

Hee-Kap Ahn *Professor; Vice President, Office of Planning*

안희갑 (安熙甲)

Department of Computer Science and Engineering
Graduate School of Artificial Intelligence
Pohang University of Science and Technology
77 Cheongam-Ro, Nam-gu, Pohang, Gyeongbuk
Republic of Korea • 37673

Contact Information.

- email: heekap@postech.ac.kr
- Homepage: www.postech.ac.kr/~heekap
- Phone number (office): +82 (054) 279-2387

Research Interest

I am interested in most areas of **algorithms**, especially in **computational geometry**, a field of computer science devoted to the study of design and analysis of algorithms for geometry and optimization problems. **Computational geometry** has received a great amount of attention of a vast number of researchers in computer science, as it has many application areas with interest in geometric computing, such as computer aided (geometric) design, computer aided manufacturing, robotics, computer graphics, virtual reality, computer vision, bioinformatics (computational biology) and geographic information systems.

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. Approxima-

tion algorithms are often surprisingly simple yet practical and efficient.

I have also been working on **shape matching** and **shape analysis**. Shape matching is the study of algorithms to compute the similarity between shapes, and it is an important ingredient in shape retrieval from a large database, shape recognition, classification, alignment and registration, and shape approximation and simplification. In shape analysis, we are interested in the structural and combinatorial properties of a shape, such as the location of its (geodesic) center, the subdivision of a shape with respect to sites under geodesic metric, and the smallest/largest figures containing or contained in a shape. Another interesting problem is maintaining geometric structures such as the convex hulls and the Voronoi diagrams of points in a shape in dynamic environments.

I also have a keen interest in **nearest-neighbor search (NNS)** in high dimensions, which has applications in **computer vision** and **artificial intelligence**.

Professional Experience

Pohang University of Science and Technology

POHANG, KOREA

Professor

Sep '16 – Now

Department of Computer Science and Engineering

Professor

Mar '20 – Now

Graduate School of Artificial Intelligence

Vice President (기획처장)

Sep '23 – Now

Office of Planning, POSTECH

Director

Sep '23 – Now

Apple Developer Academy, Apple Manufacturing R&D Accelerator

Mueunjae Endowed Chair Professor

Jun '19 – Aug '23

(무은재(無垠齋) 석좌교수)

Vice Director

Sep '22 – Aug '23

Institute of Artificial Intelligence, POSTECH

Vice President (학술정보처장) Office of Academic Information Affairs, POSTECH	Sep '19 – Aug '21
Director Machine Learning Research Center, POSTECH	Jun '19 – Feb '21
Adjunct Professor Department of Mathematics	Sep '08 – Dec '23
Associate Professor Department of Computer Science and Engineering	Sep '10 – Aug '16
Assistant Professor Department of Computer Science and Engineering	Jul '07 – Aug '10
Sejong University	SEOUL, KOREA
Assistant Professor Department of Computer Science and Engineering	Mar '06 – Jul '07
Korea Advanced Institute of Science and Technology	DAEJEON, KOREA
Research Assistant Professor Computer Science Division - replacement of military service.	Feb '04 – Feb '06
Korea Institute of Science and Technology	SEOUL, KOREA
Scientific Researcher Imaging Media Research Center - replacement of military service.	Oct '01 – Jan '04

Educational Qualifications

Utrecht University	UTRECHT, THE NETHERLANDS
Ph.D. in Computer Science with a topic in Theoretical Computer Science	December 2001
Title of thesis : <i>Geometric Aspects of the Casting Process</i>	
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	
Pohang University of Science and Technology	POHANG, KOREA
Master of Science degree in Computer Science	February 1998
Title of thesis : <i>Casting with two-part cast: Opposite and Non-opposite cast removal</i>	
Dissertation committee : Professors Otfried Schwarzkopf (advisor), Mark de Berg, Myung-Soo Kim	
Kyungpook National University	DAEGU, KOREA
Bachelor of Engineering degree in Computer Engineering	February 1996

Professional Activities

Workshops and Seminars:

- Seminar talk at Department of Statistics, Seoul National University, Korea (2024)
- Talk at Korea National Diplomatic Academy, Korea (2024)
- Invited talk at New Tech Conference, KNU, Korea (2024)
- Invited talk at Taiwan Theory Day, Taiwan (2023)
- Invited talk at School of Computer Science and Engineering, UNIST, Korea (2023)
- Talk at Korea National Diplomatic Academy, Korea (2023)
- Keynote talk at WAAC 2023 (The 23rd Japan-Korea Joint Workshop on Algorithms and Computation, Nagoya, Japan (2023))

- Invited talk at POSCO ICT, Korea (2023)
- Keynote talk at FAW 2022 (The 16th Conference on Frontiers of Algorithmic Wisdom), Hong Kong (2022)
- Invited talk at MINDS (Mathematical Institute for Data Science), Korea (2022)
- Contributed talk at SWCS 2021 (Software Convergence Symposium), Korea (2021)
- Invited talk at School of Computer Science and Engineering, UNIST, Korea (2021) *On-line*.
- Banff International Research Station - Combinatorial and Geometric Discrepancy (20w5141) (2020) *On-line*.
- Banff International Research Station - Optimal Transport and Analysis for Machine Learning (20w5126) (2020) *Cancelled due to Covid-19 pandemic*.
- Invited talk at 13th Annual Meeting of the Asian Association for Algorithms and Computation (AAAC 2020), Nara, Japan (2020) *Cancelled due to Covid-19 pandemic*.
- Invited talk at Theoretische Informatik Abteilung I, University of Bonn, Germany (2019)
- Invited lectures at Department of Informatics, Kyushu University, Japan (2019)
- Japan-Austria Workshop on Computational Geometry at Zao Resort, Japan (2018)
- Korean Workshop on Computational Geometry at Rogla, Slovenia (2018)
- Invited talk at 14th International Conference on Computability and Complexity in Analysis, Korea (CCA 2017)
- Invited talk at the Workshop on Extreme-Scale Computing for Big Data Analytics, Australia (2016)
- Invited talk at SoC Colloquium of KAIST (2016)
- NII Shonan Meeting on Algorithmics for Beyond Planar Graphs, Shonan Center, Japan (2016)
- Invited talk at the AEARU Web Technology and Computer Science Workshop, Japan (AEARU-WTCS 2016)
- NII Shonan Meeting on Theory and Applications of Geometric Optimization, Shonan Center, Japan (2016)
- Korean Workshop on Computational Geometry (& Graph Drawing), Würzburg, Germany (2016)
- Invited Seminar Talk at School of ECE, UNIST (2015)
- Invited talk at "Saturday Science Lecture" by Seoul Metropolitan Office of Education, Korea (2015)
- Japan-Korea Joint Workshop on General Optimization: Polygon containment, packing, alignment, Zao resort, Japan (2015)
- Invited talk at "Science Touch on Friday" by NRF, Korea (2014)
- Invited talk at Geometry Seminar, Courant Institute of Mathematical Sciences, New York University, United States (2014)
- Invited talk at Dept. Computer Science and Engineering, Seoul National University, Korea (2014)
- Korean Workshop on Computational Geometry at Hiddensee Island, Germany (2014)
- Barbados workshop on Geometry and Graphs, Barbados (2014)
- Invited Talk at the 16th Korea-Japan Joint Workshop on Algorithms and Computation (2013)
- Japan-Korea Joint Workshop on Optimized Extraction of Geometric Information, Yamagata, Japan (2012)
- Korean Workshop on Computational Geometry at Hokkaido, Japan (2011)
- Korean Workshop on Computational Geometry at Dagstuhl, Germany (2010)
- Invited Lectures at Winter School on Algorithms and Combinatorics (2010)
- Invited talk at Colloquium of Dept. Computer Science, Bayreuth Univ., Germany (2010)
- Invited talk at KAIST Discrete Math Seminar, KAIST (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)
- NICTA Workshop on Computational Geometry, Sydney, Australia (2008)
- Invited talk at Colloquium of Dept. Computer Science & Engineering, POSTECH (2006/2007)
- Dagstuhl Seminar on Geometric Networks and Metric Space Embeddings (2006) in Germany
- 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

Board / Advisory Committee members:

- International Symposium on Algorithms and Computation (ISAAC), since 2019.
- Asian Association for Algorithms and Computation (AAAC), since 2007.

Journal editorship: I am currently an editorial board member of

- CoEditor-in-Cheif of Computational Geometry : Theory and Applications (CGTA) (2020–)
- Computational Geometry : Theory and Applications (CGTA) (2015–)
- Interdisciplinary Information Sciences (IIS) (2013–)
- Journal of Information Processing (JIP) (2012–2018)
- Journal of Discrete Algorithms (JDA) (2015–2018)
- Journal of Computational Geometry (JoCG) (2009–2012)
- Journal of Information Science and Engineering (JISE) (2011-2017)

Program committees: PC co-chair of

- ISAAC 2021 (32nd International Symposium on Algorithms and Computation)
- ISAAC 2014 (25th International Symposium on Algorithms and Computation)

PC member of

- SoCG¹ 2010 (26th) / 2014 (30th) / 2019 (35th) / 2024 (40th): Annual Symposium on Computational Geometry

¹SoCG is the top conference in computational geometry.

- WADS 2017: Algorithms and Data Structures Symposium
- ICALP 2015: 42nd International Colloquium on Automata, Languages, and Programming
- MFCS 2015: 40th International Symposium on Mathematical Foundation of Computer Science
- COCOON 2011 (17th) / 2013 (19th) / 2015 (21st) : Annual International Computing and Combinatorics Conference
- TAMC 2024 (16th): Theory and Applications of Models of Computation
- ISAAC 2006 (17th) / 2013 (24th): Annual International Symposium on Algorithms and Computation
- EuroCG 2019 (35th): European Workshop on Computational Geometry
- FAW 2009 / 2015 / 2016 / 2018: International Frontiers of Algorithmics Workshop
- AAIM 2006 / 2007 / 2014 : Annual International Conference on Algorithmic Aspects in Information and Management
- CCCG 2013: 25th Canadian Conference on Computational Geometry
- FAW-AAIM 2011 / 2013: Joint Meeting of International Frontiers of Algorithmics Workshop and International Conference on Algorithmic Aspects of Information and Management
- WALCOM 2011 / 2012 / 2014 / 2018 / 2020: International Workshop on Algorithms and Computation
- CATS 2011: 17th Computing: the Australasian Theory Symposium
- AAAC 2008–2024: Asian Association for Algorithms and Computation

Refereeing: I have been a referee for journals, mainly in the field of computational geometry, including

- Computational Geometry: Theory and Applications (CGTA)
- Algorithmica
- Discrete Computational Geometry (DCG)
- International Journal of Computational Geometry and Applications (IJCGA)
- Journal of Discrete Algorithms (JDA)
- Computer Aided Geometric Design (CAGD)
- Computers & Graphics
- Mathematics of Operations Research
- International Journal on Foundations of Computer Science
- European Journal of Operational Research
- Journal of Combinatorial Optimization (JoCO)
- GeoInformatika (GEIN)

Sub-Refereeing for conferences:

- ACM Symposium on Computational Geometry (SoCG),
- ACM-SIAM Symposium on Discrete Algorithms (SODA),
- ACM Symposium on Theory of Computing (STOC),
- 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).

Organizing chairs:

- Fall Workshop on Algorithms and Computation (FWAC 2018). Seoul National University, Seoul, Korea. November 9–10, 2018.
- NII Shonan Meeting on “Geometric Graphs: Theory and Applications” (No. 106) *with Naoki Katoh and Subhas C. Nandy*. Shonan Village Center, Japan, October 30–November 2, 2017.
- Aslla Symposium on “Space Tessellation and Packing: Theory and Applications” (No. 2) *with Otfried Cheong and Christian Knauer*. KIST Gangneung, Korea. September 19–22, 2017.
- Fall Workshop on Algorithms and Computation (FWAC 2016) *with Yo-Sub Han and Heejin Park*. Yonsei University, Seoul, Korea. November 11–12, 2016.
- ISAAC 2014 (25th International Symposium on Algorithms and Computation (ISAAC 2014) *with Chan-Su Shin*. Jeonju, Korea. December 15–17, 2014.

Organizing committee members:

- 23rd ACM Symposium on Computational Geometry (SoCG) 2007, Gyeongju, South Korea.
- 16th ACM Symposium on Computational Geometry (SoCG) 2000, Hong Kong.
- Korean workshop on computational geometry (KWCG). 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 this name. I organize it again in 2008 at POSTECH, with Otfried Cheong and Antoine Vigneron.
- Dagstuhl Workshop on Computational Geometry and Geometric Networks, Germany. 2004 (with Alexander Wolff, Christian Knauer, René van Oostrum and Chan-Su Shin.)

Other activities:

- I am a committee member of International Olympiad in Informatics at KIESE (2013–2016, 2018–now)

Grants and Awards

Research grants:

- *Software Star Lab*. Optimal Data Structures and Algorithmic Applications in Dynamic Geometric Environment (2017/04/01 - 2024/12/31) - 2,400,000 USD
- *Samsung Electronics*. Algorithms for automatic wiring in PCBs. (2020, 2022) - 130,000 USD
- *Science Research Center (SRC-NRF)*. Surface Matching and Space Tessellations (2011/09/06 - 2018/08/31) - 1,260,000 USD
- *Hyundai Elevator Research Center*. Efficient algorithms for smart elevator call allocation system (2014/10/01-2015/5/31) - 70,000 USD
- *National Research Foundation*. Adaptive Computational Geometry (2009/05/01 - 2012/04/30) - 150,000 USD
- *National Research Foundation*. Algorithmic Aspects of Geometric Uncertainty (2010/05/01 - 2013/04/30) - 150,000 USD
- *NRF/JSPS Korea-Japan binational Research Grant*. Finding objects in geometric data: Theoretical algorithms for geometric matching, segmentation and covering (2010/07/01 -2012/06/30) - 24,000 USD
- *Hyundai Mobis Research Center*. Fast and Stable algorithms for path finding (2009/12/1 - 2010/11/31) - 50,000 USD
- *Postech BSRI*. Geometric Shape Approximation and Matching (2008/5/1 - 2009/2/28) - 20,000 USD
- *KRF/DAAD Korea-Germany Binational Research Grant*. - GENKO : Korea-Germany Partnership Program Geometric Shape Approximation (2008/1/1 - 2010/12/31) - 26,000 USD
- *Korea Research Foundation*. Geometric Shape Matching in 3D: Design of efficient matching algorithms under rigid motions (2007/8/1 - 2009/7/31) - 40,000 USD

- *Postech BSRI*. Geometric Shape Matching (2007/9/1 - 2008/2/28) - 20,000 USD
- *Korea Research Foundation*. Approximation algorithms for shape matching in 3 dimensional space (2006/7/1 - 2007/6/30) - 20,000 USD

Awards:

- Mueunjae Endowed Chair Professor (2019-2023)
 - POSTECH Education Award (2017)
 - Excellent Paper/Presentation Award at KIESE/KCC Conferences (2011/2012/2013/2015)
 - Best Paper Award at 11th International Symposium on Spatial and Temporal Databases (SSTD 2009)
 - Research Fellowship(AIO) from Utrecht University, The Netherlands
 - Postgraduate Scholarships from Hong Kong University of Science & Technology and Pohang University of Science & Technology
 - Scholarship for academic excellence from Kyungpook National University
-

Educational Experience

Ph.D. students I supervised:

- Dr. Wanbin Son (2014), Placement: Scientific researcher at KERI, Korea.
Thesis: Geometric Algorithms for Geospatial Data: Skyline and Top-k Queries.
- Dr. Hyesun Lee (2015), Placement: Researcher at ETRI, Korea.
Thesis: A Feature Model-based Method for Systematic Maintenance and Evolution of Product Lines.
- Taesung Lee (2015), Placement: Researcher at IBM Research AI
Thesis: Knowledge Base Enrichment with Entities, Attributes, and Concepts
- Dr. Sang-Sub Kim (2016), Placement: Postdoctoral researcher at Bonn University, Germany.
Thesis: Euclidean Centers of Streaming and Imprecise Points.
- Sanghoon Lee (2016), Placement: Researcher at NAVER
Thesis: Knowledge Base Alignment: Enlarging Machine-readable Web
- Jinwoo Park (2016), Placement: Researcher at Meta
Thesis:
- Dr. Dongwoo Park (2017), Placement: Researcher at Samsung SDS, Korea.
Thesis: Bundling Problems in Geometric Optimization.
- Dr. Yoonho Hwang (2018), Placement: CEO of a company, Korea.
Thesis: Fast Proximity Search Algorithms on the Euclidean Space.
- Dr. Eunjin Oh (2018), Placement: Assistant Professor at POSTECH, Korea.
Thesis: Geometric Structures on Points inside a Simple Polygon.
- Dr. Sang Duk Yoon (2018), Placement: Assistant Professor at Sungshin Women's University, Korea.
Thesis: Geometric Matching Algorithms for Terrain Data.
- Hyunsuk Cho (2018)
Thesis: Event Understanding from Social Media and Personal Media
- Jinyoung Yeo (2018), Placement: Professor at Yonsei University
Thesis: Overcoming Sparseness in Knowledge Bases: Harvesting, Integration, and Translation
- Sunghwan Kim (2020), Placement: Researcher at NAVER
Thesis: Hardware-aware Optimization of List Intersection in Web Search
- Mincheol Kim (2022), Placement: Samsung SDS, Korea.
Thesis: Path Optimization Problems in Modest Rectilinear Environment.
- Jongmin Choi (2023), Placement: CryptoLab, Korea.
Thesis: Optimal Planar Covering with Congruent Disks.

MSc students I supervised:

- Wanbin Son (2010)
Thesis: Skyline Queries in Metric Space.
- Sang-Sub Kim (2010)
Thesis: Covering Problems on a Point Set.
- Bingbing Zhuang (2013)
Thesis: A Representative Curve of k Curves with Respect to Fréchet Distance.
- Min-Gyu Kim (2016)
Thesis: Geometric Matching of Terrains: Algorithmic Analysis and Implementation.
- Seungjoon Lee (2019)
Thesis: Efficient Algorithms for Stacking Polytopes
- Byeonguk Kang (2021)
Thesis: Locating Two Centers for Imprecise Points

- Hwi Kim (2021)
Thesis: Rectangular Partitions of a Rectilinear Polygon
- Dahye Jeong (2022)
Thesis: The Two-Center Problem for Convex Polygons
- Chanyang Seo (2023)
Thesis: Shortest Paths Between Line Segments in the Presence of Rectangular Obstacles
- Jiwoo Park (2023)
Thesis: Elastic Geometric Shape Matching Algorithms for Neighborhood Trees and Cycles under Translations

Teaching experience:

- *Graph Theory and Algorithms* – CSED436 (2012–)
- *Discrete and Computational Geometry* – CSED508(was EECE508) (2011–)
- *Randomized Algorithms* – EECE701D (2011)
- *Algorithms* – CSED331 (2010–)
- *Approximation Algorithms* – EECE701C (2010)
- *Discrete Geometry* – EECE701B (2009)
- *Computational Geometry* – EECE701A (2008)
- *Research Project A/II* – CSED499 (2008)
- *Algorithm Design and Analysis* – CSED431 (2007/2008/2009)

Scientific Contributions

International Journal articles

73. Chaeyoon Chung, Taehoon Ahn, Hee-Kap Ahn, Sang Won Bae.
Parallel Line Centers with Guaranteed Separation.
Submitted.
72. Jaehoon Chung, Sang Won Bae, Chan-Su Shin, Sang Duk Yoon, Hee-Kap Ahn.
Largest Unit Rectangles Inscribed in a Convex Polygon.
Submitted.
71. Hwi Kim, Jaegun Lee, Hee-Kap Ahn.
Uniformly monotone partitioning of polygons.
Submitted.
70. Taekang Eom, Seungjun Lee, Hee-Kap Ahn.
Largest similar copies of convex polygons amidst polygonal obstacles.
Submitted.
69. Taekang Eom, Hee-Kap Ahn.
A linear-time algorithm for the center problem in weighted cycle graphs. (ShareLink)
Information Processing Letters. 186, 106495, 2024.
68. Chaeyoon Chung, Antoine Vigneron, Hee-Kap Ahn.
Maximum Coverage by k Lines.
Symmetry, 16(2), 206, 2024.
67. Jung-Yul Cha, Jaewook Huh, Jing Liu, Jae-Hun Yu, Yoon Jeong Choi, Hee-Kap Ahn, Chooryung J
Chung, Kyung-Ho Kim.
Three-dimensional evaluation of a virtual setup considering the roots and alveolar bone in molar
distalization cases.
Scientific Reports, 13, 14955, 2023.
66. Mook Kwon Jung, Sang Duk Yoon, Hee-Kap Ahn, Takeshi Tokuyama.
Universal convex covering problems under translation and discrete rotations.
Advances in Geometry, 23(4), pages 481–500, 2023.
65. Mincheol Kim, Chanyang Seo, Taehoon Ahn, Hee-Kap Ahn.
Farthest-point Voronoi diagrams in the presence of rectangular obstacles.
Algorithmica., 85(8), pages 2214–2237, 2023.
64. Jae-Hun Yu, Ji-Hoi Kim, Jing Liu, Utkarsh Mangal, Hee-Kap Ahn, Jung-Yul Cha.
Reliability and time-based efficiency of artificial intelligence-based automatic digital model analy-
sis system.
European Journal of Orthodontics, 45(6), pages 712–721, 2023.
63. Byeonguk Kang, Jongmin Choi, Hee-Kap Ahn.
Intersecting Disks using Two Congruent Disks.
Computational Geometry, 110, 101966, 2023.
62. Hwi Kim, Jaegun Lee, Hee-Kap Ahn.
Rectangular Partitions of a Rectilinear Polygon.
Computational Geometry, 110, 101965, 2023.
61. Jongmin Choi, Dahye Jeong, Hee-Kap Ahn.
Covering Convex Polygons by Two Congruent Disks.
Computational Geometry, 109, 101936, Feb. 2023.

60. Joon Im, Ju-Yeong Kim, Hyung-Seog Yu, Kee-Joon Lee, Sung-Hwan Choi, Ji-Hoi Kim, Hee-Kap Ahn, Jung-Yul Cha.
Accuracy and efficiency of automatic tooth segmentation in digital dental models using deep learning.
Scientific Reports, 12, 9429, 2022.
59. Taehoon Ahn, Jongmin Choi, Chaeyoon Chung, Hee-Kap Ahn, Sang Won Bae, Sang Duk Yoon.
Rearranging a Sequence of Points onto a Line.
Computational Geometry, 107, 101887, 2022.
58. Mincheol Kim, Hee-Kap Ahn.
Minimum-Link Shortest Paths for Polygons amidst Rectilinear Obstacles.
Computational Geometry, 103, 101858, 2022.
57. Jongmin Choi, Sergio Cabello, Hee-Kap Ahn.
Maximizing Dominance in the Plane and its Applications. (SharedIt)
Algorithmica, 83, pages 3491–3513, 2021.
56. Mincheol Kim, Sang Duk Yoon, Hee-Kap Ahn.
Shortest Rectilinear Path Queries to Rectangles in a Rectangular Domain.
Computational Geometry, 99, 101796, 2021.
55. Seungjun Lee, Taekang Eom, Hee-Kap Ahn.
Largest triangles in a polygon.
Computational Geometry, 98, 101792, 2021.
54. Jongmin Choi, Hee-Kap Ahn.
Efficient Planar Two-Center Algorithms.
Computational Geometry, 97, 101768, 2021.
53. Yujin Choi, Seungjun Lee, Hee-Kap Ahn.
Maximum-Area and Maximum-Perimeter Rectangles in Polygons.
Computational Geometry, 94, 101710, 2021.
52. Hee-Kap Ahn, Helmut Alt, Maïke Buchin, Eunjin Oh, Ludmila Scharf, Carola Wenk.
Middle Curves Based on Discrete Fréchet Distance.
Computational Geometry, 89, 101621, 2020.
51. Eunjin Oh, Luis Barba, Hee-Kap Ahn.
The Geodesic Farthest-point Voronoi Diagram in a Simple Polygon.
Algorithmica 82(5), pages 1434–1473, 2020.
50. Eunjin Oh, Hee-Kap Ahn.
Voronoi Diagrams for a Moderate-Sized Point-Set in a Simple Polygon. (Full-text view-only version)
Discrete & Computational Geometry, 63(2), pages 418–454, 2020.
49. Eunjin Oh, Hee-Kap Ahn.
Finding Pairwise Intersections of Rectangles in a Query Rectangle.
Computational Geometry, 85, 101576, 2019.
48. Eunjin Oh, Hee-Kap Ahn.
Computing the Center Region and Its Variants.
Theoretical Computer Science, 789, pages 2–12, 2019.
47. Hee-Kap Ahn, Eunjin Oh, Lena Schlipf, Fabian Stehn, Darren Strash.
On Romeo and Juliet Problems: Minimizing Distance-to-Sight.
Computational Geometry (on invitation, EuroCG 2018), 84, pages 12–21, 2019.

46. Eunjin Oh, Sang Won Bae, Hee-Kap Ahn.
Computing a Geodesic Two-Center of Points in a Simple Polygon.
Computational Geometry: Theory and Applications, 82, pages 45–59, 2019.
45. Eunjin Oh, Hee-Kap Ahn.
A New Balanced Subdivision of a Simple Polygon for Time-Space Trade-off Algorithms. (Full-text view-only version)
Algorithmica, 81(7), pages 2829–2856, 2019.
44. Eunjin Oh, Hee-Kap Ahn.
Assigning Weights to Minimize the Covering Radius in the Plane.
Computational Geometry: Theory and Applications, 81, pages 22–32, 2019.
43. Hee-Kap Ahn, Sang Won Bae, Jongmin Choi, Matias Korman, Wolfgang Mulzer, Eunjin Oh, Ji-Won Park, André van Renssen, Antoine Vigneron.
Faster Algorithms for Growing Prioritized Disks and Rectangles.
Computational Geometry: Theory and Applications, 80, pages 23–39, 2019.
42. Hee-Kap Ahn, Judit Abardia, Sang Won Bae, Otfried Cheong, Susanna Dann, Dongwoo Park, Chan-Su Shin.
The Minimum Convex Container of Two Convex Polytopes under Translations.
Computational Geometry: Theory and Applications, 77, pages 40–50, 2019. (on invitation, CCCG 2014)
41. Hee-Kap Ahn, Taehoon Ahn, Sang Won Bae, Jongmin Choi, Mincheol Kim, Eunjin Oh, Chan-Su Shin, Sang Duk Yoon.
Minimum-Width Annulus with Outliers: Circular, Square, and Rectangular Cases.
Information Processing Letters, 145, pages 16–23, 2019.
40. Eunjin Oh, Jean-Lou De Carufel, Hee-Kap Ahn. *Computational Geometry: Theory and Applications* 74, pages 21–37, 2018.
39. Sang Duk Yoon, Min-Gyu Kim, Wanbin Son, Hee-Kap Ahn.
Geometric Matching Algorithms for Two Realistic Terrains.
Theoretical Computer Science 715, pages 60–70, 2018.
38. Wanbin Son, Fabian Stehn, Christian Knauer, Hee-Kap Ahn.
Top- k Manhattan Spatial Skyline Queries.
Information Processing Letters 123, pages 27–35, 2017.
37. Sang Duk Yoon, Hee-Kap Ahn, Jessica Sherette.
Realistic Roofs without Local Minimum Edges over a Rectilinear Polygon.
Theoretical Computer Science 675, pages 15–26, 2017.
36. Hee-Kap Ahn, Luis Barba, Prosenjit Bose, Jean-Lou De Carufel, Matias Korman, Eunjin Oh.
A linear-time algorithm for the geodesic center of a simple polygon. (Full-text view-only version)
Discrete & Computational Geometry 56(4), pages 836–859, 2016. (on invitation, SoCG 2015)
35. Dongwoo Park, Sang Won Bae, Helmut Alt, Hee-Kap Ahn.
Bundling Three Convex Polygons to Minimize Area or Perimeter.
Computational Geometry: Theory and Applications 51(1), pages 1–14, 2016.
34. Wanbin Son, Sang Won Bae, Hee-Kap Ahn.
Group Nearest-Neighbor Queries in the L1 Plane.
Theoretical Computer Science 592, pages 39–48, 2015.
33. Sang-Sub Kim, Hee-Kap Ahn.
An Improved Data Stream Algorithm for Clustering.
Computational Geometry: Theory and Applications 48(9), pages 635–645, 2015.

32. Hee-Kap Ahn, Hyo-Sil Kim, Sang-Sub Kim, Wanbin Son.
Computing k centers over Streaming Data for Small k .
International Journal of Computational Geometry and Applications 24(02), pages 107–123, 2014.
31. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Joachim Gudmundsson, Takeshi Tokuyama, Antoine Vigneron.
A Generalization of the Convex Kakeya Problem.
Algorithmica 70(2), pages 152–170, 2014. (on invitation, LATIN 2012)
30. Wanbin Son, Seung-won Hwang, Hee-Kap Ahn.
MSSQ: Manhattan Spatial Skyline Queries.
Information Systems 40, pages 67–83, 2014.
29. Hee-Kap Ahn, Siu-Wing Cheng, Hyuk Jun Kweon, Juyoung Yon.
Overlap of Convex Polytopes under Rigid Motion.
Computational Geometry: Theory and Applications 47(1), pages 15–24, 2014.
28. Hee-Kap Ahn, Sang Won Bae, Christian Knauer, Mira Lee, Chan-Su Shin, Antoine Vigneron.
Realistic Roofs over a Rectilinear Polygon.
Computational Geometry: Theory and Applications 46(9), pages 1042–1055, 2013.
27. Hee-Kap Ahn, Siu-Wing Cheng, Iris Reinbacher.
Maximum Overlap of Convex Polytopes under Translation.
Computational Geometry: Theory and Applications, a special issue on “Geometric Optimization”.
46(5), pages 552–565, 2013.
26. Hee-Kap Ahn, Sang-Sub Kim, Christian Knauer, Lena Schlipf, Chan-Su Shin, Antoine Vigneron.
Covering and Piercing Disks with Two Centers.
Computational Geometry: Theory and Applications, 46(3), pages 253–262, 2013.
25. Hee-Kap Ahn, Christian Knauer, Marc Scherfenberg, Lena Schlipf, Antoine Vigneron.
Computing the Discrete Fréchet Distance with Imprecise Input.
International Journal of Computational Geometry and Applications, 22(1), pages 27–44, 2012. (on invitation, ISAAC 2010)
24. Hee-Kap Ahn, Otfried Cheong.
Aligning two convex figures to minimize area or perimeter.
Algorithmica, 62(1–2), pages 464–479, 2012.
23. Hee-Kap Ahn, Otfried Cheong, Jiří Matoušek, Antoine Vigneron.
Reachability by paths of bounded curvature in a convex polygon.
Computational Geometry: Theory and Applications, 45(1–2), pages 21–32, 2012.
22. Hee-Kap Ahn, Sang Won Bae, Marc van Kreveld, Iris Reinbacher, Bettina Speckmann.
Empty Pseudo-Triangles in Point Sets.
Discrete Applied Mathematics, 159(18), pages 2205–2213, 2011.
21. Mu-Woong Lee, Wanbin Son, Hee-Kap Ahn, Seung-won Hwang.
Spatial Skyline Queries: Exact and Approximation Algorithms.
GeoInformatica, 15(4), pages 665–697, 2011. (on invitation, SSTD 2009 Best Paper)
20. Sang-Sub Kim, Sang Won Bae, Hee-Kap Ahn.
Covering a Point Set by Two Disjoint Rectangles.
International Journal of Computational Geometry and Applications, 21(3), pages 313–330, 2011. (on invitation, ISAAC 2008)
19. Hee-Kap Ahn, Sang Won Bae, Erik D. Demaine, Martin L. Demaine, Sang-Sub Kim, Mathias Korman, Iris Reinbacher, Wanbin Son.
Covering Points by Disjoint Boxes with Outliers.
Computational Geometry: Theory and Applications, 44(3), pages 178–190, 2011.

18. Hee-Kap Ahn, Yoshio Okamoto.
Adaptive Algorithms for Planar Convex Hull Problems.
IEICE Transactions on Information and Systems E94–D(2), pages 182–189, 2011.
17. Hee-Kap Ahn, Peter Brass, Christian Knauer, Hyeon-Suk Na, Chan-Su Shin.
Covering a Simple Polygon by Monotone Directions.
Computational Geometry: Theory and Applications 43(5), pages 514–523, 2010.
16. Hee-Kap Ahn, Mohammad Farshi, Christian Knauer, Michiel Smid, Yajun Wang.
Dilation-Optimal Edge Deletion in Polygonal Cycles.
International Journal of Computational Geometry and Applications, 20(1), pages 69–87, 2010. (on invitation, ISAAC 2007)
15. Sang Won Bae, Chunseok Lee, Hee-Kap Ahn, Sunghee Choi, Kyung-Yong Chwa.
Computing Minimum-Area Rectilinear Convex Hull and L-Shape.
Computational Geometry: Theory and Applications, 42(9), pages 903–912, 2009
14. Hee-Kap Ahn, Sang Won Bae, Siu-Wing Cheng, Kyung-Yong Chwa.
Casting an Object with a Core.
Algorithmica 54(1), pages 72–88, 2009.
13. Hee-Kap Ahn, Helmut Alt, Tetsuo Asano, Sang Won Bae, Peter Brass, Otfried Cheong, Christian Knauer, Hyeon-Suk Na, Chan-Su Shin, Alexander Wolff.
Constructing Optimal Highways.
International Journal of Foundations of Computer Science 20(1), pages 3–23, 2009. (on invitation, CATS 2007)
12. Hee-Kap Ahn, Peter Brass, Hyeon-Suk Na, Chan-Su Shin.
On the minimum total length of interval systems expressing all intervals, and range-restricted queries.
Computational Geometry: Theory and Applications 42(3), pages 207–213, 2009.
11. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Joachim Gudmundsson.
Aperture-Angle and Hausdorff-Approximation of Convex Figures.
Discrete & Computational Geometry 40(3), pages 414–429, 2008.
10. Hee-Kap Ahn, Peter Brass, Chan-Su Shin.
Maximum Overlap and Minimum Convex Hull of Two Convex Polyhedra under Translations.
Computational Geometry: Theory and Applications 40, pages 171–177, 2008.
9. Hee-Kap Ahn, Otfried Cheong, Chong-Dae Park, Chan-Su Shin, Antoine Vigneron.
Maximizing the Overlap of Two Planar Convex Sets under Rigid Motions.
Computational Geometry: Theory and Applications 37, pages 3–15, 2007. (on invitation, ACM SoCG 2005)
8. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong.
Casting with Skewed Ejection Direction.
Algorithmica 44(4), pages 325–342, 2006.
7. Hee-Kap Ahn, Peter Brass, Otfried Cheong, Hyeon-Suk Na, Chan-Su Shin, Antoine Vigneron.
Inscribing an Axially Symmetric Polygon and other Approximation Algorithms for Planar Convex Sets.
Computational Geometry: Theory and Applications 33(3), pages 152–164, 2006.
6. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong, Jack Snoeyink.
The Reflex-Free Hull.
International Journal of Computational Geometry and Applications 14(6), pages 453–474, 2004.

5. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong, Mordecai Golin, René van Oostrum.
Competitive Facility Location: The Voronoi Game.
Theoretical Computer Science 310(1-3), pages 457–467, 2004.
4. Hee-Kap Ahn, Otfried Cheong, René van Oostrum.
Casting a Polyhedron with Directional Uncertainty.
Computational Geometry: Theory and Applications 26(2), pages 129–141, 2003.
3. Hee-Kap Ahn, Otfried Cheong, Chan-Su Shin.
Building Bridges between Convex Regions.
Computational Geometry: Theory and Applications 25(1/2), pages 161–170, 2003.
2. Hee-Kap Ahn, Mark de Berg, Prosenjit Bose, Siu-Wing Cheng, Dan Halperin, Jiří Matoušek, Otfried Schwarzkopf.
Separating an Object from its Cast.
Computer-Aided Design (CAD) 34(8), pages 547–559, 2002.
1. Hee-Kap Ahn, Prosenjit Bose, Jurek Czyzowicz, Nicolas Hanusse, Evangelos Kranakis, Pat Morin.
Flipping your Lid.
Geombinatorics X(2), pages 57–63, 2000.

Guest-Edited Journal Issues and Books

5. Hee-Kap Ahn, Kunihiko Sadakane.
Guest Editors of the special Issue for the 32nd International Symposium on Algorithms and Computation (ISAAC 2021).
Algorithmica, 2022.
4. Hee-Kap Ahn, Kunihiko Sadakane.
32nd International Symposium on Algorithms and Computation (ISAAC 2021)
Fukuoka, Japan, December 6–8, 2021
3. Hee-Kap Ahn, Chan-Su Shin.
Guest Editor's Foreword of the special Issue for the 25th International Symposium on Algorithms and Computation (ISAAC 2014).
Algorithmica 76(4), 2016.
2. Hee-Kap Ahn, Chan-Su Shin.
Algorithms and Computation - 25th International Symposium, ISAAC 2014, Jeonju, Korea, December 15-17, 2014
Proceedings. Lecture Notes in Computer Science 8889, Springer 2014, ISBN 978-3-319-13074-3.
1. Hee-Kap Ahn, Antoine Vigneron.
Guest Editors' Foreword of the special issue for the 24th International Symposium on Algorithms and Computation (ISAAC 2013).
International Journal of Computational Geometry and Applications 24(4), pages 259–260, 2014.

Refereed International Conference Proceedings

84. Taehoon Ahn, Chaeyoon Chung, Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Sang Duk Yoon. Minimum-Width Double-Slabs and Widest Empty Slabs in High Dimensions. *Latin American Theoretical Informatics 2024 (LATIN 2024)*
83. Jongmin Choi, Jaegun Lee, Hee-Kap Ahn. Efficient k -center algorithms for planar points in convex position. *18th Algorithms and Data Structures Symposium (WADS 2023)*.
82. Mook Kwon Jung, Sang Duk Yoon, Hee-Kap Ahn, Takeshi Tokuyama. Universal convex covering problems under affine dihedral group actions. *35th Canadian Conference on Computational Geometry (CCCG 2023)*
81. Chaeyoon Chung, Taehoon Ahn, Sang Won Bae, Hee-Kap Ahn. Parallel Line Centers with Guaranteed Separation. *35th Canadian Conference on Computational Geometry (CCCG 2023)*
80. Jaehoon Chung, Sang Won Bae, Chan-Su Shin, Sang Duk Yoon, Hee-Kap Ahn. Inscribing or Circumscribing a Histogram to a Convex Polygon. *42nd IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2022)*, 13:1–13:16, 2022.
79. Jaehoon Chung, Sang Won Bae, Chan-Su Shin, Sang Duk Yoon, Hee-Kap Ahn. Approximating Convex Polygons by Histograms. In Proc. *34th Canadian Conference on Computational Geometry (CCCG 2022)*.
78. Hwi Kim, Jaegun Lee, Hee-Kap Ahn. Uniformly Monotone Partitioning of Polygons Revisited. In Proc. *34th Canadian Conference on Computational Geometry (CCCG 2022)*.
77. Mincheol Kim, Chanyang Seo, Taehoon Ahn, Hee-Kap Ahn. Farthest-point Voronoi diagrams in the presence of rectangular obstacles. In Proc. *38th International Symposium on Computational Geometry (SoCG 2022)*.
76. Taekang Eom, Seungjun Lee, Hee-Kap Ahn. Largest similar copies of convex polygons in polygonal domains. In Proc. *41st IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2021)*, 2021.
75. Mincheol Kim, Hee-Kap Ahn. Minimum-Link Shortest Paths for Polygons amidst Rectilinear Obstacles. In Proc. *33rd Canadian Conference on Computational Geometry (CCCG 2021)*, pages 200–210, 2021.
74. Taehoon Ahn, Jongmin Choi, Chaeyoon Chung, Hee-Kap Ahn, Sang Won Bae, Sang Duk Yoon. Rearranging a Sequence of Points onto a Line. In Proc. *33rd Canadian Conference on Computational Geometry (CCCG 2021)*, pages 36–46, 2021.
73. Jongmin Choi, Dahye Jeong, Hee-Kap Ahn. Covering Convex Polygons by Two Congruent Disks. In Proc. *32nd International Workshop on Combinatorial Algorithms (IWOCA 2021)*, pages 165–178, 2021. arXiv:2105.02483
72. Byeonguk Kang, Jongmin Choi, Hee-Kap Ahn. Intersecting Disks using Two Congruent Disks. In Proc. *32nd International Workshop on Combinatorial Algorithms (IWOCA 2021)*, pages 400–413, 2021.

71. Mincheol Kim, Sang Duk Yoon, Hee-Kap Ahn.
Shortest Rectilinear Path Queries to Rectangles in a Rectangular Domain.
In Proc. *14th Latin American Theoretical Informatics Symposium (LATIN 2020)*, pages 271–282, 2020.
70. Yujin Choi, Seungjun Lee, Hee-Kap Ahn.
Maximum-Area Rectangles in a Simple Polygon. In Proc. *39th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2019)*, pages 12:1–12:14, 2019
69. Jongmin Choi, Sergio Cabello, Hee-Kap Ahn.
Maximizing Dominance in the Plane and its Applications.
In Proc. *16th International Symposium on Algorithms and Data Structures Symposium (WADS 2019)*, pages 325–338, 2019.
68. Yoonho Hwang, Sehoon Kim, Mooyeol Baek, Bohyung Han, Hee-Kap Ahn.
Product Quantized Translation for Fast Nearest Neighbor Search.
In Proc. *32nd AAAI Conference on Artificial Intelligence (AAAI-18)*, pages 3295–3301, 2018.
67. Jeong-Han Yun, Yoonho Hwang, Woomyo Lee, Hee-Kap Ahn, Sin-Kyu Kim.
Statistical Similarity of Critical Infrastructure Network Traffic based on Nearest Neighbor Distances.
In Proc. *21st International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2018)*, pages 577–599, 2018.
66. Eunjin Oh, Hee-Kap Ahn.
Approximate Range Queries for Clustering.
In Proc. *34th International Symposium on Computational Geometry (SoCG 2018)*, pages 62:1–62:14, 2018.
65. Eunjin Oh, Hee-Kap Ahn.
Point Location in Dynamic Planar Subdivisions.
In Proc. *34th International Symposium on Computational Geometry (SoCG 2018)*, pages 63:1–63:14, 2018.
64. Hee-Kap Ahn, Eunjin Oh, Lena Schlipf, Fabian Stehn, Darren Strash.
On Romeo and Juliet Problems: Minimizing Distance-to-Sight.
In Proc. *16th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT 2018)*, pages 6:1–6:13, 2018.
63. Eunjin Oh, Hee-Kap Ahn.
Polygon Queries for Convex Hulls of Points.
In Proc. *24th International Computing and Combinatorics Conference (COCOON 2018)*, pages 143–155, 2018.
62. Hee-Kap Ahn, Taehoon Ahn, Jongmin Choi, Mincheol Kim, Eunjin Oh.
Minimum-Width Square Annulus Intersecting Polygons.
In Proc. *12th International Conference and Workshops on Algorithms and Computation (WALCOM 2018)*, pages 56–67, 2018.
61. Hee-Kap Ahn, Taehoon Ahn, Sang Won Bae, Jongmin Choi, Mincheol Kim, Eunjin Oh, Chan-Su Shin, Sang Duk Yoon.
Minimum-Width Annulus with Outliers: Circular, Square, and Rectangular Cases.
In Proc. *12th International Conference and Workshops on Algorithms and Computation (WALCOM 2018)*, pages 44–55, 2018.
60. Hee-Kap Ahn, Sang Won Bae, Jongmin Choi, Matias Korman, Wolfgang Mulzer, Eunjin Oh, Ji-won Park, André van Renssen, Antoine Vigneron.
Faster Algorithms for Growing Prioritized Disks and Rectangles.

In Proc. *28th International Symposium on Algorithms and Computation (ISAAC 2017)*, pages 3:1–3:13, 2017.

59. Eunjin Oh, Hee-Kap Ahn
Finding Pairwise Intersections of Rectangles in a Query Rectangle.
In Proc. *28th International Symposium on Algorithms and Computation (ISAAC 2017)*, pages 60:1–60:12, 2017.
58. Eunjin Oh, Hee-Kap Ahn
A New Balanced Subdivision of a Simple Polygon for Time-Space Trade-off Algorithms.
In Proc. *28th International Symposium on Algorithms and Computation (ISAAC 2017)*, pages 61:1–61:12, 2017.
57. Hee-Kap Ahn, Nicola Baraldo, Eunjin Oh, Francesco Silvestri.
A Time-Space Tradeoff for Triangulations of Points in the Plane.
In Proc. *23rd Annual International Computing and Combinatorics Conference (COCOON 2017)*, pages 3–12, 2017.
56. Eunjin Oh, Hee-Kap Ahn.
Dynamic Geodesic Convex Hulls in Dynamic Simple Polygons.
In Proc. *33rd International Symposium on Computational Geometry (SoCG 2017)*, pages 51:1–51:15, 2017.
55. Eunjin Oh, Hee-Kap Ahn.
Voronoi Diagrams for a Moderate-Sized Point-Set in a Simple Polygon.
In Proc. *33rd International Symposium on Computational Geometry (SoCG 2017)*, pages 52:1–52:15, 2017.
54. Eunjin Oh, Hee-Kap Ahn.
Computing the Center Region and Its Variants.
In Proc. *11th International Conference and Workshops on Algorithms and Computation (WALCOM 2017)*, pages 254–265, 2017.
53. Jongmin Choi, Dongwoo Park, Hee-Kap Ahn.
Bundling Two Simple Polygons to Minimize Their Convex Hull
In Proc. *11th International Conference and Workshops on Algorithms and Computation (WALCOM 2017)*, pages 66–77, 2017.
52. Eunjin Oh, Hee-Kap Ahn.
Assigning Weights to Minimize the Covering Radius in the Plane.
In Proc. *27th International Symposium on Algorithms and Computation (ISAAC 2016)*, pages 58:1–58:12, 2016.
51. Eunjin Oh, Hee-Kap Ahn.
A Near-Optimal Algorithm for Finding an Optimal Shortcut of a Tree.
In Proc. *27th International Symposium on Algorithms and Computation (ISAAC 2016)*, pages 59:1–59:12, 2016.
50. Eunjin Oh, Wanbin Son, Hee-Kap Ahn.
Constrained Geodesic Center of a Simple Polygon.
In Proc. *15th Scandinavian Symposium and Workshops on Algorithm Theory (SWAT 2016)*, pages 29:1–29:13, 2016.
49. Eunjin Oh, Luis Barba, Hee-Kap Ahn.
The farthest-point geodesic Voronoi diagram of points on the boundary of a simple polygon.
In Proc. *32nd International Symposium on Computational Geometry (SoCG 2016)*, pages 56:1–56:15, 2016.

48. Eunjin Oh, Sang Won Bae, Hee-Kap Ahn.
Computing a Geodesic Two-Center of Points in a Simple Polygon.
In Proc. *12th Latin American Theoretical Informatics Symposium (LATIN 2016)*, pages 646–658, 2016.
47. Hee-Kap Ahn, Helmut Alt, Maïke Buchin, Eunjin Oh, Ludmila Scharf, Carola Wenk.
A Middle Curve Based on Discrete Fréchet Distance.
In Proc. *12th Latin American Theoretical Informatics Symposium (LATIN 2016)*, pages 14–26, 2016.
46. Eunjin Oh, Jean-Lou De Carufel, Hee-Kap Ahn.
The 2-center problem in a simple polygon.
In Proc. *26th International Symposium on Algorithms and Computation (ISAAC 2015)*, pages 307–317, 2015.
45. Sang Duk Yoon, Min-Gyu Kim, Wanbin Son, Hee-Kap Ahn.
Geometric Matching Algorithms for Two Realistic Terrains.
In Proc. *26th International Symposium on Algorithms and Computation (ISAAC 2015)*, pages 285–295, 2015.
44. Hee-Kap Ahn, Luis Barba, Prosenjit Bose, Jean-Lou De Carufel, Matias Korman, Eunjin Oh
A linear-time algorithm for the geodesic center of a simple polygon.
In Proc. *31st International Symposium on Computational Geometry (SoCG 2015)*, pages 209–223, 2015.
43. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Dongwoo Park, Chan-Su Shin.
Minimum Convex Container of Two Convex Polytopes under Translations.
In Proc. *26th Canadian Conference on Computational Geometry (CCCG 2014)*, 2014.
42. Sang-Sub Kim, Hee-Kap Ahn.
An Improved Data Stream Algorithm for Clustering.
In Proc. *11th Latin American Theoretical Informatics Symposium (LATIN 2014)*, pages 273–284, 2014.
41. Wanbin Son, Fabian Stehn, Christian Knauer, Hee-Kap Ahn.
Top- k Manhattan Spatial Skyline Queries.
In Proc. *8th International Workshop on Algorithms and Computation (WALCOM 2014)*, pages 22–33, 2014.
40. Hee-Kap Ahn, Helmut Alt, Sang Won Bae, Dongwoo Park.
Bundling Three Convex Polygons to Minimize Area or Perimeter.
In Proc. *13th Algorithms and Data Structures Symposium (WADS 2013)*, pages 13–24, 2013.
39. Hee-Kap Ahn, Sang Won Bae, Wanbin Son.
Group Nearest Neighbor Queries in the L_1 Plane.
In Proc. *10th Annual Conference on Theory and Applications of Models of Computation (TAMC 2013)*, pages 52–61, 2013.
38. Hee-Kap Ahn, Siu-Wing Cheng, Hyuk Jun Kweon, Juyoung Yon.
Overlap of Convex Polytopes under Rigid Motion.
In Proc. *32nd IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2012)*, pages 498–509, 2012.
37. Hee-Kap Ahn, Hyo-Sil Kim, Sang-Sub Kim, Wanbin Son.
Computing k -center over Streaming Data for Small k .
In Proc. *23rd International Symposium on Algorithms and Computation (ISAAC 2012)*, pages 54–63, 2012.
36. Hee-Kap Ahn, Sang Won Bae, Shin-Ichi Tanigawa.
Rectilinear Covering for Imprecise Input Points.
In Proc. *23rd International Symposium on Algorithms and Computation (ISAAC 2012)*, pages 309–318, 2012.

35. Yoonho Hwang, Bohyung Han, Hee-Kap Ahn.
A Fast Nearest Neighbor Search Algorithm by Nonlinear Embedding.
In Proc. *25th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2012)*, pages 3053–3060, 2012.
34. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Joachim Gudmundsson, Takeshi Tokuyama.
A Generalization of the Convex Kakeya Problem.
In Proc. *10th Latin American Theoretical Informatics Symposium (LATIN 2012)*, pages 1–12, 2012.
33. Yoonho Hwang, Hee-Kap Ahn.
Convergent Bounds on the Euclidean Distance.
In Proc. *25th Annual Conference on Neural Information Processing Systems (NIPS 2011)*, pages 388–396, 2011.
32. Hee-Kap Ahn, Sang-Sub Kim, Christian Knauer, Lena Schlipf, Chan-Su Shin, Antoine Vigneron.
Covering and Piercing Disks with Two Centers.
In Proc. *22nd International Symposium on Algorithms and Computation (ISAAC 2011)*, pages 50–59, 2011.
31. Hee-Kap Ahn, Sang Won Bae, Christian Knauer, Mira Lee, Chan-Su Shin, Antoine Vigneron.
Generating Realistic Roofs over a Rectilinear Polygon.
In Proc. *22nd International Symposium on Algorithms and Computation (ISAAC 2011)*, pages 60–69, 2011.
30. Wanbin Son, Seung-won Hwang, Hee-Kap Ahn.
MSSQ: Manhattan Spatial Skyline Queries., pages 313–329, 2011.
In Proc. *12th Symposium on Spatial and Temporal Databases (SSTD 2011)*
29. Hee-Kap Ahn, Christian Knauer, Marc Scherfenberg, Lena Schlipf, Antoine Vigneron.
Computing the Discrete Fréchet Distance with Imprecise Input.
In Proc. *21st International Symposium on Algorithms and Computation (ISAAC 2010)*, LNCS 6507, pages 422–433, 2010.
28. Hee-Kap Ahn, Siu-Wing Cheng, Iris Reinbacher.
Maximum Overlap of Convex Polytopes under Translation.
In Proc. *21st International Symposium on Algorithms and Computation (ISAAC 2010)*, LNCS 6507, pages 97–108, 2010.
27. Hee-Kap Ahn, Yoshio Okamoto.
Adaptive Algorithms for Planar Convex Hull Problems.
In Proc. *4th International Frontiers of Algorithms Workshop (FAW 2010)*, LNCS 6213, pages 316–326, 2010.
26. Wanbin Son, Mu-Woong Lee, Hee-Kap Ahn, Seung-won Hwang.
Spatial Skyline Queries: An Efficient Geometric Algorithm. (Best Paper Award)
In Proc. *11th International Symposium on Spatial and Temporal Databases (SSTD 2009)*, LNCS 5644, pages 247–264, 2009.
25. Hee-Kap Ahn, Sang Won Bae, Sang-Sub Kim, Matias Korman, Iris Reinbacher, Wanbin Son.
Square and Rectangle Covering with Outliers.
In Proc. *3rd International Frontiers of Algorithms Workshop (FAW 2009)*., LNCS 5598, pages 132–140, 2009.
A shorter version has been presented at 25th European Workshop on Computational Geometry 2009.
24. Hee-Kap Ahn, Sang Won Bae, Iris Reinbacher.
Optimal Empty Pseudo-Triangles in a Point Set.
In Proc. *21st Canadian Conference on Computational Geometry (CCCG 2009)*, 2009.

23. Hee-Kap Ahn, Sang Won Bae.
Covering a Point Set by Two Disjoint Rectangles.
In Proc. *19th Annual International Symposium on Algorithms and Computation (ISAAC 2008)*, LNCS 5369, pages 728–739, 2008.
22. Hee-Kap Ahn, Peter Brass, Christian Knauer, Hyeon-Suk Na, Chan-Su Shin.
Covering a Simple Polygon by Monotone Directions.
In Proc. *19th Annual International Symposium on Algorithms and Computation (ISAAC 2008)*, LNCS 5369, pages 668–679, 2008.
21. Hee-Kap Ahn, Mohammad Farshi, Christian Knauer, Michiel Smid, Yajun Wang.
Dilation-optimal edge deletion in polygonal cycles.
In Proc. *18th Annual International Symposium on Algorithms and Computation (ISAAC 2007)*, LNCS 4835, pages 88-99, 2007.
20. Sang Won Bae, Chunseok Lee, Hee-Kap Ahn, Sunghee Choi, Kyung-Yong Chwa.
Maintaining Extremal Points and Its Applications to Deciding Optimal Orientations.
In Proc. *18th Annual International Symposium on Algorithms and Computation (ISAAC 2007)*, LNCS 4835, pages 788-799, 2007.
19. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong, Joachim Gudmundsson.
Aperture-Angle and Hausdorff-Approximation of Convex Figures.
In Proc. *23rd Annual ACM Symposium on Computational Geometry (SoCG 2007)*, pages 37–45, 2007.
18. Hee-Kap Ahn, Helmut Alt, Tetsuo Asano, Sang Won Bae, Peter Brass, Otfried Cheong, Christian Knauer, Hyeon-Suk Na, Chan-Su Shin, Alexander Wolff.
Constructing Optimal Highways.
In Proc. *Computing: The Australasian Theory Symposium (CATS 2007)*, CRPIT Vol.65, pages 7–14, 2007.
17. Hee-Kap Ahn, Sang Won Bae, Siu-Wing Cheng, Kyung-Yong Chwa.
Casting an Object with a Core.
In Proc. *16th Annual International Symposium on Algorithms and Computation (ISAAC 2005)*, LNCS 3827, pages 882-891, 2005.
16. Hee-Kap Ahn, Otfried Cheong.
Stacking and Bundling two Convex Polygons.
In Proc. *16th Annual International Symposium on Algorithms and Computation (ISAAC 2005)*, LNCS 3827, pages 40–49, 2005.
15. Hee-Kap Ahn, Otfried Cheong, Chong-Dae Park, Chan-Su Shin, Antoine Vigneron.
Maximizing the Overlap of Two Planar Convex Sets under Rigid Motions.
In Proc. *21st Annu. ACM Symposium on Computational Geometry (SoCG 2005)*, pages 356–363, 2005.
14. Hee-Kap Ahn, Peter Brass, Otfried Cheong, Hyeon-Suk Na, Chan-Su Shin, Antoine Vigneron.
Approximation algorithms for Inscribing or Circumscribing an Axially Symmetric Polygon to a Convex Polygon.
In Proc. *10th Annual International Computing and Combinatorics Conference (COCOON 2004)* LNCS 3106, pages 259–267, 2004.
13. Hyun-Jhin Lee, Jinwook Kim, Hee-Kap Ahn, Sang Chul Ahn, Ik Jae Kim, Hyoung-Gon Kim, Heedong Ko.
VR Experience Design in Tangible Space : Heritage Alive!
In Proc. *15th Triennial Congress of International Ergonomics Association (IEA 2003) and 7th Joint Conference of the Ergonomics Society of Korea and the Japan Ergonomics Society*, 2003.
12. Jinwook Kim, Hee-Kap Ahn, Heedong Ko.
Description and Response Generation of Cyberspace.

In Proc. *Proc. 15th Triennial Congress of International Ergonomics Association (IEA 2003) and 7th Joint Conference of the Ergonomics Society of Korea and the Japan Ergonomics Society*, 2003.

11. ChangHoon Park, HeeDong Ko, Changseok Cho, Hee-Kap Ahn, Yo-Sub Han, TaiYun Kim.
NAVER: Design and Implementation of Networked Virtual Environments Based on PC Cluster.
In Proc. *6th Joint Conference of the Ergonomics Society of Korea and the Japan Ergonomics Society*, pages 221–228, 2002.
10. Jaeho Chang, Heedong Ko, Heekap Ahn, Changhoon Park.
NAVER Musical Composition Environment.
In Proc. *Virtual Systems and MultiMedia (VSMM 2002)*, pages 809–814, 2002.
9. ChangHoon Park, HeeDong Ko, Hee-Kap Ahn, Jinwook Kim.
NAVER: design and implementation of XML-based VR Framework on a PC cluster.
In Proc. *Virtual Systems and MultiMedia (VSMM 2002)* pages 967–975, 2002.
8. Hee-Kap Ahn, Otfried Cheong, René van Oostrum.
Casting a Polyhedron with Directional Uncertainty.
In Proc. *13th Annual International Symposium on Algorithms and Computation (ISAAC 2002)* LNCS 2518, pages 274–285, 2002.
7. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong, Mordecai Golin, René van Oostrum.
Compartitive Facility Location along a Highway.
In Proc. *7th Annual International Computing and Combinatorics Conference (COCOON 2001)* LNCS 2108, pages 237–246, 2001.
6. Hee-Kap Ahn, Siu-wing Cheng, Otfried Cheong, Jack Snoeyink.
The Reflex-Free Hull.
In Proc. *13th Canadian Conference on Computational Geometry (CCCG 2001)* pages 9-12, 2001.
5. Hee-Kap Ahn, Otfried Cheong, Jiří Matoušek, Antoine Vigneron.
Reachability by Paths of Bounded Curvature in Convex Polygons.
In Proc. *16th Annu. ACM Symposium on Computational Geometry (SoCG 2000)* pages 251–259, 2000.
4. H.-K. Ahn, P. Bose, J. Czyzowicz, N. Hanusse, E. Kranakis, P. Morin.
Flipping your Lid.
In Proc. *12th Canadian Conference on Computational Geometry (CCCG 2000)* pages 13–16, 2000.
3. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong.
Casting with Skewed Ejection Direction Revisited.
In Proc. *11th Canadian Conference on Computational Geometry (CCCG 1999)* pages 128–131, 1999.
2. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong.
Casting with Skewed Ejection Direction.
In Proc. *9th Ann. International Symposium on Algorithms and Computation (ISAAC 1998)* LNCS 1533, pages 139–148, 1998.
1. Hee-Kap Ahn, Mark de Berg, Prosenjit Bose, Siu-Wing Cheng, Dan Halperin, Jiří Matoušek, Otfried Schwarzkopf.
Separating an Object from its Cast.
In Proc. *13th Annu. ACM Symposium on Computational Geometry (SoCG 1997)* pages 221–230, 1997.

Others - presentations and talks at workshops

38. Taekang Eom, Hee-Kap Ahn.
An Optimal Algorithm for Weighted Center Problem on Cycle Graphs.
In Proc. *38th European Workshop on Computational Geometry (EuroCG 2022)*, 2022.
[PDF](#)
37. Hwi Kim, Hee-Kap Ahn.
Rectangular Partitioning Algorithm for Histograms.
KIISE Transactions on Computing Practices, 28(2), pages 128–133, 2022.
36. Garam Kim, Jongmin Choi, Hee-Kap Ahn.
Maximum Overlap of Two Convex Polygons.
KIISE Transactions on Computing Practices, 27(8), pages 400–405, 2021.
35. Byeonguk Kang, Jongmin Choi, Hee-Kap Ahn.
Intersecting Disks using Two Congruent Disks.
In Proc. *37th European Workshop on Computational Geometry (EuroCG 2021)*, 2021.
[PDF](#)
34. Hee-Kap Ahn, Eunjin Oh, Lena Schlipf, Fabian Stehn, Darren Strash.
On Romeo and Juliet Problems: Minimizing Distance-to-Sight.
In Proc. *34th European Workshop on Computational Geometry (EuroCG 2018)*, 2018.
33. Hee-Kap Ahn, Luis Barba, Prosenjit Bose, Jean-Lou De Carufel, Matias Korman, Eunjin Oh.
A linear-time algorithm for the geodesic center of a simple polygon.
In Proc. *31st European Workshop on Computational Geometry (EuroCG 2015)*, 2015.
32. Hee-Kap Ahn, Helmut Alt, Maike Buchin, Ludmila Scharf, Carola Wenk.
A Middle Curve Based on Discrete Fréchet Distance.
In Proc. *31st European Workshop on Computational Geometry (EuroCG 2015)*, 2015.
31. Hee-Kap Ahn, Siu-Wing Cheng, Hyuk Jun Kweon, Juyoung Yon.
Overlap of Convex Polytopes under Rigid Motion.
In Proc. *15th Japan-Korea Joint Workshop on Algorithms and Computation (WAAC 2012)*, 2012.
30. Hee-Kap Ahn, Sang Won Bae, Shin-ichi Tanigawa.
Rectilinear Covering for Imprecise Input Points.
In Proc. *15th Japan-Korea Joint Workshop on Algorithms and Computation (WAAC 2012)*, 2012.
29. Hee-Kap Ahn, Hyo-Sil Kim, Sang-Sub Kim, Wanbin Son.
Computing Euclidean 2-centers over Streaming Data.
In Proc. *15th Japan-Korea Joint Workshop on Algorithms and Computation (WAAC 2012)*, 2012.
28. Hee-Kap Ahn, Sang-Sub Kim, Christian Knauer, Hyeon-Suk Na, Lena Schlipf, Chan-Su Shin, Antoine Vigneron.
Covering and Piercing Disks with Two Centers.
In Proc. *27th European Workshop on Computational Geometry (EuroCG 2011)*, 2011.
27. Hee-Kap Ahn, Christian Knauer, Marc Scherfenberg, Lena Schlipf, Antoine Vigneron.
Computing the Discrete Fréchet Distance with Imprecise Input.
In Proc. *26th European Workshop on Computational Geometry (EuroCG 2010)*, pages 13–16, 2010.
26. Hee-Kap Ahn, Yoshio Okamoto, Iris Reinbacher.
Tracing a Virus.
In Proc. *3rd AAAC Annual Meeting*, 2010.
25. Wanbin Son, Hee-Kap Ahn.
Skyline Queries in Metric Space.
In Proc. *3rd AAAC Annual Meeting*, 2010.
24. Hee-Kap Ahn, Yoshio Okamoto.
Adaptive Computational Geometry.
In *RIMS Proceedings of Workshop*, pages 114–125, 2009.

23. Hee-Kap Ahn, Marc Scherfenberg, Lena Schlipf, Antoine Vigneron.
Computing the Discrete Fréchet Distance with Imprecise Input.
In Proc. *12th Korea-Japan Joint Workshop on Algorithms and Computation (WAAC 2009)*, pages 132–137, 2009.
22. Hee-Kap Ahn, Yoshio Okamoto.
An Adaptive Algorithm for the Planar Convex Hull.
In Proc. *2nd AAAC Annual Meeting*, 2009.
21. Hee-Kap Ahn, Sang Won Bae, Sang-Sub Kim, Matias Korman, Iris Reinbacher, Wanbin Son.
Square and Rectangle Covering with Outliers.
In Proc. *25th European Workshop on Computational Geometry*, pages 273–276, 2009.
20. Hee-Kap Ahn, Yoshio Okamoto.
Adaptive Computational Geometry.
In Proc. *Workshop on Computational Geometry and Discrete Mathematics, Gyoto, Japan*, pages 51–54, 2008
19. Hee-Kap Ahn, Siu-Wing Cheng, Iris Reinbacher.
Maximum Overlap of Convex Polytopes under Translation.
In Proc. *11th Japan-Korea Joint Workshop on Algorithms and Computation*, pages 181–188, 2008.
18. Sang Won Bae, Hee-Kap Ahn.
Optimal Disjoint Two-box Covering of Points.
In Proc. *1st AAAC Annual Meeting*, 2008.
17. Hee-Kap Ahn, Siu-Wing Cheng, Iris Reinbacher.
Translation Algorithms for Overlaying Convex Polyhedra.
In Proc. *1st AAAC Annual Meeting*, 2008
16. Sang Won Bae, Chunseok Lee, Hee-Kap Ahn, Sunghee Choi, Kyung-Yong Chwa.
Maintaining Extremal Points and Its Applications to Deciding Optimal Orientations.
In Proc. *10th Korea-Japan Joint Workshop on Algorithms and Computation*, pages 64–71, 2007.
15. Hee-Kap Ahn, Mark de Berg, Otfried Cheong, Herman Haverkort, Frank van der Stappen, Laura Toma.
River Networks and Watershed Maps of Triangulated Terrains Revisited.
In Proc. *22nd European Workshop on Computational Geometry (EWCG 2006)*, pages 173–176, 2006
14. Hee-Kap Ahn, Sang Won Bae, Otfried Cheong.
A New Geometric Proof on Shortest Paths with Bounded Curvature.
In Proc. *32nd KISS fall conference*, pages 958–960, 2005
13. Chong-Dae Park, Chan-Su Shin, Hee-Kap Ahn, Otfried Cheong, Antoine Vigneron.
Approximation algorithms for maximizing the overlap of two planar convex sets under rigid motions.
In Proc. *Korea Computer Congress 2005*, pages 901–903, 2005
12. Hyeon-Suk Na, Chan-Su Shin, Hee-Kap Ahn.
Geometric properties of roofs of rectilinear polygons.
In Proc. *Korea Computer Congress 2005*, pages 895–897, 2005
11. Hee-Kap Ahn, Yo-Sub Han, Chan-Su Shin.
Approximating a Minimum-Diameter Spanning Tree with Bounded Degree.
In Proc. *Japan Conference on Discrete and Computational Geometry (JCDCG 2004)*
10. Yong Hee Park, Sang Won Bae, Hee-Kap Ahn, Kyung-Yong Chwa.
Casting an Object with a Core.
In Proc. *31st KISS fall conference*, pages 706–708, 2004
9. Chong-Dae Park, Chan-Su Shin, Hee-Kap Ahn, Hyunsub Lee, Kyung-Yong Chwa, Otfried Cheong.
Approximating the Largest Empty and Fat Rectangle.
In Proc. *31st KISS spring conference*, pages 718–720, 2004
8. Hee-Kap Ahn, Yo-Sub Han, Chan-Su Shin.
Minimum Diameter Spanning Tree with Bounded Degree.
In Proc. *30th KISS spring conference* pages 806–808, 2003.

7. Heedong Ko, Hee-Kap Ahn, Jin-Wook Kim, Jong-Guk Kim, Jae-Bok Song, Hong-Jun Eu, Myung-Whan Yun, In-Su Woo, Yeon-Dong Park.
Evaluation of Car Prototype using CAVE-like Systems.
In Proc. *30th KSES spring conference* pages 66–73, 2002.
6. Hee-Kap Ahn.
Geometric Aspects of the Casting Process.
Ph.D. Thesis, ISBN 90-393-2869-2, Utrecht University.
5. Hee-Kap Ahn, Nikos Mamoulis, Ho Min Wong.
A Survey on Multidimensional Access Methods.
Tech.Report, UU-CS-2001-14, May 2001, Institute of Information and Computing Sciences, Utrecht University
4. Hee-Kap Ahn, Otfried Cheong, Chan-Su Shin.
Bridging Convex Regions and Related Problems.
In Proc. *17th European Workshop on Computational Geometry (CG 2001)* pages 53–56, 2001.
Invited to *Computational Geometry: Theory and Applications*
3. Hee-Kap Ahn, Siu-Wing Cheng, Otfried Cheong.
Casting with Skewed Ejection Direction (extended abstract).
In Proc. *First ACM HongKong Postgraduate Research Day (1998)*
2. Hee-Kap Ahn.
Casting with two-part cast: Opposite and Non-opposite cast removal.
Master Thesis, POSTECH.
1. Hee-Kap Ahn, Otfried Schwarzkopf.
Castable Polyhedra in General Setting.
In Proc. *24th KISS spring conference* pages 703–706, 1997.