**Shashi Shekhar**

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**Education and Training**

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| **Institution** | **Area** | **Degree** | **Year Awarded** |
| Indian Inst. of Technology, Kanpur | Computer Science | B. Tech. | 1985 |
| University of California, Berkeley | Computer Science | M.S. | 1987 |
| University of California, Berkeley | Business Admin. | M.S. | 1989 |
| University of California, Berkeley | Computer Science | Ph.D. | 1989 |

**Research and Professional Experience**

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| **Years** | **Position** |
| 2015 | Distinguished Teaching Professor, University of Minnesota, Minneapolis, MN |
| 2005 | McKnight Distinguished University Professor, University of Minnesota, Minneapolis, MN  |
| 2001 | Professor, University of Minnesota, Minneapolis, MN |
| 1995-2000 | Assoc. Professor, University of Minnesota, Minneapolis, MN |
| 1989-1995 | Asst. Professor, University of Minnesota, Minneapolis, MN |

**Synergistic Activities**

* Research Team Management and community building: Organized an NSF workshop to identify interdisciplinary data science approaches and challenges to enhance understanding of interactions of food systems with energy and water systems, October 2015. The workshop built a research agenda for next generation data science for understanding interactions of food systems with energy and water systems, in an effort to stimulate innovation from opposing directions: pull (i.e., FEW Nexus data science needs) and push (i.e., disruptive Data Science technology). It identified a need to build a FEW nexus data community. Organized a follow-on session on a food-energy-water nexus data and data science community symposium (S-E2) at 2016 National Conference and Global Forum on Science, Policy, and the Environment, 2016.

 Co-organized an ACM SIGKDD (Association for Computing Machinery, Special Interest Group on Knowledge and Data Discovery) workshop on Data Science for Food, Energy and Water. ACM SIGKDD is a top computer science conference on data mining. The workshop targeted innovating new technology, leveraging existing KDD technology to address the challenges in FEW nexus, by bringing together a multi-disciplinary audience and enticing them to synergize.

 Directed the Army High Performance Computing Research Center (2005-2007) with about 50 faculty members across 6 universities with an annual budget of $5M/year. Recently directed an NSF IGERT (2006-2012) project with two dozen faculty members across half a dozen departments.

Organized a Computing Community Consortium workshop titled “From GPS and Virtual Globes to Spatial Computing-2020” in 2012. It identified research directions for spatial computing and a summary was published as the cover article in the Communications of the ACM, January 2016.

* Service to scientific and engineering community: Serving as a co-Editor-in-Chief of Springer Geo-Informatica: An Intl/ Journal on Advances in Computer Sc. for GIS and a member of National Academies committee on models of the world for USDOD-National Geospatial-Intelligence Agency. Served as a member of the Computing Community Consortium Council (2012-2015). Served as a member of National Academies committees (e.g., Geo-targeted Alerts & Warnings (2012), GEOINT Workforce (2011), Mapping Science Committee (2003-9), Priorities for GEOINT Research (2006), etc.) and the Board of Directors of University Consortium of Geographic Information Systems (2003-2004).
* Innovations at teaching and training: Led a NSF IGERT on interdisciplinary graduate education (2007-2012); Developed and taught a massively open online course titled “From GPS and Google Maps to Spatial Computing” in 2014 with over 21,000 students across 182 countries. Developed one of the first courses on Spatial Databases; Co-authored a popular textbook on Spatial Databases (Prentice Hall, 2003); co-edited an Encyclopedia of GIS (Springer, 2008), which was recommended highly by a review in ACM Computing Reviews (Nov. 2008); Received the University Consortium on GIS Education Award (2015), and the University of Minnesota Graduate Education Award (2015).
* Technical contributions in computational methodologies: Received the IEEE-CS Technical Achievement Award (2006) and was elected an IEEE fellow (2003) as well as an AAAS Fellow (2008) for contributions to spatial database storage methods, data mining, and geographic information systems (GIS). Technical contributions include connectivity clustered access methods for storage of road-maps, colocation patterns for mining spatial data, etc.
* Broadening participation of underrepresented groups in STEM: Supervised Ph.D. thesis of over half a dozen members from underrepresented groups. Supervising over two dozen undergraduate (UG) students from historically black colleges in Expedition and Army High Performance Computing Research Center annual summer workshops (1997-2006), NSF Research Experience for UGs, and UG Research Opportunity Program.

**Publications**

1. Emre Eftelioglu, Zhe Jiang, Reem Ali, and Shashi Shekhar. Spatial computing perspective on food energy and water nexus, Journal of Environmental Studies and Sciences, Springer, Vol. 6, No. 1, 2016.
2. Shashi Shekhar and David Mulla. NSF Workshop to Identify Interdisciplinary Data Science Approaches and Challenges to Enhance Understanding of Interactions of Food Systems with Energy and Water Systems, Computing Research News, Computing Research Association, 27(10), 2015.
3. S. Shekhar, S. Feiner, and W. Aref. Spatial Computing, Communications of the ACM, ACM, Vol. 59, No. 1, January 2016, (Cover Article).
4. Anuj Karpatne, Zhe Jiang, Ranga Raju Vatsavai, Shashi Shekhar, and Vipin Kumar. Monitoring Land Cover Changes using Remote Sensing Data: A Machine Learning Perspective, Geoscience and Remote Sensing Magazine, IEEE, Special Issue on Advances in Machine Learning for Remote Sensing and Geosciences, Vol. 4, No. 2, 2016.
5. Zhe Jiang, Shashi Shekhar, Xun Zhou, Joseph Knight, and Jennifer Corcoran. Focal-Test-Based Spatial Decision Tree Learning, Transactions in Knowledge and Data Engineering, IEEE, Vol. 27, No. 6, 2015.
6. Guest Editors: J. H. Faghmous, V. Kumar, and S. Shekhar. Computing and Climate: Introduction to the Special Issue, Computing in Science and Engineering, IEEE, Vol. 17, No. 6, 2015.
7. Venkata M. V. Gunturi, Shashi Shekhar, and KwangSoo Yang. A Critical-Time-Point Approach to All-Departure-Time Lagrangian Shortest Paths, Trans. Knowl. Data Eng., IEEE, Vol. 27, No. 10, 2015.
8. KwangSoo Yang, Apurv Hirsh Shekhar, Dev Oliver, and Shashi Shekhar. Capacity-Constrained Network Voronoi Diagram, Trans. Knowl. Data Eng., IEEE, Vol. 27, No. 11, 2015.
9. KwangSoo Yang, Apurv Hirsh Shekhar, Faizan Ur Rehman, Hassan F. Lahza, Saleh Basalamah, Shashi Shekhar, Imtiaz Ahmed, and Arif Ghafoor. Intelligent Shelter Allotment for Emergency Evacuation Planning: A Case Study of Makkah, Intelligent Systems, IEEE, Vol. 30, No. 5, 2015.
10. Shashi Shekhar, Steven Feiner, and Walid G. Aref. From GPS and virtual globes to spatial computing - 2020, GeoInformatica, Springer, Vol. 19, No. 4, 2015.
11. Shashi Shekhar, Zhe Jiang, Reem Y. Ali, Emre Eftelioglu, Xun Tang, Venkata M. V. Gunturi, and Xun Zhou:. Spatiotemporal Data Mining: A Computational Perspective, Int. J. Geo-Information, ISPRS, Vol. 4, No. 4, 2015.
12. Chi-Yin Chow and Shashi Shekhar. MobiGIS 2013 workshop report: the second ACM SIGSPATIAL Intl. Workshop on Mobile Geographic Information Systems, SIGSPATIAL Special, Vol. 6, No. 1, 2014.
13. J. H. Faghmous, A. Banerjee, S. Shekhar, M. Steinbach, V. Kumar, A. R. Ganguly, and N. F. Samatova. Theory-Guided Data Science for Climate Change, Computer, IEEE, Vol. 47, No. 11, 2014.
14. Xun Zhou, Shashi Shekhar, and Reem Ali. Spatiotemporal change footprint pattern discovery: an inter-disciplinary survey, Interdisciplinary Review on Data Mining and Knowledge Discovery, Wiley, Vol. 4, No. 1, 2014.
15. Dev Oliver, Shashi Shekhar, James M. Kang, Renee Laubscher, Veronica Carlan, and Abdussalam Bannur. A K-Main Routes Approach to Spatial Network Activity Summarization, Transactions in Knowledge and Data Engineering, IEEE, Vol. 26, No. 6, 2014.
16. KwangSoo Yang, Michael R Evans, Gunturi Venkata M.V., James A. Kang, and Shashi Shekhar. Lagrangian Approaches to Storage of Spatio-temporal Network Datasets, Transactions on Knowledge and Data Engineering (TKDE), IEEE, Vol. 26, No. 9, Sept. 2014, (doi:10.1109/TKDE.2013.92).
17. Chi-Yin Chow and Shashi Shekhar. MobiGIS 2012 workshop report: the First ACM SIGSPATIAL Intl. Workshop on Mobile Geographic Information Systems, SIGSPATIAL Special, Vol. 5, No. 1, 2013.
18. Hui Xiong, Shashi Shekhar, and Alexander Tuzhilin. Introduction to special section on intelligent mobile knowledge discovery and management systems, Transactions on Intelligent Systems and Technology, ACM, Vol. 5, No. 1, 2013.
19. P. Mohan, S. Shekhar, J. Shine, and J. Rogers. Cascading spatio-temporal pattern discovery, Transactions on Knowledge and Data Engineering, IEEE, Vol. 24, No. 11, 2012.
20. Shashi Shekhar, KwangSoo Yang, Viswanath Gunturi, and Dev Oliver. Experiences with Evacuation Route Planning Algorithms, International Journal of Geographical Information Science (IJGIS), Taylor and Francis, Vol. 26, No. 12, 2012, Special Issue in honor of Prof. M. F. Goodchild.