

## Roy D. Yates

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### Education

Ph.D. in Electrical Engineering and Computer Science, 1990, *M.I.T.* Cambridge, MA.  
M.S. in Electrical Engineering and Computer Science, 1986, *M.I.T.* Cambridge, MA.  
B.S.E. in Electrical Engineering and Computer Science with high honors, 1983, *Princeton University* Princeton, NJ.

### Employment

(2002 – present) Professor of Electrical and Computer Engineering, Rutgers University.  
(2001 – present) Associate Director of WINLAB, Rutgers University.  
(1996 – 2002) Associate Professor of Electrical and Computer Engineering, Rutgers University.  
(1999 – 2001) Interim Director of WINLAB, Rutgers University.  
(1994 – 1999) Research Director, Network Control, WINLAB, Rutgers University.  
(1990 – 1996) Assistant Professor of Electrical and Computer Engineering, Rutgers University.

### Awards

Co-recipient, Marconi Prize Paper Award, *IEEE Transactions on Wireless Communication*, best paper for 2002.  
AT&T Bell Laboratories Fellowship 1985–1989.

### Current Research

Radio resource allocation, power efficient wireless network protocols, spectrum regulation.

### Books

- [1] R. D. Yates and D. J. Goodman. *Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers*. John Wiley & Sons, 1999.
- [2] R. D. Yates and D. J. Goodman. *Probability and Stochastic Processes: A Friendly Introduction for Electrical and Computer Engineers, 2nd Edition*. John Wiley & Sons, 2004. 40% new content.

**Journal Publications**

- [1] Jianghong Luo, Roy Yates, and Predrag Spasojevic. Service outage based power and rate allocation for parallel fading channels. *IEEE Trans. Info Theory*, 51(7):2594–2611, 2005. PDF.
- [2] I. Maric and R. Yates. Cooperative multicast for maximum network lifetime. *IEEE J. Sel. Areas Commun.*, 23(1):127 – 135, Jan. 2005. Special issue on wireless ad hoc networks. PDF.
- [3] I. Maric and R. Yates. Cooperative multihop broadcast for wireless networks. *IEEE J. Sel. Areas Commun.*, 22(6):1080 – 1088, Aug. 2004. Special issue on fundamental performance limits of wireless sensor networks. PDF.
- [4] S. Ulukus and R. Yates. User capacity of asynchronous CDMA systems with matched filter receivers and optimum signature sequences. *IEEE Trans. Info. Theory*, 50(5):903 – 909, May 2004. PDF.
- [5] L. Lin, R. Yates, and P. Spasojevic. Adaptive transmission with discrete code rates and power levels. *IEEE Trans. Commun.*, 51(12):2115 – 2125, Dec. 2003. PDF.
- [6] J. Luo, L. Lin, R. Yates, and P. Spasojević. Service outage based power and rate allocation. *IEEE Trans. Info Theory*, 49(1):323–330, Jan 2003. PDF.
- [7] R. Sinha, A. Yener, and R. Yates. Noncoherent multiuser communications: Multistage detection and selective filtering. *EURASIP Journal on Applied Signal Processing*, 12:1415–1426, 2002. PDF.
- [8] M. Saquib and R. Yates. Analysis of a partial decorrelator in a multi-cell DS-CDMA system. *IEEE Trans. Commun.*, 50(12):1895 –1898, Dec. 2002. PDF.
- [9] A. Yener, R. D. Yates, and S. Ulukus. Combined multiuser detection and beamforming for CDMA systems: Filter structures. *IEEE Transactions on Vehicular Technology*, 51(5):1087–1095, Sept 2002. PDF.
- [10] C. Rose, S. Ulukus, and R. Yates. Wireless systems and interference avoidance. *IEEE Trans. Wireless Commun.*, 1(3), July 2002. PDF.
- [11] A. Yener, R. Yates, and S. Ulukus. CDMA multiuser detection: A nonlinear programming approach. *IEEE Trans. Commun.*, 50(6):1016–1024, June 2002. PDF.
- [12] A. Yener, R. Yates, and S. Ulukus. Interference management for CDMA systems through power control, multiuser detection, and beamforming. *IEEE Trans. Commun.*, 49(7):1227–1239, July 2001. PDF.
- [13] S. Ulukus and R. Yates. Iterative construction of optimum signature sequence sets in synchronous CDMA systems. *IEEE Trans. Info. Theory*, 47(5):1989 –1998, July 2001. PDF.
- [14] D. Ramakrishna, N. Mandayam, and R. Yates. Subspace-based SIR estimation for CDMA cellular systems. *IEEE Transactions on Vehicular Technology*, 49(5):1732–1742, September 2000. PS.

- [15] O. Kelly, J. Lai, N. Mandayam, J. Panchal, A. Ogielski, and R. Yates. Scalable parallel simulations of wireless networks with WiPPET: Modeling of radio propagation, mobility and protocols. *ACM Mobile Networks and Applications*, 5(3):199–208, 2000. PS.
- [16] M. Saquib, R. Yates, and A. Ganti. An asynchronous multirate decorrelator. *IEEE Trans. Commun.*, 48(5):739–742, May 2000. PS.
- [17] M. Saquib, R. Yates, and A. Ganti. Power control for an asynchronous multirate decorrelator. *IEEE Trans. Commun.*, 48(5):804–812, May 2000. PS.
- [18] R. Yates and N. Mandayam. Challenges in low-cost wireless data transmission. *IEEE Signal Processing Magazine*, 17(3):93–102, May 2000. PS.
- [19] J. Li, R. Yates, and D. Raychaudhuri. Performance analysis of path rerouting algorithms for handoff control in mobile ATM networks. *IEEE J. Sel. Areas Commun.*, 18(3):496–509, March 2000. PDF.
- [20] J. Li, R. Yates, and D. Raychaudhuri. Mobile ATM: A generic and flexible network infrastructure for 3G mobile services. *Journal of Communications and Networks*, 2(1), March 2000. PS.
- [21] R. H. Frenkiel, B. R. Badrinath, J. Borras, and R. Yates. The infostations challenge: Balancing cost and ubiquity in delivering wireless data. *IEEE Personal Communications*, 7(2):66–71, April 2000. PS.
- [22] M. Saquib, R. Yates, and N. Mandayam. Decorrelating detectors for a dual rate synchronous DS/CDMA channel. *Wireless Personal Communications*, 9(3):197–216, 1998. PS.
- [23] S. Ulukus and R. Yates. A blind adaptive decorrelating detector for CDMA systems. *IEEE J. Sel. Areas Commun.*, 16(8):1530–1541, 1998. PS.
- [24] S. Ulukus and R. Yates. Adaptive power control and multiuser interference suppression. *ACM Wireless Networks*, 4(6):489–496, 1998. PS.
- [25] M. Saquib, R. Yates, and N. Mandayam. Decision feedback detection for a dual rate CDMA system. *ACM Wireless Networks*, 4(6):497–506, 1998. PS.
- [26] S. Ulukus and R. Yates. Stochastic power control for cellular radio systems. *IEEE Trans. Commun.*, 46(6):784–798, 1998. PS.
- [27] S. Ulukus and R. Yates. Optimum multiuser detection is tractable for synchronous CDMA systems using M-sequences. *IEEE Communications Letters*, 2(4):89–91, 1998. PS.
- [28] M. Andersin, N. Mandayam, and R. Yates. Subspace-based estimation of the signal-to-interference ratio for TDMA cellular systems. *Baltzer/ACM Wireless Networks*, 4(3):241–247, April 1998. PS.
- [29] C.Y. Huang and R. Yates. Rate of convergence for minimum power assignment algorithms in cellular radio systems. *Baltzer/ACM Wireless Networks*, 4(3):223–231, April 1998. PS.

- [30] J. Panchal, O. Kelly, J. Lai, N. Mandayam, A. Ogielski, and R. Yates. Parallel simulation of wireless networks with TED: Radio propagation, mobility and protocols. *ACM Sigmetrics Performance Evaluation Review*, 25(4):30–39, March 1998.
- [31] S. Grandhi, R. Yates, and D. Goodman. Resource allocation for cellular radio systems. *IEEE Trans. on Vehic. Tech.*, 46(3):581–588, August 1997. PS.
- [32] C. Rose and R. Yates. Ensemble polling strategies for increased paging capacity in mobile communications networks. *Baltzer/ACM Journal of Wireless Networks*, 3(2):159–167, 1997. PS.
- [33] C. Rose and R. Yates. Location uncertainty in mobile networks: a theoretical framework. *IEEE Communications Magazine*, 35(2):94–101, February 1997. PS.
- [34] R. Yates, C. Rose, S. Rajagopalan, and B. Badrinath. Analysis of a mobile-assisted adaptive location management strategy. *ACM Mobile Networks and Applications (MONET)*, 1(2):105–112, 1996. PS.
- [35] C. Rose and R. Yates. Genetic Algorithms and Call Admission to Telecommunications Networks. *Computers and Operations Research*, 23(5):485–499, May 1996.
- [36] P. Narasimhan and R. Yates. A new protocol for the integration of voice and data over PRMA. *IEEE J. Sel. Areas Commun.*, 14(4):623–631, May 1996. PS.
- [37] R. Yates. A framework for uplink power control in cellular radio systems. *IEEE J. Sel. Areas Commun.*, 13(7):1341–1348, September 1995. PS.
- [38] S. Grandhi, J. Zander, and R. Yates. Constrained power control. *International Journal of Wireless Personal Communications*, 1(4), 1995. PS.
- [39] R. Yates and C.Y. Huang. Integrated power control and base station assignment. *IEEE Transactions on Vehicular Technology*, 44(3):638–644, August 1995. PS.
- [40] C. Rose and R. Yates. Minimizing the average cost of paging under delay constraints. *ACM Wireless Networks*, 1(2):211–219, 1995. PS.
- [41] C. Rose and R.D. Yates. Scheduling Arrivals to Queues for Minimum Average Blocking: The S(n)/M/C/C system. *Computers and Operations Research*, 22(8):793–806, October 1995. PS.
- [42] R. Yates. Analysis of discrete time queues via the reversed process. *Queueing Systems: Theory and Applications*, 18:107–116, 1994. PS.
- [43] J. Hui, M. Gursoy, N. Moayeri, and R. Yates. A layered broadband switching architecture with physical or virtual path configurations. *IEEE J. Sel. Areas Commun.*, 9(9):1416–1426, 1991.

### Accepted for Publication

- [1] L. Lin, R. Yates, and P. Spasojevic. Adaptive transmission with finite code rates. *IEEE Trans. Info Theory*, 2005. Accepted. PDF.
- [2] M. K. Karakayali, R. Yates, and L. Razumov. Downlink throughput maximization in CDMA wireless networks. *IEEE Trans. Wireless Commun.*, 2005. Accepted. PDF.

## Submitted for Publication

- [1] W. H. Yuen, R. Yates, and S.-C. Mau. Exploiting data diversity and multiuser diversity in noncooperative mobile infostation networks. *IEEE/ACM Transactions on Networking*, submitted 5/2005. PDF.

## Research Grants

- (\$670,000) National Science Foundation, *NeTs Pro-Win: Cognitive Radios for Open Access to Spectrum*, PI: N. Mandayam, co-PIs: C. Rose P. Spasojevic and R.D. Yates.
- (\$676,595) National Science Foundation SPN-0338805, *Collaborative Research:MAMA (Multiple Antennas Multiple Appliances) Wideband Wireless Networks: A Pervasive Technology for the Home and Workplace*. Principal Investigator: R. Yates, Co-Principal Investigators: L. J. Greenstein, P. Spasojevic. 1/1/2004–12/31/2006. (Multi-university collaboration with Princeton and NJIT, \$2.0M total.)
- (\$5,453,115) National Science Foundation CNS-0335244, *ORBIT: Open-Access Research Testbed for Next-Generation Wireless Networks*. Principal Investigator: D. Raychaudhuri, Co-Principal Investigators: R. Yates, W. Trappe, Y. Zhang, M. Parashar, H. Kobayashi (Princeton Univ), H. Schulzrinne (Columbia). 9/1/2003 – 8/31/2007.
- (\$832,553) National Science Foundation CCR-0205362, *ITR: Collaborative Research: Achieving Innovative and Reliable Services in Unlicensed Spectrum*. Principal Investigator: R. Yates, Co-Principal Investigators: C. Rose, N. Mandayam, P. Spasojevic, and D. Raychaudhuri. 1/1/2003 – 12/2005. (Multi-university collaboration with Cornell and Michigan State, \$1.45M total.)
- (\$856,997) National Science Foundation ITR 00-85986 *Free Bits: The Challenge of the Wireless Internet*, Principal Investigator: R. Yates, Co-Principal Investigators: N. Mandayam, C. Rose. 9/1/2000 – 9/1/2003. (Multi-university collaboration with Princeton and NJIT, \$1.8M total.)
- (\$430,000) National Science Foundation CCR 99-73012, *Interference Avoidance in Wireless Systems*, Principal Investigator: C. Rose, Co-Principal Investigator: R. Yates. 9/1/1999 – 9/1/2002.
- (\$90,000) NTT DoCoMo, *Interference Cancellation and Radio Resource Management in Multicell WCDMA Systems*. Principal Investigator: R. Yates, Co-Principal Investigator: N. Mandayam. 11/1/1999 – 11/1/2001.
- (\$1,218,405) New Jersey Commission on Science and Technology, *Digital Radio as an Enabling Technology for Computing, Communications and Information Systems*, PI: R. Yates, co-PIs: C. Rose, N. Mandayam, R. Frenkiel. 1/1/1999-1/1/2004.
- (\$469,898) National Science Foundation NCR 95-06505 *Power Control for Packet Radio Networks*, Principal Investigator: R. Yates, Co-Principal Investigator: C. Rose, 9/1/95 - 9/1/98.

- (\\$170,000) National Science Foundation NCR 97-29863 *Parallel Computing for Wireless Networking Research*, PI: D.J. Goodman co-PIs: N. Mandayam, A. Ogielski, C. Rose, R. Yates.
- (\\$33,500) Texas Instruments *Subspace-based Approaches for Signal Quality Estimation and Interference Cancellation in Wireless Systems*, PI: N. Mandayam, co-PI R. Yates, 9/1/97–9/1/98.
- (\\$20,000) AT&T Foundation, *Autonomous Controller Design using Genetic Algorithms*, C. Rose & R. Yates, 10/95.
- (\\$412,456) National Science Foundation (CISE/NCRI) 4-20931, *Searching for Good Call Admission Policies in Telecommunications Networks*, Principal Investigator: C. Rose, Co-Principal Investigator: R. Yates, 9/1/92–9/1/95.

### Conference Publications

- [1] C. Raman, R. D. Yates, and N. Mandayam. Scheduling variable rate links via a spectrum server. In *IEEE Symposium on New Frontiers in Dynamic Spectrum Access Networks DySPAN'05*, Nov 2005. Baltimore MD. PDF.
- [2] J. Acharya and R. D. Yates. Two dimensional spreading for dispersive channels. In *Proceedings of MILCOM*, Oct 2005. Atlantic City NJ. PDF.
- [3] I. Maric, R. Yates, and G. Kramer. The strong interference channel with common information. In *Proceedings of Asilomar*, November 2005. Monterey, CA. (invited) PDF.
- [4] I. Maric, R. Yates, and G. Kramer. The strong interference channel with common information. In *Allerton Conference on Communications, Control and Computing*, Sept. 2005. (invited) PDF.
- [5] I. Maric, R. Yates, and G. Kramer. The discrete memoryless compound multiple access channel with conferencing encoders. In *Proc. IEEE International Symposium On Information Theory (ISIT'05)*, Sept. 2005.
- [6] J. Lei, R. Yates, L. Greenstein, and H. Liu. Wireless link SNR mapping onto an indoor testbed. In *Proceedings of The First International Conference of Testbeds and Research Infrastructures for the Development of Networks and Communities*, February 2005. Trento Italy. PDF.
- [7] I. Maric and R. Yates. Power and bandwidth allocation for cooperative strategies in gaussian relay networks. In *Proceedings of Asilomar*, November 2004. Monterey, CA. (invited) PDF.
- [8] I. Maric and R. Yates. Cooperative multicast for network lifetime maximization. In *Proceedings of the 42nd Allerton Conference on Communications, Control, and Computing*, Oct. 2004. (invited) PDF.
- [9] I. Maric and R. Yates. Forwarding strategies for parallel-relay networks. In *International Symposium On Information Theory (ISIT'04)*, July 2004. Chicago, IL.

- [10] I. Maric and R. Yates. Cooperative broadcast for maximum network lifetime. In *Conference on Information Sciences and Systems CISS 2004*, Mar. 2004. PDF.
- [11] I. Maric and R. Yates. Forwarding strategies for gaussian parallel-relay networks. In *Conference on Information Sciences and Systems CISS 2004*, Mar. 2004. PDF.
- [12] W.H. Yuen, R.D. Yates, and C.W. Sung. Performance evaluation of highway mobile infostation networks. In *IEEE Global Telecommunications Conference, GLOBECOM '03*, volume 2, pages 934 – 939, Dec. 2003. PDF.
- [13] W.H. Yuen and R.D. Yates. Optimum transmit range and capacity of mobile infostation networks. In *IEEE Global Telecommunications Conference, GLOBECOM '03*, volume 2, pages 1130 – 1135, Dec. 2003. PDF.
- [14] J. Luo, R. Yates, and P. Spasojevic. Service outage based power and rate allocation for parallel fading channels. In *IEEE Global Telecommunications Conference, GLOBECOM '03*, volume 2, pages 1003 – 1007, Dec. 2003. PDF.
- [15] L. Lin, R.D. Yates, and P. Spasojevic. Adaptive transmission with discrete code rates and channel state uncertainty. In *IEEE Global Telecommunications Conference, GLOBECOM '03*, volume 3, pages 1771 – 1775, Dec. 2003. PDF.
- [16] W.H. Yuen, R.D. Yates, and C.W. Sung. Effect of node mobility on highway mobile infostation networks. In *ACM MSWiM 2003*, September 2003. PDF.
- [17] W.H. Yuen, R.D. Yates, and S.C. Mau. Exploiting data diversity and multiuser diversity in noncooperative mobile infostation networks. In *Proc. of IEEE INFOCOM 2003*, volume 3, pages 2218 – 2228, 2003. PDF.
- [18] W. H. Yuen, R. D. Yates, and S.-C. Mau. Noncooperative content distribution in mobile infostation networks. In *Proc. IEEE Wireless Communications and Networking Conference (WCNC)*, volume 2, pages 1344 – 1349, March 2003. New Orleans, LA. PDF.
- [19] M. K. Karakayali, R. Yates, and L. Razoumov. Throughput maximization on the downlink of a CDMA system. In *Proc. IEEE Wireless Communications and Networking Conference (WCNC)*, March 2003. New Orleans, LA. PDF.
- [20] M. K. Karakayali, R. Yates, and L. Razoumov. Joint power and rate control in multiaccess systems with multirate services. In *Proceedings of Conference on Information Sciences and Systems (CISS)*, March 2003. The Johns Hopkins University, Baltimore, MD. PDF.
- [21] I. Maric and R. Yates. Efficient multihop broadcast for wireless systems. In *DIMACS Workshop on Signal Processing for Wireless Transmission*, Oct. 2002. PDF.
- [22] W.H. Yuen and R.D. Yates. Inter-relationships of performance metrics and system parameters for mobile ad hoc networks. In *IEEE MILCOM*, October 2002. PDF.
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- [30] L. Lin, R. Yates, and P. Spasojevic. Discrete adaptive transmission for fading channels. In *IEEE International Conf. on Comm. ICC 2001*, volume 7, pages 2261–2265, 2001. PDF.
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- [32] I. Maric and R. Yates. Connection establishment in the bluetooth system. In *Conference on Information Sciences and Systems CISS'01*, March 2001. Baltimore, MD. PDF.
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- [37] V. Kaul, W. Zhang, and R. Yates. Multi-cell WCDMA signal processing simulation. In *Proceedings of the IEEE Vehicular Technology Conference, Fall 2000*, Sept 2000. Paper no. 4.7.2.4. PDF.

- [38] A. Yener, R. Yates, and S. Ulukus. Combined temporal and spatial filter structures for CDMA systems. In *Proceedings of the IEEE Vehicular Technology Conference, Fall 2000*, Sept 2000. Paper no. 4.5.1.1. PDF.
- [39] R. Sinha and R. Yates. An OFDM based multicarrier MFSK system. In *Proceedings of the IEEE Vehicular Technology Conference, Fall 2000*, Sept 2000. Paper no. 2.3.3.5.
- [40] C. Rose, S. Ulukus, and R. Yates. Interference avoidance for wireless systems. In *IEEE Vehicular Technology Conference VTC-00*, May 2000. Tokyo, Japan.
- [41] M. Saquib and R. Yates. Analysis of a partial decorrelator in a multi-cell DS/CDMA system. In *Proceedings of the IEEE Global Communications Conference*, December 1999. Rio de Janiero, Brazil. PDF.
- [42] J. Borras and R. Yates. Infostation overlays for cellular systems. In *Proc. of WCNC'99*, Sept. 1999. (invited) PDF.
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- [44] A. Yener, R. Yates, and S. Ulukus. Joint power control, multiuser detection, and beamforming for CDMA systems. In *Proceedings of the IEEE Vehicular Technology Conference VTC'99*, May 1999. PDF.
- [45] A. Yener and R. Yates. Multiuser access capacity of packet switched CDMA systems. In *Proceedings of IEEE Vehicular Technology Conference VTC'99*, May 1999. PDF.
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- [49] S. Ulukus and R. Yates. Iterative signature adaptation for capacity maximization of CDMA systems. In *Proceedings of the 36th Allerton Conference on Communications, Control, and Computing*, Sept. 1998. (invited) PDF.
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- [59] S. Ulukus and R. Yates. Adaptive power control with MMSE multiuser detectors. In *Proceedings of the IEEE International Conference on Communications ICC'97*, June 1997. PDF.
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- [62] D. Goodman, J. Borras, N. Mandayam, and R. Yates. INFOSTATIONS: A New System Model for Data and Messaging Services. In *Proceedings of The IEEE Vehicular Technology Conference VTC'97*, May 1997. PDF.
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- on Interference Rejection and Signal Separation in Wireless Communications IRSS97*, March 1997.
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- [70] C. Rose and R. Yates. Ensemble polling strategies in mobile communications networks. In *Proc. IEEE Vehicular Technology Conference, VTC-96*, pages 101–105, 1996. PDF.
- [71] M. Saquib, R. Yates, and N. Mandayam. Decorrelating detectors for a dual rate synchronous DS/CDMA channel. In *Proc. IEEE Vehicular Technology Conference, VTC-96*, pages 377–381, 1996.
- [72] M. Andersin, N. Mandayam, and R. Yates. Subspace-based estimation of the signal-to-interference ratio for TDMA cellular systems. In *Proc. IEEE Vehicular Technology Conference, VTC-96*, pages 1155–1159, 1996. PDF.
- [73] C.Y. Huang and R. Yates. Call admission in power controlled CDMA systems. In *Proc. IEEE Vehicular Technology Conference, VTC-96*, pages 1665–1669, 1996.
- [74] C. Rose and R. Yates. Ensemble paging strategies for cellular systems. In *INFORMS Spring National Conference*, April 1996.
- [75] C.Y. Huang and R. Yates. Rate of convergence for uplink constrained power control. In *Conference on Information Sciences and Systems CISS-96*, March 1996.
- [76] P.S. Kumar, R. Yates, and J. Holtzman. Power control based on bit error (BER) measurements. In *Proc. IEEE Military Communications Conference MILCOM'95*, pages 617–620, November 1995.
- [77] C.N. Chuah and R. Yates. Evaluation of a minimum power handoff algorithm. In *Sixth IEEE International Symposium on Personal, Indoor and Mobile Radio Communications PIMRC'95*, pages 623–627, 1995. PDF.
- [78] P. Narasimhan and R. Yates. A new protocol for the integration of voice and data over prma. In *Sixth IEEE International Symposium on Personal, Indoor and Mobile Radio Communications PIMRC'95*, pages 814–818, 1995.

- [79] C.N. Chuah, R. Yates, and D. Goodman. Integrated dynamic radio resource management. In *Proc. IEEE Vehicular Technology Conference, VTC-95*, pages 584–588, 1995.
- [80] R. Yates and C. Rose. Packet Arrival Scheduling at an Exponential Server for Minmax Blocking. *IEEE ICC'95*, June 1995. Seattle, WA.
- [81] R. Yates. Uplink power control for CDMA cellular radio systems. In *Fifth Winlab Workshop on Third Generation Wireless Networks*, pages 261–274, 1995.
- [82] C. Rose and R. Yates. Paging Cost Minimization Under Delay Constraints. In *IEEE Infocom'95*, pages 490–495, April 1995. Boston, MA.
- [83] M. Saquib and R. Yates. Optimal call admission to mobile cellular networks. In *Proc. IEEE Vehicular Technology Conference, VTC-95*, pages 190–194, 1995. PDF.
- [84] A. Sethu, D.J. Goodman, and R. Yates. A methodology for modeling multimedia access protocols. In *Second International Workshop on Mobile Multi-Media Communications*, 1995. Paper A5.5.
- [85] R. Yates and C.Y. Huang. Optimal uplink power control and base station assignment. In *Third International Conference Universal Personal Communications ICUPC'94*, pages 247–251, 1994. San Diego, CA.
- [86] P. Narasimhan and R. Yates. Performance analysis of frame reservation multiple access. In *Third International Conference Universal Personal Communications ICUPC'94*, pages 26–30, 1994. San Diego, CA.
- [87] R. Yates and C. Rose. Scheduling arrivals at a single server for min-max blocking. In *Conference on Information Sciences and Systems CISS'94*, pages 1047–1050, March 1994. Princeton, NJ.

### Invited Talks

- [1] R. Yates. Cooperative multicast for wireless networks, Sept. 2004. Dept. of Elec. Eng., Princeton University, Princeton NJ.
- [2] R. Yates. Cooperative broadcast algorithms for wireless networks, April 2004. Center for Satellite and Hybrid Communication Networks, Univ. of Maryland, College Park MD.
- [3] R. Yates. Performance of repetition codes and punctured codes for accumulative broadcast, March 2003. WiOPT'03: Modeling and Optimization in Mobile and Ad Hoc and Wireless Networks. Sophia-Antipolis, France.
- [4] R. Yates. Service outage based resource allocation for wireless systems, February 2002. ECE Dept, Univ. of Massachusetts, Amherst.
- [5] R. Yates. Free bits, June 2001. KTH Wireless Center, Kista, Sweden.
- [6] R. Yates. Free Bits: The Challenge of the Wireless Internet, May 2001. Wireless World Research Forum Second Meeting, Nokia Research Center, Helsinki, Finland.

- [7] R. Yates. Service outage based resource allocation for wireless systems, April 2001. Dept. of Electrical Engineering, University of Texas at Dallas.
- [8] R. Yates. Multi-cell WCDMA signal processing simulation testbed, April 2001. Nokia Research Center, Dallas TX.
- [9] R. Yates. Distributed interference management for wireless systems, December 2000. Dept. of Electrical Engineering, Columbia University.
- [10] R. Yates. Interference management for CDMA wireless systems, November 2000. Dept. of Electrical Engineering, Polytechnic University.
- [11] R. Yates. Trends in wireless data, August 2000. DIMACS Summer School on Foundations of Wireless Networks and Applications.
- [12] A. Yener and R. Yates. Decorrelating acquisition and access for connectionless CDMA. In *Symposium on Interference Rejection and Signal Separation in Wireless Communications IRSS00*, April 2000. (invited).
- [13] R. Yates. "Free Bits" Over the Air: The Challenge of the Wireless Internet, March 2000. Sprint Research Symposium, Univ. of Kansas, Lawrence KS.
- [14] R. Yates. Interference suppression and avoidance for wireless systems, May 1999. Institute for Systems Research, Univ. of Maryland, College Park MD.
- [15] R. Yates. Power control, interference suppression and interference avoidance for wireless systems, May 1999. Radio Communications Laboratory, Royal Institute of Technology, Stockholm Sweden.
- [16] R. Yates. Fourth generation wireless data, May 1999. Radio Communications Laboratory, Royal Institute of Technology, Stockholm Sweden.
- [17] R. Yates. Adaptive resource allocation, May 1999. Communication Theory Workshop.
- [18] R. Yates. Power control, interference suppression and interference avoidance for CDMA systems, February 1999. Dept. of Elec. Eng., Princeton University, Princeton NJ.
- [19] R. Yates. Radio resource management, October 1998. NSF/ONR Workshop on Future Directions in Systems and Control Research in Communication Networks, Airlie House, VA.
- [20] R. Yates. Combined power control and interference suppression for CDMA systems, April 1998. ECE Dept., New Jersey Institute of Technology.
- [21] R. Yates. Coverage and capacity of an infostations system, May 1997. Fourth INFORMS Telecommunications Conference, Boca Raton FL.
- [22] R. Yates. Power control and multiuser detection, July 1997. Applied Probability Conference, Boston MA.
- [23] R. Yates. Power control using available measurements for cellular radio systems, October 1996. Bellcore, Red Bank, NJ.

- [24] R. Yates. Stochastic power control for cellular radio systems, September 1996. Institute for Systems Research, Univ. of Maryland, College Park MD.
- [25] R. Yates. Stochastic power control for CDMA cellular radio systems, September 1996. Ericsson Radio, Research Triangle Park NC.
- [26] R. Yates. Uplink power control for CDMA cellular radio systems, April 1995. NEC C&C Research Laboratories, Princeton NJ.
- [27] R. Yates. A unified approach to power control in cellular radio systems, March 1995. Third INFORMS Telecommunications Conference, Boca Raton FL.
- [28] R. Yates. Blind packet scheduling for min-max blocking, April 1995. RUTCOR Stochastic Optimization Seminar.
- [29] R. Yates. Issues in the 902-928 mhz unlicensed band, March 1995. Electric Power Research Institute, Pittsburgh PA.
- [30] R. Yates. A framework for power control in cellular radio systems, Sep 1994. UCLA EE Dept., Los Angeles, CA.
- [31] R. Yates. Uplink power control in cellular radio systems, May 1994. MIT Laboratory for Information and Decision Systems, Cambridge MA.
- [32] R. Yates. Integrated power control and base station assignment, Feb 1994. AT&T Bell Laboratories, Holmdel NJ.

## Graduate Student Supervision

### Current Doctoral Students

- Ivana Maric, *Cooperative Broadcast Protocols for Sensor Networks*.
- M. Kemal Karakayali, *Cooperative Signaling Strategies*.
- Silvija Kokalj-Filipovic, *TBD*. (Joint supervision with Predrag Spasojevic.)
- Jing “Michelle” Lei, *TBD*. (Joint supervision with Larry Greenstein.)
- Umut Aykol, *TBD*
- Joydeep Acharya, *TBD*

### Ph.D. Students Supervised

- [1] Jianghong Luo. *Service Outage Based Adaptive Transmission in Fading Channels*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, June 2004. Joint supervision with P. Spasojevic. Employment: Postdoc, Princeton University.
- [2] Wing-Ho Yuen. *Modeling and Analysis of Mobile Ad Hoc Networks*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, June 2004. Employment: Panasonic Technologies, Princeton NJ.
- [3] Lang Lin. *Adaptive Transmission in Fading Environments*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, January 2004. Joint supervision with P. Spasojevic. Employment: Globespan-Virata, Red Bank NJ.

- [4] Rajnish Sinha. *Noncoherent Multicarrier Communications and Multiuser Detection*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, October 2003. Employment: Lucent Technologies, Whippany NJ.
- [5] Aylin Yener. *Efficient Access and Interference Management for CDMA Wireless Systems*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, May 2000. Employment: Assistant Professor, Penn State Univ., State College PA.
- [6] Joan Borras. *Capacity of an Infostation System*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, January 2000. Employment: Tempos 21, Innovacion en Aplicaciones Moviles, S.A., Barcelona Spain.
- [7] Jun Li. *Protocol Design and Performance Analysis for Handoff Control in Mobile ATM Networks*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, August 1999. Employment: Thomson Multimedia, Princeton NJ.
- [8] Sennur Ulukus. *Power Control, Multiuser Detection and Interference Avoidance in CDMA Systems*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1998. Employment: Assistant Professor, Univ. of Maryland, College Park.
- [9] Mohammad Saquib. *Quality of Service for Multi-rate DS/CDMA Systems with Multi-user Detection*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1998. Employment: Assistant Professor, Univ. of Texas at Dallas.
- [10] Partha Narasimhan. *Quality-of-Service Based Bandwidth Allocation in Integrated Multiservices Wireless Networks*. PhD thesis, Rutgers University, May 1998. Employment: Aruba Networks, San Jose CA.
- [11] Ching-Yao Huang. *Radio Resource Management in Power Controlled CDMA Systems*. PhD thesis, Rutgers University, May 1996. Employment: Assistant Professor, Department of Electronics Engineering, National Chiao Tung University, Taiwan.

### **M.S. Students Supervised**

- [1] Umut Akyol. Effects of physical layer models on wireless network simulations. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, May 2005.
- [2] Joydeep Acharya. Two dimensional spreading for doubly dispersive channels. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, May 2005.
- [3] Kinjal Desai. Tournament arena simulation for a wireless ecosystem in unlicensed band. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, Jan 2005.
- [4] M. Kemal Karakayali. Resource management for downlink wireless systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, October 2003.

- [5] Nanyan Jiang. Wireless broadcast services. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, June 2002.
- [6] Vikram Kaul. Multicell WCDMA signal processing simulation testbed. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, November 2000.
- [7] Ivana Maric. Connection establishment in the bluetooth system. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, October 2000.
- [8] Shalinee Kishore. Scheduling multirate CDMA users based on average power consumption. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 1998.
- [9] David Pandian. Channel allocation and power control in IS-136. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, January 1999.
- [10] Jignesh Panchal. Parallel simulator of wireless networks. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 1998.
- [11] Sorabh Gupta. Soft dropping power control. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.
- [12] Deepa Ramakrishna. Subspace based estimation of the signal to interference ratio for CDMA cellular systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997. Joint supervision with N. Mandayam.
- [13] Rajnish Sinha. Spread spectrum interference issues in the unlicensed band. Master's thesis, Rutgers University, 1996.
- [14] Siva Veerepalli. Dual rate multiple access: A radio access protocol. Master's thesis, Rutgers University, May 1996.
- [15] Kevin G. Chen. Integrated dynamic resource management of wireless communication systems. Master's thesis, Rutgers University, January 1996.
- [16] Asokan Sethu. A model for wireless multimedia access protocols. Master's thesis, Rutgers University, Sept. 1995.
- [17] M. Saquib. Optimal call admission to a mobile cellular network. Master's thesis, Rutgers University, 1995.

### **Doctoral Thesis Committee Memberships**

- [1] J. M. Sucec. *Routing in Mobile Ad Hoc Networks: Scalability, Resource Management and Application*. PhD thesis, Rutgers University Department of Electrical and Computer Engineering, October 2003.
- [2] H. Wang. *Opportunistic Transmission for Wireless Data over Fading Channels under Energy and Delay Constraints*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 2002.
- [3] D. Popescu. *Interference Avoidance for Wireless Systems*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, September 2002.

- [4] L. Cheng. *Network Awareness for Heterogeneous Data Networks*. PhD thesis, Rutgers University Department of Electrical and Computer Engineering, May 2002.
- [5] C. Comaniciu. *Integrated Access Control and Detection for QoS Multimedia CDMA Networks*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 2001.
- [6] J. Lai. *Performance of Channel Coding in Temporally and Spatially Correlated Wireless Channels*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, August 2001.
- [7] L. Song. *Resource Allocation Based on Hierarchical and Nonlinear Control in Wireless Networks*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, August 2001.
- [8] L. Qian. *Optimal Power Control in Cellular Wireless Systems*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, June 2001.
- [9] Y. Bai. *Interlayer Protocol Interactions and Coordinations in Wireless Internet Access*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, June 2001.
- [10] C. U. Saraydar. *Pricing and Power Control in Wireless Data Networks*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 2000.
- [11] A. L. Iacono. *Information Delivery in an Infostation Network*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, June 2000.
- [12] Z. Naor. *Mobile Users Tracking in Wireless Networks*. PhD thesis, Tel-Aviv University, 2000. External examiner.
- [13] P.-C. Chen. *Mobile Position Location Estimation in Cellular Systems*. PhD thesis, Rutgers University, Dept. of Electrical and Computer Engineering, May 1999.
- [14] C. G. Löf. *Multicasting in Cellular Radio Systems*. PhD thesis, Royal Institute of Technology (KTH), 1999. External examiner.
- [15] S. Ramakrishna. *Optimization of CDMA Systems*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1998.
- [16] F.-C. Cheng. *Wireless Intelligent ATM Network: System and Protocol Design*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1998.
- [17] A. Sampath. *Integrated Voice/Data Wireless CDMA Systems: Capacity, Access Control and Performance Analysis*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, May 1997.
- [18] M. Thomas. *A Multi-rate TDMA Protocol and Associated Speech Quality Issues*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.
- [19] H. Ji. *Resource Management in Communication Networks via Economic Models*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.

- [20] E. Karasan. *A Theory of Network Dynamics for Large-Scale Broadband Networks*. PhD thesis, Rutgers University, 1995.
- [21] G. P. Pollini. *Signaling Traffic and Switching Loads in Wireless Cellular Personal Communications: Methodology for Evaluation and Potential Solutions*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1995.
- [22] H. Qi. *Packet Reservation Multiple Access Protocol for Cellular Systems*. PhD thesis, University of South Australia, 1994. External examiner.
- [23] J. MacLellan. *Methods of Resource Allocation in Cellular Networks Using and Underlying Queuing Model*. PhD thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1995.
- [24] S.A. Grandhi. *Power Control in Mobile Radio Systems*. PhD thesis, Rutgers University, 1994.
- [25] A. Atai. *Congestion Control for High Speed Networks*. PhD thesis, Rutgers University, December 1993.
- [26] A. Kolarov. *Dynamic Routing in Multiple-Service Networks*. PhD thesis, Rutgers University, 1993.

#### **M.S. Thesis Committee Memberships**

- [1] F. Atay. Exploiting mobility in mobile ad hoc networks: A packet-eye view. Master's thesis, Rutgers University, December 2003.
- [2] S. Sorooshiyari. Performance analysis of multicarrier CDMA in the presence of correlated fading. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering., October 2003.
- [3] O. Ileri. Pricing for enabling forwarding in wireless adhoc networks. Master's thesis, Rutgers University, October 2003.
- [4] S. Patel. Comparative evaluation of ofdm and single-carrier equalization for infostation channel. Master's thesis, Rutgers University, December 2002.
- [5] A. Domazetovic. Propagation models for short-rane wireless channels with predictable path geometries. Master's thesis, Rutgers University, September 2002.
- [6] David Tabora-Sierra. An analysis of covariance estimation, codeword feedback and multiple base performance of interference avoidance. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, September 2001.
- [7] Shaily Verma. QoS provisioning for mobile internet access via GPRS/EDGE. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, July 2001.
- [8] D. Devaraj. Mobile terminated data transmission in general packet radio service over GSM. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, April 2001.

- [9] Dragan Samardzija. Blind interference cancellation schemes for DS-CDMA systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, October 2000.
- [10] J. Wang. Packet size optimization: Throughput analysis and rate adaptation for infostation systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 1999.
- [11] M. Sheth. Low cost mobile receivers using sequency ordered orthogonal spreading codes. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 1999.
- [12] N. Feng. Utility maximization for wireless data based on power and rate control. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, June 1999.
- [13] D. Duggirala. Broadcast mechanism for data transmission in mobile computing environments. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, December 1999.
- [14] K. Kasargod. Optimal routing schemes for a simplified packet radio network architecture. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, May 1999.
- [15] V. Shah. Power control for wireless data services based on utility and pricing. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, May 1998.
- [16] D. Famolari. Parameter optimization of CDMA data systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, January 1999.
- [17] K. Medepalli. TDMA interference cancellation and equalization using tentative decisions. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, January 1999.
- [18] P. Hatrack. Reduction of other-cell interference with integrated interference cancellation/power control. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, January 1998.
- [19] I. Seskar. Implementation of multiuser detectors. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, January 1997.
- [20] S. Agarwal. Modeling and analysis of handoff algorithms for multiple cell wireless systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.
- [21] K. Wells. A fitness function accelerator for genetic algorithms. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.
- [22] L. Madapati. Matrix geometric analysis and simulation of integrated traffic in a land mobile trunking system. Master's thesis, Rutgers University, 1997.

- [23] J. Cai. GSM general packet radio service. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1997.
- [24] Z. Lei. Wireless subscriber location tracking for adaptive mobility management. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, 1996.
- [25] C.U. Saraydar. Selection of good location areas from population and traffic data. Master's thesis, Rutgers University, May 1997.
- [26] S. Rajagopalan. An adaptive location management scheme for mobile internetworking. Master's thesis, Rutgers University, January 1995.
- [27] A. Yener. Finding good call admission policies for cellular mobile networks. Master's thesis, Rutgers University, 1994.
- [28] P. Rauber. Duplex schemes and receiver activity reduction for packet reservation multiple access. Master's thesis, Rutgers University, February 1994.
- [29] A. Sampath. An adaptive algorithm for handoffs in cellular systems. Master's thesis, Rutgers University, May 1994.
- [30] O. T. Choksi. Performance of data link layer in cellular radio environment. Master's thesis, Rutgers University, February 1994.
- [31] A. Sumiyama. Mobility management in microcell/macrocell overlay systems. Master's thesis, Rutgers University, March 1994.
- [32] N. Zhang. Analysis of handoff algorithms in cellular mobile systems. Master's thesis, Rutgers University Dept. of Electrical and Computer Engineering, April 1994.
- [33] M. Khan. PRMA under congestion and channel impairments. Master's thesis, Rutgers University, 1993.

## Teaching

### **Instructor: 14:332:222 Principles of Electrical Engineering II**

**Semesters Taught** Spring 1997–2000

**Average Course Enrollment** 90 undergraduates

**Description** Circuit analysis, network theorems, controlled sources, nonlinear elements, transient analysis. Laplace transforms, step and impulse response, and computer methods.

### **Instructor: 14:332:349 Probability and Random Processes**

**Semesters Taught** Fall 1991, Fall 1992, Fall 1995, Fall 2002, Fall 2003

**Average Course Enrollment** 120 (1991-95), 200 (2002-03) undergraduates

**Description** Probability and its axioms, conditional probability, independence, random variables and distributions, functions of random variables, expectations, random vectors, law of large numbers, central limit theorem. Characterization of random processes, linear systems with random process inputs, spectral density.

**Instructor: 14:332:450 Principles of Communications Systems**

**Semesters Taught** Fall 1990, Spring 1993-99

**Average Course Enrollment** 100 undergraduates

**Description** Principles of analog communications systems, correlation functions, power spectral density, effects of noise on system performance. Analysis of analog modulation techniques including AM, DSB-SC, VSB, SSB, FM, PM.

**Instructor: 14:332:421 Communications Engineering**

**Semesters Taught** Spring 1991, Spring 1992, Fall 2000

**Average Course Enrollment** 40 undergraduates

**Description** Theoretical and practical aspects of digital data transmission in the presence of noise. Effects of finite bandwidth, error rate analysis for various modulation strategies. Source and channel coding.

**Instructor: 16:332:559 Advanced Topics in Communication: Discrete Event Stochastic Processes**

**Semesters Taught** Spring 1992, Spring 1993, Fall 1993, Fall 1994

**Average Course Enrollment** 7 graduate students

**Description** Stochastic point processes with applications to communications and networks. Renewal processes. Poisson process. Discrete and continuous time Markov chains. Semi-Markov processes. Time reversibility. Networks of queues.

**Instructor: 16:332:541 Stochastic Signals and Systems**

**Semesters Taught** Fall 1995-98

**Average Course Enrollment** 35 graduate students

**Description** Probability, random variables, response of memoryless channels to random inputs, sequences of random variables, central limit theorem, stochastic processes, linear dynamic systems with stochastic inputs, correlation and power spectral density.

**Instructor: 16:332:543 Communication Networks I**

**Semesters Taught** Fall 1998

**Average Course Enrollment** 30 graduate students

**Description** Introduction to telephony and packet data networks. Circuit and packet switching networks. Multiple access networks. Delay and blocking analysis. Queueing network analysis.

**Supervisor: 14:332:491 Undergraduate Special Problems**

- R. Ravindran, *JAVA simulation viewer*
- A. Ganti *Asynchronous Multirate Decorrelators For DS/CDMA Systems*, Fall 1996-Spring 1997. (ECE Department James Leroy Potter Award for original independent investigation by an undergraduate)
- M. Limotte *A Visual Interface for a Mobile Cellular Simulation*, Spring 1995.
- G. Labrozzi *Distributed Algorithms in Communication Networks*, Fall 1994.

- C.N. Chuah *Dynamic Resource Management in Linear Cellular Systems*, Fall 1994. (ECE Department James Leroy Potter Award for original independent investigation by an undergraduate)
- R. Sinha *Cellular Standards: A Competitive Assessment*, Fall 1993. (Slade Scholar)
- S. Ghanekar *Satellite Communication System Design*, Fall 1992.
- L. Humphrey *Signal Triggers in Cellular Systems*, Spring 1992.
- G. Levy *Study of Telecommunication Networks*, Fall 1991.
- D. Chan *Head of Line and Output Blocking*, Fall 1991.
- T. Tank *Winning at Monopoly, the Markov Process*, Fall 1991.
- N. Bery, *Electromagnetic Waves*, Spring 1991.
- M. Esserman, *Optical Disk Technology*, Spring 1991.

### Professional Activities

Associate Editor: *IEEE Journal on Selected areas in Communications Series in Wireless*.

External Faculty Opponent: Ph.D. thesis defense of Carl-Gustav Lof, Royal Institute of Technology, Stockholm Sweden.

Ph.D. External Examiner:

- Zohar Naor, *Mobile Users Tracking in Wireless Networks*, Tel Aviv University, April 2000.
- Jinwen Ma, *Multiuser Detection for Multirate DS/CDMA Systems*, New Jersey Institute of Technology, November 1999.
- Christian Ibars Casas, *Capacity, Coding, and Interference Cancellation in Multiuser Multicarrier Wireless Communications Systems*, New Jersey Institute of Technology, August 2003.

Technical Program Committee Member:

- Mobicom 1997, Mobicom 1998, Infocom 1999, VTC 2003, Mobihoc 2003, ICC 2004.

NSF Panelist:

- CISE Information Technology Research, January 2001, September 2003.
- CISE Special Projects in Networking, January 1999.
- CISE Networking Research, June 1999.
- CCR Communications Research, November 1999.
- CISE/NCRI Career Awards, 1996.

Journal Reviewer: IEEE Transactions on Information Theory,  
 IEEE Transactions on Communications,  
 IEEE Transactions on Wireless Communications  
 IEEE Journal on Selected Areas in Communications,  
 IEEE/ACM Transactions on Networking,  
 IEEE Communication Letters,  
 IEEE Transactions on Vehicular Technology,  
 Queueing Systems: Theory and Applications.

Member – Institute of Electrical and Electronic Engineers.

**University Activities**

School of Engineering Dean's Committee on Appointments and Promotions, 2002–2003,  
2003-2004.

Rutgers University Article X Grievance Hearing Committee Member

ECE Academic Advisor to incoming sophomores. (1993–1999)

ECE Graduate Scholastic Standing Committee.

ECE Undergraduate Scholastic Standing Committee

University Hearing Board. (1994–1997)

College of Engineering Commencement Marshal. (1992–1996)