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Education

Ph.D.	Computer Science, University of Southern California, Los Angeles, CA 1996	
	Advisor: Professor Shahram Ghandeharizadeh	
	Title: Scheduling the retrievals of continuous media objects	
M.S.	Computer Science, University of Southern California, Los Angeles, CA 1993	
	Research Topic: *"Parallel Object Oriented Database Systems"*	
B.S.	Sharif University of Technology, Tehran, Iran	1989
	Senior Project: *"Design and Implementation of a CAL Software"*	

Employment History

Professor   2016-present
Spatial Sciences (Joint Appt.), University of Southern California, Los Angeles, CA

Director   2014-present
Informatics Program, University of Southern California, Los Angeles, CA

Professor   2011-present
Dept of Electrical Engineering (Joint Appt.), University of Southern California, Los Angeles, CA

Director   2010-present
Integrated Media Systems Center, University of Southern California, Los Angeles, CA

Professor   2009-present
Dept of Computer Science, University of Southern California, Los Angeles, CA

Associate Professor   2004-2009
Dept of Computer Science, University of Southern California, Los Angeles, CA

Assistant Professor   2000-2004
Dept of Computer Science, University of Southern California, Los Angeles, CA

Director of Information Laboratory   1998-present
Dept of Computer Science, University of Southern California, Los Angeles, CA

Investigator   1996-2001
Integrated Media Systems Center, University of Southern California, Los Angeles, CA

Research Assistant Professor   1996-2000
Dept of Computer Science, University of Southern California, Los Angeles, CA

Publications

Refereed Journal Articles

1. Lei Chen and Cyrus Shahabi: Spatial Crowdsourcing: Challenges and Opportunities, *IEEE Data Eng. Bull.* 39(4): 14-25 (2016).

2. D. Deng, C. Shahabi, U. Demiryurek, and L. Zhu, Task Selection in Spatial Crowdsourcing from Worker's Perspective, *GeoInformatica*, 20(3): 529-568 (2016).

3. Y. Lu, C. Shahabi, and S. H. Kim, Efficient indexing and retrieval of large-scale geo-tagged video databases, *GeoInformatica*, 20(4): 829-857 (2016).

4. A. Akdogan, C. Shahabi, and U. Demiryurek, D-ToSS: A Distributed Throwaway Spatial Index Structure for Dynamic Location Data. *IEEE Trans. Knowl. Data Eng. (TKDE)*, 28(9): 2334-2348 (2016).

5. H. Pham, C. Shahabi, and Y. Liu, Inferring Social Strength from Spatiotemporal Data, *ACM Trans. Database Syst. (TODS)*, 41(1): 7 (2016).

6. C. Shahabi and H. Pham, Inferring Real-World Relationships from Spatiotemporal Data. *IEEE Data Eng. Bull.*, 38(2): 14-26, 2015.

7. J. Xu, D. Deng, U. Demiryurek, C. Shahabi, and M. van der Schaar, Mining the Situation: Spatiotemporal Traffic Prediction With Big Data. *J. Sel. Topics Signal Processing*, 9(4): 702-715, 2015.

8. B. Pan, U. Demiryurek, C. Gupta, and C. Shahabi, Forecasting spatiotemporal impact of traffic incidents for next-generation navigation systems. *Knowl. Inf. Syst.*, 45(1): 75-104, 2015.

9. H. To, C. Shahabi, and L. Kazemi, A Server-Assigned Spatial Crowdsourcing Framework. *ACM Trans. Spatial Algorithms and Systems*, 1(1): 2, 2015.

10. H. V. Jagadish, J. Gehrke, A. Labrinidis, Y. Papakonstantinou, J. M. Patel, R. Ramakrishnan, and C. Shahabi, Big data and its technical challenges. *Communication of ACM (CACM)* 57(7): 86-94, 2014.

11. C. Shahabi, S. H. Kim, L. Nocera, G. Constantinou, Y. Lu, Y. Cai, G. G. Medioni, R. Nevatia, and F. Banaei Kashani, Janus - Multi Source Event Detection and Collection System for Effective Surveillance of Criminal Activity. *JIPS* 10(1): 1-22, 2014.

12. Y. Jing, L. Hu, W. S. Ku, and C. Shahabi, Authentication of k Nearest Neighbor Query on Road Networks. *IEEE Trans. Knowl. Data Eng. (TKDE)* 26(6): 1494-1506, 2014.

13. Y. Lu, J. Lu, G. Cong, W. Wu, and C. Shahabi, Efficient Algorithms and Cost Models for Reverse Spatial-Keyword k-Nearest Neighbor Search, *ACM Trans. Database Syst. (TODS)* 39(2): 13, 2014.

14. L. Hu, W. S. Ku, S. Bakiras and C. Shahabi, Spatial Query Integrity with Voronoi Neighbors, *IEEE Trans. Knowl. Data Eng. (TKDE)* 25(4): 863-876, 2013.

15. A. Khoshgozaran, H. Shirani-Mehr, C. Shahabi, Blind evaluation of location based queries using space transformation to preserve location privacy, *GeoInformatica* 17(4): 599-634, 2013.

16. W. S. Ku, L. Hu, C. Shahabi and H. Wang, A query integrity assurance scheme for accessing outsourced spatial databases, *GeoInformatica* 17(1): 97-124, 2013.

17. H. Shirani-Mehr, F. Banaei Kashani and C. Shahabi, Users plan optimization for participatory urban texture documentation. *GeoInformatica* 17(1): 173-205, 2013.

18. L. Kazemi and C. Shahabi, TAPAS: Trustworthy privacy-aware participatory sensing, *Knowl. Inf. Syst.* 37(1): 105-128, 2013.

19. A. Khodaei, C. Shahabi,and Amir Khodaei, Temporal-Textual Retrieval: Time and Keyword Search in Web Documents, *International Journal of Next-Generation Computing (IJNGC)* 3(3), 2012.

20. A. Khodaei, C. Shahabi and C. Li, SKIF-P: a point-based indexing and ranking of web documents for spatial-keyword search, *Geoinformatica*, Publisher: Springer Netherlands, 16(3): 563-596 (2012).

21. S. Yoon, W. Ye, J. S. Heidemann, B. Littlefield and C. Shahabi, SWATS: Wireless sensor networks for steamflood and waterflood pipeline monitoring, *IEEE Network*, 25(1): 50-56 (2011).

22. A. Khoshgozaran, C. Shahabi and H. Shirani-Mehr, Location privacy: going beyond K-anonymity, cloaking and anonymizers, *Knowl. Inf. Syst.*, 26(3): 435-465 (2011).

23. L. Kazemi and C. Shahabi, A privacy-aware framework for participatory sensing, *SIGKDD Explorations*, 13(1): 43-51 (2011).

24. F. Banaei-Kashani, H. Shirani-Mehr, B. Pan, N. Bopp, L. Nocera and C. Shahabi, GeoSIM: A GeoSpatial Data Collection System for Participatory Urban Texture Documentation, *Special Issue of IEEE Data Engineering Bulletin on Spatial and Spatiotemporal Databases*, June 2010.

25. C. Shahabi, F. Banaei-Kashani, A. Khoshgozaran, L. Nocera and S. Xing, GeoDec: A Fmework to Effectively Visualize and Query Geospatial Data for Decision-Making, *IEEE Multimedia*, ISSN: 1070-986X, pp. 14-23, July-September 2010 (vol. 17 no. 3).

26. M. Sharifzadeh, C. Shahabi, and L. Kazemi, Processing Spatial Skyline Queries in both Vector Spaces and Spatial Network Databases, *ACM Transactions on Database Systems (TODS)*, 34(3), 2009.

27. W. D. Bae, S. Alkobaisi, S. H. Kim, S. Narayanappa and C. Shahabi: Web data retrieval: solving spatial range queries using k-nearest neighbor searches, *GeoInformatica* 13(4): 483-514 (2009).

28. A. Khoshgozaran, A. Khodaei, M. Sharifzadeh, and C., Shahabi, A Hybrid Aggregation and Compression Technique for Road Network Databases, To appear in the *Journal of Knowledge and Information Systems (KAIS)*, ISSN 0219-1377 (Print) 0219-3116 (Online) 2009.

29. Y. Y. Chiang, C. A. Knoblock, C. Shahabi, and C. C. Chen, Accurate and Automatic Extraction of Road Intersections From Raster Maps, *Geoinformatica* volume 13, number 2, pp121-157, 2009.

30. M. Sharifzadeh and C.Shahabi, Approximate Voronoi Cell Computation on Spatial Data Streams, In *The VLDB Journal: The International Journal on Very Large Data Bases*, volume 18, number 1, pp57-75, 2009.

31. M. Sharifzadeh and C. Shahabi, Processing Optimal Sequenced Route Queries Using Voronoi Diagrams, *GeoInformatica*, volume 12, number 4, pp411-433 (2008), December 2008.

32. M. Sharizadeh, M. Kolahdouzan, and C. Shahabi, The Optimal Sequenced Route Query, *The VLDB Journal: The International Journal on Very Large Data Bases*, volume 17, number 4, pp765-787, 2008.

33. C. C. Chen, C. A. Knoblock, and C. Shahabi, Automatically and Accurately Conflating Raster Maps with Orthoimagery, *GeoInformatica*, volume 12, number 3, pp377-410, 2008.

34. C. Shahabi, M. Jahangiri, and F. Banaei-Kashani, ProDA: An End-to-End Wavelet-Based OLAP System for Massive Datasets, *IEEE Computer*, pages 78-86, April 2008.

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36. C. Shahabi, T. Marsh, K. Yang, H. Yoon, A. A. Rizzo, M. Mun, and M. Mclaughlin, Immersidata Analysis: Four Case Studies, *IEEE Computer*, volume 40, number 7, pp45-52, July 2007.

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38. K. Yang and C.Shahabi, An efficient k nearest neighbor search for multivariate time series, *Information and Computation*, January 2007, Pages 65-98.

39. F. Parvini and C. Shahabi, An algorithmic approach for static and dynamic gesture recognition utilizing mechanical and biomechanical characteristics, *International Journal of Bioinformatics Research and Applications*, 2007, Vol. 3, No. 1.

40. C. Shahabi and M. Safar, An experimental study of alternative shape-based image retrieval techniques, *Multimedia Tools and Applications*, 32(1), Page numbers: 29-48, 2007.

41. M. Sharifzadeh and C. Shahabi, Utilizing Voronoi Cells of Location Data Streams for Accurate Computation of Aggregate Functions in Sensor Networks, In *GeoInformatica*, Vol. 10, No. 1, pp9-36, 2006.

42. C. Chen, C. Knoblock, and C. Shahabi, Automatically Conflating Road Vector Data with Orthoimagery, In *GeoInformatica*, Vol. 10, No. 4, Page numbers: 495-530, 2006.

43. M. Safar and C. Shahabi, MBC-Based Shape Retrieval: Basics, Surveys, Optimizations, and Open Problems, Accepted for publication in *Journal of Multimedia Tools and Applications*, Kluwer Academic Publishers, Vol. 29, Page numbers: 189-206, No. 6, 2006.

44. S. Y. D. Yao, C. Shahabi and R. Zimmermann, BroadScale: Efficient Scaling of Heterogeneous Storage Systems, *International Journal on Digital Libraries- Special Issue on Multimedia Contents and Management in Digital Libraries*, Vol. 6, No. 2, ISSN: 1432-5012, 2006.

45. R. Zimmermann, K. Fu, M. Jahangiri, and C. Shahabi, A Multi-Threshold Online Smoothing Technique for Variable Rate Multimedia Streams, In *Journal of Multimedia Tools and Applications*, Kluwer Academic Publishers, Vol. 28, No. 2, 2006.

46. M. R. Kolahdouzan and C. Shahabi, Alternative Solutions for Continuous K Nearest Neighbor Queries in Spatial Network Databases, In *GeoInformatica*, Volume 9, Number 4, Pages 321-341, December 2005.

47. H. Yoon, K. Yang and C. Shahabi, Feature Subset Selection and Feature Ranking for Multivariate Time Series, *To appear in IEEE Transactions on Knowledge and Data Engineering (TKDE) - Special Issue on Intelligent Data Preparation*, September 2005, Volume 17, Issue 9, pp. 1186- 1198, ISSN: 1041-4347.

48. C. Shahabi, M. Jahangiri and D. Sacharidis, Hybrid Query and Data Ordering for Fast and Progressive Range-Aggregate Query Answering, *International Journal of Data Warehousing and Mining*, April 2005, Vol. 1, No.2, Pages 49-69, Idea Group Publishing, ISSN: 1548-3924.

49. S. Y. Yao, C. Shahabi and Per-Ake Larson, Hash-Based Labeling Techniques for Storage Scaling, *The VLDB Journal, The International Journal on Very Large Data Bases*, Springer-Verlag Heidelberg, 2005, ISSN: 1066-8888 (Paper) 0949-877X (Online), DOI: 10.1007/s00778-004-0124-6.

50. R. Gummadi, X. Li, R. Govindan, C. Shahabi and Wei Hong, Energy-Efficient Data Organization and Query Processing in Sensor Networks, *SIGBED Review*, Vol. 2, No. 1, Baltimore, Maryland, January 2005, ISSN: 1551-3688.

51. R. Zimmermann, C. Shahabi, K. Fu, and S. Y. Yao, Scalability Evaluation of the Yima Streaming Media Architecture, *Software: Practice and Experience*, December 2004, Volume 35, Issue 4, pp. 345 - 359.

52. A. A. Rizzo, T. Bowerly, C. Shahabi, J. G. Buckwalter, Diagnosing Attention Disorders in a Virtual Classroom, *IEEE Computer*, June 2004.

53. C. Shahabi, M. R. Kolahdouzan and M. Safar, Alternative Strategies for Performing Spatial Joins on Web Sources, In *Journal of Knowledge and Information Systems (KAIS)*, May 2004, Volume 6, Number 3, pp. 290-314, ISSN: 0219-1377 (Paper) 0219-3116 (Online).

54. R. Zimmermann, C. Kyriakakis, C. Shahabi, C. Papadopoulos, A. A. Sawchuk and U. Neumann, The Remote Media Immersion System, In *IEEE MultiMedia magazine, special issue on "Digital Media on Demand"*, v11, n2, pages 48-57, April 2004.

55. C. Shahabi and Y. S. Chen, An Adaptive Recommendation System without Explicit Acquisition of User Relevance Feedback, In *Distributed and Parallel Databases Journal*, v14, n3, pages 173-192, Kluwer Academic Publishers, September 2003.

56. C. Shahabi, M. R. Kolahdouzan and M. Sharifzadeh, A Road Network Embedding Technique for K-Nearest Neighbor Search in Moving Object Databases, In *GeoInformatica Journal*, v7, n3, pages 255-273, Kluwer Academic Publishers, September 2003.

57. Y. S. Chen and C. Shahabi, Yoda: An Adaptive Soft Classification Model: Content-based Similarity Queries and Beyond, *ACM/Springer Multimedia Systems Journal, Special issue on Content-Based Image Retrieval*, v8, n6, pages 523-535, Spring 2003.

58. C. Shahabi and F. Banaei-Kashani, Efficient and Anonymous Web Usage Mining for Web Personalization, *INFORMS Journal of Computing, Special Issue on Web Data Mining*, v15, n2, pages 123-147, Spring 2003.

59. C. Shahabi and F. Banaei-Kashani, Decentralized Resource Management for a Distributed Continuous Media Server, *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, v13, n7, pages 710-727, July 2002.

60. C. Shahabi, R. Zimmermann, K. Fu and D. Yao, Yima: A Second Generation of Continuous Media Servers, *IEEE Computer*, v35, n6, pages 56-64, June 2002.

61. G. Burns, F. Bian, W. C. Cheng, S. Kapadia, C. Shahabi, S. Ghandeharizadeh, Software engineering tools and approaches for neuroinformatics: the design and implementation of the View-Primitive Data Model framework (VPDMf), *Neurocomputing*, v44-46, pages 1049-1056, June 2002.

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63. N. Ashish, C. Knoblock and C. Shahabi, Selectively Materializing Data in Mediators by Analyzing User Queries, *International Journal of Cooperative Information Systems*, v11, n1, pages 119-144, March 2002.

64. M. Safar and C. Shahabi, A Framework To Evaluate The Effectiveness of Shape Representation Techniques, Journal of *Applied Systems Studies, Special Issue on Distributed Multimedia Systems with Applications*, v2, n3, Cambridge International Science Publishing 2001.

65. Leta Hunt, Bruce Zuckerman and C. Shahabi, Prototypical Extensions to the Paradigm of Spatial Search. Journal of *Academic Librarianship, Special Issue on Digital Libraries*, v26, n6, November 2000.

66. C. Shahabi, L. Khan and D. McLeod, A Probe-Based Technique to Optimize Join Queries in Distributed Internet Databases. In the Journal of *Knowledge and Information Systems (KAIS)*,Springer-Verlag,v2 , n3, pp373-385, August 2000.

67. C. Shahabi and M. Alshayeji, Super-streaming: A New Object Delivery Paradigm for Continuous Media Servers. In the Journal of *Multimedia Tools and Applications*, v11, n1, May 2000.

68. C. Shahabi and S. Ghandeharizadeh, Continuous Display of Presentations Sharing Clips. *ACM/Springer-Verlag Multimedia Systems Journal*, v3, No. 2, May 95.

69. S. Ghandeharizadeh, A. Dashti and C. Shahabi, A Pipelining Mechanism to Minimize the Latency Time in Hierarchical Multimedia Storage Managers. *Journal of Computer Communications*, v18, No. 3, March 95.

Books

1. *Streaming Media Server Design*, Ali E. Dashti, Seon Ho Kim, Cyrus Shahabi and Roger Zimmermann, Prentice Hall PTR, April 25, 2003, ISBN 0130670383.

2. *Shape Analysis and Retrieval of Multimedia Objects*, Maytham Safar and Cyrus Shahabi, Kluwer Academic Publishers, 2002, ISBN 1-4020-7252-X.

Edited Works

1. Matthias Renz, Cyrus Shahabi, Xiaofang Zhou, Muhammad Aamir Cheema: *Database Systems for Advanced Applications - 20th International Conference, DASFAA 2015*, Hanoi, Vietnam, April 20-23, 2015, Proceedings, Part I. Lecture Notes in Computer Science 9049, Springer 2015, ISBN 978-3-319-18119-6.

2. Matthias Renz, Cyrus Shahabi, Xiaofang Zhou, Muhammad Aamir Cheema: *Database Systems for Advanced Applications - 20th International Conference, DASFAA 2015*, Hanoi, Vietnam, April 20-23, 2015, Proceedings, Part II. Lecture Notes in Computer Science 9050, Springer 2015, ISBN 978-3-319-18122-6

3. Christophe Claramunt, Markus Schneider, Raymond Chi-Wing Wong, Li Xiong, Woong-Kee Loh, Cyrus Shahabi, Ki-Joune Li: *Advances in Spatial and Temporal Databases - 14th International Symposium, SSTD 2015*, Hong Kong, China, August 26-28, 2015. Proceedings. Lecture Notes in Computer Science 9239, Springer 2015, ISBN 978-3-319-22362-9

4. *Proceedings of the 2010 ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS 2010)*, Mohamed H. Ali, Erik G. Hoel, Cyrus Shahabi, November 2, 2010, San Jose, CA, USA ACM 2010.

5. *Proceedings of the 17th ACM SIGSPATIAL International Symposium on Advances in Geographic Information Systems (ACM-GIS 2009)*, Divyakant Agrawal, Walid G. Aref, Chang-Tien Lu, Mohamed F. Mokbel, Peter Scheuermann, Cyrus Shahabi, Ouri Wolfson, Editors, November 4-6, 2009, Seattle, Washington, USA, Proceedings ACM 2009.

6. *Proceedings of the 15th ACM International Workshop on Geographic Information Systems (ACM-GIS'07)*, Hanan Samet, Markus Schneider, and Cyrus Shahabi, Editors, November 7-9, 2007, Seattle, Washington, ACM Digital Library.

7. *Proceedings of the 13th ACM International Workshop on Geographic Information Systems (ACM-GIS'05)*, Cyrus Shahabi and Omar Boucelma, Editors, November 4-5, 2005, Bremen, Germany, ACM Press.

8. *Proceedings of the First International Workshop on Networking Meets Databases (NetDB'05)*, Ramesh Govindan and Cyrus Shahabi, Editors, IEEE Computer Press, April 2005.

9. *Proceedings of the Second International Workshop on Web Information and Data Management (WIDM'99)*, Cyrus Shahabi, Editor, ACM Press, November 1999, ISBN: 1-58113-221-2.

Book Chapters

1. C. Shahabi, Road Networks, In *Encyclopedia of Database Systems*, T. M. zsu, L. Liu, (Eds.), Springer 2009, 2442-2447, ISBN:978-0-387-35544-3.

2. C. Shahabi and M. Sharifzadeh, Voronoi Diagrams, In *Encyclopedia of Database Systems*, T. M. zsu, L. Liu, (Eds.), Springer 2009, 3438-3440, ISBN:978-0-387-35544-3.

3. F. Banaei-Kashani and C. Shahabi, Applications of Sensor Network Data Management, In *Encyclopedia of Database Systems*, T. M. zsu, L. Liu, (Eds.), Springer 2009, 107-111, ISBN:978-0-387-35544-3.

4. C. Shahabi and M. Sharifzadeh, Query Processing in Spatial Network Databases utilizing Voronoi Diagrams, In *Encyclopedia of GIS*, S. Shekhar, H. Xiong (Eds.), Springer 2008, ISBN: 978-0-387-30858-6.

5. C. A. Knoblock and C. Shahabi, Geospatial Data Integration, The Handbook of Geographic Information Science, ISBN: 9781405107969, Pages 185-196, Editors: John P. Wilson , A. Stewart Fotheringham; Publisher: Blackwell, 2008.

6. C. Shahabi and F. Banaei-Kashani, Querical Data Networks, In Encyclopedia of Database Technologies and Applications, Editors: Laura C. Rivero, Jorge Horacio Doorn, Viviana E. Ferraggine; Publisher: Idea Group Inc., August 2005, ISBN: 1-59140-560-2.

7. M. Sharifzadeh, C. Shahabi and C. A. Knoblock, Learning Approximate Thematic Maps from Labeled Geospatial Data, In Next Generation Geospatial Information: From Digital Image Analysis to Spatiotemporal Databases, Peggy Agouris and Arie Croituru Eds., Taylor & Francis Group, July 2005, ISBN 0415380499.

8. C. Shahabi, D. Sacharidis and M. Jahangiri, Wavelets for Querying Multidimensional Datasets, In Encyclopedia of Data Warehousing and Mining, Vol. 1, Idea Group Reference, April 2005, ISBN 1-59140-557-2.

9. L. Khan, A. Ponnusamy, D. McLeod and C. Shahabi, A Run-Time Based Technique to Optimize Queries in Distributed Internet Databases, In Advanced Topics in Database Research , Vol. 2, Idea Group Publishing, 2003.

10. C. Shahabi and Roger Zimmermann, Design and Development of a Scalable End-to-End Streaming Architecture, *Video Databases: Design and Applications*, Editors Borko Furht and Oge Marques, CRC Press LLC, Boca Raton, Florida, September 2003 (ISBN 0-849-37006-X).

11. C. Shahabi and F. Banaei-Kashani, A Framework for Efficient and Anonymous Web Usage Mining Based on Client-Side Tracking, *Mining Web Log Data Across All Customers Touch Points, Revised Papers from the 3rd International WEBKDD Workshop*, Springer-Verlag, 2002 (ISBN: 3-540-43969-2).

12. Y. S. Chen and C. Shahabi, Improving User Profiles for E-Commerce by Genetic Algorithms, In *E-Commerce and Intelligent Methods, Studies in Fuzziness and Soft Computing,*, J. Segovia, P.S. Szczepaniak, M. Niedzwiedzinski, Editors, Springer-Verlag, 2002 (ISBN 3-7908-1499-7).

13. C. Shahabi, L. Kaghazian, S. Mehta, A. Ghoting, G. Shanbhag, and M. L. McLaughlin, Understanding of User Behavior in Immersive Environments. In *Touch in Virtual Environments: Haptics and the Design of Interactive Systems*, Margaret L. McLaughlin, Joao Hespanha, and Gaurav Sukhatme, Editors, Prentice Hall, 2001 (ISBN 0-13-065097-8).

14. C. Shahabi and S. Jia, Perspective: Geographical Information Systems. In *Computing the Brain: A Guide to Neuroinformatics*, Michael A. Arbib, and Jeffrey Grethe, Editors, with the Project Team of the University of Southern California Brain Project, Academic Press, 2001 (ISBN 0-12-059781-0).

15. S. Ghandeharizadeh and C. Shahabi, Distributed Multimedia Systems. In *Wiley Encyclopedia of Electrical and Electronics Engineering*, Editor: J. G. Webster, Volume 5, John Wiley & Sons, Inc, 1999.

16. S. Ghandeharizadeh, S. H. Kim and C. Shahabi. Placement of Continuous Media in Multi-Zone Disks. In *Multimedia Information Storage and Management*, Kluwer Academic Publishers 1996 (ISBN 0-7923-9764-9).

Selected Refereed Conference Proceedings

1. P. Cheng, X. Lian, L. Chen and C. Shahabi, Prediction-Based Task Assignment on Spatial Crowdsourcing, *33rd IEEE International Conference on Data Engineering (ICDE)*, San Diego, CA, April 2017.

2. R. Yu, Y. Li, C. Shahabi, U. Demiryurek, and Y. Liu, Deep Learning: A Generic Approach for Extreme Condition Traffic Forecasting, *Proceedings of the 2017 SIAM International Conference on Data Mining (SDM)*, Houston, Texas, US, April 2017.

3. Y. Li, H. Su, U. Demiryurek, B. Zheng, T. He, and C. Shahabi, PaRE: A System for Personalized Route Guidance, *Proceedings of the 26th International Conference on World Wide Web (WWW)*, Perth, Australia, April 2017.

4. M. Asghari, D. Deng, C. Shahabi, U. Demiryurek, and Y. Li, Price-aware real-time ride-sharing at scale: an auction-based approach, *24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL 2016)*, San Francisco, CA, November 2016 (**Acceptance rate < 18%**).

5. H. To, K. Nguyen, and C. Shahabi, Differentially private publication of location entropy, *24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (SIGSPATIAL 2016)*, San Francisco, CA, November 2016(**Acceptance rate < 18%**).

6. L. Tran, L. Fan, and C. Shahabi, Distance-based Outlier Detection In Data Streams, *Proceedings of the 42nd International Conference on Very Large Data Bases (VLDB 2016)*, New Delhi, India, September 2016.

7. H. Pham and C. Shahabi, Spatial Influence - Measuring Followship in the Real World, *32nd IEEE International Conference on Data Engineering (ICDE)*, Helsinki, Finland, May 2016.

8. Y. Lu, H. To, A. Alfarrarjeh, S. H. Kim, Yi. Yin, R. Zimmermann, and C. Shahabi, GeoUGV: User-Generated Mobile Video Dataset with Fine Granularity Spatial Metadata, *In the 7th ACM Multimedia Systems Conference (MMSys)*, Klagenfurt am Worthersee, Austria, May 2016.

9. H. To, L. Fan, L. Tran, and C. Shahabi, Real-Time Task Assignment in Hyperlocal Spatial Crowdsourcing under Budget Constraints, *In Proceeding of IEEE International Conference on Pervasive Computing and Communications (PerCom)*, Sydney, Australia, March 2016 (**Acceptance rate < 15%**).

10. R. Yu, A. Gelfand, S. Rajan, C. Shahabi, and Y. Liu, Geographic Segmentation via Latent Poisson Factor Model, *ACM International Conference on Web Search and Data Mining (WSDM)*, San Francisco, CA, Feb 2016 (**acceptance rate 18.2%**).

11. C. Shahabi, L. Xiong, L. Fan, L. Nocera, and M. Li, Privacy-Preserving Inference of Social Relationships from Location Data: A Vision Paper, *23rd ACM SIGSPATIAL International Conference on Advances in GIS*, Seattle, Washington, USA, November 3-6, 2015 (third place CCC BlueSky Ideas Award for best vision paper).

12. H. To, S. H. Kim, and C. Shahabi, Effectively Crowdsourcing the Acquisition and Analysis of Visual Data for Disaster Response, *In proceeding of 2015 IEEE International Conference on Big Data, Santa Clara*, CA, USA, October 29-November 1, 2015 (**Acceptance rate 18%**).

13. D. Deng, C. Shahabi, and L. Zhu, Task Matching and Scheduling for Multiple Workers in Spatial Crowdsourcing, *23rd ACM SIGSPATIAL International Conference on Advances in GIS*, Seattle, Washington, USA, November 3-6, 2015 (**acceptance rate: 17.5%**).

14. Y. Lu and C. Shahabi, An arc orienteering algorithm to find the most scenic path on a large-scale road network, *23rd ACM SIGSPATIAL International Conference on Advances in GIS*, Seattle, Washington, USA, November 3-6, 2015 **(acceptance rate: 17.5%)**.

15. M. Asghari, T. Emrich, U. Demiryurek, and C. Shahabi, Probabilistic Estimation of Link Travel Times in Dynamic Road Networks, *23rd ACM SIGSPATIAL International Conference on Advances in GIS*, Seattle, Washington, USA, November 3-6, 2015 **(acceptance rate: 17.5%)**.

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39. C. Shahabi, M. Sharifzadeh and A. A. Rizzo, Modeling Data of Immersive Environments, *ACM First International Workshop on Immersive Telepresence (ITP'02)*, Juan Les Pins, France, December 2002.

40. C. Shahabi,F. B. Kashani and Jabed Faruque, A Reliable, Efficient, and Scalable System for Web Usage Data Acquisition, *in ACM WebKDD'01 Workshop in conjunction with the ACM-SIGKDD 2001*, San Francisco, CA, August 2001.

41. C. Shahabi, S. Chung and Maytham Safar, A Wavelet-Based Approach to Improve the Efficiency of Multi-Level Surprise Mining, *In the PAKDD International Workshop on Mining Spatial and Temporal data*, Hong Kong, China, April 2001.

42. R. R. Schmidt and C. Shahabi, Wavelet Based Density Estimators for Modeling Multi-dimensional Data Sets, *In the SIAM Workshop on Mining Scientific Data Sets*, Chicago, IL, April 2001.

43. C. Shahabi, A. Faisal, M. McLaughlin and F. Betz, INsite: Introduction to a Generic Paradigm for Interpreting User-web Space Interaction, In *Proceedings of the 2nd ACM workshop on Web Information and Data Management (WIDM'99)*, Kansas City, Missouri, November 1999.

44. N. Ashish, C. Knoblock and C. Shahabi, Selectively Materializing Data in Mediators by Analyzing Source Structure, Query Distribution and Maintenance Cost, In *Proceedings of the 2nd ACM workshop on Web Information and Data Management (WIDM'99)*, Kansas City, Missouri, November 1999.

45. C. Shahabi, M. Alshayeji, N. Jiang and L. Khan, Improving the Performance of Audio-based Similarity Queries with Clustering, In *Proceedings of the ACM Multimedia First International Workshop on Multimedia Intelligent Storage and Retrieval Management*, Orlando, Florida, October 1999.

46. C. Shahabi, G. Barish, B. Ellenberger, N. Jiang, M. Kolahdouzan, A. Nam and R. Zimmermann, Immersidata Management: Challenges in Management of Data Generated within an Immersive Environment, In *Proceedings of the Fifth International Workshop on Multimedia Information Systems (MIS'99)*, Palm Spring, CA, October 1999.

47. N. Ashish, C. Knoblock and C. Shahabi, Semantic Caching for Information Integration, In *Proceedings of the AAAI'98 Workshop on AI and Information Integration*, July 1998.

48. N. Ashish, C. Knoblock and C. Shahabi, Intelligent Caching for Information Mediators, In *Proceedings of the ACM/SIGMOD 5th International Workshop on Knowledge Representation Meets Databases (KRDB'98)*, May 1998.

49. C. Shahabi and M. Alshayeji, Object Delivery in Distributed Continuous Media Servers, In *Proceedings of the IEEE Eight International Workshop on Research Issues in Data Engineering (RIDE'98)*, Feb. 1998.

50. C. Shahabi, M. Alshayeji and S. Wang, A Redundant Hierarchical Structure for a Distributed Continuous Media Sever, In *Proceedings of the European Workshop on Interactive Distributed Multimedia Systems and Telecommunication Services (IDMS'97)*, September 1997.

51. C. Shahabi, A. Zarkesh, J. Adibi, and V. Shah, Knowledge discovery from users web-page navigation, In *Proceedings of the IEEE Seventh International Workshop on Research Issues in Data Engineering (RIDE'97)*, April 1997.

Other Scholarly Publications

1. M. Yue, L. Fan, and C. Shahabi, Inferring Traffic Incident Start Time with Loop Sensor Data, *The 25th ACM International Conference on Information and Knowledge Management (CIKM)*, Indianapolis, IN, October 2016 (**Best Demonstration Award**.

2. D. Deng, C. Shahabi, U. Demiryurek, L. Zhu, R. Yu, and Y. Liu, Latent Space Model for Road Networks to Predict Time-Varying Traffic, *ACM International Conference on Knowledge Discovery and Data Mining (SIGKDD)*, San Francisco, CA, August 2016, (**acceptance rate 18%**) poster.

3. Y. Li, H. Su, U. Demiryurek, B. Zheng, K. Zeng, and C. Shahabi, PerNav: A Route Summarization Framework for Personalized Navigation, *Proceedings of the 2016 ACM International Conference on Management of Data (SIGMOD)*, San Francisco, CA, June 2016 (demonstration).

4. Y. Lu, G. Cong, and J. Lu, Efficient Algorithms for Answering Reverse Spatial-Keyword Nearest Neighbor Queries, *23rd ACM SIGSPATIAL International Conference on Advances in GIS*, Seattle, Washington, USA, November 3-6, 2015, (short paper).

5. A. Akdogan, S. Indrakanti, U. Demiryurek, and C. Shahabi, Cost-Efficient Partitioning of Spatial Data on Cloud. *IEEE BigData*, Santa Clara, CA, USA, October 2015 (Short paper).

6. H. To, G. Ghinita, and C. Shahabi, PrivGeoCrowd: A toolbox for studying private spatial Crowdsourcing. *ICDE 2015*, 1404-1407 (demonstration).

7. Y. Lu, C. Shahabi, and S. H. Kim, An Efficient Index Structure for Large-scale Geo-tagged Video Databases, *ACM SIGSPATIAL GIS 2014* (short paper).

8. C. Shahabi, Towards a generic framework for trustworthy spatial crowdsourcing, *MobiDE* 2013: 1-4 (invited paper).

9. S. H. Kim, J. Shi, A. Alfarrarjeh, D. Xu, Y. Tan and C. Shahabi, Real-Time Traffic Video Analysis Using Intel Viewmont Coprocessor, *DNIS* 2013: 150-160 (invited paper).

10. L. Hu, Y. Jing, W. S. Ku and C. Shahabi, Enforcing k Nearest Neighbor Query Integrity on Road Networks, *ACM SIGSPATIAL GIS (ACMGIS 2012)*, Redondo Beach, CA, November 2012 (short paper).

11. H. Pham, L. Hu and C. Shahabi, GEOSO - A Geo-Social Model: From Real-World Co-occurrences to Social Connections. *DNIS* 2011: 203-222 (invited paper).

12. H. Pham, L. Hu and C. Shahabi, Towards integrating real-world spatiotemporal data with social networks. *ACM SIGSPATIAL ACMGIS*, Chicago, Il, page 453-457, November 2011 (short paper).

13. M. H. Ali, E. G. Hoel and C. Shahabi, *ACM SIGSPATIAL Special*, 3(1): 13-14 (2011).

14. U. Demiryurek, F. Banaei-Kashani and C. Shahabi, A Case for Time-Dependent Shortest Path Computation in Spatial Networks, *ACM SIGSPATIAL ACMGIS*, San Jose, CA, November 2010 (short paper).

15. J. Kazemitabar, U. Demiryurek, M. Ali, A. Akdogan and C. Shahabi, Geospatial Stream Query Processing using Microsoft SQL Server StreamInsight, *PVLDB* 3(2): 1537-1540, September 2010 (Demo Paper).

16. U. Demiryurek, F. Banaei-Kashani and C. Shahabi, TransDec: A Spatiotemporal Query Processing Framework for Transportation Systems (Demo), *26th IEEE International Conference on Data Engineering (ICDE 2010)*, Long Beach, California, USA, March 2010 (Demo Paper).

17. F. Banaei-Kashani and C. Shahabi, Fixed-Precision Approximate Continuous Aggregate Queries in Peer-to-Peer Databases, In *IEEE ICDE'08*, Cancun, Mexico, April 2008, (poster presentation).

18. C. Shahabi and A. Khoshgozaran, Location Privacy in Geospatial Decision-Making, *Workshop on Databases in Networked Information Systems (DNIS 2007) (Invited Paper; Keynote)*, Aizu-Wakamatsu, Japan, October 2007.

19. M. Jahangiri and C. Shahabi, ProDA: A Suite of WebServices for Progressive Data Analysis, *ACM SIGMOD*, Baltimore, Maryland, USA, June 2005, (demonstration).

20. C. Shahabi and F. Banaei-Kashani, Modelling Peer-to-Peer Data Networks Under Complex System Theory, *Workshop on Databases in Networked Information Systems (DNIS 2005) (Invited Paper)*, Aizu-Wakamatsu, Japan, March 2005, LNCS, Volume 3433, ISBN: 3-540-25361-0.

21. R. Gummadi, X. Li, R. Govindan, C. Shahabi and W. Hong, Energy-Efficient Data Organization and Query Processing in Sensor Networks, *SIGBED Review*, Vol. 2, No. 1, Baltimore, Maryland, January 2005, ISSN: 1551-3688.

22. M. Sharifzadeh, C. Shahabi, B. Navai, F. Parvini, and A. A. Rizzo, AIDA: an Adaptive Immersive Data Analyzer, *The 30th International Conference on Very Large Data Bases (VLDB'04)*, Toronto, Canada, September, 2004, (demonstration).

23. F. Banaei-Kashani, C. C. Chen, and C. Shahabi, WSPDS: Web Services Peer-to-peer Discovery Service, *International Symposium on Web Services and Applications (ISWS'04)*, Las Vegas, Nevada, USA, June 2004.

24. Y. S. Chen, C. Shahabi, and A.P.C. Burns, Two-Phase Decision Fusion Based On User Preference, *The Hawaii International Conference on Computer Sciences*, Honolulu, Hawaii, January 2004.

25. C. C. Chen, C. A. Knoblock, C. Shahabi, and S. Thakkar, Building Finder: A System to Automatically Annotate Buildings in Satellite Imagery, *International Workshop on Next Generation Geospatial Information (NG2I'03)*, Cambridge (Boston), Massachusetts, USA, October, 2003.

26. C. Shahabi and Y. S. Chen, Web Information Personalization: Challenges and Approaches, *The 3nd International Workshop on Databases in Networked Information Systems (DNIS'03)*, Aizu-Wakamatsu, Japan, September, 2003.

27. C. Shahabi and D. Yan, Real-Time Pattern Isolation and Recognition Over Immersive Sensor Data Streams, *The 9th International Conference On Multi-Media Modeling (MMM'03)*, Taipei, Taiwan, January 2003 (Invited Paper).

28. R. Zimmermann, K. Fu, N. Nahata and C. Shahabi, Retransmission-based error control in a many-to-many client-server environment, *SPIE/ACM Conference on Multimedia Computing and Networking (MMCN'03)*, Santa Clara, CA, January 2003.

29. J. L. Ambite, C. A. Knoblock, M. R. Kolahdouzan, M. Muslea, C. Shahabi and S. Thakkar, The WorldInfo Assistant: Spatio-Temporal Information Integration on the Web, *In the 27th International Conference on Very Large Data Bases (VLDB'2001)*, Rome, Italy, September 2001 (Demonstration).

30. C. Shahabi, L. Kaghazian, S. Mehta, A. Ghoting, G. Shanbhag and M. McLaughlin, Analysis of Haptic Data for Sign Language Recognition, *in the 9th International Conference on Human Computer Interaction (UAHCI'2001*, New Orleans, LA, August 2001.

31. C. Shahabi, M. R. Kolahdouzan, G. Barish, R. Zimmermann, D. Yao, K. Fu, L. Ling, Alternative Techniques for the Efficient Acquisition of Haptic Data, *In ACM SIGMETRICS/Performace 2001*, Cambridge, MA, June 2001 (poster).

32. C. A. Knoblock, J. L. Ambite, S. Minton, M. Kolahdouzan, M. Muslea, J. Oh, C. Shahabi and S. Thakkar, Integrating the World: The WorldInfo Assistant, *In the International Conference on Artificial Intelligence (IC-AI)*, Las Vegas, NV, June 2001.

33. J. L. Ambite, C. Shahabi, Rolfe R. Schmidt and Andrew Philpot, Fast Approximate Evaluation of OLAP Queries for Integrated Statistical Data, *In the National Conference for Digital Government Research*, Los Angeles, California, May 2001.

34. J. Eisenstein, S. Ghandeharizadeh, L. Huang, C. Shahabi, G. Shanbhag and R. Zimmermann, Analysis of Clustering Techniques to Detect Hand Signs, *In the International Symposium on Intelligent Multimedia, Video and Speech Processing*, Hong Kong, China, May 2001.

35. C. Shahabi, A. Faisal, F. B. Kashani and J. Faruque, INSITE: A Tool for Real-Time Knowledge Discovery from Users Web Navigation, In *Proceedings of Very Large Databases (VLDB'2000)*, Cairo, Egypt, September 2000 (Demonstration).

36. C. Shahabi and Y. Chen, Efficient Support of Soft Query in Image Retrieval Systems, In *Proceedings of International Conference on Advances in Infrastructure for Electronic Business, Science, and Education on the Internet*, Rome, Italy, August 2000 (Invited paper).

37. G. Barish, Y. S. Chen, D. Pasquo, C. Knoblock, S. Minton, I. Muslea and C. Shahabi, Distributed Information Integration for Heterogeneous Datatypes, In *Proceedings of IEEE Conference on Data Engineering (ICDE'2000)*, San Diego, California, February 2000 (Demonstration).

38. C. Shahabi and Y. S. Chen, Soft Queries in Image Retrieval Systems, In *Proceedings of SPIE Electronic Imaging 2000*, San Jose, California, January 2000.

39. R. Zimmermann, M. Kolahdouzan and C. Shahabi, MASAA: A Case Study in Building a Distributed Integrated Media Database, In *Proceedings of the New Trends in Multimedia Systems in the Software Technology Track of the Thirty-Third Hawaii International Conference on System Sciences (HICSS-33)*, Maui, Hawaii, January 2000.

40. A. Dashti and C. Shahabi, Data Placement Techniques for Serpentine Tapes, In *Proceedings of the New Trends in Multimedia Systems in the Software Technology Track of the Thirty-Third Hawaii International Conference on System Sciences (HICSS-33)*, Maui, Hawaii, January 2000.

41. C. Shahabi, M. Safar and H. Ai, Multiple Index Structures for Efficient Retrieval of 2D Objects, In *Proceedings of the IEEE International Conference on Data Engineering (ICDE)*, March 1999 (Poster).

42. C. Shahabi, L. Khan, V. Shah and D. McLeod, Run-Time Optimization of Join Queries for Distributed Databases over the Internet, In *Proceedings of Communication Networks and Distributed Systems Modeling and Simulation (CNDS)*, January 1999.

43. C. Shahabi and L. Khan, Selective Placement and Replication Strategies for Storing Audio Clips in A Naval Application, In *Proceedings of the SPIE Multimedia Storage and Archiving Systems III*, November 1998.

44. G. Barish, C. Knoblock, Y. Chen, S. Minton, A. Philpot and C. Shahabi, TheaterLoc: A Case Study in Building An Information Integration Application, In *Proceedings of the AAAI IJCAI Workshop on Intelligent Information Integration*, Stockholm, Sweden, August 1999.

45. C. Shahabi, A. Dashti and S. Ghandeharizadeh, Continuous Media Retrieval Optimizer for Hierarchical Storage Structures, In *Proceedings of the International Workshop on Issues and Applications of Database Technology (IADT)*, July 1998.

46. C. Shahabi, M. Alshayeji and S. Wang, A Buffering Policy for Distributed Continuous Media Servers, In *Proceedings of the World Automation Congress (WAC), IFMIP*, May 1998.

47. S. Ghandeharizadeh, L. Ramos and C. Shahabi, An Overview of Techniques for Continuous Retrieval of Multimedia Data *In ACM SIGARCH Computer Architecture News, 21, No. 5*, December 1993 (Invited paper).

Industrial Articles

1. Revolutionary Approach to Network Storage for the New Millennium. In *T.H.E. Journal*, May 98.

2. Network Storage for the Next Millennium. In *Storage Inc.*, Spring 98.

Grants

Previous:

- C. Shahabi, PI, **Northrop Grumman Corporation, 10/01/2015 - 11/30/2016**: Privacy-Aware Mobile Crowdsourcing, $ 55,000.

- C. Shahabi, PI, **NSF III, 08/16/2011- 08/15/2015**: Real-World Traffic Data Management for Time-Dependent Spatial Queries, $ 579,610.
- C. Shahabi, PI, **Oracle, 6/1/2013- 12/31/2015**: Time-dependent Vehicle Routing for Fleets , $ 194,936.
- C. Shahabi, PI, **Californina-DOT, 01/01/2015 - 12/31/2015:** Analysis and Prediction of Transportation Systems Incidents for Better Mobility and Safety in Transportation Systems, $99,999.
- G. Giuliano, C. Shahabi, et. al., **Los Angeles County Metropolitan Transportation Authority 08/16/2010 - 08/15/2014**: Archived Data Management System for Regional Integration of ITS, $ 1,065,914 (total: $ 1,979,124).
- C. Shahabi, PI, **Northrop Grumman Corporation, 12/30/2013 - 12/31/2014**: Geolocation based camera activity motion sensing to enable persistent persons of interest identification and movement tracking across multiple surveillance camera video frames and video feeds, $ 30,000.
- C. Shahabi, PI, **Google, 6/1/2013- 5/30/2014**: GeoCrowd - Harnessing the Power of Crowd for On-Demand Geographical Data Collection, $ 62,067.
- C. Shahabi, PI, **HP Labs, 9/1/2012 - 8/31/2013**: Traffic-Aware Route Planning for Delivery Businesses, $ 55,000.
- C. Shahabi, PI, **Vietnam Education Foundation, 07/01/2012- 06/30/2013**: VEF US Faculty Scholar Program, $ 55,000.
- C. Shahabi, PI, **Northrop Grumman Corporation, 06/01/2012 - 05/30/2013**: A Spatiotemporal Database Approach for Effective Multi-Source Activity Surveillance, $ 40,000.
- J. Taplin, C. Shahabi, et. al., **Intel, 12/1/2011 - 07/31/2013**: Real-Time Vision Based Traffic Flow Measurements, $ 244,000 (total: $ 300,000).
- C. Shahabi, PI, **NIJ, 10/01/2011- 12/30/2013**: Janus: Multi -Source Event Collection System for Efficient Surveillance of Criminal Activity, $ 995,172.
- C. Shahabi, PI, **Chevron CiSoft, 01/01/2012 - 12/31/2013:** Production Attribute Relevant Time Mapping: A Data Cleansing and Visualization Project, $352,000.
- C. Shahabi, PI, **Northrop Grumman Corporation, 08/16/2013 - 08/15/2014**: Cloud-based geo-reference data indexing, querying and retrieval methods for multisource data association and exploitation, $ 30,000.
- C. Shahabi, PI, **Microsoft, 12/16/2010- 12/15/2012**: Traffic Stream Data Processing with StreamInsight $ 100,000.
- C. Shahabi, PI, **NSF CyberTrust, 08/08-08/12**: Enabling Location Privacy; Moving beyond k-anonymity, cloaking and anonymizers, $ 386,666.
- C. Shahabi, PI, **Vietnam Education Foundation, 07/01/2011- 06/30/2012**: VEF US Faculty Scholar Program, $ 27,836.
- C. Shahabi, PI, **METRANS, 1/10-12/10**: A Geospatial Framework for Dynamic Route Planning Using Congestion Prediction in Transportation Systems, $ 90,000.
- C. Shahabi, **Chevron CiSoft, 01/01/2010 - 12/31/2010:** General Data Management & Advanced Queries $380,000.
- C. Shahabi and Roger Zimmermann, **NSF, 1/2/2006 - 31/1/2009:** HYDRA- High Performance Data Recording Architecture for Streaming Media $270,000.
- C. Shahabi, **Chevron CiSoft, 01/01/2009 - 12/31/2009:** General Data Management & Advanced Queries $450,000.
- C. Shahabi, PI, **NSF PECASE, 09/03-08/09**: Immersive Sensor Data Streams, $ 400,000.
- C. Shahabi, PI, **METRANS, 1/09-12/09**: A Geospatial Framework for Dynamic Route Planning Using Congestion Prediction in Transportation Systems, $ 90,000.
- C. Shahabi, **Chevron CiSoft, 01/01/2008 - 12/31/2008:** General Data Management & Advanced Queries $600,000.
- E. Hovy, D. McLeod, P. Pantel, C. Shahabi, ... **DHS, 12/06-12/08:** CKID: Large-Scale Strategic Knowledge Discovery from Multiple Media $803,775.00 (through Geosmeble Technologies).
- Craig Knoblock, C. Shahabi and J. Wilson, **NSF ITR, 10/03-09/08**: Framework for Integrating Geospatial and Online Data to Respond to Unexpected Events, $ 1,186,000.
- C. Shahabi, **AFRL 05/05-09/08; subcontract from ISI**: Entity Base, $20,000.

- C. Shahabi, **NSF, 09/01/07-08/31/08:** SGER: Blind Evaluation of Spatial Queries with Hilbert Curves to Preserve Location Privacy $77,685.
- C. Shahabi, **JPL, 08/20/2007 - 07/19/2008:** On-the Fly Retrieval and Fusion of 5-D Earth Science Data for Effective Visualization and Decision Support $70,000.
- C. Shahabi, **Chevron CiSoft, 01/01/2004 - 12/31/2007:** Real-Time Data Management $835,000.
- C. Shahabi (PI), **Google, 08/06-09/07:** OSR-OnLine Map Services, $25,000.
- S. Ghandeharizadeh and C. Shahabi **NSF IDM, 09/03-08/07**: Management and Processing of Continuous Streams from Moving Sensors $ 300,000.
- C. Shahabi (PI) **Microsoft, 12/05-11/06:** ProDA: Online Scientific Data Analysis with Wavelets, Web-Services, and Smart Clients, $50,000.
- C. Shahabi (PI), C. Knoblock, U. Neumann and R. Nevatia, **Microsoft, 12/05-11/06:** GeoDec: Geospatial Decision Making, $50,000.
- C. Shahabi (PI), C. Knoblock, U. Neumann and R. Nevatia, **Annenberg Center, 12/05-11/06:** GeoDec: A Geospatial Decision Making Environment, $50,000.
- C. Shahabi (PI), C. Knoblock, U. Neumann and R. Nevatia, **Google, 11/05-10/06:** Accurate and Rapid Construction of Information-Rich 3D City Models, $100,000.
- C. Shahabi, PI, **JPL, 09/03-06/06:** Support of GENESIS-II statistical queries, $ 495,794. As part of: Tom Yunck (JPL) et. al., **NASA, 09/03-08/08**: GENESIS-II: Data Fusion and Analysis for Multi-Sensor Earth System Science.
- G. Burns, S. Ghandeharizadeh, C. Shahabi, **NLM, 05/01/01 - 04/30/06**: Knowledge management of the Neuroscientific literature, $ 1,200,000.
- C. Shahabi, PI, **USGS, 09/03-08/04:** Automatic Vector to Image Conflation, $ 10,000.
- C. Shahabi, PI, **NSF ITR, 09/00-08/04**: An Infrastructure for the Real-Time Delivery of High Quality Continuous Media from Distributed Scalable Servers to Multiple Clients, $ 456,357.
- S. Ghandeharizadeh, C. Knoblock, C. Papadopoulos, C. Shahabi, **Microsoft, 01/03-12/03:** Proteus: A System for Execution of Dynamically Composed Web Services Using GXA, $250,000.
- C. Knoblock and C. Shahabi, **DoD DURIP (Equipment only), 04/02-03/04:** Information System for Integrating Geographic Data Sources, $220,000.
- C. Shahabi, PI, **ISI, 06/01/00 to 08/31/03:** Active Template Reasoning and Optimization, $ 320,230. As part of: Craig Knoblock et. al., **DARPA, 06/00-08/03**: Active Template Reasoning and Optimization, $ 2,114,000.
- C. Shahabi, PI, **JPL, 09/98-01/03:** Support of GENESIS queries on a distributed database environment, $ 497,000. As part of: Tom Yunck (JPL), C. Shahabi et. al., **NASA, 09/98-09/01**: GPS environmental and earth science information system (GENESIS), $ 2,336,000.
- S. Ghandeharizadeh, C. Knoblock, C. Papadopoulos, C. Shahabi, **Microsoft, 01/02-12/02:** Composing Web Sources Using a Scalable .NET Middleware, $200,000.
- C. Shahabi, PI, **NCR, 07/01-06/02:** Implementation of PROPOLYNE on the Teradata platform, $50,000.
- U. Neumann, S. Rizzo and C. Shahabi, **NCR, 07/00-06/01:** Kiosks That See and React, $85,000.
- C. Knoblock and C. Shahabi, **NCR-GDIS, 07/98-06/01:** Integration of video, images, and semistructured data in a geographical information system, $300,000.
- A. Sawchuk, C. Shahabi, et. al., **NSF, 10/97-09/00** (Major Research Instrumentation program, MRI 97-24567, **Equipment only**): High performance processors and networks for video compression, distributed visualization, database systems, and collaborative telepresence $ 1,000,000.
- C. Shahabi, PI, **Hughes, 08/97-07/98:** Audio processing for twenty-first century surface combatant (SC-21) multimodal watchstations, $ 30,000.
- C. Shahabi, PI, **NCR, 07/97-06/98:** Utilization and extension of NCR parallel multimedia database system (M-DBS) for IMSC system integration experiments and applications, $ 100,000.
- J. Kuo and C. Shahabi, **Hughes, 08/96-05/97:** Selective & progressive transmission of wavelet compressed imagery data, $ 30,000.

Current:

- J. L. Ambite, C. Shahabi, et. al., **NIH, 10/01/2015 - 9/30/2019)**: Pediatric Research using Integrated Sensor Monitoring Systems (PRISMS): Data and Software Coordination and Integration Center (DSCIC), $118.952 (total: $999,394).
- G. Giuliano, C. Shahabi, et. al., **Los Angeles County Metropolitan Transportation Authority 07/1/2015 - 06/30/2016**: Archived Data Management System Maintenance, $ 293,125 (total: $330,000).
- P. Kuhn, C. Shahabi, et. al., **NIH, 10/01/2015 - 9/30/2017)**: Monitoring Kinetic Movement in Elderly Patients Undergoing Cytotoxic Chemotherapy, $372,573 (total: ~$1M).
- C. Shahabi, PI, **NSF CNS, 04/1/2015- 03/31/2018**: BDD: Human-Centered Situation Awareness Platform for Disaster Response and Recovery, $ 299,976.
- G. Giuliano, C. Shahabi, et. al., **CALTRANS, 01/01/2017 - 12/31/2017:** Trajectory Data Mining for Performance Measurement of Public Transportation Systems, $100,000.
- C. Shahabi, PI, **NSF III, 08/16/2013- 08/15/2016**: GeoCrowd – A Generic Framework for Trustworthy Spatial Crowdsourcing, $ 490,000.
- C. Shahabi, PI, **Chevron CiSoft, 01/01/2013 - 12/31/2017:** Efficient and Scalable Data Cleansing and Compression towards Smart Data Management, $672,000.

Teaching Experience

2007-present
Dept of Computer Science, University of Southern California, Los Angeles, CA.
Geospatial Information Management course (CSCI-587). The focus of this course is on studying techniques to efficiently store, manipulate, index and query geospatial information in support of real-world geographical and decision-making applications. In this course, the students become familiar with a variety of geospatial applications (e.g., location-based services, online maps) and datasets (e.g., road-network data, aerial imagery, 3D models). Meanwhile, as part of the course projects, the students will learn to use the state-of-the-art geospatial software tools, applications and libraries such as those provided by Apple (e.g., iPhone), Oracle, Google (e.g., Android) and Microsoft.

2002-present
Dept of Computer Science, University of Southern California, Los Angeles, CA.
Multidimensional Databases course (CSCI-599). This seminar course covers several research papers related to (a) introduction to multidimensional databases, (b) OLAP applications, (c) approximation techniques, (d) multidimensional index structures, (e) dimension reduction techniques, and (f) multidimensional data mining.

2000-2002
Dept of Computer Science, University of Southern California, Los Angeles, CA.
Spatial and Temporal Databases course (CSCI-599). This seminar course covers several research papers related to (a) the ontology, structure, and representation of space and time, (b) the data models and query languages to represent spatial, temporal and spatio-temporal data, (c) techniques for efficient processing and evaluating queries on multidimensional data, (d) query processing algorithms, storage structures and indexing techniques, and (e) architectures for spatial, temporal and spatio-temporal Database Management Systems.

1999-present
Dept of Computer Science, University of Southern California, Los Angeles, CA.
Database Management course (CSCI-585). This course covers important subjects in the design and implementation of relational, object-oriented and object-relational database management systems. It also includes lectures on Spatial, OLAP and Multimedia Databases as well as XML and its query languages. During this course, students experiment with an object-relational

DBMS, currently Informix Universal Server v9.12. Students also develop a Java application that submits SQL3 queries to Informix through JDBC and RMI.

1997-1998
Dept of Computer Science, University of Southern California, Los Angeles, CA.
File and Database Management course (CSCI-485). This course covers important subjects in the design and implementation of relational database management systems. During this course, students implement a mini relational DBMS incrementally in four layers. Topics such as crash recovery and concurrency control as well as E-R diagram, relational model, and SQL language are covered in this course.

Students

- Undergraduate Students: Nihar Agrawal, Chenzgyi Chen, Suvir Copparam, Alexander Kuo, and Suveena Thanawala.
- Master Students: Chrysovalantis Anastasiou,
- Doctoral Students: Abdullah Alfarrarjeh, Mohammad Asghari, Giorgos Constantinou, Dingxiong Deng, Yaguang Li, Ying Lu, Kien Nguyen, Minh Nguyen, Hien To, Luan Tran, Rose Yu, and Mingxuan Yue
- Ph.D. Graduates: Afsin Akdogan (December 2015, Google), Huy Pham (August 2015, Oracle), Bei Pan (May 2014, Microsoft), Ali Khodaei (May 2013, Yahoo!), Houtan Shirani-Mehr (May 2013, Yahoo!), Leyla Kazemi (Oct 2012, Microsoft), Ugur Demiryurek (Aug 2012, USC), Ling Hu (July 2012, Google), SongHua Xing (Dec 2011, IBM J. Watson), Jeff Khoshgozaran (May 2010, Samsung Information Systems America), Hyunjin Yoon (September 2009, ETRI), SunHee Yoon (August 2008, Stanford Postdoc), Mehrdad Jahangiri (August 2008; NetSeer), Mehdi Sharifzadeh (May 2007; Google), Kiyoung Yang (May 2007; Fair Isaac), Farnoush Banaei-Kashani (Dec 2006; USC), Jason Chen (May 2005; Geosemble Technologies), Mohammad R. Kolahdouzan (August 2004; Yahoo!), Didi Yao (May 2003; VMware), Yi-Shin Chen (November 2002; National TsingHua U.), Maytham Safar (September 2000; Kuwait U.), Mohammad Alshayeji (April 99; Kuwait U.), Ali Dashti (April 99; Kuwait U.).
- Post-Doctorate Graduates: Tobias Emirch (August 2014; now at Ludwig-Maximilians-Universitt Mnchen), Tim Marsh (Summer 2006; now at Queensland College of Art).

Honors/Awards

- **IEEE Fellow**, 2014.
- Vietnam Education Foundation U.S. Faculty Scholar 2012-13.
- Vietnam Education Foundation U.S. Faculty Scholar 2011-12.
- Organizer of the National Academy of Engineering "Japan-America Frontiers of Engineering" program, 2011.
- Invited speaker in the National Research Council (of the National Academies) Committee on New Research Directions for the National Geospatial-Intelligence Agency, May 2010.
- ACM Distinguished Scientists award, 2009.
- Participant in the National Academy of Engineering "Frontiers of Engineering" program, 2005.
- Presidential Early Career Award for Scientists and Engineers, **PECASE** Award, 2003.
- NSF CAREER Award, 2002.
- Okawa Foundation Research Grant for Information and Telecommunications, 2001.

Selected Invited Talks

1. September 2016, Inference of Social Relationships from Location Data, The 18th Asia Pacific Web Conference, APWEB 2016, Suzhou, China (keynote).

2. July 2016, Privacy-Preserving Inference of Social Relationships from Location Data, The third Privacy Preserving IR Workshop, PIR 2016, Pisa, Italy (keynote).

3. August 2015, Inferring people's social behavior by exploiting their spatiotemporal location data, 14th International Symposium on Algorithms and Data Structures, WADS 2015, Victoria, BC, Canada (keynote).

4. June 2015 Inferring and impacting people's social behavior by exploiting their spatiotemporal location data, Google TechTalk, Mountain View, CA.

5. June 2015 Spatial Indexing and Spatial Crowdsourcing of User-Generated-Video, Australian Database Conference, Melbourne, Australia.
   The second USC-HKUST Joint Conference in Big Data Applications, HKUST, Hong Kong.

6. May 2014, GeoCrowd: Harnessing the power of Crowd for On-Demand Geographical Data Collection, Web and Wireless GIS 2014, Seoul, South Korea (keynote).

7. March 2014, Geo-Immersion: A Data-Centric (Big-Data) Approach towards Situational Awareness, Big Data to Knowledge Workshop, UCLA.

8. December 2013, University Startups: Strong IP Portfolio, Weak Business Models, Business of IP Asia Forum, Hong Kong. Business of IP Asia Forum, Hong Kong Convention and Exhibition Centre, Hong Kong.
   First USC-HKUST Joint Conference in Big Data Applications, HKUST, Hong Kong.

9. September 2013, Geo-Immersion: A data-centric (Big-Data) approach towards situational awareness, Distinguished Seminar, KT Advanced Institute of Technology, Seoul, Korea.

10. August 2013, TransDec: A Big-Data Framework for Decision-Making in Transportation Systems, 13th International Symposium on Spatial and Temporal Databases (SSTD 2013), Munich, Germany, August 2013 (keynote).

11. June 2013, GeoCrowd: Harnessing the Power of Crowd for On-Demand Geographical Data Collection, MobiDE 2013, New York, New York, USA (keynote).

12. April 2013, Traffic Congestion, TransDec, ClearPath, and Time-Dependent A*: A Big-Data Problem, A System Solution, A Product, and an Algorithm, Computer Science and Artificial Intelligence Laboratory (CSAIL), MIT.

13. February 2013, TransDec: A "Big Data" Framework for Decision Making in Transportation Systems, Workshop on Big Data Analytics, National University of Singapore.

14. August 2012, From Real-World Co-occurrences to Social Connections , The Fourth International Conference on Emerging Databases-Technologies, Applications, and Theory (EDB 2012), Seoul, Korea (Keynote).

15. May 2012, TransDec: A Big-Data Framework for Decision-Making in Transportation Systems, Database Seminar Series, UC-San Diego, San Diego, CA.

16. April 2012, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, SIAM Data Mining. 1st International Workshop on Analytics for Cyber-physical Systems (ACS-2012), Anaheim, CA (Keynote).

17. March 2012, TransDec: A Big-Data Framework for Decision-Making in Transportation Systems, Computer Science Seminar Series, UC-Irvine, Irvine, CA.

18. September 2011, An Introduction to USC Integrated Media Systems Center (IMSC), Northrop Grumman, Carson, CA.

19. August 2011, An Introduction to USC Integrated Media Systems Center (IMSC), Hanoi University of Science and Technology, Hanoi, Vietnam.

20. June 2011, An Introduction to USC Integrated Media Systems Center (IMSC), University of Tokyo, Tokyo, Japan.

21. June 2011, An Introduction to USC Integrated Media Systems Center (IMSC), Panasonic, Tokyo, Japan.

22. May 2011, An Introduction to USC Integrated Media Systems Center (IMSC), Shanghai Jiao-Tong University, Shanghai, China.

23. August 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, Japan's National Institute of Information and Communications Technologies (NICT), Keihanna, Japan.

24. June 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, Geoinformatics 2010, Peking University, Beijing, China.

25. May 2010, Participatory Urban Data Collection: Planning and Optimization, Workshop on New Research Directions for NGA, National Research Council of The National Academies, Washington, D.C.

26. May 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, University of California, Computer Science Department, Santa Barbara, CA.

27. May 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, University of Minnesota, Computer Science Department, Minneapolis, MN.

28. April 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, The California University Transportation Centers and The CalTrans Division of Research & Innovation, Sacramento, CA.

29. March 2010, TransDec: A Data-Driven Framework for Decision-Making in Transportation Systems, 6th International Workshop on Databases in Networked Information Systems (DNIS 2010), Aizu-Wakamatsu, Japan.

30. October 2009, Participatory Urban Data Collection: Planning and Optimization, Tsinghua University, Beijing, China.

31. April 2009, GeoRealism: Expanding the human ability to comprehend a larger geo space, University of California, Irvine, CA.

32. Feb 2009, GeoRealism: Expanding the human ability to comprehend a larger geo space, National Reconnaissance Office, Chantilly, VA.

33. October 2007, Geospatial Decision Making and Spatial Skyline Queries, University of Tokyo, Tokyo, Japan.

34. October 2007, Location Privacy in Geospatial Decision Making, 5th International Workshop on Databases in Networked Information Systems (DNIS 2007), Aizu-Wakamatsu, Japan (keynote talk).

35. August 2007, Geospatial Decision Making and Spatial Skyline Queries, National University of Singapore (NUS), Singapore.

36. July 2007, Geospatial Decision Making and Spatial Skyline Queries, Peking University (PKU), Beijing, China.

37. July 2007, Geospatial Decision Making and Spatial Skyline Queries, Chinese Academy of Sciences (CAS), Beijing, China.

38. February 2007, Geospatial Information Extraction and Integration, Lawrence Livermore National Laboratory, Livermore, CA.

39. September 2006, GeoDec: Enabling Geospatial Decision Making, ETRI, Korea.

40. June 2006, GeoDec: Enabling Geospatial Decision Making, Air Force Research Lab (AFRL) - Chief Scientist seminar series, Rome, NY.

41. May 2006, GeoDec: Enabling Geospatial Decision Making, Google, Mountain View, CA.

42. January 2006, GeoDec: Enabling Geospatial Decision Making, UC Irvine, CA.

43. December 2005, GeoDec: Enabling Geospatial Decision Making, Microsoft Research Center, Redmond, WA.

44. August 2005, Wavelets and Web-Services (W2) for Online Scientific Data Analysis, , Lawrence Livermore National Laboratory, Livermore, CA.

45. May 2005, Modelling Peer-to-Peer Data Networks Under Complex System Theory, Seoul National University, Seoul, Korea.

46. March 2005, Modelling Peer-to-Peer Data Networks Under Complex System Theory, 4th International Workshop on Databases in Networked Information Systems (DNIS 2005), Aizu-Wakamatsu, Japan.

47. March 2005, Modelling Peer-to-Peer Data Networks Under Complex System Theory, Department of Computer Science, National Tsing Hua University, HsingChu, Taiwan.

48. February 2005, Geospatial Information Integration, Geotech Event, Vancouver, Canada.

49. January 2005, Applications of the Complex System Theory to Peer-to-Peer Data Networks, UC Riverside Computer Science Dept., Riverside, California.

50. October 2004, Application of the Complex System Theory to Peer-to-peer Data Networks, at Air Force Research Laboratory, Information Directorate, Dayton, Ohio.

51. June 2004, Integration of geospatial and online data for crisis management, at ACM SIGMOD-Databases in Virtual Organizations, Paris, France.

52. May 2004, A Suite of Web-Services for Wavelet-based Analysis of Large Atmospheric Datasets, at Microsoft-Scientific Data Intensive Computing Workshop, Bellevue, Washington.

53. December 2003, A Study of Querical Data Networks as Complex Systems, at Kuwait University, Kuwait.

54. September 2003, Web Information Personalization: Challenges and Approaches, at the 3nd International Workshop on Databases in Networked Information Systems (DNIS 2003), Aizu-Wakamatsu, Japan.

55. March 2003, Wavelets for Efficient Querying of Large Multidimensional Datasets, at the 35th Symposium on the Interface, Salt Lake City, Utah.

56. February 2003, Wavelets for Efficient Querying of Large Multidimensional Datasets, at the 11th Mardi Gras Conference, Baton Rouge, Louisiana.

57. January 2003, Real-Time Pattern Isolation And Recognition Over Immersive Sensor Data Streams, at the 9th International Conference On Multi-Media Modeling, Taiwan.

Services

- **Member of Editorial Board:** ACM Transactions on Spatial Algorithms and Systems, TSAS (2013-present), VLDB Journal (2009-2015), Journal of Spatial Information Science (2009-present), ACM Computers in Entertainment magazine (2004-present), IEEE TKDE (2010-2013), IEEE Transaction on Parallel and Distributed Systems (2005-2009), PVLDB (2008 and 2009), ACM SIGMOD DiSC (2002).

- **Program Committee co-Chair** of the Combined APWEB and WAIM 2017.

- **Program Committee co-Chair** of the IEEE Mobile Data Management 2016 (MDM 16).

- **Program Committee co-Chair** of the 3rd International Conference on Big Data and Smart Computing 2016 (BigComp'16).

- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2015 (ACM SIGSPATIAL GIS'16).

- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2015 (ACM-GIS'15).
- **General co-Chair** of the International Symposium on Spatial and Temporal Databases 2015 (SSTD'15).
- **Program Committee co-Chair** of the 20th International Conference on Database Systems for Advanced Applications 2015 (DASFAA'15).
- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2014 (ACM-GIS'14).
- **Program Committee co-Chair** of the IEEE Mobile Data Management 2013 (MDM13).
- **Program Committee co-Chair** of the First IEEE International Conference on Big Data 2013.
- **Demonstration Chair** of ACM SIGMOD 2013.
- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2013(ACM SIGSPATIAL GIS 2013).
- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2012 (ACM-GIS'12).
- **Chair** of the ACM SIGSPATIAL Nominating Committee 2011.
- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2011 (ACM-GIS'11).
- **Sponsorship Chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2010 (ACM-GIS'10).
- **General vice-chair** of the ACM SIGSPATIAL Conference on Advances in Geographic Information Systems 2009 (ACM-GIS'09).
- **General chair** of the ACM Conference on Advances in Geographic Information Systems 2008 (ACM-GIS'08).
- **General co-chair** of the ACM Symposium on Advances in Geographic Information Systems 2007 (ACM-GIS'07).
- **Steering Committee member** of the IEEE Workshop on Networking Meet Databases, 2005-2008.
- **Program chair** of the ACM Symposium on Advances in Geographic Information Systems 2005 (ACM-GIS'05).
- **Founding Program chair** of the IEEE Workshop on Networking Meet Databases (NetDB'05).
- **Founding Program chair** of the ACM Workshop on Web Information and Data Management (WIDM'99).
- **Local Chair:** ACM SIGMETRICS 2002.
- **Committee member** of several conferences, e.g., VLDB, ACM SIGMOD, IEEE ICDE, ACM SIGKDD, IEEE ICDM, ACM GIS, SSTD, ACM Multimedia.
- **Member of the National Science Foundation Expeditions Site Visit panel** in the Division of Information and Intelligent Systems (IIS) in 2014.
- **Member of the National Science Foundation proposal review panel** in the Division of Information and Intelligent Systems (IIS) in 1999, 2003, 2005, 2007, 2009, 2010, 2011, 2012, 2013, 2014, 2015 and 2016.
- **Member of the National Science Foundation proposal review panel** in the Division of Computer and Network Systems (CNS) in 2004 and 2008.
- **Member of the National Science Foundation proposal review panel** in the CISE Advanced Computational Research program in 2000.

Patents

1. **Throwaway spatial index structure for dynamic point data**; with Afsin Akdogan, and Ugur Demiryurek, Patent No. 9,501,509, United States, November 2016.

2. **Traffic prediction using real-world transportation data**; with Bei Pan, and Ugur Demiryurek, Patent No. 9,286,793, United States, March 2016.

3. **Processing time-based geospatial data**; with Ching-Chien Chen and Craig A. Knoblock, Patent No. 8,953,887, United States, February 2015.

4. **Precisely locating features on geospatial imagery**; with Ching-Chien Chen, Dipsy Kapoor, and Craig A. Knoblock, Patent No. 8,675,995, United States, March 2014.

5. **Systems and methods for linking content to individual image features**; with Craig A. Knoblock, Ching-Chien Chen, and Dipsy Kapoor, Patent No. 8,670,617, United States, March 2014.

6. **Hierarchical and exact fastest path computation in time-dependent spatial networks**, with Ugur Demiryurek, Patent No. 8,660,789, United States, February 2014.

7. **Dynamically linking relevant documents to regions of interest**; with Craig A. Knoblock, Dipsy Kapoor, and Ching-Chien Chen, Patent No. 8,635,228, issued in Jan 2014.

8. **Efficient K-nearest neighbor search in time-dependent spatial networks**; with Ugur Demiryurek and Farnoush Banaei-Kashani, Patent No. 8,566,030, issued in October 2013.

9. **Blind evaluation of nearest neighbor queries wherein locations of users are transformed into a transformed space using a plurality of keys**; with Ali Khosh-gozaran, and Houtan Shirani-Mehr, Patent No. 8,099,380, issued in January 2012.

10. **Methods for Fast Progressive Evaluation of Polynomial Range-Sum Queries on Real-time Datacubes**; with Rolfe Schmidt, Patent No. 8,090,730, issued in January 2012.

11. **Continuous Media System**; with Roger Zimmermann, Kun Fu, and Shu-Yuen Didi Yao, Patent No. 7,742,504, issued in June 2010. This technology has been licensed to The Global-Theater Inc. in October 2000 and Prentice Hall in 2002.

12. **System and method for fusing geospatial data**; with Ching-Chien Chen, Craig A. Knoblock, Yao-Yi Chiang, Patent No. 7,660,441, issued on February 2010.

13. **Pseudorandom Data Storage**; with Shu-Yuen Didi Yao and Roger Zimmermann, Patent No. 7,096,328, issued in August 2006.

14. **Multi-Threshold Smoothing**; with Kun Fu and Roger Zimmermann, Patent No. 6,910,079, issued on 06-21-2005.

Industrial Experience

Technical Adviser and Co-Founder   2014-present
TallyGo, LLC, NEW YORK, NY 10010
GPS Navigation, path planning, traffic data analysis.

Advisor   2013-Present
Tilofy, Marina Del Ray, CA
Event filtering.

Chief Scientist and Founder   2013-2014
ClearPath, Las Vegas, NV
GPS Navigation, path planning, traffic data analysis.

Scientific Advisor   2012-2013
Terrago Technologies, Manhattan Beach, CA
Geospatial data collection, integration and distribution.

CTO and Founder   2005-2012 **(Acquired)**
Geosemble Technologies, El Segundo, CA
Acquired in July 2012.

Consultant and Member of Advisory Board   2001-2007
TierFleet, Irvine, CA
Advisement in the design and development of a middleware to perform load balancing among
several web-accessible database servers.

Consultant and Member of Advisory Board   1999-2005
TelSurf Networks, Los Angeles, CA
Advisement in the design and development of a multimedia database system to store audio
clips and generate customized audio packages tailored to user preferences.

Consultant   1996-1998
Procom Technology, Irvine, CA