2022 BOARD NOMINEE

Shashi Shekhar

McKnight Distinguished University Professor, Computing, Computer Science and Engineering
University of Minnesota

Awards and Honors and Year Received

- 2015: University Consortium for GIS (UCGIS) Education Award. Each year, UCGIS recognizes one scholar with this award. Shashi was selected in 2015 for outstanding contributions including a definitive textbook on spatial databases (Prentice Hall 2003), which has educated an entire generation of GIS scholars, an authoritative Encyclopedia of GIS (Springer, 1st Ed. in 2008, 2nd Ed. in 2017) and a popular massively open online course titled “From GPS and Google Maps to Spatial Computing” (Coursera, Fall 2014).
- 2010: Named a key difference maker for the field of Geographic Information Systems (GIS) and biography featured in the most popular GIS textbook (Geographic Information Science and Systems, 3rd Edition, Wiley, 2010), co-authored by Prof. M. Goodchild, a member of the National Academy of Sciences.
- 2008: Elected a Fellow of the American Association for Advancement of Science (AAAS) for distinguished contributions to the advancement of science in the fields of spatial databases, spatial data mining and GIS.
- 2006: IEEE Computer Society Technical Achievement Award for the foundational, technical and commercial impact of the Connectivity Clustered storage and Access Method (CCAM) for roadmaps and navigation applications. This award recognizes an outstanding and innovative contribution usually within the past ten years.
- 2003: Elected an IEEE Fellow for contributions to spatial database storage methods, data mining, and GIS.

Involvement in CRA Activities

- Co-chair, 2022 CRA Conference at Snowbird Organizing Committee. Also co-organizing a session on “Climate-Smart Computing”
- Co-led the CV Database initiative (https://cra.org/cv-database/) as a first step to address faculty recruiting challenges (e.g., low yield to faculty job offers) discussed in the Faculty Recruiting session in the 2018 CRA conference at Snowbird. The initiative has completed 3 years (see CVDatabase Turns Three, CRA Bulletin, 33(9), Oct. 2021) and served hundreds of candidates and recruiters from member institutions.
- Co-organizing a session on “Intelligent Infrastructure for All: Challenges and Opportunities’’ at the 2022 American Association for Advancement of Sciences (AAAS) annual conference. Earlier, co-organized a session on “Using Computing to Sustainably Feed a Growing Population’’ at the 2020 AAAS annual conference.
- Co-authored a Computing Community Consortium report titled “A National Research Agenda for Intelligent Infrastructure: 2021 Update”

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- Also served on the CRA Survey committee which oversees the Taulbee surveys
- visited CRA office (May 2018) to make a presentation to the CRA staff.
- March 2015: Represented the CRA in the U.S. Congressional reception on Deconstructing Precision Agriculture and made a presentation on Computer Science contributions such as Geographic Information Systems (GIS), which is used widely in precision agriculture and prescriptive farming. This congressional event was organized by the House Agriculture Committee with help from the Task Force on American Innovation and the Computing Research Association to showcase the contributions of science to the citizens represented by U.S. Congress members from rural communities. Speakers included U.S. farmers, leading agriculture technology companies, and scientists. This activity was described in an article in CRA Computing News (April 2015, Vol. 27/No. 4).
- July 2012 – July 2015: Served on the Computing Community Consortium (CCC) Council of the Computing Research Association (CRA). Led the Blue-Sky tracks initiative to help over a dozen major conferences (e.g., AAAI 2015, ACM SIG-Spatial 2015, ACM SIGSOFT FSE 2014) catalyze community to pursue bold new research directions. Also helped set up CCC presentation at the annual meeting of the ACM SIG board.
- 2012 - 2013: Co-organized the CRA/CCC visioning workshop titled “From GPS and Virtual Globes to Spatial Computing 2020” to create a community research agenda in light of transformative development ranging from GPS to Google Maps to Uber, which have enriched billions of lives.
- Prepared workshop report and made presentations at federal agencies (e.g., NIH/NCI, NIST, USDOE/ANL) to explore funding initiative. A summary of the report was published as a cover article in the Communications of the ACM (59(1):72-81, January, 2016).
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Other Relevant Experience

- Service Leadership: Shashi served as the Chair of the Symposium on Spatial and Temporal Databases Endowment (2014-2019). Earlier, he served as the President of the University Consortium for Geographic Information Science (UCGIS) during 2017-2018 and led A UCGIS Call to Action: Bringing the Geospatial Perspective to Data Science Degrees and Curricula (Summer 2018). Moreover, he served on the board of director of the UCGIS (2003). Shashi also presented his work on evacuation route planning in a congressional breakfast on GIS and homeland security (February 2004). Also organized an NSF workshop to identify data science research challenges in the upcoming cross-

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directorate multi-year NSF INFEWS initiative. The goal of this workshop was to engage computing community in the emerging national priority area of food, energy, water across multiple agencies such as NSF, USDOE, USDA, EPA, USGS, NASA, etc. Due to the community significance, this activity was described in an article in CRA Computing News (November 2015, Vol. 27/No. 10). • Research Project Management: Currently, Shashi is serving as the Principal Investigator for a large NSF Smart and Connected Communities project (2017-2022) involving four universities and three cities. Earlier, he 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. In addition, he directed an NSF IGERT (2006-2012) project with two dozen faculty members across half a dozen departments. • National Academies: Shashi served on many committees of the U.S. national academies committees including Models of World for (USDOD) National Geospatial-Intelligence Agency (2015-16), Geo-targeted Disaster Alerts and Warning (2013), Future Workforce for Geospatial Intelligence (2011), Mapping Sciences (2003-2009), and Priorities for GEOINT Research (2005-2006). Many of these committees produced reports, which were published by national academies press. • Educational contributions include a definitive textbook on spatial databases (Prentice Hall 2003), which has educated an entire generation of GIS scholars. Other contributions include an authoritative Encyclopedia of GIS (Springer, 1st Ed. 2008, 2nd Ed. 2017), a spatial computing book (MIT Prerss, 2020) for broad audience, and a popular massively open online course titled “From GPS and Google Maps to Spatial Computing” (Coursera, Fall 2014), which attracted over 21,000 students across 182 countries. Shashi also shaped the Computer Science component of GIS body of knowledge developed by the University Consortium on GIS. He was also instrumental in creation of a professional Master in GIS degree and an undergraduate minor at the University of Minnesota. • Journals & Conferences: Shashi is currently serving as the program co-chair of the ACM SIG-SPATIAL International Conference on Advances in Computer Sciences for GIS. As a co-Editor-in-chief, Shashi helped Springer’s “GeoInformatica: An International Journal on Computer Science Advances for GIS” become a top-tier GIS journal. He also served as a special-issue co-editor for ACM Transactions on Intelligent Systems and Technology (5(1), 2013) and an editor for the IEEE Transactions on Knowledge and Data Engineering (1996-2000). Shashi co-chaired the International Conference on Geographic Information Science (2012) and International Symposium on Spatial and Temporal Databases (2011), where he introduced an inaugural track on challenge and vision papers with a sponsorship from the Computing Community Consortium (CCC).

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Research Interests

- Spatial Computing, Spatial Data Science, Spatial Data Mining, Spatial Databases, Geographic Information Sciences.

Personal Statement

Faculty recruiting challenges departments (e.g., low yield to offers), faculty (e.g., multiple interviews per week) and candidates (e.g., many strong candidates not getting interviews). Thus, I co-led the recent CRA CVDatabase initiative. In the next term, I will volunteer to shepherd this initiative exploring innovations such as signaling which helped recruiting in other disciplines and addressing COVID-19 challenges. Moreover, I plan to grow the emerging responsible computing initiative to increase computing community participation in U. N. Sustainable Development Goals by identifying obstacles and ways to overcome those building on discussions in the 2022 Snowbird session on climate-smart computing.