

KWANGSOO YANG

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Computer & Electrical Engineering and Computer Science
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EDUCATION

University of Minnesota	Computer Science	Ph.D.	2015
University of Minnesota	Computer Science	M.S.	2010
Yonsei University	Electricity Engineering	B.S.	1998

PROFESSIONAL EXPERIENCE

Software Engineer	LG-CNS	Seoul, Korea	2001–2008
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AWARDS AND HONORS

- College Junior Faculty Research Award, Florida Atlantic University, 2020
- NSF Career Award, 2019
- Doctor Dissertation Fellowship, University of Minnesota, 2014.
- Received a “Thank a Teacher” note from students (UMN Center for Teaching & Learning).
- Distinguished Service Award, Leader of IT Research Division, (LG-CNS) Dec. 2002

PUBLICATIONS

Refereed Journal Articles

8. Wei Ding, Junfeng Tian, Yonsik Lee, Kwangsoo Yang, Kwang Woo Nam, “VVS: Fast Similarity Measuring of FoV-Tagged Videos”, IEEE Access, Volume 8, Pages: 190734–190745 (2020)
7. KwangSoo Yang, Kwang Woo Nam, Ahmad Qutbuddin, Aaron Reich, Valmer Talis Huhn, “Size Constrained k Simple Polygons”, GeoInformatica (2020)
6. Kwang Woo Nam, Wei Ding, KwangSoo Yang, “Measuring similarity between geo-tagged videos using largest common view”, Electronics Letters, 450–452, IET (2019).
5. KwangSoo Yang, Apurv Shekhar, Dev Oliver, Shashi Shekhar, “Capacity-Constrained Network-Voronoi Diagram”, IEEE Transactions on Knowledge & Data Engineering, 27(11):2919-2932 (2015)
4. KwangSoo Yang, Apurv Shekhar, Faizan Ur Rehman, Hatim Lahza, Saleh Basalamah, Shashi Shekhar, Imtiaz Ahmed, Arif Ghafoor, “Intelligent Shelter Allotment for Emergency Evacuation Planning: A Case Study of Makkah”, IEEE Intelligent Systems, 30(5): 66-76 (2015)
3. Venkata Gunturi, Shashi Shekhar, KwangSoo Yang, “A Critical-time-point Approach to All-departure-time Lagrangian Shortest Paths”, IEEE Transactions on Knowledge & Data Engineering, 27(10): 2591-2603 (2015)
2. KwangSoo Yang, Michael R. Evans, Venkata M.V. Gunturi, James M. Kang, Shashi Shekhar, “Lagrangian Approaches to Storage of Spatio-temporal Network Datasets”, IEEE Transactions on Knowledge & Data Engineering, 26(9): 2222-2236 (2014)

1. Shashi Shekhar, KwangSoo Yang, Venkata M. V. Gunturi, Lydia Manikonda, Dev Oliver, Xun Zhou, Betsy George, Sangho Kim, Jeffrey M. R. Wolff, Qingsong Lu, “Experiences with evacuation route planning algorithms”. *International Journal of Geographical Information Science* 26(12): 2253-2265 (2012)

Refereed Conference Proceedings

15. Daniel Berezhnyi, Ahmad Qutbuddin, Younggu Her and Kwangsoo Yang, “Node-attributed Spatial Graph Partitioning”, In *Proceedings of 28th ACM SIGSPATIAL Intl. Conference on Advances in Geographic Information Systems*, pages 58–67 (2020).
14. Ahmad Qutbuddin and KwangSoo Yang. “Multiple Resource Network Voronoi Diagram”, 11th Intl. Conference on Geographic Information Science (In-Press) (2020)
13. Ohriniuc Roxana and Kwangsoo Yang. “Conflict-Free Evacuation Route Planner”. In *Proceedings of 27th ACM SIGSPATIAL Intl. Conference on Advances in Geographic Information Systems*, pages 480-487 (2019).
12. Ohriniuc Roxana, Reich Aaron, KwangSoo Yang: “Coverage Constrained Spatial CO-clustering”, In *Proceedings of 26th ACM SIGSPATIAL Intl. Conference on Advances in Geographic Information Systems: Pages 492-495* (2018)
11. Reich Aaron, Ohriniuc Roxana, KwangSoo Yang: “Size Constrained k Simple Polygons”, In *Proceedings of 26th ACM SIGSPATIAL Intl. Conference on Advances in Geographic Information Systems: Pages 500-503* (2018)
10. Yiqun Xie, Kwangsoo Yang, Shashi Shekhar, Brent Dalzell and David Mulla, “Spatially Constrained Geodesign Optimization (GOP) for Improving Agricultural Watershed Sustainability”, *Workshops at the Thirty-First AAAI Conference on Artificial Intelligence: Pages 57-63*, ISBN: 9781577357865 (2017)
9. KwangSoo Yang: “Distance-Constrained k Spatial Sub-Networks: A Summary of Results”, 9th Intl. Conference on Geographic Information Science, LNCS 9927: pages 68-84 (2016)
8. KwangSoo Yang, Apurv Hirsh Shekhar, Dev Oliver, Shashi Shekhar, “Capacity-Constrained Network-Voronoi Diagram (Extended Abstract)”, *IEEE 32nd International Conference on Data Engineering (ICDE)*, ISBN: 978-1-5090-2020-1 (2016)
7. KwangSoo Yang, Apurv Hirsh Shekhar, Dev Oliver, Shashi Shekhar, “Capacity-Constrained Network-Voronoi Diagram: A Summary of Results”, *Spatial and Temporal Databases, proceeding of 13th Intl. Symposium on Spatial and Temporal Databases Springer LNCS 8098*: pages 56-73 (2013)
6. Shekhar, Shashi, Viswanath Gunturi, Michael R. Evans, and KwangSoo Yang. “Spatial big-data challenges intersecting mobility and cloud computing.” In *Proceedings of the Eleventh ACM International Workshop on Data Engineering for Wireless and Mobile Access*, pp. 1-6. ACM (2012)
5. KwangSoo Yang, Venkata M. V. Gunturi, Shashi Shekhar: “A Dartboard Network Cut Based Approach to Evacuation Route Planning: A Summary of Results”, 7th Intl. Conference on Geographic Information Science, LNCS: pages 7478: 325-339 (2012)
4. KwangSoo Yang et al., “Capacity-Constrained Network-Voronoi Diagram: An Extended Abstract”, *Proceedings of the 12th International Conference on GeoComputation* (2013)
3. KwangSoo Yang, Shashi Shekhar, Jing Dai, Sambit Sahu, Milind R. Naphade: *Smarter Water Management: A Challenge for Spatio-Temporal Network Databases. Spatial and Temporal Databases, proceeding of 12th Intl. Symposium on Spatial and Temporal Databases, LNCS 6849*: pages 471-474 (2011)

2. Venkata M. V. Gunturi, Ernesto Nunes, KwangSoo Yang, Shashi Shekhar, "A Critical-Time-Point Approach to All-Start-Time Lagrangian Shortest Paths: A Summary of Results", Spatial and Temporal Databases, proceeding of 12th Intl. Symposium on Spatial and Temporal Databases, LNCS 6849: pages 74-91 (2011)
1. Michael R. Evans, KwangSoo Yang, James M. Kang, Shashi Shekhar, "A Lagrangian approach for storage of spatio-temporal network datasets: a summary of results", In Proceedings of 18th ACM SIGSPATIAL Intl. Conference on Advances in Geographic Information Systems, pages 212-221 (2010)

Books

1. KwangSoo Yang, Shashi Shekhar: Spatial Network Big Databases: Queries and Storage Methods, Springer, ISBN 978-3-319-56657-3 (2017)

Book Chapters

3. Evans, Michael R., Dev Oliver, KwangSoo Yang, and Shashi Shekhar. "Enabling Spatial Big Data via CyberGIS: Challenges and Opportunities." CyberGIS for Geospatial Discovery and Innovation. pp. 143-170. Springer, ISBN: 978-94-024-1529-2 (2019)
2. Evans, Michael R., KwangSoo Yang, Viswanath Gunturi, Betsy George, and Shashi Shekhar. "Spatio-temporal Networks: Modeling, Storing, and Querying Temporally-Detailed Roadmaps." In Space-Time Integration in Geography and GIScience, pp. 77-108. Springer, ISBN: 978-94-017-9204-2 (2015)
1. Shekhar, Shashi, Michael R. Evans, Viswanath Gunturi, KwangSoo Yang, and Daniel Cintra Cugler. "Benchmarking Spatial Big Data." In Specifying Big Data Benchmarks, LNCS, Volume 8163, pp. 81-93. Springer, ISBN 978-3-642-53974-9 (2014)

Technical Reports

1. KwangSoo Yang, Faizan Ur Rehman, Hatim Lahza, Saleh Basalamah, Shashi Shekhar, Arif Ghafoor, "Intelligent Shelter Allotment for Emergency Evacuation Planning: A Case Study of Makkah", HajjCore tech. report P1104-T1 (2012)

Patents

2. Shortest Travel Path Determination Using Critical Start Time Points, Publication no.: US20140058674 A1, Publication type: Application, Application no. US 13/974,777, Publication date: Feb 27, 2014, Inventors: Shashi Shekhar, Venkata Maruti Viswanath Gunturi, KwangSoo Yang
1. Conveyance planning using dartboard network, Publication no.: WO2013172959 A2, Publication type: Application, Application no. PCT/US2013/031478, Publication date: Nov 21, 2013, Inventors: Shashi Shekhar, KwangSoo Yang, Venkata Maruti Viswanath Gunturi

TEACHING

Graduate Courses:

- Spring 2020: COP 6731 Theory and Implementation of Database Systems
- Spring 2018: COP 6731 Theory and Implementation of Database Systems
- Fall 2017: COP 6726 New Directions in Database
- Fall 2016: COP 6731 Theory and Implementation of Database Systems
- Spring 2016: COP 6726 New Directions in Database
- Fall 2015: COP 6731 Theory and Implementation of Database Systems

Undergraduate Courses:

- Fall 2019: COP 4703 Applied Database Systems
- Fall 2018: COP 3540 Introduction to Database Structures
- Spring 2018: COP 3540 Introduction to Database Structures
- Fall 2017: COP 3540 Introduction to Database Structures
- Summer 2017: COP 3540 Introduction to Database Structures
- Spring 2017: COP 3540 Introduction to Database Structures
- Fall 2016: COP 3540 Introduction to Database Structures

STUDENT SUPERVISION

Ph.D. Students (3):

- Roxana Herschelman (advisor), “Thesis Title: Spatial Network Big Data Approaches To Emergency Management Information Systems”, (Graduated in Fall 2020).
- Ahmad Qutbuddi (advisor), “Multiple Resource Network Voronoi Diagram”, Expected to complete the Ph.D. dissertation proposal in Fall 2020.
- Divya Gangwani (advisor), “Spatiotemporal Network Analysis”, Expected to take the Ph.D. qualification exam in Fall 2020.

M.S. Students (1):

- Daniel Bereznai (RA supervision), “Node-attributed Spatial Graph Partitioning”, 2018 Fall - 2020 Spring

Undergraduate Students (2):

- Reich Aaron, “Size Constrained k Simple Polygons”, 2017 Fall - 2018 Spring
- Valmer Talis Huhn, “Size Constrained k Simple Polygons”, 2019 Fall - 2020 Spring

GRANT AWARDS

External Grants From Federal/State Agencies

3. “NIH: In-Vehicle Sensors to Detect Cognitive Change in Older Drivers”, Co-PI: KwangSoo Yang with Ruth Tappen, NIH, \$6,130,807, 2020-2024.
2. NSF OAC CAREER: Spatial Network Database approach for Emergency Management Information Systems (\$ 500,011); Mar. 2019 - Feb. 2024, National Science Foundation
1. Development of a Traffic Map Evaluation Tool for TMC Applications (\$243,706); Feb. 2017 – Dec. 2018, Florida Department of Transportation, (Co-PI with PI Dr. Stevanovic, FAU)

Internal Grants

1. OURI Undergraduate Research Grant: Florida Emergency Evacuation Route Planning (\$1,200); Jan. 2018 – Dec. 2018, Florida Atlantic University

SERVICE

Department Service

- Graduate Programs Committee (GPC): 2016-Present
- Instructor Search Committee: 2017

- Proctoring the QE exam: 2015,2016,2017,2018
- Ph.D. Dissertation/M.S. Thesis Committee for four students.

University Service

- OURI UG Symposium Judge 2018
- Graduate Research Judge Day 2020

Professional Activities

- Editorial Board Member of Korea Spatial Information Society
- Refereed for numerous journals, including IEEE Trans. on Knowledge and Data Engineering, International Journal on Advances of Computer Science for Geographic Information Systems, IEEE Intelligent Systems, ACM Trans. on Spatial Algorithms and Systems, ACM Trans. on Spatial Algorithms and Systems, IEEE Trans. on Intelligent Transportation Systems, Journal of AI and Data Mining, ISPRS International Journal of Geo-Information (MDPI), Applied Sciences (MDPI).
- Refereed for numerous conferences, including ACM SIGSPATIAL, FEED Workshop KDD, IEEE International Conference on Vehicular Electronics and Safety, GEOProcessing, GraphSM.