SANJAY RANKA
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BRIEF BIOGRAPHY

Sanjay Ranka is a Distinguished Professor in the Department of Computer Information Science and Engineering at the University of Florida. His areas of expertise are data science, machine learning, applied algorithms, and high-performance computing. The focus of his current research is on using this expertise for solving applications in Transportation, Health Care, and Scientific Computing. His current research is funded by NIH, NSF, DOE, USDOT, and FLDOT.

From 1999–2002, as the Chief Technology Officer at Paramark (Sunnyvale, CA), he developed a real-time optimization service called PILOT for marketing campaigns. PILOT served more than 10 million optimized decisions a day in 2002 with a 99.99% uptime. Paramark was recognized by VentureWire/Technologic Partners as a Top 100 Internet technology company in 2001 and 2002 and was acquired in 2002. Sanjay has also held positions as a tenured faculty member at Syracuse University, academic visitor at IBM T. J. Watson Research Labs and summer researcher at Hitachi America Limited. He is currently a board member of American Society for Artificial Intelligence.

He is a fellow of the IEEE, AAAS, AAIA (Asia-Pacific Artificial Intelligence Association), AIIA (Artificial Intelligence industry Alliance) and a past member of IFIP Committee on System Modeling and Optimization. He is a board member of American Society for Artificial Intelligence. He was awarded the 2020 Research Impact Award from IEEE Technical Committee on Cloud Computing. He was also awarded the 2022 Distinguished Alumnus Award from the Indian Institute of Technology, Kanpur.

He has coauthored one book, five monographs, and 350 journal and refereed conference articles. His recent coauthored work has received a best student paper runner-up award at IGARSS 2015, best paper award at BICOB 2014, best student paper award at ACM-BCB 2010, best paper runner-up award at KDD-2009, a nomination for the Robbins Prize for the best paper in the *Journal of Physics in Medicine and Biology* for 2008, and a best paper award at ICN 2007.

He is an associate editor for *ACM Computing Surveys*, *Applied Sciences*, *Sustainable Computing: Systems and Informatics*, *Knowledge and Information Systems*, and *International Journal of Computing*. Additionally, he is a book series editor for CRC Press for Bigdata. In the past, he has been an associate editor for *IEEE Transactions on Parallel and Distributed Systems*, associate editor for *IEEE Transactions on Computers*, associate editor for *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, and an associate editor-in-chief of the *Journal of Parallel and Distributed Computing*. He was a general co-chair for International Conference in Data Mining in 2009, International Green Computing Conference in 2010, and International Green Computing Conference in 2011, a general chair for ACM Conference on Bioinformatics and Computational Biology in 2012, and a program chair for 2013 International Parallel and Distributed Processing Symposium and 2015 HiPC Conference. He was a co-general chair for DataCom 2017 and co-program chair for International Conference on Machine Learning and Data Science for 2017, 2018, and 2023. He is the co-program chair for the International Conference in Data Mining for 2022.

His work has received 17300+ citations with an h-index of 64 (based on Google Scholar). He has consulted for several startups and Fortune 500 companies.

EDUCATION

University of Minnesota	Ph.D. in Computer Science	Minneapolis, MN (1988)
	M.S. in Computer Science	Minneapolis, MN (1986)
Indian Institute of Technology	B.Tech. Computer Science	Kanpur, India (1985)

WORK EXPERIENCE

August 2002–present – Tenured Distinguished Professor, University of Florida, Gainesville, FL

The focus of my current research is using Machine Learning, Internet of Things, Accelerator Computing, and Cloud Computing for solving applications in Transportation and Health Care. I have been a PI or a co-PI for $20+ million of completed projects during the last 10 years. I graduated 15 doctoral students during that time. Most of them are currently employed by Amazon, Google, Facebook, Microsoft, Qualcomm and other technology companies. I currently have seven active projects with a total funding of $6+ million as a PI or co-PI.

- Artificial Intelligence for Intelligent Transportation and Smart Cities
  - Led development of real-time machine learning algorithms and software to analyze feeds from lidar and video cameras and fuse them with ground sensor data for real-time detection of potential collisions, or “near-misses,” between pedestrians and vehicles.
  - Deployed these algorithms and software on edge-based computers and AWS Cloud. Worked with the City of Gainesville and the City of Orlando to quantitatively measure intersections by safety and to transmit information about unsafe behavior to connected vehicles and pedestrians in real time.
  - Developed machine learning algorithms and system for modeling traffic using ground sensor data. Developed machine-learning–based algorithms for traffic interruption detection using ground sensor data.
- Data Science for Health Care
  - Developing a novel smart watch app called ROAMM (Real-time Online Assessment and Mobility Monitor) that offers continuous and long-term connectivity and bidirectional interactivity with programmable measurements – a necessity for capturing data surrounding an intervening health event (e.g., episodic falls, injuries, and hospitalizations).
  - Deploying this software on AWS Cloud for pre-clinical trials to capture activity and mobility patterns of free-living adults and their reported outcomes, including pain and anxiety levels for a variety of health care studies.
  - Developed machine learning algorithms for detecting super-utilizers using Texas Medicaid data. Demonstrated that a subset of patients consistently utilize more health care dollars as compared to patients with similar disease loads.
- Machine-Learning–Based Scientific Data Compression
  - Developed hybrid machine-learning–based algorithms for data compression that are the first ones to provide error guarantees on both primary data and downstream quantities of interest.
  - Demonstrate their effectiveness for exascale scientific simulation such as fusion, climate data and computational fluid dynamics.
- Accelerator and Exascale Computing for Scientific Applications

- Developing algorithms and software for applications with dynamic computational structure and sparse data sets (compressible turbulence, synthetic aperture radar, and sparse matrix factorization).
- Developed novel approaches to real-time scheduling of irregular and hierarchical structures, intelligent task-to-core mapping, energy-aware task scheduling, dynamic voltage scaling, and load balancing on millions of cores.

1999–2002 – Chief Scientist/Chief Technology Officer, Paramark Inc., Sunnyvale, CA

- Conceptualized, designed and developed a real-time, parallel, and fault-tolerant optimization service called PILOT that used active machine learning to conduct online experiments and used it in conjunction with data mining techniques to derive the best advertisement based on consumer profiles and/or changing conditions.
- Deployed a data-center solution that served more than 10 million optimized decisions a day in 2001 with a 99.99% uptime. This resulted in 20%–100% improvement in revenue generated for advertisement campaigns of Capitol One, American Express, and Chase Bank.
- Lead inventor of many seminal patents in choice optimization of advertisements in an interactive medium. Many of them are now owned by Google.
- Raised more than $10 million in venture capital. Paramark was recognized by VentureWire/Technologic Partners as a Top 100 Internet technology company in 2001 and 2002 and was acquired in 2002.
- Real-time choice optimization and targeting for online advertising, pioneered by me while at Paramark, was a major market disrupter, and was adopted in advertising technology platforms such as DoubleClick (acquired by Google in 2007) and marketing/CRM solutions such as Adobe-Omniture.

1995–1999 – Tenured Associate Professor, University of Florida, Gainesville, FL

- Led teams that conducted leading-edge research and development in the areas of scalable software, data mining, and bio-medical computing. My research had a practical bent with strong theoretical underpinnings.
- Led or co-led large government and defense-supported projects. I was a Principal Investigator or Co-Principal Investigator of 2+ million dollars grants from NSF, ARMY, ARPA, and NIH.
- Taught undergraduate and graduate courses on algorithms and scalable computing.
- Developed novel algorithms and software for Dynamic multileaf collimator intensity modulated radiation therapy. This technology is currently used in commercial radiation treatment planning systems.

1988–1995 – Tenured Associate/Assistant Professor, Syracuse University, Syracuse, NY

- Led or co-led teams that conducted leading edge research and development in the areas of scalable software and parallel algorithms.
- Led or co-led large government and defense supported projects. I was a Principal Investigator or Co-Principal Investigator for sponsored research of $3+ million from NSF, NASA, NIH, ONR, and ARPA.
- Taught undergraduate and graduate courses on algorithms and scalable computing.
- Co-developer of the Fortran 90D compiler, one of the first compilers that demonstrated that scalable performance can be automatically achieved on large-scale distributed memory machines, and that has had lasting impact on design of high-performance parallel languages. Key features in Fortran 90D to support data distribution and optimized runtime

libraries, co-developed by me, for generating high performance are now present in vendor-supported HPC languages such as Chapel, X10, and NVIDIA CUDA platform.

HONORS, AWARDS, AND SPECIAL APPOINTMENTS

1. AIIA (Internation Artificial Intelligence Industry Association) Fellow, 2024.
2. College of Engineering, Doctoral Dissertation Mentorship Award, 2024.
3. Board Member, American Society for Artificial Intelligence, 2023.
4. University of Florida Foundation Research Professorship, 2023–2026.
5. AAIA (Asia-Pacific Artificial Intelligence Association) Fellow, 2022.
6. Distinguished Alumnus Award from Indian Institute of Technology, Kanpur, 2022.
7. Research Impact Award for "significant and impact contributions to theory and practice of cloud computing," IEEE Technical Committee on Cloud Computing, 2020.
8. University of Florida Foundation Research Professorship, 2018–2021.
9. Outstanding Service Award, IEEE Computer Society Technical Committee on Parallel Processing, 2015.
10. AAAS Fellow for "distinguished contributions to theory and practice of parallel and distributed computing," 2006.
11. IEEE Fellow for "contributions to theory and practice of high-performance computing," 2002.
12. Advisory Board Member, IEEE Technical Committee on Parallel Processing, 1998–2003.
13. Member, IFIP Committee on System Modeling and Optimization, 1999–2012.
14. Associate Editor-in-Chief for Algorithms, *Journal of Parallel and Distributed Computing* (Algorithms and Scientific Computing), 2011–2021.
15. Subject Area Editor, *Journal of Parallel and Distributed Computing* (Algorithms and Scientific Computing), 1993–2010.
16. Associate Editor, *IEEE Transactions on Parallel and Distributed Systems*, 2010–2014.
17. Associate Editor, *IEEE Transactions on Computers*, 2011–2015.
18. Associate Editor, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2013–present.
19. Associate Editor, *Sustainable Computing: Systems and Informatics*, 2010–present.
20. Associate Editor, *Knowledge and Information Systems*, 2010–present.
21. Associate Editor, *International Journal of Computing*, 2010–present.
22. Associate Editor, *ACM Computing Surveys*, 2013–present.
23. Member, Editorial Board, *Applied Sciences* (Computing and Artificial Intelligence), 2019–present.

PATENTS

1. United States Patent Number 8,805,715. Brian Jones and Sanjay Ranka. Method for Improving the Performance of Messages Including Internet Splash Pages. Aug. 12, 2014.
2. United States Patent Number 8,386,315. Arvind Bala, Richard Chatwin, Brian Jones, Ahmet Nalcacioglu, and Sanjay Ranka. Yield Management System and Method for Advertising Inventory, Feb. 26, 2013.
3. United States Patent Number 8,260,663. Sanjay Ranka, Diane Chang, and Daniel Veiner. Method, Algorithm, and Computer Program for Targeting Messages Including Advertisements in an Interactive Measurable Medium, Sept. 4, 2012.
4. United States Patent Number 8,144,686. Sartaj Sahni, Nageshwar Sirikonda Venkata, Sanjay Ranka, Yan Li, Eun-sung Jung, and Narayana Kamath. Method and Systems for Bandwidth Scheduling and Path Computation for Connection-Oriented Networks, Mar. 27, 2012.

5. United States Patent Number 7,573,978. Srijit Kamath, Sartaj Sahni, Jonathan Li, Jatinder Palta, and Sanjay Ranka. Variable Feathering Field Splitting for Intensity-Modulated Fields of Large Size, Aug. 11, 2009.
6. United States Patent Number 7,415,423. Sanjay Ranka, Jason Lenderman, and James Weisinger. Method, Algorithm, and Computer Program for Optimizing the Performance of Messages Including Advertisements in an Interactive Measurable Medium, Aug. 19, 2008.
7. United States Patent Number 7,406,434. Diane Chang, Richard Chatwin, Sachin Kumar, Sanjay Ranka, James Weisinger, and Jason Lenderman. System and Method for Improving the Performance of Electronic Media Advertising Campaigns through Multi-attribute Analysis and Optimization, July 29, 2008.
8. United States Patent Number 7,142,635. Srijit Kamath, Sartaj Sahni, Jonathan Li, Jatinder Palta, and Sanjay Ranka. Field Splitting for Intensity-Modulated Fields of Large Size, Nov. 28, 2006.
9. United States Patent Number 7,085,348. Srijit Kamath, Sartaj Sahni, Jonathan Li, Jatinder Palta, and Sanjay Ranka. Leaf Sequencing Method and System, Aug. 1, 2006.
10. United States Patent Number 6,563,952. Anurag Srivastava, G. D. Ramkumar, Vineet Singh, and Sanjay Ranka. Method of High Dimensional Data and Apparatus for Classification, May 13, 2003.
11. United States Patent Number 6,173,280. G. D. Ramkumar, Sanjay Ranka, and Shalom Tsur. Method and Apparatus for Generating Weighted Association Rules, Jan. 9, 2001.
12. United States Patent Number 5,987,468. Vineet Singh, Khaled Alsabti, and Sanjay Ranka. Structure and Method for Efficient Parallel High-Dimensional Similarity Join, Nov. 16, 1999.
13. United States Patent Number 5,983,224. Vineet Singh, Sanjay Ranka, and Khaled Alsabti. Method and Apparatus for Reducing the Computational Requirements of K-Means Data Clustering, Nov. 9, 1999.

SELECTED INVITED PRESENTATIONS

1. Keynote Speaker, Machine Learning for Intelligent Transportation, 2024 International Conference on Smart Transportation and Future Mobility, Shanghai, October 2024.
2. Keynote Speaker, AI for Intelligent Transportation, The International Association of Transportation Regulators (IATR) 37th Annual Conference, Fort Lauderdale, October 2024
3. Keynote Speaker, Machine Learning for Scientific Data Reduction, IEEE ISCC, Paris, June 2024.
4. Keynote Speaker, Machine Learning for Smart Transportation, International Conference on Civil Engineering Fundamentals and Applications (ICCEFA '23), Lisbon, Dec. 2023.
5. Keynote Speaker, Leveraging AI for Transportation, 2023 7th International Symposium on Computer Science and Intelligent Control, ISCSIC 2023, Oct. 2023.
6. Keynote Speaker, Volumetric Scientific Data Reduction with Performance Guarantees, International Conference on Contemporary Computing (IC3-2023), August 2023.
7. Keynote Speaker, Machine Learning for Smart Transportation, Advances in Information Communication Technology & Computing, Bikaner, India, Dec. 2022.
8. Keynote Speaker, Machine Learning for Smart Transportation, International Conference on Machine Learning, and Intelligent Systems (MLIS2022), Seoul, Republic of Korea, Nov. 2022.
9. Keynote Speaker, Artificial Intelligence and Machine Learning for Smart Transportation, INFRAMEET 2022, Chicago, Nov. 2022.
10. Keynote Speaker, Edge-Based AI for Smart Transportation, International Conference on Computing Innovation and Applied Physics, Aug. 2022.
11. Invited Speaker, A Multi-Sensor Edge-Based System for Intelligent Traffic Intersections, IEEE MetroCAD, Detroit, Apr. 2022.

12. Keynote Speaker, Edge-Based Artificial Intelligence for Smart Transportation, International Conference on Informatics (ICI-2022), New Delhi, Apr. 2022.
13. Plenary Speaker, Power and Performance Tradeoffs for Exascale Computing, Global Summit on Power and Energy Engineering (GSPEE2022), Dubai, Mar. 2021.
14. Keynote Speaker, International Conference on Information System Design and Intelligent Applications (INDIA - 2022), Hyderabad, India, Feb. 2021.
15. Plenary Speaker, Artificial Intelligence for Smart Transportation, 11th International Advanced Computing Conference, Malta, Dec. 2021.
16. Keynote Speaker, ROAMM: A smartwatch-based framework for real-time and online assessment and mobility monitoring, Third World Aging and Rejuvenation Conference (ARC-2021), Sep. 2021.
17. Invited Speaker, ROAMM: A Smartwatch-Based Framework for Real-Time and Online Assessment and Mobility Monitoring, IEEE Symposium on Data Analytics and Internet of Things, Nov. 2020.
18. Keynote Speaker, Artificial Intelligence for Transportation, World Congress on Artificial Intelligence and Robotics Research, Zurich, Switzerland, October. 2020.
19. Keynote Speaker, Big Data Computing and Machine Learning for Intelligent Transportation and Connected Vehicles, The 5th International Conference on Fog and Mobile Edge Computing (FMEC 2020), Paris, France, Jul. 2020.
20. Keynote Speaker, Big Data Computing and Machine Learning for Intelligent Transportation and Connected Vehicles, The 3rd International Workshop on Intelligent Transportation and Connected Vehicles Technologies (ITCVT 2020), part of The 32nd IEEE/IFIP Network Operations and Management Symposium (NOMS 2020), Budapest, Hungary, Apr. 2020.
21. Invited Speaker, Vision Track, A Vision of Smart Traffic Infrastructure for Traditional, Connected, and Autonomous Vehicles, IEEE Conference on Connected and Autonomous Driving (MetroCAD), Detroit, Michigan, Feb. 2020.
22. Plenary Speaker, International Conference on Machine Learning and Data Science, Hyderabad, India, Dec. 2019.
23. Keynote Speaker, A Multi-sensor System for Traffic Analysis at Smart Intersections, International Conference on Contemporary Computing, Noida, India, Aug. 2019.
24. Keynote Speaker, Silver Jubilee Foundation Day Celebration, Machine Intelligence Unit, Indian Statistical Institute, Kolkatta, Mar. 2018.
25. Keynote Speaker, Smart Intersection Control Algorithms for Automated and Connected Vehicles, BigDF Workshop, High Performance Computing Conference (HiPC 2017), Nov. 2017.
26. Invited Speaker, Optimization Algorithms for Transportation, International Conference on Contemporary Computing, Aug. 2017.
27. Keynote Speaker, Performance, Energy and Thermal Aware Algorithms for Hybrid Multicore Processors, The 22nd IEEE Symposium on Computers and Communications, July 2017.
28. Keynote Speaker, Multiobjective Algorithms for Hybrid Multicore Processors, International Green and Sustainable Computing Conference, Nov. 2016.
29. Keynote Speaker, High Performance Computing and Data Science for Large-Scale Spatiotemporal Applications, International Conference on Contemporary Computing, Aug. 2016.
30. Plenary Speaker, Energy Efficient Multicore Computing, Second International Conference on Eco-friendly Computing and Communication Systems, Oct. 2014.
31. Keynote Speaker, Gliding through Large Amounts of Data, IEEE International Conference on Parallel, Distributed and Grid Computing, Dec. 2012.
32. Keynote Speaker, Advance Reservations for Network Centric Applications on Grids and Clouds, The 4th IEEE International Conference on Cloud Computing Technology and Science, Dec. 2012.

33. Keynote Speaker, Energy Efficient Multicore Computing, 5th International Conference on Information Systems, Technology and Management, New Delhi, India, Mar. 2011.
34. Keynote Speaker, In-Silico Methods for Metabolic Engineering, 2nd International Conference on Contemporary Computing, Aug. 2010
35. Keynote Speaker, Talk Title: Novel Mixture Models to Learn Complex Patterns in High-Dimensional Data, ICDM 2009 Workshop on Optimization Based Methods for Emerging Data Mining Problems.
36. Keynote Speaker, Energy Aware Computing, International Conference on Contemporary Computing, Aug. 2008.
37. Invited Speaker, Grid Resource Management, International Conference on Grid and Pervasive Computing, May 2006.
38. Invited Speaker, Information Management and Computation Scheduling for Life Science Applications, SURA Cyberinfrastructure Workshop: Life Sciences and the Grid, Jan. 2006.
39. Invited Speaker, Real-Time Data Mining on Grids, SIAM Workshop on High Performance Data Mining, 2004.

SPONSORED RESEARCH PROJECTS

Completed

1. Principal Investigator: Performance Modeling of SIMD and MIMD Parallel Computers Using Neural Networks, NSF (July 1991–Dec. 1992), approx. $65,000.
2. Co-Principal Investigator: Fault Tolerance and Reliability Analysis of Neural Networks, Rome Laboratories (Jan. 1992–Dec. 1992), $100,000 (with Chilukuri K. Mohan and Kishan G. Mehrotra).
3. Co-Principal Investigator: Fortran 77D and Fortran 90D: Scalable and Portable Software Module for SIMD and MIMD Distributed Memory Parallel Computers, DARPA (Sept. 1991–Aug. 1994), $1,581,033 (with Geoffrey C. Fox and Alok C. Choudhary).
4. Co-Principal Investigator: Development of Software and Applications for Parallel Computers, IBM Yorktown (May 1991–Oct. 1992), $95,652 (with Geoffrey C. Fox and Alok C. Choudhary).
5. Co-Principal Investigator: Fault Tolerance and Reliability Analysis of Neural Networks, New York State Center for Computer Applications and Software Engineering (July 1991–June 1992), $20,000 (with Chilukuri K. Mohan and Kishan G. Mehrotra).
6. Co-Principal Investigator: Development of a Device Driver, Parasoft Corporation, $30,000 for six months (June 1992–Dec.1992) (with Geoffrey C. Fox).
7. Co-Principal Investigator: Software Environments and Scalable High-Level Data Structure Extensions of Fortran for Irregular Loosely Synchronous Problems on SIMD and MIMD Parallel Computers (Dec. 92–Dec. 95), $768,966 (subcontract to Rice University; with Geoffrey C. Fox and Alok C. Choudhary).
8. Co-Principal Investigator: High-Performance Computing and Parallel Processing in the Utility Industry, Niagara Mohawk (June 1993–Mar. 1994), $200,000 (with Geoffrey C. Fox, Paul D. Coddington, Alok C. Choudhary, Salim Hariri, and Michael S. Nilan).
9. Principal investigator: Common Runtime Support for High Performance Languages, subcontract to University of Florida from Syracuse University ($126,708 for two years) (part of a $3.16 million grant with G. C. Fox et al. from ARPA for three years).
10. Principal Investigator: Mainstreaming Parallel and Distributed Computing in the Computer Science Undergraduate Curriculum, NSF (Aug. 1996–July 1999), $391,565 (excluding matching funds from University of Florida; with T. Johnson, S. Rajasekaran, G. Ritter, and S. Sahni).

11. Co-Principal Investigator: Distributed Computing and Databases for High Energy Physics, NSF (subcontract from Cornell University) (Aug. 1997–July 1999), $381,923 (PI: Paul Avery).
12. Principal Investigator: Scalable Parallelization of Spatial Data Structures, BMDO/ARO (subcontract from NMSU), (1997–1999), approx. $73,960.
13. Co-Principal Investigator: A Framework for Matching Applications with Parallel Machines, U.S. ARMY (Oct. 1997–Sep. 1998), $50,000 (with Sahni and Peir).
14. Co-Principal Investigator: Integrating Randomization Techniques in the Undergraduate and Graduate Curricula, NSF (Aug. 1998–July 2001), $372,312 (excluding matching funds from University of Florida) (PI: Rajasekaran).
15. Co-Principal Investigator: High Performance Web-Centric Computing, IBM SUR Equipment Grant (1998–1999), approx. $625,000 (with Ritter and Fishwick).
16. Co-Principal Investigator: Real-Time Dose Computation and Treatment Planning, NIH (1999–2004), (PI: Sahni). $1.362 million.
17. Principal Investigator, A Data Mining and Exploration Middleware for Distributed and Grid Computing, Collaborative NSF grant (2003–2008) (with Minnesota and Illinois Chicago: Total amount $1.5 million, UF portion; $535,000).
18. Investigator, Resource Center for Emerging Technologies, NIH (2002–2007) (PI: Palta), $2.65 million.
19. Principal Investigator, An Inter-regional Grid-Enabled Center for HEP Research and Education Outreach (CHEPREO) at FIU, National Science Foundation (2003–2007), $116,970.
20. Principal Investigator, Acquisition of CASTOR: A High-Performance Communication and Storage Backbone for Data-Intensive Science and Engineering Computing, (2004–2006) National Science Foundation, $600,000 (+ matching monies from UF).
21. Principal Investigator, Blue Team Plan for Knowledge Management, Defense Threat Reduction Agency, (2003–2006), $123,835.
22. Co-Principal Investigator, SEI: Data Mining for Multiple Antibiotic Resistance (NSF), (2006–2009), $568,237 (PI: Jermaine).
23. Co-Principal Investigator, Advanced Scheduling of High-Speed Networks, DOE (subcontract from AAS), 2006–2007, $52,000 (includes UF matching), (PI: S. Sahni).
24. Principal Investigator, Strategic Planning and Innovative Research, DTRA, 2007–2009, DTRA, approx. $13,665 (with T. Anderson) (subcontract from PSU).
25. Principal Investigator, PLANETS: Physica Lambda Network System, subcontract from Caltech, National Science Foundation, $53,500 (Aug. 2007–July 2010)
26. Principal Investigator, An Inter-Regional Grid-Enabled Center for HEP Research and Education Outreach (CHEPREO) at FIU, National Science Foundation (2007–2009), subcontract from FIU, approx. $103,800.
27. Co-Principal Investigator, Advanced Scheduling of High-Speed Networks Advanced Algorithms and Systems, 2006–2007, $52,000 (includes UF matching), (PI: S. Sahni).
28. Co-Principal Investigator, Co-scheduler for High-Performance Computer Systems and Networks, UltraHiNet, 2008–2009, $52,000 (includes UF matching), (PI: S. Sahni).
29. Principal Investigator, CSR: Medium: Collaborative Research: GridPac: A Resource Management System for Energy and Performance Optimization on Computational Grids (National Science Foundation), (2009–2014), $405,000.
30. Principal Investigator, MCDA: Collaborative Research: A Multi-Element and Multi-Objective Optimization Approach for Allocating Tasks to Multi-Core Processors, National Science Foundation/Semiconductor Research Corporation (2009–2013), $300,000.
31. Co-Principal Investigator, Ensuring Quality Care for Radiation Patients, Florida Department of Health (2010–2012), $740,838 (PI: Palta).

32. Co-Principal Investigator, CiC: EAGER: Inferring Patterns and Processes of Genome Evolution through Cloud Computing, National Science Foundation (2010–2012), $300,000 (PI: Burleigh).
33. Co-Principal Investigator, III: EAGER: A Framework for Large Data Analysis, National Science Foundation (2011–2013), $100,000 (PI: Dobra).
34. Co-Principal Investigator, Sparse Direct Methods on High-Performance Heterogeneous Architectures, National Science Foundation (2011–2015), $310,000 (PI: Davis).
35. Principal Investigator, Partitioning and Scheduling Real-time Applications for Multicore Mobile Devices and Hybrid Clouds, Samsung Corporation (2012), approx. $140,000.
36. Principal Investigator, Student Travel Sponsorship for Third ACM BCB Conference 2012, National Science Foundation (2012–2013), $24,000.
37. Co-Principal Investigator, Engineering Informatics of Actigraphy for Preventing Mobility Incidents in Older Adults. UF Informatics Institute Seed Fund Grant (2014–2015), $37,838 (PI: Manini).
38. Principal Investigator, Performance, Energy and Thermal Tradeoffs for Next Generation Intel Multicore Machines. Intel Corporation (2016), $100,000.
39. Principal Investigator, Thermal Aware Computing: Hardware Monitoring and Software Controls, UF Foundation/Harris Corporation (2016), $20,000.
40. Principal Investigator, Determining the Feasibility of Automatic Processing of Video Log Images for Detection of Key ADA Features, FDOT (2016), approx. $9000.
41. Co-Principal Investigator, MRI: Acquisition of GatorCloud: Enabling High-Impact Scientific Research and Collaboration via Software Defined Networks and Cloud Services, National Science Foundation (2012–2017), approx. $1.17 million + matching funds from the university (PI: Andy Li).
42. Co-Principal Investigator, Development and Testing of Optimized Autonomous and Connected Vehicle Trajectories at Signalized Intersections, Florida Department of Transportation (2015–2017), $392,603 (PI: Elefeteriadou).
43. Co-Principal Investigator, PEAKS: Validation of Mobile Technologies for Clinical Assessment, Monitoring and Intervention, Everyfit Inc (2016–2017) (PI: Todd Manini), approx. $35,000.
44. Principal Investigator, Big Data in Transportation, District 5 (Florida Department of Transportation) (2016–2018), approx. $630,000.
45. Principal Investigator, Performance, Energy and Thermal Tradeoffs for Next Generation Intel Multicore Machines, INTEL CORP, (2016–2016) $100,000.
46. Principal Investigator, Determining the Feasibility of Automatic Processing of Video Log Images for Detection of Key ADA Features, Florida Department of Transportation, (2016–2016) $9,000
47. Co-PI, PCORI Health Systems Demonstration Project NYC Capricorn (2016–2018), $308,000 (PI: Shenkman).
48. Investigator, Finding Super-utilizers in Texas Medicaid (effort in Texas External Quality Review Organization Vendor and Quality Vendor), Texas Health and Human Services (2014–2019), approx. $350,000 (PI: Shenkman) (Total Project Budget, $45+ million).
49. Co-Principal Investigator, EAGER: Parallel Semi-supervised Machine Learning for Volumetric Datasets, National Science Foundation (2017–2019), $100,000 (PI: Rangarajan).
50. Principal Investigator, SparseKaffe: High-Performance, Auto-Tuned Energy-Aware Algorithms for Sparse Direct Methods on Modern Heterogeneous Architectures, National Science Foundation (2015–2019), $395,454.
51. Principal Investigator, Energy-Aware Time Change Detection Using Synthetic Aperture Radar on High-Performance Heterogeneous Architectures, Air Force Office of Scientific Research (2015–2019), approx. $705,000.
52. Principal Investigator, Truck Taxonomy and Classification Using Video and Weigh-In-Motion (WIM) Technology, Florida Department of Transportation (2017–2019), approx. $200,000.

53. Principal Investigator, Dynamic Intersection Learning Machine Optimization Real-time Engine, District 5 (Florida Department of Transportation) (2017–2019), approx. $230,000.
54. Principal Investigator, Machine Learning Algorithms for Demand and Turning Movement Count, FDOT (2018–2020), approx. $200,000.
55. Principal Investigator, EAGER: Software-Hardware Co-Design Approaches for Multi-Level Memories, National Science Foundation (2017–2020), $300,000.
56. Principal Investigator, Data Management and Analytics for UF Smart Testbed, FDOT, (2017-2020), approx. $540,000.
57. Principal Investigator, Traffic-event Unification System Highlighting Arterial Roads, FDOT (2017–2020), approx. $300,000.
58. Co-Principal Investigator, Center for Compressible Multiphase Turbulence (CCMT), DOE/NNSA (2014–2020), approx. $11 million (PI: Bala Balachandar).
59. Co-Principal Investigator, CPS: TTP Option: Synergy: Traffic Signal Control with Connected and Autonomous Vehicles in the Traffic Stream, National Science Foundation (2015–2021), approx. $1.6 million (PI: Elefeteriadou).
60. Principal Investigator, Data Analytics and Evaluation of the Gainesville Trapezium Connected Vehicle Signal Phasing and Timing (SPaT) Deployment Project, Florida Department of Transportation, (2019–2020), $249,655.
61. Principal Investigator, Parallel Study in Trusted AI to Support Sandia/UF Collaboration, UF VP of Research (2020–2021), $50,000.
62. Principal Investigator, Bigdata Analytics and Artificial Intelligence for Smart Intersections, Florida Department of Transportation (2019–2022), $750,000.
63. Co-Principal Investigator, A Downscaling-Assimilation Framework for SMAP Observations to Obtain High-Resolution Crop Yields in Heterogeneous Agricultural Regions, NASA (2017–2022), approx. $450,000 (PI: Judge).
64. Principal Investigator, Machine Learning Algorithms for Improved Network Traffic Signal Policy Optimization (2020–2023), Florida Department of Transportation, $320,000.
65. Principal Investigator, Interstate 4 Florida's Regional Advanced Mobility Elements, (2021–2023), $185,000.
66. Principal Investigator, Video Analysis for Traffic Intersections in Seminole County, (2021–2023), FDOT D5, $70,000.
67. Co-Core Leader OAIC Data Science and Applied Technology Core, National Institute of Aging (2017–2022), approx. $2 million, (PI: Pahor).
68. Principal Investigator, Research on Artificial-Intelligence for Data Integration with State Highways, Florida Department of Transportation (2022–2024), $300,000.
69. Principal Investigator, Video-Based Machine Learning for Smart Traffic Analysis and Management, National Science Foundation Smart Cities and Communities, (2019–2024), approx. $2 million.

Active

70. Principal Investigator, Hybrid Learning Techniques for Data Reduction with Performance Guarantees, DOE (2021–2025), $900,000.
71. Principal Investigator, RAPIDS2: A SciDAC Institute for Computer Science, Data and Artificial Intelligence, DOE (2020–2025), $550,000.
72. Principal Investigator, Wearable Technology Infrastructure to Enhance Capacity for Real-Time, Online Assessment and Mobility (ROAMM) of Intervening Health Events in Older Adults, National Institute of Aging (2019–2024), approx. $2.2 Million (Todd Manini is the other PI). R31 phase of this R31/R33 project ($0.45M) ended Feb. 2022.

73. Co-Core Leader, Data Science and Applied Technology Core, University of Florida Claude D. Pepper Older Americans Independence Center, National Institute of Aging (2022–2027), approx. $6,866,968 (total anticipated) (PI: Esser and Manini).
74. Principal Investigator, Interstate 4 Florida's Regional Advanced Mobility Elements: Before and After, (2023–2028), $201,000.
75. Principal Investigator, Using Trajectory Data and Ground Sensor Data for Traffic Signal Policy Optimization, Florida Department of Transportation (2022–2025), $400,000.
76. Principal Investigator, Near-Miss Traffic Incident Identification System at Signalized Intersections, Broward County (2023–2024), approx. $415,000.

PUBLICATIONS AND PRESENTATIONS

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182. J. C. Wang, T. H. Lin, and S. Ranka. Distributed Scheduling of Unstructured Collective Communication on the CM-5. Proceedings of the Twenty-Seventh Hawaii International Conference on System Sciences (HICSS-27), Jan. 4-7, 1994, pp. 483-492.
183. C. T. Chiu, K. Mehrotra, C. K. Mohan, and S. Ranka. Fault Tolerance of Feedforward Neural Networks with Hardware Limitations. Proceedings of International Symposium on Artificial Neural Networks, Dec. 1993, pp. E31-E40.
184. Z. Bozkus, S. Ranka, G. Fox, and A. Choudhary. Performance Comparison of the CM-5 and Intel Touchstone Delta for Data Parallel Operations. Proceedings of 1993 5th IEEE Symposium on Parallel and Distributed Processing, Dec. 1-4, 1993, pp. 307-310.
185. Z. Bozkus, A. Choudhary, G. Fox, T. Haupt, and S. Ranka. Compiling Distribution Directives in a Fortran 90D Compiler. Proceedings of 1993 5th IEEE Symposium on Parallel and Distributed Processing, Dec. 1-4, 1993, pp. 617-620.
186. S. Ranka, M. Kaddoura, A. Wang, and G. Fox. Heterogeneous Computing on Heterogeneous Systems: Software and Application Issues. Proceedings of the 1993

ACM/IEEE conference on Supercomputing (Supercomputing ’93), Nov. 19, 1993, pp. 763-764.

187. Z. Bozkus, A. Choudhary, G. Fox, T. Haupt, and S. Ranka. Fortran 90D/HPF Compiler for Distributed Memory MIMD Computers: Design, Implementation and Performance Results. Proceedings of the 1993 ACM/IEEE Conference on Supercomputing (Supercomputing ’93), Nov. 19, 1993, pp. 351-360.
188. S. Ranka, J. C. Wang, and M. Kumar. Personalized Communication Avoiding Node Contention on Distributed Memory Systems. Proceedings of 1993 International Conference on Parallel Processing (ICPP), Aug. 16-20, 1993, Vol. 1, pp. 241-244.
189. N. Copty, S. Ranka, G. Fox, and R. Shankar. Solving the Region Growing Problem on the Connection Machine. Proceedings of 1993 International Conference on Parallel Processing (ICPP), Aug. 16-20, 1993, Vol. 3, pp. 102-105.
190. T. Chen, J. Feeney, G. Fox, G. Frieder, S. Ranka, B. Wilhelm, and F. Yu. A Low-Latency Programming Interface and a Prototype Switch for Scalable High-Performance Distributed Computing. Proceedings of the *2nd International* Symposium on High-Performance Distributed Computing (HPDC), July 20-23, 1993, pp. 160-168.
191. H. Lee, K. Mehrotra, C. Mohan, and S. Ranka. Selection Procedures for Redundant Inputs in Neural Networks. Proceedings of the World Congress on Neural Networks, July 1993, Vol. 1, pp. 300-303.
192. K. Mehrotra, S. Ranka and J. C. Wang. A Probabilistic Analysis of a Locality Maintaining Load Balancing Algorithm. Proceedings of Seventh International Parallel Processing Symposium, Apr. 1993, pp. 369-373.
193. C. T. Chiu, K. Mehrotra, C. K. Mohan, and S. Ranka. Robustness of Feedforward Neural Networks. Proceedings of IEEE International Conference on Neural Networks, Mar. 1993, Vol. 2, pp. 783-788.
194. J. C. Wang, S. Ranka, and G. C. Fox. Static and Runtime Scheduling of All-to-Many Personalized Communication on Permutation Networks. Proceedings of 1992 International Conference on Parallel and Distributed Systems, pp. 211-218.
195. Y. C. Chung and S. Ranka. Applications and Performance Analysis of a Compile Time Optimization Approach for List Scheduling Algorithms on Distributed Memory Multiprocessors. Proceedings of the 1992 ACM/IEEE conference on Supercomputing (Supercomputing ’92), Nov. 16-20, 1992, pp. 512-521.
196. T. Heywood and S. Ranka. Architectural Independent Analysis of Sorting and List Ranking on the Hierarchical PRAM Model. Proceedings of t*he Fourth Symposium on the Frontiers of Massively Parallel Computation* (Frontiers '92), Oct. 19-21, 1992, pp. 531-534.
197. A. Choudhary, G. Fox, S. Ranka, S. Hiranandani, K. Kennedy, C. Koelbel, and C.-W. Tseng. Compiling Fortran 77D and 90D for MIMD Distributed Memory Machines. Proceedings of t*he 4th Symposium on the Frontiers of Massively Parallel Computation* (Frontiers '92), Oct. 19-21, 1992, pp. 4-11.
198. Z. Bozkus, S. Ranka, and G. Fox. Benchmarking the CM-5 Multicomputer. Proceedings of t*he 4th Symposium on the Frontiers of Massively Parallel Computation* (Frontiers '92), Oct. 19-21, 1992, pp. 100-107.
199. M. C. Yang, K. Mehrotra, C. K. Mohan, and S. Ranka. A New Algorithm for Partial Shape Matching. Proceedings of the 1992 Artificial Neural Networks in Engineering (ANNIE'92), Vol. 2, pp. 523-528.
200. K. Chakraborty, K. Mehrotra, C. K. Mohan, and S. Ranka. An Optimization Network for Solving a Set of Simultaneous Linear Equations. Proceedings of International Joint Conference on Neural Networks (IJCNN), June 7-11, 1992, Vol. 2, pp. 516-521.
201. Y. C. Chung and S. Ranka. A Parallel Programming Tool for Single Program Multiple Data Model on Distributed-Memory Multiprocessors. Proceedings of 26th Hawaii International Conference on System Sciences (HICCS-26), Jan. 8, 1993, Vol. 2, pp. 433-434.

202. I. Ahmad, R. Bordawekar, Z. Bozkus, A. Choudhary, G. Fox, K. Parasuram, R. Ponnusamy, S. Ranka, and R. Thakur. Fortran 90D Intrinsic Functions on Distributed-Memory Machines: Implementation and Scalability. Proceedings of 26th Hawaii International Conference on System Sciences (HICCS-26), Jan. 8, 1993, Vol. 2, pp. 35-36.
203. F. G. Zeng, M. Zhang, K. G. Mehrotra, C. K. Mohan, and S. Ranka. A Neural Network Approach to Prediction of Psychological Performance in Frequency Discrimination. Proceedings of International Joint Conference on Neural Networks (IJCNN), June 17-21, 1990, Vol. 2, pp. 361-366.
204. T. Heywood and S. Ranka. A Practical Hierarchical Model of Parallel Computation. Proceedings of the Third IEEE Symposium on Parallel and Distributed Processing, Dec. 2-5, 1991, pp. 18-25.
205. H. Lee, Y. Park, K. Mehrotra, C. Mohan, and S. Ranka. Nonlinear System Identification and Control Using Neural Networks. Proceedings of International Joint Conference on Neural Networks (IJCNN), Singapore, Nov. 1991, Vol. 3, pp. 2410-2415.
206. R. Anand, C. K. Mohan, K. Mehrotra, and S. Ranka. Analyzing Images Containing Multiple Sparse Patterns with Neural Networks. Proceedings of International Joint Conference on Artificial Intelligence, Sydney, Australia, Aug. 1991, Vol. 2, pp. 838-843.
207. A. Choudhary and S. Ranka. Mesh and Pyramid Algorithms for Iconic Indexing. Proceedings of the 5th International Conference on Supercomputing (ICS '91), Cologne, West Germany, June 17-21, 1991, pp. 295-303.
208. R. V. Shankar and S. Ranka. Hypercube Algorithms for Operations on Quadtrees. Proceedings of Distributed Memory Computing Conference (DMCC), Apr. 1991, pp. 161-168.
209. N. Asokan, S. Ranka, and O. Frieder. A Parallel Free-Text Search System with Indexing. Proceedings of PARBASE-90*: International Conference on Databases, Parallel Architectures, and Their Applications,* Mar. 7-9, 1990, pp. 519-521.
210. S. Ranka and S. Sahni. Clustering on a Hypercube Multicomputer. Proceedings of 10th International Conference on Pattern Recognition, June 16-21, 1990, Vol. 2, pp. 532-536.
211. S. Ranka, J. Wang, and N. Yeh. Embedding Meshes on the Star Graph. Proceedings of the Supercomputing Conference (*SUPERCOMPUTING '90*), Nov. 12-16, 1990, pp. 476-485.
212. J. Koh, G. S. Moon, K. G. Mehrotra, C. K. Mohan, and S. Ranka. Korean Character Recognition Using Neural Networks. Proceedings of 3rd Symposium on the Frontiers of Massively Parallel Computation, Oct. 8-10, 1990, pp. 162-165.
213. Y. C. Chung and S. Ranka. Mapping Finite Element Graphs on Hypercubes. Proceedings of 3rd Symposium on the Frontiers of Massively Parallel Computation, Oct. 8-10, 1990, pp. 135-144.
214. A. Choudhary, S. Hariri, W. Song, P. Banerjee, and S. Ranka. Optical Switching and Routing Architectures for Fiber-Optic Computer Communication Networks. Proceedings of 15th Conference on Local Computer Networks (LCN), 1990, pp. 65-74.
215. S. Ranka and S. Sahni. Hypercube Algorithms for Image Transformations. Proceedings of International Conference on Parallel Processing, 1989, Vol. 3, pp. 24-31.
216. S. Ranka and S. Sahni. Efficient Serial and Parallel Algorithms for Median Filtering. Proceedings of International Conference on Parallel Processing, 1989, Vol. 3, pp. 56-62.
217. S. Ranka and S. Sahni. Image Template Matching on SIMD Hypercube Multicomputers. Proceedings of International Conference on Parallel Processing, 1988, Vol. 3, Algorithms & Applications, pp. 84-91.
218. S. Ranka and S. Sahni. Convolution on an SIMD Mesh-Connected Computer. Proceedings of International Conference on Parallel Processing, Vol. 3, 1988, Algorithms & Applications, pp. 212-217.

219. S. Ranka and S. Sahni. Image Template Matching on MIMD Hypercube Multicomputers. Proceedings of International Conference on Parallel Processing, 1988, Vol. 3, Algorithms & Applications, pp. 92-96.

Workshops/Non-refereed Conferences

1. T. A. Davis, S. Ranka, S. Yeralan, High-Performance GPU Kernels for Multifrontal Sparse Factorization, SIAM Parallel Processing (PP14), 2014, Portland, Oregon.
2. T. A. Davis, S. Ranka, S. Yeralan, H. Zandi, and S. Chetlur. Multifrontal Sparse QR Factorization on a GPU. SIAM Annual Meeting, July 2013, San Diego, California.
3. Jaeyeon Kang and Sanjay Ranka. Assignment Algorithm for Energy Minimization on Parallel Machines. Proceedings of the 3rd **International Workshop on Advanced Distributed and Parallel Network Applications, 2009, pp. 484-491.**
4. K. Alsabti, S. Ranka, and V. Singh. An Efficient K-Means Clustering Algorithm. 1998 IPPS/SPDP Workshop on High Performance Data Mining.
5. N. Nagaratnam, K. Mehrotra, C. K. Mohan, and S. Ranka. Configuration Acceptance Criteria in Simulated Annealing Algorithms. Proceedings of the IASTED Conference, July 1994, pp. 170-173.
6. E. A. Bogucz, G. C. Fox, T. Haupt, K. A. Hawick, and S. Ranka. Preliminary Evaluation of High-Performance Fortran as a Language for Computational Fluid Dynamics. 25th AIAA Fluid Dynamics Conference, June 1994, AIAA 94-2262.
7. C. T. Chiu, K. Mehrotra, C. K. Mohan, and S. Ranka. Modifying Training Algorithms for Improved Fault Tolerance. Proceedings of International Conference on Neural Networks, Vol. I, June 1994, pp. 333-338. Invited paper.
8. G. C. Fox, S. Ranka, M. Scott, A. D. Malony, J. Browne, M. C. Chen, A. C. Choudhary, T. Cheatham, J. Cuny, R. Eigenmann, A. Fahmy, I. Foster, D. Gannon, T. Haupt, M. Karr, C. Kesselman, C. Koelbel, W. Li, M. Lam, T. LeBlanc, J. Openshaw, D. Padua, C. Polychronopoulos, J. Saltz, A. Sussman, G. Weigand, and K. Yelick. Runtime Support for High-Performance Parallel Languages. Proceedings of Supercomputing '93, pp. 752-757.
9. Z. Bozkus, A. N. Choudhary, G. C. Fox, T. Haupt, S. Ranka, R. Thakur, and J-C. Wang. Scalable Libraries for High-Performance Fortran. Scalable Libraries Conference, Oct. 1993. Invited Paper.
10. R. Bhargava, G. Fox, C-W. Ou, S. Ranka, and V. Singh. Scalable Libraries for Graph Partitioning, Scalable Libraries Conference, Oct. 1993.
11. D. Koester S. Ranka, and G. C. Fox. Scalable Solutions for Sparse Matrix Solvers, Scalable Libraries Conference, Oct. 1993.
12. Z. Bozkus, A. Choudhary, G. Fox, T. Haupt, and S. Ranka. A Compilation Approach for Fortran 90D/HPF Compilers on Distributed Memory MIMD Computers, 6th Workshop on Languages and Compilers for Parallelism, Aug. 1993.
13. D. Krishnaswamy, K. G. Mehrotra, C. K. Mohan and S. Ranka. Storing Temporal Sequences of Patterns in Neural Networks. Proceedings of Conference on Neural and Stochastic Methods in Image and Signal Processing II (SPIE'93), San Diego, July 1993, pp. 120-126.
14. H. J. Lee, K. G. Mehrotra, C. K. Mohan, and S. Ranka. Performance Modeling of Communication Primitives Using Neural Networks. 3rd KSEA WNY Regional Conference, Mar. 1993, Vol. 1, pp. 300-303.
15. J. C. Wang and S. Ranka. Static and Runtime Scheduling of Unstructured Communication (for presentation only). 2nd Symposium on Parallel Computational Methods for Large Scale Structural Analysis and Design, Mar. 1993.
16. A. Choudhary, G. C. Fox, S. Hiranandani, K. Kennedy, C. Koelbel, S. Ranka, and J. Saltz. A Classification of Irregular Loosely Synchronous Problems and Their Support in Scalable

Parallel Software Systems. 1992 DARPA Software Technology Conference, Vol. 7, pp. 138-149.

17. A. N. Choudhary, T. Haupt, G. C. Fox, and S. Ranka. What Problems Use High-Performance Fortran and Fortran D-Industry Standard Data Parallel Languages. Proceedings of 5th Australian Supercomputing Conference, Dec. 1992, pp. 117-124.
18. K. Mills, G. Cheng, M. Vinson, S. Ranka, and G. C. Fox. Software Issues and Performance of a Parallel Model for Stock Option Pricing. Proceedings of 5th Australian Supercomputing Conference, Dec. 1992, pp. 125-132.
19. Y. C. Chung and S. Ranka. An Optimization Approach for Static Scheduling of Directed Acyclic Graphs on Distributed Memory Multiprocessors (poster presentation). 1992 International Conference on Parallel Processing, 1992.
20. D. Koester and S. Ranka. Image Processing Applications on General Purpose Architectures, Conference on Command Control. Communications and Intelligent Technology and Applications, June 1991, pp. 25-29.
21. R. V. Shankar and S. Ranka. Massive Parallelism for Sparse Images, Session on Massive Parallelism. Proceedings of International Conference on Systems, Man, and Cybernetics, Vol. 1, 1991, pp. 683-688. Invited paper.
22. R. Shankar and S. Ranka. Parallel Processing of Sparse Images, Workshop on Parallel Processing for Machine Intelligence, IJCAI 91.
23. M. Li, K. G. Mehrotra, C. K. Mohan, and S. Ranka. Sunspot Number Prediction Using Neural Networks. Proceedings of the 5th IEEE International Symposium on Intelligent Control, Vol. 1, Sept. 1990, pp. 524-529.
24. N. Asokan, R. V. Shankar, C. K. Mohan, K. G. Mehrotra, and S. Ranka. A Neural Network Simulator for the Connection Machine. Proceedings of the 5th IEEE International Symposium on Intelligent Control, Vol. 1, Sept. 1990, pp. 518-523.
25. A. Choudhary, S. Hariri, S. Ranka, and W. Song. OPTIMP: Optical Interface Message Processor, Optical Society Meeting, 1990.
26. S. Ranka, N. Yeh, and J. C. Wang. Embedding Meshes on the Star Graph. Ohio State Parallel Computing Workshop, 1990.
27. A. Choudhary and S. Ranka. Software Development Tools for Implementing Vision Systems on Multiprocessors. Image Understanding in the 90s: Building Systems That Work, Oct. 1990, SPIE Vol 1406-18, pp. 148-161.
28. S. Ranka and S. Sahni. Computing Hough Transform on Hypercube Multicomputers, IJCAI Workshop on Parallel Algorithms for Machine Intelligence, 1989.
29. S. Ranka and S. Sahni. Multicomputer Algorithms for Image Template Matching. AAAI Workshop on Parallel Algorithms for Pattern Analysis and Machine Intelligence, 1988.

Group Reports

1. The MPI Message Passing Standard, MPI Forum.
2. G. Fox, S. Ranka, M. Scott, A. Malony, J. Browne, M. Chen, A. Choudhary, T. Cheatham, J. Cuny, R. Eigenmann, A. Fahmy, I. Foster, D. Gannon, T. Haupt, M. Karr, C. Kesselman, C. Koelbel, W. Li, M. Lam, T. LeBlanc, J. Openshaw, D. Padua, C. Polychronopoulos, J. Saltz, A. Sussman, G. Weigand, and K. Yelick. Runtime Support for High-Performance Parallel Languages. Parallel Compiler Runtime Consortium, July 1993.
3. T. Sterling, P. Messina, M. Chen, F. Darema, G. Fox, M. Heath, K. Kennedy, R. Knighten, R. Moore, S. Ranka, J. Saltz, L. Tucker, and P. Woodard. System Software and Tools for High-Performance Computing Environments, a Report on the Findings of the JPL Pasadena Workshop, Apr., 1992.

4. A. Choudhary, G. Fox, T. Haupt, and S. Ranka. Coauthors of an interim chapter in High-Performance Fortran Document, High-Performance Fortran Forum. (Ken Kennedy chair.)

SERVICE TO THE UNIVERSITY OF FLORIDA

2005-2008	Member, CTSA Biomedical Informatics Committee
2004-2012	Chair, Department Space Assignment Committee
2003-2011	Member, Department Steering Committee
2010-2011	Member, Admissions Committee
2014-2018	Member, College Tenure and Promotion Committee
2015-2019	Member, Admissions Committee
2013-2020	Member, University Research Computing Advisory Committee

SERVICE TO THE PROFESSION

1989	Session chair, 1989 International Conference on Parallel Processing
1991	Publicity Chair, Symposium of Parallel and Distributed Systems, Dallas on Parallel Processing for Computer Vision and Image Understanding
1992	Session Chair, Scalable High-Performance Computing Conference, Apr. 1992
1992	Deputy Chair, Applications Group, NASA HPCC meeting, Apr. 1992
1993	Member, Program Committee, Symposium on High-Performance Distributed Computing -2
1993–1994	Member, Message Passing Interface (MPI) Standard
1993–1996	Member, Parallel Compiler Runtime Consortium
1993	Workshop Organizer, ARPA Runtime Support Group, Syracuse University, May 1993
1993	Workshop Organizer, Runtime Support for Parallel Compilers, Supercomputing 93
1994	Member, Program Committee, International Conference on Pattern Recognition
1994	Member, Program Committee, Scalable High-Performance Computing Conference
1995	Program Committee, Frontiers of Massively Parallel Computation
1995	Session Chair, Frontiers of Massively Parallel Computation
1995	Tutorials Chair, Frontiers of Massively Parallel Computation
1995	Workshop Organizer, International Parallel Processing Symposium, Solving Irregular Problems on Distributed Memory Machines
1995	Session Chair, International Parallel Processing Symposium
1995	Program Committee, Irregular 1995
1995	Program Committee, International Conference on Parallel Processing
1995	Program Committee, International Conference on High Performance Computing
1996	Program Committee, International Conference on High Performance Computing
1995	Member, Review Panel, NASA
1996	Workshop Organizer, International Parallel Processing Symposium, Solving Irregular Problems on Distributed Memory Machines
1996	Program Committee, Frontiers of Massively Parallel Computation
1996	Member, Tutorials Committee, Supercomputing 96
1997	Program Committee, International Parallel Processing Symposium
1997	Participant, Petaflops Algorithms Workshop
1997	Program Committee, International Conference on High Performance Computing
1998	Member, Review Panel, NSF

1998	Program Committee, ISPAN'98
1998	Program Committee, International Parallel Processing Symposium
1998	Program Committee, International Conference on Parallel Processing
1998	Program Committee, MPPOI 1998 Program Committee, PDCN
1998	Co-Program Chair, Workshop on High Performance Data Mining (in conjunction with IPPS)
1988	Program Committee, KDD Workshop on Distributed Data Mining
1998	Program Committee, International Conference on High Performance Computing
1999	Program Committee, Irregular 1999
1999	Program Committee, Supercomputing 1999
1999	Program Committee, Frontiers of Massively Parallel Computation
1999	Program Committee, ISPAN' 99 1999 Co-Program Chair, Workshop on High Performance Data Mining (in conjunction with IPPS)
2000	Co-Editor, JPDC Special Issue on High Performance Data Mining
2000–2011	Member, IFIP Committee on System Modeling and Optimization
2000–2003	Advisory Committee, IEEE Technical Committee on Parallel Processing
2003	Program Committee, IASTEAD Conference on Computer Science and Technology
2004	Program Committee, High Performance Distributed Computing
2004	Program Committee, International Conference on Parallel Processing
2004	Program Co-Chair, IASTED International Conference on Knowledge Sharing and Collaborative Engineering
2004	Program Committee, IASTED International Conference on Databases and Applications
2004	Sponsorship Chair, SIAM Conference on Data Mining
2004	Program Committee, High Performance Distributed Computing
2004	Program Committee, International Conference on Parallel Processing
2004	Program Committee, International Conference on Parallel Processing
2005	Vice Program Chair, SIAM Conference on Data Mining, 2005
2005	Program Co-Chair, IASTED Conference on Knowledge Sharing and Collaborative Engineering, 2005
2006	Program Committee, International Conference on Parallel Processing
2006	Program Committee, DBA conference
2006	Program Committee, ACMSE conference
2006	Program Committee, SIAM Conference on Data Mining
2007	Program Committee, Pacific-Asia Conference on Knowledge Discovery and Data Mining
2007	Program Co-chair, International Conference on Information Systems, Technology and Management.
2007	Program Committee, IPDPS
2008	Program Committee, SEKE’2008
2008	Program Committee, DADC’2008
2008	Program Chair, International Conference on Contemporary Computing
2008	Program Committee, Grid and Pervasive Computing
2008	Program Committee, IPDPS’2008
2009	Co-General Chair, International Conference on Data Mining
2009	Program Chair, International Conference on Contemporary Computing
2009	Program Committee, International Conference on Parallel Processing
2009	Program Committee, Knowledge Discovery and Data Mining
2009	Program Committee, International Conference on Information Systems, Technology and Management.
2009	Program Committee, SEKE’2009

2009 Program Committee, DADC'2009
2009 Co-General Chair, International Conference on Data Mining
2010 Program Chair, International Conference on Contemporary Computing
2010 Co-General Chair, International Conference on Green Computing
2010 Member, Program Committee, COMAD
2010 Track Chair, ACM CIKM
2010 Program Committee, DIDC Workshop 2010
2010 Program Committee, PAKDD
2011 Senior Member, Program Committee, ACM CIKM
2011 Member, Program Committee, AICCSA 2011
2011 Invited Session Co-Chair, IEA/AEI 2011
2011 Co-Finance Chair, ACM Bioinformatics and Computational Biology
2011 Co-General Chair, International Conference on Green Computing
2011 Vice Program Chair, HiPC Conference
2011 Member, Program Committee, International Conference on Data Mining
2011 Member, Program Committee, ACM Knowledge Discovery and Data Mining
1993–2010 Subject Area Editor, Journal of Parallel and Distributed Computing (Algorithms and Scientific Computing).
2011–2021 Associate Editor-in-Chief for Algorithms, Journal of Parallel and Distributed Computing.
2010–2014 Associate Editor, IEEE Transactions on Parallel and Distributed Computing.
2010–present Associate Editor, Sustainable Computing: Systems and Informatics.
2010–present Associate Editor, Knowledge and Information Systems.
2010–present Associate Editor, International Journal of Computing.
2011–2015 Associate Editor, IEEE Transactions on Computers.
2012 General Chair, ACM Bioinformatics and Computational Biology.
2012 Workshop Chair, International Conference on Green Computing.
2013 Program Chair, International Parallel and Distributed Processing Symposium.
2013–Present IEEE/ACM Transactions on Computational Biology and Bioinformatics. 2015 Program Chair, HiPC – High Performance Computing.
2017 Co-General Chair, DataCom.
2017 Track Chair, International Conference on Data Mining.
2017 Track Chair, SBAC PAD.
2017 Co-Program Chair, International Conference on Machine Learning and Data Science.
2018 Co-Program Chair, International Conference on Machine Learning and Data Science.
2016–Present Steering Committee, IEEE Datacom: Big Data Intelligence and Computing
2019–Present Member, Editorial Board, Applied Sciences (Computer Science and Artificial Intelligence).
2022 Co-Program Chair, International Conference on Data Mining.
2023 Co-Program Chair, International Conference on Machine Learning and Data Science

DOCTORAL STUDENTS

Unless listed as a co-advisee, I was/am the principal advisor.

Graduated

1. Todd Heywood, (1991), A Practical Hierarchical Model of Parallel Computation. Technical Staff, IBM Poughkeepsie.
2. Anand Rangachari, (1992), Efficient Neural Algorithms for Multiclass Problems. Technical Staff, IBM T. J. Watson Labs. (Co-advisor with Kishan G. Mehrotra).
3. Yeh Chin Chung, (1992), Static Mapping and Scheduling Algorithms for Distributed Memory Multiprocessors. Associate Professor, Department of Computer Science, National Taiwan University, Taiwan R. O. C.
4. Jhy Chun Wang, (1993), Load Balancing and Communication Support for Irregular Problems. Technical Staff, IBM Poughkeepsie.
5. Harpal Maini, (1994), Incorporating Knowledge in Genetic Optimization. Technical Staff, Deutesche Morgan Bank. (Co-advisor with Kishan G. Mehrotra).
6. M. C. Yang, (1994), 3-D Object Recognition and Description Using Parallel Geometric Hashing Algorithms.
7. David Koester, (1995), Parallel Block-Diagonal-Bordered Sparse Linear Systems for Power Systems Applications.
8. Chao-Wei Ou, (1996), Partitioning and Incremental Partitioning for Adaptive Irregular Problems. Technical Staff, Northeast Parallel Architecture Center.
9. Ravi Shankar, (1996), Scalable Parallel Algorithms for Random Accesses and Shared Memory Simulation. Technical Staff, Bellcore.
10. Maher Kaddoura, (1996), Parallel Computing in Non-uniform and Adaptive Computational Environments. Technical Staff, Architecture Technology Corporation.
11. Seungjo Bae, (1997), Runtime Support for High Performance Fortran. Technical Staff, ETRI (Korea).
12. Jang Sun Lee, (1997), User Controllable Parallel I/O. Technical Staff, ETRI (Korea).
13. Khaled Alsabti, (1998), Efficient Algorithms for Data Mining Primitives, Assistant Professor, King Fahd University, Saudi Arabia.
14. Ibraheem Al-furaih, (1998), Optimizing for Memory Hierarchy. Saudi Arabia.
15. Hankil Yoon, (2000), Efficient Processing of Large Sparse Datasets. Oracle Corporation.
16. Scott Winterstein, (2000), Efficient Association Mining for Data Warehousing and E-Commerce.
17. Srijit Kamath, (2005), Efficient Algorithms for Sequencing Multileaf Collimators. (Postdoc at Stanford University College of Medicine; co-advisor with Sartaj Sahni).
18. Jang Uk In, (2006), Policy-Based Scheduling for Grid Environments. Microsoft Corporation.
19. Jun Liu, (Feb. 2008), Mining Comparative Genomic Hybridization Data. Google Corporation.
20. Xiuyao Song, (2008), Novel Change Detection Techniques in Multidimensional Data Mining. Google Corporation.
21. Laukik Chitnis, (2008). Fault Tolerance and Scalability of Data Aggregation in Sensor Networks. Google Corporation.
22. Jaeyeon Kang, (2008), Energy Minimization Algorithms for Multicore Machines. Samsung Research.
23. Parbati Manna, (2008), Detection, Propagation Modeling, and Designing of Advanced Internet Worms. Intel Corporation.

24. Manas Somaiya, (2010), Novel Mixture Models to Learn Complex and Evolving Patterns in High Dimensional Data. EBay Corporation.
25. Eunsung Jung, (2010), Network Resource Provisioning in Research Networks, Faculty, Hongik University, Korea.
26. Yan Li, (2010), Data Structures and Algorithms for Resource Scheduling in High Speed Networks. (Co-advisee with Sartaj Sahni). Google Corporation.
27. Bin Song, (2010), New in Silico Approaches for Metabolic Engineering (co-advisee with Tamer Kahveci). Google Corporation.
28. Nirmalya Bandyopadhyay, (2011), Modeling Perturbations in Gene Regulatory and Signaling Networks. Broad Institute.
29. Arslan Munir, (2012), Modeling and Optimization of Parallel and Distributed Embedded Systems (co-advisee with Ann Gordon Ross), University of Nevada, Reno.
30. Abdullah Almutairi, (2012), Efficient Algorithms for Learning Correlations in Large-Scale Wireless Data, Kuwait University.
31. Zhe Wang, (2012), Software and Algorithms for Energy and Temperature Minimization, Facebook.
32. Saeed Moghhaddam, (2012), Large-Scale Mining of Mobile Online Behavior: Interest-Aware Modeling and Design, Samsung Corporation (co-advisee with Ahmed Helmy), Samsung Research.
33. William Chapman, (2013), Multiresolution SAR Image Formation and Change Detection on High-Performance Heterogeneous Architectures.
34. Junjie Li, (2013), GPU Computing for Bioinformatics (co-advisee with Sartaj Sahni), Snapchat Corporation.
35. Yifan Wang, (2015), Energy Efficient and Thermal-Aware Task Scheduling on Multi-Core Processors.
36. Hengxing Tan, (2016), Performance, Energy and Thermal Tradeoffs for Data Parallel Problems, Amazon Corporation.
37. Manu Sethi, Postdoctoral Researcher, 2016-2017, Spatiotemporal Machine Learning (co-advisee with Anand Rangarajan).
38. Mohamed Gadou, (2018), Performance Energy Tradeoffs for Iterative and Direct Sparse Matrix Solvers on Hybrid Multicore Architectures, Google Corporation.
39. Chengliang Yang, (2018), Interpretable Machine Learning with Applications in Health Care, Uber Corporation.
40. Yupeng Yan, (2018), Parallelizable Semi-Supervised Dense Labeling Framework for Very High-Resolution Satellite Images (co-advisee with Anand Rangarajan), Airbnb corporation.
41. Matin Kheirkhahan, (2018), Real-Time Data Monitoring and Machine Learning Methods for Activity Recognition using Wearable Devices, Google Corporation.
42. Adeesha Pathirannahalage Wijayasiri, (2018), Dynamic Data Driven SAR Reconstruction on Hybrid Multicore Systems (co-advisee with Sartaj Sahni), Faculty in Computer Science, University of Moratuwa, Sri Lanka.
43. Meng Tang, (2020), GPU Algorithms and Software for Sparse Matrix Factorization, Qualcomm Corporation.
44. Keke Zhai, (2020), Load Balancing Sparse Dataset Based Applications on Hybrid Multicore Architectures, Facebook Corporation.
45. Xiaohui Huang, (2020), Video-based Machine Learning for Intelligent Transportation Systems, Facebook Corporation.
46. Dhruv Mahajan, (2021), Scalable Data Analytics for High Resolution Signalized Intersection Datasets, Proctor and Gamble.
47. Patrick Emami (2021), Neural algorithms for Object Centric scene understanding December 2021, National Renewable Energy Lab.
48. Sanaz Gheibi (2022), Speeding up Algorithms for Large Datasets, Intel Corporation.

49. Yashaswi Karnati (2022), Machine Learning Algorithms for applications in Intelligent Transportation Systems, Nvidia Corporation.
50. Pan He (2023), Deep Learning on Spatiotemporal Point Cloud Modeling for Motion and Correspondence, Auburn University.
51. Aotian Wu (2024), A Multi-Sensor Video/Lidar System for Analyzing and Improving Intersection Safety (2024), Nvidia Corporation.
52. Tania Banerjee, Postdoctoral Researcher, 2014–2024, University of Houston.

Active

53. Rahul Sengupta, 2018–Present (Expected Graduation: August 2024)
54. Xiao Li, 2022–Present (Expected Graduation: 2025)
55. N. Hosseini, 2023–Present (Expected Graduation: 2025)
56. Y. Ranjan, 2024–Present (Expected Graduation: 2025)

TEACHING

Fall 1988	Syracuse University	CIS710 Research Topics in Parallel Computation
Spring 1989	Syracuse University	CIS675 Analysis of Algorithms
Fall 1989	Syracuse University	CIS575 Introduction to Analysis of Algorithms
Fall 1989	Syracuse University	CIS700 Neural Networks
Fall 1989	Syracuse University	CIS710 Research Topics in Parallel Computing
Fall 1990	Syracuse University	CIS700 Neural Networks
Fall 1990	Syracuse University	CIS710 Research Topics in Parallel Computing
Spring 1991	Syracuse University	CIS665 Computer Vision
Fall 1991	Syracuse University	CIS700 Neural Networks
Fall 1991	Syracuse University	CIS710 Research Topics in Parallel Computing
Spring 1992	Syracuse University	CIS675 Analysis of Algorithms
Fall 1992	Syracuse University	CIS710 Research Topics in Parallel Computing:
Spring 1993	Syracuse University	CIS600 Compiler Construction
Fall 1993	Syracuse University	CIS657 Operating Systems
Fall 1994	Syracuse University	CIS657 Operating Systems
Fall 1994	Syracuse University	CIS710 Research Topics in Parallel Computing
Fall 1995	University of Florida	COT3100 Discrete Mathematics
Spring 1996	University of Florida	COT 5405 Analysis of Algorithms
Fall 1996	University of Florida	COT6930 Introduction to Parallel Computing
Fall 1997	University of Florida	CIS3020 Introduction to CIS (using JAVA)
Fall 1998	University of Florida	COT5405 Analysis of Algorithms
Fall 2002	University of Florida	COT5405 Analysis of Algorithms
Spring 2003	University of Florida	COT5405 Analysis of Algorithms
Fall 2003	University of Florida	CIS6930 Introduction to Data Mining
Spring 2004	University of Florida	COT5405 Analysis of Algorithms
Fall 2005	University of Florida	COT5405 Analysis of Algorithms
Spring 2005	University of Florida	CIS6930 Introduction to Data Mining
Fall 2006	University of Florida	COT5405 Analysis of Algorithms
Spring 2006	University of Florida	CIS6930 Introduction to Data Mining
Fall 2007	University of Florida	CIS6930 Introduction to Data Mining
Spring 2008	University of Florida	CIS6930 Introduction to Parallel Computing
Fall 2008	University of Florida	COT5405 Analysis of Algorithms
Spring 2009	University of Florida	CIS6930 Introduction to Data Mining

Fall 2009	University of Florida	CIS6930 Introduction to Parallel Computing
Spring 2010	University of Florida	COT5405 Analysis of Algorithms
Fall 2010	University of Florida	CIS6930 Introduction to Parallel Computing
Spring 2011	University of Florida	CIS6930 Introduction to Parallel Computing
Fall 2011	University of Florida	COT5405 Analysis of Algorithms
Spring 2012	University of Florida	CIS6930 Introduction to Parallel Computing
Fall 2013	University of Florida	COT5405 Analysis of Algorithms
Spring 2013	University of Florida	CIS6930 Elements of Data Science
Fall 2014	University of Florida	CIS6930 Projects in Data Science
Spring 2015	University of Florida	COT5405 Analysis of Algorithms
Fall 2015	University of Florida	CIS6930 Introduction to Data Mining
Spring 2016	University of Florida	COT5405 Analysis of Algorithms
Fall 2017	University of Florida	CIS6930 Introduction to Data Mining
Fall 2019	University of Florida	CIS6930 Projects in Data Science
Fall 2024	University of Florida	CAP4470 Introduction to Data Science