 21–23, 2001.

S. W. Choi and H.-P. Seidel, "One-sided Stability of Medial Axis Transform," *Proceedings of Pattern Recognition, 23rd DAGM Symposium*, Munich, Germany, pp. 132–139, September 12–14, 2001. (Lecture Notes in Computer Science, vol. 2191)

S.-W. Lee, Y.-M. Kim and S. W. Choi, "Fast Scene Change Detection Using Direct Feature Extraction from MPEG Compressed Videos," *IEEE Trans. on Multimedia*, Vol. 2, No. 4, pp. 240–254, 2000.

S. W. Choi and S.-W. Lee, "Stability Analysis of Medial Axis Transform under Relative Hausdorff Distance", *15th International Conference on Pattern Recognition*, Barcelona, Spain, vol. 3, pp. 139–142, September 3–8, 2000.

Y.-M. Kim, S. W. Choi and S.-W. Lee, "Fast Scene Change Detection Using Direct Feature Extraction from MPEG Compressed Videos", *15th International Conference on Pattern Recognition*, Barcelona, Spain, vol. 3, pp. 178–181, September 3–8, 2000.

H. I. Choi, S. W. Choi, H. P. Moon and N.-S. Wee, "New Algorithm for Medial Axis Transform of Plane Domain," *Graphical Models and Image Processing*, Vol. 59, No. 6, pp. 463–483, 1997.

H. I. Choi, S. W. Choi and H. P. Moon, "Mathematical Theory of Medial Axis Transform," *Pacific Journal of Mathematics*, Vol. 181, No. 1, pp. 57–88, 1997.

Preprints:

H. I. Choi, S. W. Choi, C. Y. Han, H. P. Moon, K. H. Roh, N.-S. Wee, "Two-dimensional Offsets via Medial Axis Transform II: Algorithm," 2001.

H. I. Choi, S. W. Choi, C. Y. Han, H. P. Moon, K. H. Roh, N.-S. Wee, "Two-dimensional Offsets via Meidal Axis Transform I: Mathematical Theory," 2001.

S. W. Choi and H.-P. Seidel, "Hyperbolic Hausdorff Distance for Medial Axis Transform," Research Report, MPI-I-2000-4-003, 2000.

S. W. Choi and S.-W. Lee, "Stability Analysis of Medial Axis Transform under Relative Hausdorff Distance," 1999.

In Preparation:

S. W. Choi and H.-P. Seidel, "Medial Axis Transform is One-sidedly Stable".

S. W. Choi, "Monotone-Visibility: A Non-differentiable Generalization of Semi-convexity for Planar Shapes".

Theses:

Minkowski Sum of Semi-convex Domains in \mathbb{R}^2 , Ph.D. Thesis, Department of Mathematics, Seoul National University, Seoul, Korea, February 1999.

A Proof of the Second Shannon Theorem, M.S. Thesis, Department of Mathematics, Seoul National University, Seoul, Korea, February 1993.

Invited Talks:

"Medial Axis Transform: Shape, Algorithm, and Stability," *Tenth International Colloquium on Numerical Analysis and Computer Science with Applications*, Plovdiv, Bulgaria, August, 2001.

Teaching Experience

Co-Supervision of Graduate Students (jointly with Prof. Dr. Hans-Peter Seidel), Max Planck Institute for Computer Science, 2000–2001.

Seminar Course, Advanced Topics in Computer Graphics, Max Planck Institute for Computer Science, Fall 2001.

Co-Supervision of Graduate Students (jointly with Prof. Seong-Whan Lee), Center for Artificial Vision Research, 1999. (S.-W. Lee, Y.-M. Kim and S. W. Choi, "Fast Scene Change Detection Using Direct Feature Extraction from MPEG Compressed Videos," *IEEE Trans. on Multimedia*, Vol. 2, No. 4, pp. 240–254, 2000.)

Teaching Assistant for Calculus, Differential Equations, Linear Algebra, *etc.* at Seoul National University in the period from March 1992 to February 1994.

★ Note: In the period from March 1995 to February 2000, I served my military obligations in Korea, which prohibited me (by law) from teaching at the universities or equivalent institutions.

Possible Courses to Teach

Applied Differential Geometry
Computer Aided Geometric Design
Discrete & Applied Mathematics
Computer Graphics & Vision
Image Processing
Computational Geometry

Citizenship

Korean Citizen (South)