

DR. STEPHEN B. WICKER

Professor
School of Electrical and Computer Engineering
Cornell University

EDUCATION

Ph.D.	Electrical Engineering University of Southern California	1987
M.S.E.E.	Electrical Engineering Purdue University	1983
B.S.E.E.	Electrical Engineering University of Virginia	1982

EMPLOYMENT HISTORY

Cornell University, Ithaca New York School of Electrical Engineering Associate Director for Research	2000 - 2003
Professor	1999 -
Associate Professor	1996-1999
Georgia Institute of Technology, Atlanta, Georgia School of Electrical and Computer Engineering Associate Professor	1992-1996
Assistant Professor	1987-1992
Hughes Aircraft, El Segundo, California, Information Sciences Department, System Laboratories, Space and Communications Staff Engineer	1983-1987
Bell Laboratories, Network Architecture Research Group Columbus, Ohio	1982

EXPERIENCE SUMMARY

Professor Wicker teaches and conducts research in wireless information networks, secure networks, packet-switched computer networks, and digital telephony. His research has focused on the development and application of advanced technologies to adaptive networks. Current interests include privacy-aware design practices for wireless networks and self-configuring sensor networks for disaster recovery, infrastructure monitoring, and national security. Other interests include secure anonymous networking, the behavior of complex systems, phase transitions in NP-hard problems, and the evolution of the nation's telecommunications networks.

Professor Wicker is the Cornell Principal Investigator for the TRUST Science and Technology Center – a National Science Foundation center dedicated to the development of technologies for securing the nation's critical infrastructure.

In 2010 Professor Wicker testified before the Congressional Committee on Science and Technology and was appointed to the Air Force Scientific Advisory Board. He is a Fellow of the IEEE.

Technical Duties at Hughes Aircraft included the following:

1. Principal System Engineer for advanced military satellite communications, new business.
2. Team leader and principal author of study examining the use of 60 and 94 GHz monolithic arrays in satellite cross-links.
3. Team leader and principal author of study examining the use of High Electron Mobility Transistor (HEMT) devices in frequency synthesizers for frequency hopped communication systems.
4. Responsible for analysis, design, and production of 800 Mbps demod-remod SQPSK receiver.
5. Responsible for analysis and design of several receivers and digital signal processors for various military satellite programs.
6. Conducted analysis and simulation of MILSTAR direct digital frequency synthesizers.

Technical Duties at Bell Laboratories included the development of synchronous protocols for a packet switch (no. 2 STP).

CONSULTING

- Mitre Corporation., Eatontown, NJ. 1997 - 2005
 - Turbo Error Control for Wireless Applications.
- Motorola Inc. Advanced Mobile Messaging Division 1997 – 1998
 - Wireless Networking
- Digital Technics Inc., Baltimore, MD. 1995 - 1997
 - Design of SS7/SONET/ATM interface for telephone switch.
- Integrated Device Technology, Santa Clara, CA. 1995 - 1996
 - Development of Reed-Solomon error control chip for high-speed mass memory applications.
- Lockheed Sanders, Avionics Division, Nashua, N.H. 1994 - 1995
 - Development of error control chips for magnetic recording in space applications.
- Mobile Telecommunication Technologies, Jackson, MS. 1993 - 1998
 - Design and analysis of mobile networks for paging and data transfer, bulk data transfer using frame relay.
- Al-Elm Research and Development Corp., Raleigh, N.C. 1992 - 1994
 - Design and development of advanced digital voice and FAX encryption techniques.
- Intellivision, Atlanta, GA. 1992 - 1993
 - Design and development of automated telephone switching equipment.
- Unisys Corporation, San Jose, CA. 1991 - 1992
 - Design and development of error control algorithms for internodal communication in multiprocessing computer systems.
- Il Morrow Inc., UPS Technical Systems, Salem, OR. 1990 - 1992
 - Analysis, design, and development of error control systems for mobile radio networks.
- Charter Leasing Corporation, Richmond, VA. 1990 - 1993

- Analysis and design of digital switching systems for commercial telephony.

CURRICULUM DEVELOPMENT

- Developed and implemented a course for Freshmen entitled “Wiretaps to Facebook: Security and Privacy in Information Networks” for the College of Engineering, Cornell University, Ithaca, New York (Fall 2010).
- Developed and implemented a course for Juniors entitled “Networks and Systems” for the School of Electrical Engineering, Cornell University, Ithaca, New York (Spring 2005).
- Developed and implemented a course for Seniors entitled “Artificial Intelligence and Expert Systems for Telecommunications Networks” for the School of Electrical Engineering, Cornell University, Ithaca, New York (Spring 1998).
- Developed and implemented a course for Freshmen entitled “Introduction to Telecommunications” for the College of Engineering, Cornell University, Ithaca, New York (Spring 1997).
- Developed and implemented a graduate course in Cryptography and Data Security for the School of Electrical Engineering, Cornell University, Ithaca, New York (Fall 1996).
- Academic Coordinator, Georgia Tech - Lorraine, Metz, France, September 1990 - March 1992.
- Developed and implemented two graduate courses in Error Control Coding and one graduate course in Cryptography and Data Security for the School of Electrical Engineering, Georgia Institute of Technology, Atlanta, Georgia.
- Developed and taught numerous short courses on digital communication systems, wireless information networks, error control, and cryptology.

PH. D. STUDENTS (GRADUATED)

Cornell University

- **Daniel Lee** (“Reliable and Energy-Efficient Wireless Sensor Networks for Mobile Healthcare Systems,” graduated Summer 2011)
- **Nathan Karst** (“Combinatorial Designs For Key Distribution And Secure Re-Keying In Group Communication Systems,” graduated Summer 2011)
- **Sergio Bermudez** (“Analysis of Topological Properties of Random Wireless Sensor Networks,” graduated Summer 2010)
- **Mikhail Lisovich** (“Mobility And Privacy: Exploring Technical And Social Issues In Emerging Pervasive Sensor Networks,” graduated Spring 2010)

- **Michael Eoin Buckley** ("Side Information Inference For Turbo Code Based Systems," graduated Fall 2009)
- **Coalton Bennett** ("Secure Data Reporting for Demand Response Systems," graduated Fall 2009)
- **Ania Kacewicz** ("Coding Theory for Security and Reliability in Wireless Networks," graduated Fall 2009)
- **Phillip Kuryloski** ("Design Strategies For Human Centered Sensor Networks," graduated Spring 2009)
- **Sameer Pai**, ("Co-Design Of Sensor Networking Technology And Privacy Policy," graduated Spring 2008)
- **Hui Qu**, ("Co-Designed Localization And Geographic Routing Algorithm For Sensor Networks," graduated Spring 2008)
- **Christina Tavoularis**, ("Event Detection and Queueing in Wireless Sensor Networks," Graduated Fall 2006)
- **Hazer Inaltekin**, ("Game Theoretic Mac Protocol Design And Interference Analysis For Wireless Networks," Graduated Spring 2006)
- **Xin Zhang**, ("Distributed Source Coding in Sensor Networks," graduated Spring 2006)
- **Martin Roth**, ("TERMITE: A Swarm Intelligent Routing Algorithm for Mobile Wireless Ad Hoc Networks," graduated Winter 2005)
- **Prince Samar**. ("Optimizing Protocols for Mobility in Ad Hoc Networks," graduated Summer, 2004)
- **Yasser Mourtada**. ("Content-Aware Routing Schemes," graduated Summer, 2004)
- **Allen MacKenzie**. ("Game Theoretic Analysis of Medium Access Control Protocols," graduated Spring, 2003)
- **Ewald Hueffmeier, Jr.** (Applied Mathematics - Turbo Decoding Architectures and Algorithms for Wireless Data Systems, graduated Summer, 2002)
- **Xie Xi** (AI and Expert Systems for Random Access Protocols, graduated Summer, 2002)
- **Bhaskar Krishnamachari** ("Complexity and Phase Transitions in Wireless Networks," graduated Spring, 2002)
- **Sarah Spence** ("Subfield Subcodes of Reed-Solomon Codes," graduated Spring, 2002)
- **Eric Sakk** ("Wavelets Based on Reed-Muller Coding," graduated Spring, 2002)
- **Frederic Fontaine** ("Iterative Trellis Decoding for Block Codes," graduated Summer, 1999)
- **Saejoon Kim** ("Belief Propagation, Parameter Estimation, and Issues in Turbo Decoding," graduated Summer 1998)

Georgia Tech

- **Andreas Yankopolus**. ("Adaptive Error Control for Wireless Multimedia"), graduated Winter, 2004)
- **James Kosmach** ("Soft Decision Decoding for Wireless Mobile Systems," graduated Fall. 1998)

- **Amjad Luna** (“DSP Implementation of Advanced Decoder Architectures,” graduated Winter, 1998)
- **Jong-Il Park** (“Turbo Equalization Algorithms,” graduated Winter, 1998)
- **Thomas Tapp** (“Advanced Error Control Systems for Mobile Messaging Systems,” graduated Summer, 1996)
- **Mahdi Zaidan** (“Tree Structure Trellis Codes,” graduated Spring, 1996)
- **Xiao-An Wang** (“Trellis-Based Decoders and Neural Network Implementations,” graduated Winter, 1996)
- **Ahmed El-Rifai** (“Application of Linear Block Codes to the McEliece Cryptosystem,” graduated Fall, 1995)
- **Miin-Jong Hao** (“Performance Evaluation of Practical FSK, CPFSK, and ASK Detection Schemes for Coherent Optical Fiber Communication Systems,” graduated Summer, 1995)
- **Slim Souissi** (“Adaptive Packet Combining in CDMA Systems,” graduated Summer, 1994)
- **Deidre Williams** (“Key Management in the McEliece Cryptosystem,” graduated Summer, 1994)
- **Lars Rasmussen** (“Trellis Coded Adaptive Rate Hybrid-ARQ Protocols over AWGN and Slowly Fading Rician Channels,” graduated Summer 1993)
- **Mohssen Alabbadi** (“Integration of Error Correction, Encryption, and Signature Using Linear Error-Correcting Block Codes,” graduated Summer 1993)
- **Michael Bartz** (“Soft Decision Decoders Based on Artificial Neural Networks,” graduated Summer 1992)
- **Michael Rice** (“Adaptive Error Control Over Slowly Varying Channels,” graduated Spring 1991)
- **Bruce Harvey** (“Adaptive Rate Convolutional Coding Using the Viterbi Decoder,” graduated Spring 1991)

PH.D. STUDENTS (IN PROGRESS)

- **Daniel Lee** (Cellular Information Systems)
- **Nathan Karst** (Design Theory)
- **Dipayan Ghosh** (Smart Grid/Demand Response Systems)

PUBLICATIONS

Theses

- Wicker, S. B., “The Geometry of Error Correcting Codes,” Ph.D. Thesis, University of Southern California, Los Angeles, California, May 1987.
- Wicker, S. B., “A Microprocessor Based Diagnostic System,” BS Thesis, University of Virginia, Charlottesville, Virginia, May 1982.

Books

- Wicker, S. B. and Kim, S., *Fundamentals of Codes, Graphs, and Iterative Decoding*, Boston: Kluwer Academic Press, 2002.
- Heegard, C. and Wicker, S. B., *Turbo Coding*, Boston: Kluwer Academic Press, 1999.
- Wicker, S. B., *Error Control Systems for Digital Communication and Storage*, Englewood Cliffs: Prentice Hall, 1995.
- Wicker, S. B. and Bhargava, V. K. (editors), *Reed-Solomon Codes and Their Applications*, Piscataway: IEEE Press, 1994.
- Chmora, A., and Wicker, S. B. (editors), *Error Control, Cryptology, and Speech Compression: Workshop on Information Protection, Moscow, Russia*, Lecture Notes in Computer Science, Volume 829, Heidelberg: Springer Verlag, 1994.

Parts of Books

- Z. Haas, J. Y. Halpern, L. Li, and S. B. Wicker, "A decision-theoretic approach to resource allocation in wireless multimedia networks," *Resource Allocation in Next Generation Wireless Networks* (W. Li and Y. Pan, eds.), Nova Science Publishers, 2005.
- P. Samar and S.B. Wicker, "On the Behavior of Communication Links in a Multi-Hop Mobile Environment," *Frontiers in Distributed Sensor Networks*, S.S. Iyengar and R.R. Brooks (eds.), CRC Press, 2005.
- B. Krishnamachari and S. B. Wicker, "Base Station Location Optimization in Cellular Wireless Networks using Heuristic Search Algorithms," book chapter in *Soft Computing in Communications*, Ed. L. Wang, Springer-Verlag, 2004.
- Wicker, S. B., "Cyclic Codes" in *Wiley Encyclopedia of Telecommunications*, (ed: J. Proakis), 2002.
- Bhaskar Krishnamachari, Stephen B. Wicker, Ramon Bejar, and Marc Pearlman, "Critical Density Thresholds in Distributed Wireless Networks," *Advances in Coding and Information Theory*, eds. H. Bhargava, H.V. Poor and V. Tarokh, Kluwer Publishers, 2002.
- Carla Games, Xi Xie, Stephen B. Wicker, and Bart Selman, "Heavy Tails, Phase Transitions, and the Nature of Cutoff," in *Codes, Graphs, and Systems*, Boston: Kluwer, 2002.
- Bhaskar Krishnamachari, Xi Xie, Bart Selman, and Stephen B. Wicker, "Analysis of Random Walk and Random Noise Algorithms for Satisfiability

Testing," Principles and Practice of Constraint Programming - CP 2000, *Lecture Notes in Computer Science*, vol. 1894, Springer, September 2000.

- Bhaskar Krishnamachari and Stephen B. Wicker, "Global Search Techniques for Problems in Mobile Communications," in *Telecommunications Optimization: Adaptive and Heuristic Approaches*, Eds. David Corne et al., John Wiley & Sons Publishers, October 2000.
- Costello, D., Hagenauer, J., Imai, H., and Wicker, S. B., "Applications of Error Control Coding," *Information Theory: 50 Years of Discovery* (S. Verdú and S. McLaughlin, ed), IEEE Press, 1999.
- Wicker, S. B., "Deep Space Applications," *Handbook of Coding Theory*, (Vera Pless and William Cary Huffman, ed.), Amsterdam: Elsevier, 1998.
- Wicker, S. B. and Bhargava, V. K., "Introduction," in *Reed-Solomon Codes and Their Applications*, (S. B. Wicker and V. K. Bhargava, ed.), IEEE Press, 1994.
- Wicker, S. B. and Bartz, M., "Reed-Solomon Codes in Hybrid Automatic-Repeat-Request Protocols," in *Reed-Solomon Codes and Their Applications*, (S. B. Wicker and V. K. Bhargava, ed.), IEEE Press, 1994.
- Alabbadi, M. and Wicker, S. B., "Susceptibility of Digital Signature Schemes Based on Error-Correcting Codes to Universal Forgery," in *Error Control, Cryptology, and Speech Compression: Workshop on Information Protection, Moscow, Russia* (A. Chmora and S. B. Wicker, ed.), Lecture Notes on Computer Science, Volume 829, Heidelberg: Springer Verlag, 1994.
- Souissi, Slim and Wicker, S. B., "Application of Packet Combining Techniques to a DS/CDMA System Using Convolutional Encoding and Sequential Decoding", in *Communication Theory and Applications II* (B. Honary, M. Darnell, and P. Farrell, ed.) London: HW Communications Publishing Ltd, 1993.
- Wicker, S. B., "Trellis Coded Hybrid-ARQ Protocols," in *Communication, Control, and Signal Processing*, pp. 339 - 346, (Erdal Erkan, ed.), Amsterdam: Elsevier Publishing (1990).

Refereed Journal Articles (published or to appear)

- N. Karst, S. B. Wicker. "On Secure Rekeying Using Cover-Free Families," *IEEE Transactions on Information Theory*, in revision.
- H. Inaltekin, M. Chiang, H. V. Poor and S. B. Wicker, "Selfish random access over wireless channels with multipacket reception," *IEEE Journal in Selected*

Areas in Communications, (Special Issue on Game Theory in Wireless Communications), revision submitted, Aug 2011.

- S. B. Wicker, "Digital Telephony and the Question of Privacy," *Communications of the ACM*, Vol. 54, No. 7, July, 2011, pp. 88 – 98.
- S, B, Wicker and D. E. Schrader, "Privacy-Aware Design Principles for Information Networks," *Proceedings of the IEEE*, February 2011, pp. 330 - 350.
- Mikhail Lisovich, Deirdre Mulligan, and Stephen B. Wicker, "Inferring Personal Information from Demand-Response Systems," *IEEE Security and Privacy Magazine*; January/February 2010.
- Anna Kacewicz and Stephen B. Wicker, "Redundancy Minimizing Techniques for Robust Transmission in Wireless Networks," *Journal of Communications and Networks*, 11:564-573, 2009.
- H. Inaltekin, M. Chiang, H. V. Poor and S.B. Wicker, "On unbounded path-loss models: Effects of singularity on wireless network performance," *IEEE Journal in Selected Areas in Communications* (Special Issue on Geometry and Random Graphs for the Analysis of and Design of Wireless Networks), vol. 27, no. 7, pp. 1078-1092, Sept 2009.
- H. Inaltekin and S.B. Wicker, "A One-shot Random Access Game for Wireless Networks – Behavior of Nodes at Nash Equilibria" *IEEE/ACM Trans. on Networking*, December 2008.
- H. Inaltekin and S. B. Wicker, "The analysis of Nash equilibria of the one-shot random access game for wireless networks and the behavior of selfish nodes," *IEEE/ACM Trans. on Networking*, vol. 16, no. 5, pp. 1094-1107, Oct 2008.
- S. Pai, M. Meingast, T. Roosta, S. Bermudez, S. Wicker, D. Mulligan, and S. S. Sastry, "Confidentiality in Sensor Networks: Transactional Information," *IEEE Security and Privacy Magazine*; July/August 2008.
- H. Qu and S. B. Wicker, "A Combined Localization and Geographic Routing Algorithm for Rapidly-Deployed Wireless Sensor Networks", *International Journal of Distributed Sensor Networks*, Volume 4, Issue 1 January 2008, pages 44 - 63.
- H. Qu and S. B. Wicker, "Co-Designed Anchor-Free Localization and Location-Based Routing Algorithm for Rapidly-Deployed Wireless Sensor Networks", *Information Fusion*, 2008.

- M. Meingast, S. Pai, S. Wicker, S. S. Sastry, "Privacy in Camera Networks, A Technical Perspective," EECS Department, University of California, Berkeley, *Technical Report UCB/EECS-2007-94*, July 2007.
- X. Zhang, J. Chen, S. B. Wicker, and T. Berger, "Successive Coding in Multiuser Information Theory", *IEEE Transactions on Information Theory*, Volume 53, No. 6, June 2007, pp. 2246 – 2254.
- P. Samar and S. B. Wicker, "Link Dynamics and Protocol Design in a Multi-Hop Mobile Environment," *IEEE Transactions on Mobile Computing*, September 2006.
- X. Zhang, S. B. Wicker, "On the Optimal Distribution of Sensors in a Random Field", *ACM Transactions on Sensor Networks*, March 2006.
- J. Chen, X. Zhang, T. Berger and S. B. Wicker "The Sum-Rate Distortion Function and Optimal Rate Allocation for the Quadratic Gaussian CEO Problem" *IEEE Journal on Selected Areas in Communications: Special Issue on Sensor Networks*, Volume 22, No. 6, August 2004.
- Bhaskar Krishnamachari, Rung-Hung Gau, Stephen B. Wicker, and Zygmunt J. Haas, "Optimal Sequential Paging in Cellular Networks," *ACM/Baltzer Wireless Networks*, Vol 10, No. 2, March 2004.
- Bhaskar Krishnamachari, Stephen Wicker, Ramon Bejar and Cesar Fernandez, "On the Complexity of Distributed Self-Configuration in Wireless Networks," in *Kluwer Journal on Telecommunication Systems*, Special Issue on Wireless Networks and Mobile Computing, Eds. I. Stojmenovic and S. Olariu, Vol. 22, No. 1, January/April 2003.
- B. Krishnamachari, Y. Mourtada, and S. Wicker, "The Energy-Robustness Tradeoff for Real-Time Information Routing in Wireless Sensor Networks," submitted to the *Special Issue of Elsevier Computer Networks on Wireless Sensor Networks*, October 2002.
- Andrea Goldsmith And Stephen B. Wicker, "Design Challenges For Energy-Constrained Ad Hoc Wireless Networks," *IEEE Wireless Communications Magazine*, August, 2002.
- Allen B. MacKenzie and Stephen B. Wicker, "Game Theory and the Design of Self-Configuring, Adaptive Wireless Networks," *IEEE Communications Magazine*, November 2001.
- Buckley, M. E. and Wicker, S. B., "The Design and Performance of a Neural Network for Predicting Decoder Error in Turbo-Coded ARQ Protocols," *IEEE Transactions on Communications*, Volume 48, Number 4, pp. 566 - 576, April 2000.

- Park, J. I., Wicker, S. B., and Owen, H. L., "Trellis-Based Soft Output Adaptive Equalization Techniques for TDMA Cellular Systems," *IEEE Transactions on Vehicular Technology*, pp. 83 – 94, January 2000.
- Wang, X.A., and Wicker, S. B., "The BCJR Trellis and the Design and Implementation of Trellis Decoders for Some BCH Codes," *Applicable Algebra in Engineering, Communication, and Computing*, Volume 9, Number 6, 1999, pp. 521 - 546.
- Buckley, M. E. and Wicker, S. B., "A Neural Network for Predicting Decoder Error in Turbo Decoders," *IEEE Communications Letters*, Volume 3, Number 5, May 1999, pp. 145 - 147.
- Tapp, T., Luna, A., Wang, X.A., and Wicker, S. B., "BCH Soft Decision Decoders for Mobile Data Applications," *IEEE Transactions on Communications*, Volume 47, Number 3, pp. 333 – 337, March 1999.
- Luna, A., Fontaine, F. and Wicker, S. B., "Iterative Maximum Likelihood Trellis Decoding for Block Codes," *IEEE Transactions on Communications*, Volume 47, Number 3, pp. 338 – 342, March 1999.
- Costello, D., Hagenauer, J., Imai, H., and Wicker, S. B., "Applications of Error Control Coding," *IEEE Transactions on Information Theory*, 50th Anniversary Issue, Volume 44, Number 6, pp. 2531 - 2560, October 1998.
- Zaidan, M. Y. and Wicker, S. B., "Trellis Coded Modulation with σ -Tree Codes," *IEEE Transactions on Information Theory*, Volume 43, Number 6, pp. 2005 - 2012, November, 1997.
- Hao, M.-J. and Wicker, S. B., "The Effect of Error Control Coding in Multichannel FSK Coherent Lightwave Communication Systems," *IEEE Journal of Lightwave Technology*, Volume 14, Number 12, pp. 2648 - 2656, December, 1996.
- Rasmussen, L. K., Bartz, M. J., and Wicker, S. B., "A Comparison of Trellis Coded and Reed-Solomon Coded Hybrid-ARQ Protocols over Slowly Fading Rayleigh Channels," *Wireless Personal Communications*, Volume 2, Number 4, pp. 393-413, 1996.
- Wang, X-A, and Wicker, S. B., "Generalized Soft Decision Decoding for Concatenated Systems," *IEEE Transactions on Information Theory*, Volume 42, Number 2, pp. 543-553, March, 1996.
- Wang, X-A, and Wicker, S. B., "The Analog Neural Net Viterbi Decoder," *IEEE Transactions on Communications*, Volume 44, Number 2, February, 1996, pp. 165 - 171.

- Rasmussen, L. and Wicker, S. B., "Trellis Coded, Type-I Hybrid-ARQ Protocols Based on CRC Error-Detecting Codes," *IEEE Transactions on Communications*, Volume 43, Number 10, October, 1995, pp. 2569 - 2575.
- Hao, M.-J. and Wicker, S. B., "Performance Evaluation of FSK and CPFSK Optical Communication Systems: A Stable and Accurate Method," *IEEE Journal of Lightwave Technology*, Volume 13, Number 8, August 1995, pp 1613 - 1623.
- Rasmussen, L. and Wicker, S. B., "A Comparison of Two Code Combining Techniques for Equal Gain, Trellis Coded Diversity Receivers," *IEEE Transactions on Vehicular Technology*, Volume 44, Number 2, May, 1995, pp. 291 - 295.
- Souissi, S. and Wicker, S. B., "A Diversity Combining DS/CDMA System with Convolutional Encoding and Viterbi Decoding," *IEEE Transactions on Vehicular Technology*, Volume 44, Number 2, May, 1995, pp. 304 - 312.
- Wicker, S. B. and Bartz, M., "Type-II Hybrid-ARQ Protocols Using Punctured MDS Codes," *IEEE Transactions on Communications*, Vol. 42, No. 4, pp. 1431-1440, April 1994.
- Rice, M. D. and Wicker S. B., "A Sequential Testing Scheme for Adaptive Error Control on Slowly Varying Channels" *IEEE Transactions on Communications*, Vol. 42, No. 4, pp. 1533-1543, April 1994.
- Harvey, B. A. and Wicker, S. B., "Packet Combining Systems Based on the Viterbi Decoder" *IEEE Transactions on Communications*, Vol. 42, No. 4, pp. 1544-1557, April 1994.
- Rice, M. D. and Wicker, S. B., "Adaptive Error Control for Slowly Varying Channels," *IEEE Transactions on Communications*, Vol. 42, No. 3, pp. 917-926, March 1994.
- Wicker, S. B. and Bartz, M., "The Design and Implementation of Type-I and Type-II Hybrid-ARQ Protocols Based on First-Order Reed-Muller Codes," *IEEE Transactions on Communications*, Vol. 42, No. 3, pp. 979-987, March 1994.
- Rasmussen, L. and Wicker, S. B., "Trellis Coded Hybrid-ARQ Protocols over AWGN and Slowly Fading Rician Channels," *IEEE Transactions on Information Theory*, Volume 40, Number 2, March 1994, pp. 418-428.
- Rasmussen, L. and Wicker, S. B., "A Comparison of Two Retransmission Request Mechanisms for Trellis Coded Modulation," *Electronics Letters*, Volume 29, Number 25, pp. 2162 - 2163, December 9, 1993.

- Rice, M. D. and Wicker, S. B., "Modified Majority-Logic Decoding of Cyclic Codes in Hybrid-ARQ Systems, *IEEE Transactions on Communications*, Volume 40, Number 9, pp. 1413 - 1417, September, 1992.
- Alabbadi, M. and Wicker, S. B., "Cryptanalysis of the Harn-Wang modification of the Xinmei signature scheme," *Electronics Letters*, Volume 28, Number 18, pp. 1756 - 1757, August 27, 1992.
- Wicker, S. B., "Reed-Solomon Error Control Coding for Data Transmission over Rayleigh Fading Channels with Feedback," *IEEE Transactions on Vehicular Technology*, Volume 41, Number 2, pp. 124 - 133, May 1992.
- Alabbadi, M. and Wicker, S. B., "The Security of Xinmei's Digital Signature Scheme" *Electronics Letters*, Volume 28, Number 9, pp. 890 - 891, April 1992.
- Wicker, S. B., "Adaptive Rate Error Control Through the Use of Diversity Combining and Majority-Logic Decoding in a Hybrid-ARQ Protocol," *IEEE Transactions on Communications*, Volume 39, Number 3, pp. 380 - 386, March 1991.
- Harvey, B and Wicker, S. B., "Error-Trapping Viterbi Decoding for Type-I Hybrid-ARQ Protocols," *Canadian Journal of Electrical and Computer Engineering*, Volume 16, Number 1, pp. 5 - 12, January 1991.
- Wicker, S. B., "Muting Algorithms Based on the Use of Side Information Generated by Error Control Systems," *IEEE Transactions on Vehicular Technology*, Volume 39, No 2, pp. 171 - 176, May 1990.
- Wicker, S. B., "Modified Majority-Logic Decoders for Use in Convolutionally Encoded Hybrid-ARQ Systems," *IEEE Transactions on Communications*, Volume 38, No. 3, pp. 263 - 266, March 1990.
- Wicker, S. B., "High Reliability Data Transfer over the Land Mobile Radio Channel," *IEEE Transactions on Vehicular Technology*, Volume 39, No 1, pp. 48 - 55, February 1990.

Refereed Conference Papers

- Stephen B. Wicker and Robert J. Thomas, "A Privacy-Aware Architecture For Demand Response Systems" in Proc. of the 44 Hawaiian Conference on System Science (HICSS-44), Kauai, Hawaii, January 10, 2011. Nominee for best paper award.
- Anna Kacewicz and Stephen B. Wicker, "Application of Reed-Muller Codes for Localization of Malicious Nodes, " in Proc. *IEEE International Conference on Communications (ICC'10)*, Cape Town, South Africa, May 23–27, 2010.

- Sergio Bermudez and Stephen B. Wicker, "Partial connectivity of multi-hop two-dimensional finite hybrid wireless networks," in *Proc. IEEE International Conference on Communications (ICC'10)*, Cape Town, South Africa, May 23–27, 2010.
- Bennett C., Wicker S. B., "Decreased Time Delay and Security Enhancement Recommendations for AMI Smart Meter Networks." *2010 PES Innovative Smart Grid Technologies Conference.*, Gaithersburg, Maryland, January 19th–21st, 2010
- Anna Kacewicz and Stephen B. Wicker, "Secrecy and Reliability using Raptor Codes in the Presence of a Wiretapper in a Multiple Path Wireless Network", *Proceedings of International Conference on Wireless Communications and Signal Processing*, Nanjing, China, Nov 13, 2009 - Nov 15, 2009.
- Bennett C., Wicker S. B., Cardell J., "A Review of the Communication Protocols for Smart Grid AMI Systems." *Fifth Annual Carnegie Mellon Conference on the Electricity Industry: Smart Grids 2009.*, Pittsburgh, Pennsylvania, 2009
- S. Bermudez and S. B. Wicker, "Connectivity analysis under shadowing in wireless networks with data correlation topology control," in *Proc. IEEE International Symposium on Wireless Pervasive Computing (ISWPC'09)*, Melbourne, Australia, Feb. 11–13, 2009.
- S. Bermudez and S. B. Wicker, "Connectivity of finite wireless networks with random communication range nodes," in *Proc. IEEE International Conference on Communications (ICC'09)*, Dresden, Germany, Jun. 14–18, 2009.
- Anna Kacewicz, Stephen B. Wicker, "Optimizing redundancy using MDS codes and dynamic symbol allocation in mobile ad hoc networks," *Proceedings of the Conference on Information Science and Systems (CISS)*, 1093-1098, 2008.
- S. A. Bermudez and S. B. Wicker, "On the connectivity of finite wireless networks with multiple base stations," in *Proc. 17th International Conference on Computer Communications and Networks (ICCCN'08)*, Saint Thomas, U.S. Virgin Islands, Aug. 3–7, 2008.
- H. Inaltekin, M. Chiang, H. V. Poor and S. B. Wicker, "On the asymptotic behavior of selfish transmitters sharing a common wireless communication channel," *Proceedings of the 2008 IEEE International Symposium on Information Theory*, Toronto, Canada, July 2008.
- S. Bermudez and S. B. Wicker, "Taking Advantage of Data Correlation to Control the Topology of Wireless Sensor Networks," *15th International Conference on Telecommunications* 16-19 June, 2008, St. Petersburg, Russia

- M. Lisovich, S. Bermudez, and S. B. Wicker, "Reconfiguration in Heterogeneous Mobile Wireless Sensor Networks" *Proceedings of the International Symposium on Wireless Pervasive Computing 2008*, 7-9 May, 2008, Santorini, Greece.
- M. Lisovich and S. B. Wicker, "Privacy Concerns in Upcoming Residential and Commercial Demand-Response Systems," *Clemson Power Systems Conference 2008*, March 2008
- C. Bennett, J. Cardell, S. Wicker. "Residential Demand Response Wireless Sensor Network". *Proceedings of the Fourth Annual Carnegie Mellon Conference on the Electricity Industry*, Carnegie Mellon University Department of Electrical Engineering, 5, March, 2008.
- S. Jiang, Y. Cao, S. Iyengar, P. Kuryloski, R. Jafari, Y. Xue, R. Bajcsy, S. Wicker. "CareNet: An Integrated Wireless Sensor Networking Environment for Remote Healthcare," *Proceedings of the 3rd International Conference on Body Area Networks (BODYNETS 2008)*, March 13-15, 2008.
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- H. Inaltekin, C. Tavoularis and S. B. Wicker, "Event detection time calculations for mobile sensor networks using first passage processes," *IEEE Global Communications Conference*, Washington, DC, Nov 2007.
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- Wicker, S. B., "An Adaptive Type-I Hybrid-ARQ Technique Using the Viterbi Decoding Algorithm," *Proceedings of the 1988 IEEE Military Communications Conference*, San Diego, California, pp. 15.5.1 - 15.5.5, October 23, 1988.
- Wicker, S. B., "Cyclic Codes and Rational Curves," 1988 International Symposium on Information Theory, Kobe, Japan, Paper Number MC7-2, June 19, 1988.
- Wicker, S. B. and Welch, L. R., "The Geometry of MDS Codes," *Proceedings of the 1987 IEEE Pacific Rim Conference for Communications, Computers, and Signal Processing*, Victoria, British Columbia, pp. 89 - 92, June 4, 1987.

Invited Conference Papers

- Wicker, S. B., "Markov Chains, Error Control, and the Advent of Turbo Coding," IMA Workshop on Codes, Systems and Graphical Models, Minneapolis, MN, August 2-13, 1999.
- Buckley, M. E. and Wicker, S. B., " Optimization, Neural Networks, and Turbo Decoding," *Proceedings of the Fifth International Symposium on Communication Theory and Applications*, Ambleside, U. K., July 12 - 16, 1999.
- Kim, S. and Wicker, S. B., "A Connection Between the Baum-Welch Algorithm and Turbo Decoding," *Proceedings of the Information Theory Workshop*, Killarney, Ireland, June 22-26, 1998.
- Wicker, S. B., "Error Control in Space Applications," 1995 Central Section Meeting of the American Mathematical Society, Chicago, Illinois, March 24 - 25, 1995.
- Wicker, S. B., "Error Control Techniques for Voice and Data Communications over Cellular Mobile Channels," *Proceedings of the Allerton Conference on*

Communication, Control, and Computing, pp. 444 - 453, September 28 – 30, 1994.

- Wicker, S. B. and Alabbadi, M., “Susceptibility of Digital Signature Schemes Based on Error-Correcting Codes to Universal Forgery,” Workshop on Information Protection, Moscow, Russia, December 6 - 9, 1993.
- Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, *Proceedings of the International Conference on Selected Topics in Wireless Communication*, pp. 76 - 79, Vancouver, British Columbia, Canada, June 25 - 26, 1992.
- Wicker, S. B., “Type-II Hybrid-ARQ Protocols Using Punctured Reed-Solomon Codes,” *Proceedings of the 1991 IEEE Military Communications Conference*, McLean, Virginia, pp. 52.2.1 - 52.2.6, November 4 - 6, 1991.
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Invited Seminar Presentations

- Vanderbilt University, March 2009
- Carnegie Mellon University, April 2008
- Indian Institute of Technology, Kanpur, January 2006.
- Indian Institute of Technology, New Delhi, January 2006.
- Chalmers University, Sweden, September 2004.
- Queens University, Canada, May 2004.
- McMaster University, Canada, February 2004.
- University of the West Indies, Barbados, December, 2002.
- Dartmouth College, October, 2002.
- University of the West Indies, Barbados, December, 2001.
- Wicker, S. B., "Evolutionary Game Theory and Self-Configuring Wireless Networks," UCLA, Los Angeles, CA, November 2, 2000.
- Wicker, S. B., "Optimization, Neural Networks, and Turbo Decoding," University of Ulm, Germany, July 23, 1999.
- Wicker, S. B., "Optimization, Neural Networks, and Turbo Decoding," Technical University of Munich, Germany, June 16, 1999.
- Wicker, S. B., "The Baum-Welch Algorithm and Turbo Decoding," Technical University of Denmark, Copenhagen, March 20, 1998.
- Wicker, S. B., “Maximum Likelihood Sequential Soft Decision Decoding for Block Codes,” Jet Propulsion Laboratory/CalTech, Pasadena, California, December 30, 1997.
- Wicker, S. B., “Hard and Soft Decision Decoders for the FLEX Mobile Messaging Protocol,” Motorola Paging Division, Fort Worth, Texas, November 24, 1997.
- Wicker, S. B., “Soft Decision and Turbo Error Control for Wireless

- Multimedia Networks,” Motorola Paging Division, Fort Worth, Texas, November 24, 1997.
- Wicker, S. B., “Turbo Codes, Bayesian Networks, and the Future of Telecommunications,” SUNY Buffalo, Department of Electrical Engineering, May 23, 1997.
 - Wicker, S. B., “Soft Decision Trellis Decoders for Block Codes: Thoughts on the State of the Art,” Lancaster University, Lancaster, England , January 14, 1997.
 - Wicker, S. B., “Introduction to the Cornell Wireless Multimedia Laboratory,” Distinguished Seminar Series, Queen’s University, November 13, 1996.
 - Wicker, S. B., “Introduction to the Cornell Wireless Multimedia Laboratory,” GTR Corporate Research and Development, Schenectady, New York, September 26, 1996.
 - Wicker, S. B., “Enabling Technologies for Wireless Multimedia Systems,” Strathclyde University, Glasgow, Scotland, August 15, 1996.
 - Wicker, S. B., “Wireless Technologies and the Evolution Toward the Universal Mobile Telecommunication System,” National Technical University of Athens, Athens, Greece, September 4, 1995.
 - Wicker, S. B., “Wireless Technologies and the Evolution Toward the Universal Mobile Telecommunication System,” University of Athens, Department of Telematics, Athens, Greece, September 5, 1995.
 - Wicker, S. B., “Wireless Technologies and the Evolution Toward the Universal Mobile Telecommunication System,” Telecommunications Systems Institute, Chania, Crete, September 7, 1995.
 - Wicker, S. B., “Error Control Coding for Mobile Applications,” Jet Propulsion Laboratory, Pasadena, California, October 18, 1994.
 - Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, Lancaster University, Lancaster, England, June 21, 1994.
 - Wicker, S. B., “Intelligent Systems for Error Control and Security”, Defense Science and Technology Organization, Adelaide, South Australia, May 2, 1994.
 - Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, Simon Fraser University, British Columbia, Canada, June 24, 1992.
 - Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, University of British Columbia, Vancouver, British Columbia, Canada, June 23, 1992.
 - Wicker, S. B., “Adaptive Error Control Using Convolutional and Trellis Codes”, University of Victoria, Victoria, British Columbia, Canada, June 22, 1992.
 - Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, University of Victoria, Victoria, British Columbia, Canada, June 19, 1992.
 - Wicker, S. B., “Reed-Solomon Error Control Systems for Bidirectional Fading Channels”, Institute of Communications Technology, German Aerospace Research Establishment, Oberpfaffenhofen, Germany, February 4 - 6, 1992.

- Wicker, S. B., "The Application of Classical Algebraic Geometry to Error Correcting Codes," Department of Mathematics, University of Puerto Rico, Rio Piedras, Puerto Rico, December 9 - 15, 1988.

Patents and Patent Applications

- Ober, C, O'Rourke, T, Spencer, M., Turner, J., Wicker, S., "Flexible Substrate Sensor System For Environmental And Infrastructure Monitoring", PCT WO 2008/140490, 20 November 2008, assigned to Cornell University.
- Fontaine, F. and Wicker, S., "Method and Apparatus for Turbo Decoding Block Codes", U.S. patent 7,243,288, June 10, 2007, assigned to Motorola.
- Wicker, S. and Fine, T., "Sensor-Assisted ALOHA Multiple Access", U.S. patent 6,404,750, June 11, 2002, assigned to Cornell University.
- Wang, X.-A. and Wicker, S. B., "The Analog Neural Net Viterbi Decoder," U.S. patent 5,548,684, August 20, 1996, assigned to Georgia Institute of Technology.
- Tapp, T., Wang, X.-A. and Wicker, S. B., "The Soft Decision (31,21) BCH Decoder," patent pending, assigned to MTEL/SkyTel.

Other Publications

- Alabbadi, M. and Wicker, S. B., "Integration of Error Correction, Encryption, and Signature Using Linear Error-Correcting Block Codes," *IEEE Information Theory Newsletter*, Volume 43, Number 4, p. 10, December 1993.
- Rasmussen, L. K. and Wicker, S. B., "Trellis Coded Adaptive Rate Hybrid-ARQ Protocols over AWGN and Slowly Fading Rician Channels," *IEEE Information Theory Newsletter*, Volume 43, Number 4, p. 10, December 1993.
- Harvey, B. A. and Wicker, S. B., "Adaptive Rate Convolutional Coding Using the Viterbi Decoder," *IEEE Information Theory Newsletter*, Volume 41, Number 3, p. 15, September 1991.
- Rice, M. D. and Wicker, S. B., "Adaptive Error Control over Slowly Varying Channels," *IEEE Information Theory Newsletter*, Volume 41, Number 2, p. 20, June 1991.

Funded Research Projects¹

- TC: Privacy-Aware Design Strategies For Mobile Communications And Computing,” National Science Foundation, \$500,000, June 15, 2010 – June 14, 2013.
- “STC: Team for Research in Ubiquitous Secure Technology (TRUST),” National Science Foundation, \$20,000,000, September 15, 2005 - September 15, 2015.
- “Nets-NOSS: NETS - NOSS: Ultra Low-Power, Self-Configuring, Wireless Sensor Networks,” National Science Foundation, \$2,000,000, September 15, 2004 - September 15, 2009.
- “ITR: Self-Configuring Sensor Networks for Disaster Mitigation and Recovery,” National Science Foundation, \$2,500,000, September 15, 2003 -- September 15, 2009.
- “SENSORS: The Reachback Channel in Wireless Sensor Networks,” (PI: Sergio Sevetto), National Science Foundation. September 15, 2003 -- September 15, 2006.
- “The Ad Hoc Classroom: Integrating Emerging Wireless Communications and Networking Technologies into Mainstream Computer Science and Electrical Engineering Curricula,” National Science Foundation-CRCD, (PI: Gun Sirer), \$410,000, 2002 – 2005.
- “The Ad Hoc Classroom: Integrating Emerging Wireless Communications and Networking Technologies into Mainstream Computer Science and Electrical Engineering Curricula,” Microsoft, (PI: Gun Sirer), \$75,000, 2002 – 2005.
- “The Ad Hoc Classroom: Integrating Emerging Wireless Communications and Networking Technologies into Mainstream Computer Science and Electrical Engineering Curricula,” Hewlett Packard, (PI: Gun Sirer), \$20,000, 2002 – 2005.
- “Self-Configuring Wireless Sensor Networks,” DARPA ITO, \$900,000, June 1, 2000 - May 31, 2003.
- “Soft Decision Decoders for Wireless Systems,” Motorola, \$84,000, September 15, 1998 – September 15, 2000.
- “Sensor-Assisted Wireless Multimedia Systems,” National Science Foundation Grant NCR-9725251, \$862,465, September 15, 1997 - August 31, 2000 (with Terrence Fine and Joseph Halpern).

¹ Principal Investigator is Stephen Wicker unless otherwise noted.

- “Coded Diversity Combining and Channel Estimation for Wireless Data Communications,” National Science Foundation Grant NCR-9706592, \$ 246,636, September 15, 1997 - August 31, 2000 (with Zygmunt Haas).
- AT&T/Lucent Technologies Foundation, Special Purpose Grant, \$15,000, November 20, 1996.
- “Adaptive Code Division Multiple Access Systems,” National Science Foundation Grant Number Grant NCR-9505887, \$ 236,855, September 15, 1995 - August 31, 1998
- “Data Transport on Cellular Telephone Systems,” Mobile Telecommunication Technologies International, \$110,000, July 1, 1995 - June 30, 1996.
- “European Data Transfer Protocols,” Mobile Telecommunication Technologies International, \$92,000, July 1, 1994 - June 30, 1995.
- “Soft Decision Decoding For Block Codes Using Artificial Neural Networks,” National Science Foundation Grant Number NCR-9216686, \$140,000, September 15, 1993 - March 14, 1996.
- “Adaptive Bandwidth-Efficient Coding for Nonstationary Channels,” National Science Foundation Grant NCR-9016276, \$102,000, September 15, 1991 - March 14, 1994.
- “Cellular Mobile Telephony Laboratory,” Mitsubishi Consumer Electronics, \$500,000 (Equipment), May 29, 1991.
- “Adaptive Coding on Nonstationary Communication Channels with Feedback,” National Science Foundation Grant NCR-9009877, \$85,000, September 15, 1990 - September 14, 1993.
- “Young Faculty Grant,” General Electric, \$10,000, July 15, 1989 - July 14, 1990.
- “Cellular Radio Diversity Simulation Study,” Bell South Mobility, Coprincipal Investigator: Gordon L. Stuber, \$60,000, March 25, 1989 - June 25, 1989.
- “An Investigation of Message Handling in Post 2000 Era,” U. S. Army Signal Center, Fort Gordon, Coprincipal Investigator: Douglas W. Browning, \$137,161, January 10, 1989 - December 31, 1989.
- “Cellular Radio Simulation and Coding Study,” Bell South Mobility, \$35,000, December 15, 1988 - March 15, 1989.
- “Cellular Radio Spectrum Study,” Bell South Mobility, \$30,000, September

25, 1988 - December 15, 1988.

- “The Algebraic Foundations of Digital Communication,” AT&T Foundation, \$25,000, July 7, 1988 - July 6, 1989.
- “Cellular Radio Spectrum Study,” Bell South Mobility, \$45,000, June 15, 1988 - September 15, 1988.
- “Cellular Radio Spectrum Study,” Bell South Mobility, \$40,000, March 15, 1988 - June 15, 1988.
- “Communication System Simulation Software Package,” Space and Communications Group, Hughes Aircraft Company, \$200,000 (software), February 1, 1988.

Service

Institute of Electrical and Electronic Engineers (IEEE)

- Elected to Board of Governors, IEEE Information Theory Society, 1996 – 1998, re-elected for 1999 - 2001.
- Information Theory Society representative to IEEE Committee on New Technology Directions

Defense Advanced Research Projects Agency (DARPA)

- Member, Information Science and Technology Study Group, 1999 – 2002.

Journals

- Editor, *ACM Transactions on Sensor Networks*, 2004 - present.
- Editor, Special Issue on Ad Hoc Networks, Volume 2, *IEEE Journal on Special Areas in Communications*, 2005.
- Editor, Special Issue on Sensor Networking, *IEEE Journal on Special Areas in Communications*, 2004.
- Editor, Special Issue on Ad Hoc Networks, *IEEE Journal on Special Areas in Communications*, 2004.
- Editor, Special Issue on Energy-Aware Ad Hoc Wireless Networks, *IEEE Wireless Communications*, August 2002.
- Editor for Coding Theory and Techniques, *IEEE Transactions on Communications*, March, 1995 - March 2001.

- Reviewer for numerous journals, conferences, national and international funding agencies, and textbook publishers.

Conference Organization

- Chair, Technical Program Committee, Fifth International Symposium on Information Processing in Sensor Networks (IPSN 2006), Nashville, Tennessee.
- Member, Technical Program Committee, International Conference on Distributed Computing in Sensor Networks (DCOSS '06).
- Member, Technical Program Committee, Fourth International Symposium on Information Processing in Sensor Networks (IPSN 2005), Berkeley, California.
- Member, Technical Program Committee, Conference on Innovations and Commercial Applications of Distributed Sensor Networks, Bethesda, MD, October 18 –19, 2005.
- Member, Technical Program Committee, Second IEEE International Conference on Sensor and Ad Hoc Communications and Networks (SECON 2005).
- Member, Organizing Committee, First IEEE Conference on Sensor Networks: Applications, Protocols and Technology (SNAPT 2004).
- Member, Technical Program Committee, First Annual IEEE Communications Society Conference on Sensor and Ad Hoc Communications and Networks, Santa Clara CA, October 2004.
- Member, Technical Program Committee, Third International Symposium on Information Processing in Sensor Networks (IPSN '04), Berkeley, California, USA April 26-27, 2004
- Member, Organizing Committee, 7th International Symposium on Communication Theory and Applications, Ambleside, England, 2003
- Member, Technical Program Committee, First IEEE International Workshop on Sensor Network Protocols and Applications, May 11, 2003, Anchorage, AK.
- Chair, IEEE Information Theory Society Symposia and Workshops Committee, 2000 - 2001.

- Organizing Committee, 6th International Symposium on Communication Theory and Applications, Ambleside, England, 2001
- Member, International Advisory Committee, 2000 International Symposium on Information Theory and its Applications, Honolulu, November 5 - 8, 2000.
- Technical Program Committee, 1999 IEEE Wireless Communications & Networking Conference (WCNC), New Orleans, LA, Sep. 22 - 27, 1999.
- Organizing Committee, 5th International Symposium on Communication Theory and Applications, Ambleside, England, 10-14 July, 1999
- Technical Program Committee, International Symposium on Information Theory and Applications, Mexico City, Mexico, October 14 - 16, 1998.
- Chaired "ARQ and Wireless Error Control" session at the 1998 International Symposium on Information Theory, Boston, MA, August 16-21, 1998.
- Organizing Committee, 4th International Symposium on Communication Theory and Applications, Ambleside, England, 11 - 15 July, 1997
- Technical Program Committee, International Symposium on Information Theory and Applications, Victoria, British Columbia, September 17-21, 1996.
- Organized and chaired "Gus Solomon Memorial Session" at IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing, Victoria, British Columbia, August 20-22, 1997.
- Chaired "Mobile Communications" session at the International Symposium on Information Theory and Applications, Victoria, British Columbia, September 17-21, 1996.
- Chaired "Advanced Subsystems in Wireless Multimedia Networks" session at the Japan-Canada International Workshop on Multimedia Wireless Communications and Computing, Victoria, British Columbia, September 17, 1996.
- Technical Program Committee, IEEE Vehicular Technology Conference, Atlanta, Georgia, April 28 - May 1, 1996.
- Chaired "Communication Networks" session at the 3rd International Symposium on Communication Theory and Applications, Ambleside, England, 10 - 14 July, 1995.
- Chaired "Decoding Problems" session at Seventh Joint Swedish-Russian International Workshop on Information Theory, St. Petersburg, Russia, June 17 - 22, 1995.

- General Chairman, Wireless Security Workshop, Metz, France, February 10 - 11, 1995.
- U. S. Representative, International Advisory Board, IEEE International Symposium on Information Theory, Whistler, British Columbia, Canada, September 17 - 22, 1995.
- Chaired “Coding and Modulation” session at the 3rd UK/Australian International Symposium on DSP for Communication Systems, Warwick, UK, 12 - 14 December, 1994.
- Chaired “Error Control Techniques” session at 1990 IEEE International Conference on Communications, Atlanta, Georgia, April 16 - 19, 1990.

University Committees, Cornell University

- Chair, General Recruiting Committee, School of Electrical and Computer Engineering, (2009 – 2012)
- Member, University Local Advisory Committee (appointed by Faculty Senate) (2008 – 2011)
- Member, Faculty Advisory Board for Information Technology, (appointed by Faculty Senate) (2004 - 2007)
- Member, University Intellectual Property Advisory Committee, (appointed by VP for Research) (2003 - present)
- Chairman, College of Engineering Curriculum Governing Board (appointed) (2001 - 2002)
- Chairman, Electrical Engineering Curriculum and Standards Committee (elected) (2001 -2002)
- Chairman, Electrical Engineering Policy Committee (elected) (1998-2000)
- Chairman, Electrical Engineering PeopleSoft Lab Oversight Committee (1997-2003)
- Member, College of Engineering Dean Search Committee (2000-2002)
- Member, College of Engineering Teaching Award Committee (1999-2000)
- Member, Applied Mathematics Director Search Committee (1999)
- Member, Associate Dean Search Committee, 1998.
- Member, Electrical Engineering Policy Committee (elected) (1997-2000)
- Member, Digital Systems Search Committee (1997-1998)
- Member, College Faculty Advisory Committee for Associate Dean for Professional Development (1998)
- Chairman, Several Department and College Ad Hoc Tenure and Promotion Committees.

Institute Committees, Georgia Institute of Technology

- Institute Statutory Advisory Committee (elected) (1995 - 1997)
- Institute Public Relations Committee (elected) (1990 - 1992)
- ECE Graduate Curriculum Committee (1995 - 1997)

- ECE Undergraduate Curriculum Committee (1994 - 1995)
- ECE Computer Resources Committee (1988 - 1991)

Honors and Awards

- Fellow of the IEEE, 2011
- U.S. Air Force Scientific Advisory Board, 2010 - 2012
- Cornell University College of Engineering Teaching Award, 2009
- Cornell School of ECE Teaching Award, 2000
- Cornell University College of Engineering Teaching Award, 1998
- SAIC Best Paper Award, 1994, for “An Artificial Neural Net Viterbi Decoder” (with Xiao-an Wang)
- Senior Member, Institute of Electrical and Electronic Engineers.
Elected January, 1993
- Visiting Fellow, British Columbia Advanced Systems Institute.
Awarded January 1992.
- Sigma Xi, 1991 - present
- Tau Beta Pi, 1980 - present
- Eta Kappa Nu, 1980 - present
- Omicron Delta Kappa, 1980 – present