

## **Ramesh R. Rao**

Director, Qualcomm Institute

UCSD Division, Calif. Institute for Telecommunications and Information Technology

Professor, Electrical and Computer Engineering

UCSD Jacobs School of Engineering

QUALCOMM Endowed Chair in Telecommunications and Information Technologies

9500 Gilman Drive, La Jolla, CA 92093-0436

858-822-4572 (voice) / 858-822-5197 (fax) / [r rao@ucsd.edu](mailto:r rao@ucsd.edu)

*Ramesh Rao has been a faculty member at UC San Diego since 1984. Prior to becoming the director of Qualcomm Institute, Dr. Rao was the director of the Center for Wireless Communications (CWC) at UCSD. Dr. Rao is involved on a day-to-day basis with a wide variety of research initiatives at Qualcomm Institute. He leads several major interdisciplinary and collaborative projects and has been a PI on dozens of federal-, state-, foundation- and industry-funded grants.*

### **1. Professional Roles, Activities, and Awards** (as of: December, 2017)

- Fellow of the Institute of Electrical and Electronics Engineers (IEEE) for leadership in wireless communications
- Senior Fellow of the California Council on Science and Technology (CCST)
- Qualcomm Endowed Chair in Telecommunications and Information Technology
- Professional Gordon Engineering Leadership Award 2010, Gordon Engineering Leadership Center, UCSD
- Past Member, UC San Diego Health System Advisory Board
- Past Member, Board of Advisors, CommNexus San Diego: A Network of Communications Companies
- Member, Rady Children's Hospital and Health Center Board of Trustees' Information Technology Task Force
- Member, Weqaya Advisory Task Force, Health Authority – Abu Dhabi (HAAD), United Arab Emirates
- Member, Young Scholar Award Selection Committee, Marconi Society
- Member, Board of Directors, Academy of Neuroscience for Architecture
- Investigator, Health Data Exploration Project, Robert Wood Johnson Foundation
- Member, Clarke Center's Internal Advisory Board
- Member, Advisory Board, Center for Global Justice
- Member, Steering Committee of Cross-Campus Healthy Aging Initiative, UCSD
- Member, UCSD CREATE STEM Success Initiative Internal Advisory Board
- Member, Board of Directors, CONNECT
- IEEE Communications Society, Member, Organizing Committee of GLOBECOM 2015
- IEEE Communications Society, Chair, Technical Program Committee of GLOBECOM 2015
- Member of the Board of Governors IEEE Information Theory Society, 1997-1999 and 2000-2002
- Secretary, Technical Activities Council and Technical Committees Board, IEEE Communications Society, 1990-1991

- Publications Editor, IEEE Transactions on Information Theory, 1999-2001
- Editor for Packet Multiple Access, IEEE Transactions on Communications, 1997-2000
- Guest Editor, Special Issue on Multimedia Network Radios, IEEE Journal of Selected Areas in Communications, 1998
- Member, Editorial Board, IEEE Networks, 1997-1999
- Chair, the National Research Council's Committee on Using Information Technology to Enhance Disaster Management, the findings were published by the NRC in 2007: "Improving Disaster Management: The Role of IT in Mitigation, Preparedness, Response and Recovery."
- Chair, the National Academies of Sciences, Engineering, and Medicine's Committee on the Future of Emergency Alert and Warning Systems Research in 2017: "Emergency Alert and Warning Systems: Current Knowledge and Future Research Directions and Integrating Social and Behavioral Sciences Within the Weather Enterprise"
- Organized "The New Role of Science and Engineering in Risk Reduction," NSF Workshop, La Jolla, CA, February, 2003
- Testified before House Armed Services Committee on Calit2 research related to Homeland Security, February 2002
- Member, Education Task Force of The San Diego Foundation Regional Vision Council
- *Best Paper Award*  
P. Zhou, B.S. Manoj and R. Rao, "On Optimizing Non-Asymptotic Throughput of Wireless Mesh Networks," Proceedings of the 5th IEEE Consumer Communications and Networking Conference (CCNC 2008), Las Vegas, NV, January 10-12, 2008, pp. 343-347.
- *Best Demonstration Award*  
Douglas Palmer, Rajesh Gupta, and Ramesh Rao, "Calit2 Sensor Nodes and their use for data integration in WIISARD," Fourth International Symposium on Information Processing in Sensor Networks (ISPN) 2005
- Distinguished Alumni Award 2012, A. James Clark School of Engineering (ECE), University of Maryland
- Distinguished Alumnus Award 2008, National Institute of Technology (NITT), Tiruchirappalli
- National Merit Scholarship, Govt. of India, 1967

## 2. Publications (as of: December, 2017)

### Journals, Books, and Book Chapters

77. Mahmood Karimi, Ramesh R Rao, "On the estimation and control of human body composition," *Transactions of the Institute of Measurement and Control*, (30 May 2017). Pages: 0142331217705946
76. Jinglei Li, Qinghai Yang, Kyung-sup Kwak, Ramesh Rao, "Cross-Layer Resource Optimization for Wireless Relay Networks under Dynamic Node-Selfishness," *IEEE Transactions on Vehicular Technology*, (August 2017). DOI: 10.1109/TVT.2017.2665649

75. Meng Qin, Qinghai Yang, Jian Yang, Kyung-sup Kwak, Ramesh R Rao, "Throughput of QoS Guaranteed Wireless Systems with/without Channel State Information," *IEEE Transactions on Vehicular Technology*, (19 December 2016). DOI: 10.1109/TVT.2016.2641443
74. Jian Yang, Qinghai Yang, Kyung Sup Kwak, Ramesh R Rao, "Power-Delay Tradeoff in Wireless Powered Communication Networks," *IEEE Transactions on Vehicular Technology*, (7 July 2016). DOI: 10.1109/TVT.2016.2587101
73. Giorgio Quer, Joshal Daftari, Ramesh R Rao, "Heart rate wavelet coherence analysis to investigate group entrainment," *Pervasive and Mobile Computing*, Vol. 28, (30 June 2016), pp. 21-34
72. Jian Yang, Qinghai Yang, Kyung Sup Kwak, Ramesh R Rao, "QoS Guaranteed Throughput Region of Wireless Energy Harvesting DF Relay System," *IEEE Wireless Communications Letters*, Vol. 5, Issue 2 (April 2016), pp. 224-227
71. Shaoyi Xu, Kyung Sup Kwak, Ramesh Rao, "Interference-aware resource sharing in D2D underlaying LTE-A networks," *Transactions on Emerging Telecommunications Technologies*, Vol. 26, Issue 12 (1 December 2015), pp. 1306-1322
70. Giorgio Quer, Joshal Daftari, Ramesh R Rao, "Heart rate wavelet coherence analysis to investigate group entrainment," *Pervasive and Mobile Computing*, (13 October 2015). DOI: 10.1016/j.pmcj.2015.09.008
69. M. Danieleto, G. Quer, R. Rao, and M. Zorzi "CARMEN: A Cognitive Networking Testbed on Android OS Devices," *IEEE Communications Magazine*, Vol. 52, Issue 9 (12 September 2014), pp. 98-107
68. M. Danieleto, G. Quer, R. Rao, and M. Zorzi "Traffic Sensing and Characterization in Multi-Channel Wireless Networks for Cognitive Networking," *Computer Networks*, Vol. 56, Issue 7 (3 May 2012), pp. 1968-1982
67. S. Xu, K.S. Kwak, and R. Rao, "Interference-Aware Radio Resource Allocation in D2D Underlaying LTE-Advanced Networks," *Korean Society for Internet Information Transactions on Internet and Information Systems (TIIS)*, Vol. 8, No. 8 (August 2014), pp. 2626-26466
66. C.K. Verma, B.R. Tamma, B. S. Manoj, and R. Rao, "A Realistic Small-World Model for Wireless Mesh Networks," *IEEE Communications Letters*, Vol. 15, No. 4, April 2011, pp. 455-457. DOI: 10.1109/LCOMM.2011.020111.100266
65. B. R. Tamma, A. Badamb, C. Siva Ram Murthy, and R. R. Rao, "K-Tree: A multiple tree video multicast protocol for Ad hoc wireless networks," *Computer Networks*, Vol. 54, Issue 11 (2 August 2010), pp. 1864-1884. DOI: 10.1016/j.comnet.2010.02.013

64. P. Zhou, X. Wang, B. S. Manoj, and R. Rao, "On Optimizing Gateway Placement for Throughput in Wireless Mesh Networks," *EURASIP Journal on Wireless Communications and Networking*, Vol. 2010 (2010), 12 pp. DOI: 10.1155/2010/368423
63. T. DeFanti, G. Dawe, D. Sandin, J. Schulze, P. Otto, J. Girado, F. Kuester, L. Smarr, and R. Rao, "The StarCAVE, a third-generation CAVE and virtual reality OptIPortal," *Future Generation Computer Systems*, Vol. 25, Issue 2 (February 2009), pp. 169-178. DOI: 10.1016/j.future.2008.07.015
62. B.S. Manoj, R.R. Rao, and M. Zorzi, "CogNet: a cognitive complete knowledge network system," *IEEE Wireless Communications*, Vol. 15, Issue 6 (January 19, 2009), pp. 81-88. DOI: 10.1109/MWC.2008.4749751
61. B.C. Meyer, R. Raman, T. Hemmen, R. Obler, J.A. Zivin, R. Rao, R.G. Thomas, P.D. Lyden, "Efficacy of site-independent telemedicine in the STRokE DOC trial: a randomised, blinded prospective study," *Lancet Neurology*, Vol. 7, Issue 9 (September 2008), pp. 787-795. DOI: 10.1016/S1474-4422(08)70171-6
60. P. Zhou, X. Wang, and R. Rao, "Asymptotic Capacity of Infrastructure Wireless Mesh Networks," *IEEE Transactions on Mobile Computing*, Vol. 7, Issue 8 (August 2008), pp.1011-1024. DOI: 10.1109/TMC.2007.70778
59. B.S. Manoj, P. Zhou, and R.R. Rao, "Dynamic adaptation of CSMA/CA MAC protocol for wide area wireless mesh networks," *Elsevier Computer Communications*, Vol. 31, Issue 8 (May 25, 2008), pp. 1627-1637. DOI: 10.1016/j.comcom.2008.01.048
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56. B.C. Meyer, R. Raman, R. Rao, R.D. Fellman, J. Beer, J. Werner, J.A. Zivin, and P.D. Lyden, "The STRokE DOC trial technique: 'video clip, drip, and/or ship'," *International Journal of Stroke*, Vol. 2 (November 2007), pp. 281-287. DOI:10.1111/j.1747-4949.2007.00153.x
55. B.S. Manoj, R.R. Rao, and M. Zorzi, "Architectures, Protocols, and Analytical Approaches for Next Generation Cognitive Networking," in *Cognitive Wireless Networks: Concepts, Methodologies and Visions Inspiring the Age of Enlightenment of Wireless Communications*. F.H.P. Fitzek and M. Katz, Eds. Dordrecht, The Netherlands: Springer, 2007, pp. 271-284.
54. R.R. Rao, J. Eisenberg, and T. Schmitt (Eds.), *Improving Disaster Management: The Role of IT in Mitigation, Preparedness, Response, and Recovery*, Committee on Using Information Technology to Enhance Disaster Management, National Research Council, Washington, DC: National Academies Press, 2007, 177 pp.

53. M. Zorzi and R.R. Rao, Reply to "Comments on 'Capture and Retransmission Control in Mobile Radio'," IEEE Journal on Selected Areas in Communications, Vol. 24, No. 12(2006), pp. 2341-2342. DOI: 10.1109/JSAC.2006.887340
52. P. Nuggehalli, V. Srinivasan, C. Chiasserini, and R.R. Rao, "Efficient cache placement in multi-hop wireless networks," IEEE / ACM Transactions on Networking, Vol. 14, No. 5 (October 2006), pp. 1045-1055. DOI: 10.1109/TNET.2006.882863
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46. B.S. Manoj and R.R. Rao, "Wireless Mesh Networks: Issues and Solutions," in Wireless Mesh Networks: Architectures, Protocols, and Standards. Y.S. Zhang, et al., Eds., Florida: CRC Press, 2006, pp. 3-48.
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44. B.C. Meyer, P.D. Lyden, L. Al-Khoury, Y. Cheng, R. Raman, R. Fellman, J. Beer, R. Rao, and J.A. Zivin, "Prospective Reliability of the STRoKE DOC Wireless / Site Independent Telemedicine System," Neurology 2005, no. 64 (March 2005), pp. 1058-1060.
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37. C.F. Chiasserini and R. R. Rao, "Coexistence Mechanisms for Interference Mitigation in the 2.4 GHz ISM Band," *IEEE Transactions on Wireless Communications*, Vol. 2. No.5 (September 2003), pp. 964-975. DOI: 10.1109/TWC.2003.817417
36. K. Wang, J. Proakis, and R. R. Rao, "Energy-Efficient Routing Algorithms Using Directional Antennas for Mobile Ad Hoc Networks," *International Journal of Wireless Information Networks, Special Series on Mobile Ad Hoc Networks (MANETs): Standards, Research, Applications*, Vol. 9, No. 2 (April 2002), pp. 105-118. DOI: 10.1023/A:1015303800432
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31. M. Zorzi and R. R. Rao, "Energy Efficiency of TCP in a local wireless environment," *Mobile Networks and Applications (special issue on Energy Efficient Protocols)*, Vol. 6 (June 2001), pp. 265-278. DOI: 10.1023/A:1011482901234
30. C. F. Chiasserini and R. R. Rao, "Stochastic Battery Discharge in Portable Communication Devices," *IEEE Aerospace and Electronic Systems Magazine*, Vol. 15, No. 8 (August 2000), pp. 41-45. DOI: 10.1109/BCAA.2000.838358

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25. E. Ayanoglu, V. Bahl, R. S. Cheng, R. R. Rao, and M. Zorzi, "Multimedia Network Radios (guest editorial)," *IEEE Journal on Selected Areas in Communications*, Vol. SAC-17 (May 1999), pp. 753-755.
24. A. M. Chen and R. R. Rao, "Wireless Channel Models- Coping with Complexity," *Wireless Multimedia Network Technologies*, Kluwer Academic Publishers, pp. 271-288, 1999. DOI: 10.1007/0-306-47330-5\_15
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10. M. Zorzi and R. R. Rao, "Throughput performance of ARQ Selective-Repeat protocol with time diversity in Markov channels with unreliable feedback," *Wireless Networks Journal*, Vol. 2 (March 1996), pp. 63-75. DOI: 10.1007/BF01201462
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5. R. R. Rao, "Computer Communications - A First Course -- J. Walrand," *Book Review IEEE Transactions on Information Theory* Vol. 38, No. 5 (January 1992), pp.214-216.



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### **Conference Proceedings**

184. C Yu Hans, Giorgio Quer, Ramesh R Rao, "Wireless SDN mobile ad hoc network: From theory to practice", *Proceedings of the 2017 IEEE International Conference on Communications (ICC)*, Paris, France, May 21-25, 2017, pp. 1-7.
183. Tugcan Aktas, Giorgio Quer, Tara Javidi, Ramesh R Rao, "From Connected Vehicles to Mobile Relays: Enhanced Wireless Infrastructure for Smarter Cities", *Proceedings of the 2016 IEEE Global Communications Conference (GLOBECOM)*, Washington DC, USA, Dec. 4-8, 2016, pp. 1-6.
182. Giorgio Quer, Amr Alasaad, Ramesh R Rao, "On the Accuracy of Heart Rate Variability Measures from Undersampled RR Interval Time Series", *Proceedings of the 2016 IEEE Global Communications Conference (GLOBECOM)*, Washington DC, USA, Dec. 4-8, 2016, pp. 1-7.
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179. M. Karimi, and R. Rao, "Human Body Composition Estimation and Model-Free Control Design for Weight Management," *Proceedings of the American Society of Mechanical Engineers' Conference on Dynamic Systems and Control (ASME 12, DSC)*, San Antonio, TX, Oct. 22-24, 2014, pp. V001T06A006-V001T06A006.

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174. R. B. Dilmaghani, and R. Rao, "Supervisory Decision Making in Emergency Response Application," Proceedings of the IEEE International Conference on Pervasive Computing and Communications Workshops (PERCOM Workshops 12), San Diego, CA, Mar. 18-22, 2013, pp. 553-558.
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172. O. Chipara, W. Griswold, A. Plymoth, R. Huang, F. Liu, P. Johansson, R. Rao, T. Chan, and C. Buono, "WIISARD: A Measurement Study of Network Properties and Protocol Reliability During an Emergency Response," Proceedings of the 10th International Conference on Mobile Systems, Applications and Services (MobiSys '12), Lake District, UK, June 25-29, 2012, pp. 407-420.
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