

SANJAY RANKA, Ph.D.

Computer Science Expert Witness

Distinguished Professor, University of Florida | Former CTO, Paramark | IEEE & AAAS Fellow

sanjayranka@gmail.com | 352-514-4213 | Gainesville, FL | sanjayranka.com

PROFESSIONAL PROFILE

Computer scientist with more than 35 years of academic and industry experience in algorithms, software and computer systems. Technical background spans AI and machine learning; parallel, distributed and cloud computing; computer architecture; databases and large-scale data processing; computer vision; and advertising technology. Author or coauthor of 350+ refereed publications and named inventor on 13 issued U.S. patents.

EXPERT-WITNESS EXPERIENCE

Consulting and testifying expert in patent matters for plaintiffs and defendants, including federal district-court litigation, PTAB inter partes reviews and USPTO reexamination. Prepared more than 15 expert reports and declarations; provided deposition testimony and federal jury-trial testimony in 800 Adept v. Murex Securities.

Services: Technical infringement and invalidity analysis; claim-construction support; source-code, architecture and design-document review; algorithm and data-flow analysis; testing and benchmarking; rebuttal opinions; expert reports, declarations and testimony.

TECHNICAL EXPERTISE

AI, machine learning and optimization. Neural networks, deep learning and generative models; training and inference; classification, clustering and prediction; evolutionary and adaptive optimization.

Cloud, distributed systems and networking. Cloud/edge architectures, virtualization, software-defined networking, scheduling, resource allocation, load balancing and fault tolerance.

Computer architecture, GPU and high-performance computing. Multicore and CPU/GPU systems, memory hierarchies, data movement, synchronization and hardware/software co-design; MPI, OpenMP, CUDA and Fortran.

Databases and data systems. Distributed storage and data-server architectures, indexing, similarity search and joins, data mining, and scalable real-time data-processing pipelines.

Computer vision and video/image processing. Object detection and tracking, camera calibration, sensor fusion, video analytics, and allocation of processing across edge devices and servers.

Advertising technology. Ad serving, user profiles and identifiers, cross-source data integration, online experimentation, behavioral targeting, and campaign and inventory-yield optimization.

Software architecture and performance. APIs, component responsibilities, data/control flow, source-code analysis, benchmarking, scalability, throughput, latency and resource constraints.

ACADEMIC AND INDUSTRY EXPERIENCE

University of Florida - Distinguished Professor. Research in parallel and distributed computing, AI, scientific data compression, transportation systems and wearable health platforms. PI or co-PI on more than \$25 million in externally funded research; advisor or co-advisor to 50+ Ph.D. graduates.

Paramark - CTO and co-founder (1999-2002). Architected and led development of PILOT, a real-time, parallel, fault-tolerant advertising-optimization platform serving more than 10 million decisions per day at 99.99% uptime. Co-inventor on five issued advertising-technology patents.

Earlier contributions: Co-developed the Fortran 90D compiler and participated in MPI standardization.

EDUCATION AND SELECTED HONORS

Ph.D. (1988) and M.S. (1986), Computer Science, University of Minnesota; B.Tech. (1985), Computer Science, Indian Institute of Technology Kanpur.

IEEE Fellow; AAAS Fellow; AAIA Fellow; 2020 IEEE Technical Committee on Cloud Computing Research Impact Award; Distinguished Alumnus Award, IIT Kanpur (2022).

REPRESENTATIVE EXPERT-WITNESS ENGAGEMENTS

Selected matters below include separate IPR proceedings grouped by case. Additional case information is available on request.

Matter / proceeding	Technical subject and work	Counsel
Tesla, Inc. v. Intellectual Ventures II LLC IPR2025-00341 (PTAB)	Distributed-computing resource management. Expert declaration.	Volpe Koenig
Microsoft Corp. v. Edge Networking Systems, LLC IPR2025-00618 (PTAB)	Software-defined networking and cloud/edge application management. Expert declaration.	Volpe Koenig
FreeWheel Media v. AlmondNet IPR2024-00413 and IPR2024-00416 (PTAB)	Ad-serving platforms and user-profile data. Expert declarations; deposition.	Banner Witcoff
Hayden AI Technologies, Inc. v. Safe Fleet Holdings LLC No. 1:23-cv-03471 (E.D.N.Y.)	Vehicle-mounted computer vision and image processing. Expert report; deposition.	Flaster Greenberg
Google LLC v. MindbaseHQ, LLC IPR2021-01251 and IPR2021-01252 (PTAB)	Lexicographic systems and related software/data processing. Expert declarations; deposition.	Iaconis Law
Patent reexamination (2008) U.S. Patent and Trademark Office	Software systems. Expert report; USPTO appearance.	Sterne, Kessler, Goldstein & Fox
800 Adept, Inc. v. Murex Securities, Ltd. No. 6:02-cv-01354 (M.D. Fla.)	Databases and telecommunications. Expert report; deposition; federal jury-trial testimony.	Allen Dyer

SELECTED BOOKS - COAUTHOR

Elements of Artificial Neural Networks. MIT Press, 1996.

Hypercube Algorithms with Applications to Image Processing and Pattern Recognition. Springer, 1990.

Modeling and Optimization of Parallel and Distributed Embedded Systems. Wiley-IEEE Press, 2016.

Video Based Machine Learning for Traffic Intersections. CRC Press, 2024.

Machine Learning Methods for Scientific Data Compression. CRC Press, forthcoming.

ISSUED U.S. PATENTS

Named inventor or co-inventor on all 13 patents below. Subjects are abbreviated.

8,805,715 (2014) - Internet splash-page performance

7,142,635 (2006) - Intensity-modulated field splitting

8,386,315 (2013) - Advertising-inventory yield management

7,085,348 (2006) - Leaf sequencing methods and systems

8,260,663 (2012) - Targeting messages and advertisements

6,563,952 (2003) - High-dimensional data classification

8,144,686 (2012) - Bandwidth scheduling and path
computation

6,173,280 (2001) - Generating weighted association rules

7,573,978 (2009) - Variable feathering and field splitting

5,987,468 (1999) - Parallel high-dimensional similarity joins

7,415,423 (2008) - Message/ad performance optimization

5,983,224 (1999) - Reducing computation in K-means
clustering

7,406,434 (2008) - Multi-attribute advertising optimization

PROFESSIONAL SERVICE

Former Associate Editor-in-Chief, Journal of Parallel and Distributed Computing; editorial service for ACM Computing Surveys, IEEE Transactions on Parallel and Distributed Systems and IEEE Transactions on Computers; conference leadership for ICDM, IPDPS and HiPC.