Research Interests

Advanced error-correcting coding and digital signal processing techniques with applications in wireless communications and storage systems. Radio-frequency identification (RFID) systems. Cognitive radio.

Education

- PhD.EE (1992) University of Hawaii. Thesis: Multilevel Error Correcting Codes Advisor: Shu Lin
- MSEE (1987) National University of Mexico (UNAM). Thesis:

- Professor (August 2012-present) Electrical Engineering, San Jose State University
- Associate Professor (August 2002-August 2012) Electrical Engineering, San Jose State University
- Research Associate, Courtesy Appointment (2005 - 2006) University of California at Santa Cruz
- Researcher (August 1999-June 2002)   Advanced Telecommunication Laboratory, Sony CSL, Tokyo, Japan
- Staff Member (1997-1999) LSI LOGIC Corporation, Milpitas, CA, U.S.A.
- Research Associate (1995-1997) Institute of Industrial Science, University of Tokyo, Tokyo, Japan
- Research Fellow (1994-1995) Nara Institute of Science and Technology, Nara, Japan
- Endowed Chair, Intelligent Information Processing Systems (1993-1994) Osaka University, Japan
- Assistant Professor (1992-1993) Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

Membership

- Iberium Communi

- Reviewer, IEEE Trans. on Communications, 2000-2015
- Reviewer, IEEE Communications Magazine, 2012-2014
- Reviewer, IEEE Trans. on Vehicular Technology, 2004-2010
- Reviewer, IEICE Trans. on Communications, 2000-2010 and IEEE Comm. Letters, 2002-2008
- Reviewer, European Transactions on Telecommunications, 2007
- Reviewer, IEEE Trans. on Info. Theory, 1998-2003, 2004 and 2006
- Reviewer, EURASIP J. Wireless Communications and Networking, 2003-2004
- NSF panelist, May 2003

Honors and Awards

- International Advisory Committee Co-chair of ISITA 2020
- Fulbright U.S. Scholar in Mongolia, February – June 2017
- DARPA Spectrum Challenge finalist (Team SJSU Spartans), March 2013
- Visiting Fellow, Japanese Society for the Promotion of Science, Osaka University, January 2009
- Best paper award, IEEE WPMC 2001 conference, 2001
- Research Fellow, Japanese Society for the Promotion of Science, Nara Institute of Science and Technology, 1995
- Member, Eta Kappa Nu, 1992
- Chairman, IEEE University of Hawaii Student Branch, 1991
- E.E. Black Fellowship, University of Hawaii, 1989
- Gabino Barreda Medal to Academic Merit, National Autonomous University of Mexico, 1988
- Dean's List (Honorific mention), Faculty of Engineering, National Autonomous University of Mexico, 1985

Publications

Books

The Art of Error Correcting Coding, second edition, John Wiley & Sons, 2006. Translated to Chinese and Russian.

Journals

1. Multi-Value Sequence Generated over Sub Extension Field and Its Properties, (coauthors: M.A. Ali, Y. Kodera, Yuta, T. Kusaka, S. Ueharaand Y. Nogami), Journal of Information Security, vol. 10, no. 3, pp. 130-154, July 2019.

2. Multi-valued Sequences Generated by Power Residue Symbols over Odd Characteristic Fields, (coauthors: B. Nasima, Y. Nogami and S, Uehara), IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science, Vol.E100-A, No.4, pp. 922-929, Apr. 2017.

3. On the Error Performance of Coding and Equalization in Low-Complexity Ultra-Wideband Communication Systems, Journal of Communication Software and Systems, vol. 2, no. 3, pp. 245-251, Nov. 2006.

4. A Multi-Value Sequence Generated by Power Residue Symbol and Trace Function over Odd Characteristic Field, (coauthors: Y. Nogami, S. Uehara, K. Tsuchiya, N. Begum and H. Ino), IEICE Trans. on Fundamentals of Electronics, Communications and Computer Sciences, vol. E99.A, no. 12, pp. 2226-2237, December 2016.

5. Method of Non-Data-Aided Carrier Recovery with Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science, vol. E87-A, no. 3, pp. 656-665, March 2004.

6. Statistical Mechanics of Broadcast Channels Using Low Density Parity Check Codes, (coauthors: K. Nakamura, D. Saad and Y. Kabashima): cond-mat/0204622, unpublished (2002), Physical Review E, March 2003.

7. A Software Radio Receiver with Direct Downconversion and Its Digital Signal Processing, (coauthors: S. Haruyama, M.Abe, N. Sasho, L. Michael and R. Kohno), IEICE Trans. Communications, Special Issue on Software Defined Radio Technology and Its Applications, vol. E85-B, no. 12, pp. 2741-2749, December 2002.

8. A Software-Defined Radio Platform with Direct Conversion: SOPRANO, (coauthors: S. Haruyama and Y. Sanada), in Kluwer International Journal on Wireless Personal Communications, vol. 23, no.1, pp. 67-76, October 2002.

9. A Two-Stage Decoder for Pragmatic Trellis-Coded M-PSK Modulation Using a Symbol Transformation, (coauthor: A. Mogre), IEEE Trans. Comm., vol. 49, no. 9, pp. 1501-1505, September 2001.

10. Tradeoffs Between Error Performance and Decoding Complexity in Multilevel 8-PSK Codes and Multistage Decoding with UEP Capabilities, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science, Vol.E83-A, No.8, pp.1704-1712, August 2000.

11. Multilevel Coded Modulation for Unequal Error Protection and Multistage Decoding - Part II: Asymmetric Constellations, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), IEEE Trans. Comm., vol. 48, no. 5, pp. 774-786, May 2000.

12. Multilevel Coded Modulation for Unequal Error Protection and Multistage Decoding - Part I: Symmetric Constellations, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), IEEE Trans. Comm., vol. 48, no. 2, pp. 204-213, February 2000.

13. Constructions of Generalized Concatenated Codes And Their Trellis-Based Decoding Complexity, (coauthors: T. Fujiwara, T. Kasami, and S. Lin), IEEE Transactions on Information Theory, vol. 45, no. 2, pp. 725-731, March 1999.

14. Coded Modulation for Satelli-2 (i)-2 (on)4 (r)3. Fo(pl)-2 (e).nsactions on1-2 (on)4 (rT (or)-1 (m(n)-10CID

23. A Suboptimal Receiver with Turbo Block Coding for Ultra-Wideband Communications, (coauthors: T. Becker and S. Aquino), Proc. of IEEE Wireless Comm 2005, pp. 678-683, Communication Theory Symposium, Kaanapali Beach, Maui, Hawaii, June 13-15, 2005.

24. Error Performance of Two-Tap LMS Equalization in an OFDM-UWB System, (coauthors: B. Mau and L. Wong), Proc. of 2005 Global Mobile Congress (GMC'05), Chongqing, China, Oct. 10-12, 2005.

25. Modulation Identification and Carrier Recovery System for Adaptive Modulation in Satellite Communications, (coauthors: K. Umebayashi and R. Kohno), Proc. of IEEE VTC Spring 2005 conference, May 30 - June 1, 2005, Stockholm, Sweden.

26. Asymmetric Modulation for Cognitive Radio and Intelligent Environments, (coauthor: E. Kreb), Proc. of the 2004 SDR Forum Technical Conference (SDR'04), Phoenix, Arizona, Nov. 15-18, 2004.

27. Evaluation of a Multimode PLL using Modulation Identification for the ISDB-S Standard, (coauthors: K. Umebayashi and R. Kohno), Proc. of the 2004 SDR Forum Technical Conference (SDR'04), Phoenix, Arizona, Nov. 15-18, 2004.

28. On Channel Capacity, Constellation Labeling and Demapping for BICM with 64-QAM Modulation, (coauthor: T. Tsai), Proc. of the 2004 International Symposium on Information Theory and its Aplications (ISITA 2004), Parma, Italy, Oct. 10-13, 2004.

29. On Channel Capacity, Constellation Labeling and Demapping for BICM with 64-QAM Modulation, (coauthor: T. Tsai), Proc. of the 2004 International Symposium on Information Theory and its Applications (ISITA 2004), Parma, Italy, Oct. 10-13, 2004.

30. On Channel Capacity, Constellation Labeling and Demapping for BICM using a 32--ary Constellation, (coauthor: T. Tsai), 7th International Symposium on Wireless Personal Multimedia Communications (WPMC 2004), Abano Terme, Italy, Sept. 12-15, 2004.

31. Feedforward Carrier and Symbol Timing Recovery and Phase-Invariant Signaling for Softwno.T4erhebpiun)a 1 Tn-5 (w)-1 (a5P)-8 (h)-4 t-2 (onso)1 (s)-1 (a)4 (i)-2 ())3 (,)]TJ

Multimedia Communications (WPMC 2002), pp. 432-434, Honolulu, Hawaii, Oct. 27-30, 2002.

37. On the Phase-Lock Detector of a Multimode PLL for Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), Proc. 2002 International Symposium on Information Theory and its Applications (ISITA 2002), pp. 595-598, Xian, China, October 7-11, 2002.

38. Look-up Table Based Fast Erasure Correction and Conditional Access Techniques for Streaming Media, (coauthor: M.J. Mihaljevi'c), Sony ATL Technical Report, March 2002. Patent filed.

(t)-,2 - vTT1 o39.<(An)2e(Wione)-4och (k D)2 (e)4fne4 (l)-2 (R-10 (I)2 (M)-1 (odul)-2 1P)-2 (a)63tB 24 1 (63)rtB 80.506 0 rs4

50. Variable-Rate Coding Using Extended Cyclic Codes, (coauthor: F. Swarts), Proc. 2000 International Symposium on Information Theory and Its Applications (ISITA 2000), pp. 774-777, Honolulu, Hawaii, November 5-8, 2000.

51. Universal Platform for Software Defined Radio, (coauthors: R. Kohno, M. Abe, N. Sasho, S. Haruyama, E. Sousa, F. Swarts, P. Van Rooyen, Y. Sanada, L. Michael, H. Amir-Alikhani and V. Brankovish), Proc. of the 2000 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS 2000), pp. 26-31, Honolulu, Hawaii, Nov. 5-8, 2000.

52. Architectural Issues of Soft-Decision Iterative Decoders for Binary Cyclic Codes, Sony ATL Internal Report, Aug. 9, 2000. Patent Issued.

53. On the Error Performance of 8-VSB TCM Decoders for ATSC Terrestrial Broadcasting of Digital Television, (coauthor: D. Rhee), Proc. of the 2000 IEEE International Symposium on Information Theory (ISIT'2000), p. 218, Sorrento, Italy, June, 2000.

54. Error Performance of Multilevel Codes for Unequal Error Protection over Fading Channels with Coherent Detection and Phase Jitter, (coauthors: M. Isaka and H. Imai), Proc. of the 2000 IEEE International Symposium on Information Theory (ISIT'2000), p. 38, Sorrento, Italy, June, 2000.

55. Joint Phase-Lock Detection and Identification of Digital M-PSK/M-QAM Modulation, Proc. of the 2000 International Conference on Third Generation Wireless Communications (3GWireless'00), pp. 272-279, San Francisco, CA, June 14-16, 2000.

56. A Two-Stage Decoder for Pragmatic Trellis-Coded PSK/QAM Modulation Using a Symbol Transformation, Proc. of the 1999 Symposium on Information Theory and Its Applications (SITA'99), pp. 753-756, Niigata, Japan, Nov. 30-Dec. 3, 1999.

57. Error Performance of 8-VSB TCM Decoders for ATSC Terrestrial Broadcasting of Digital Television, (coauthor: D. Rhee), Proc. of the 13th AAECC Symposium on Applied Algebra, Algebraic Algorithms and Error-Correcting Codes (AAECC-13), p. 29, Honolulu, Hawaii, Nov. 15, 1999.

58. Multilevel Codes and Multistage Decoding for Unequal Error Protection, (coauthors: M. Isaka, H. Imai, M.P.C. Fossorier and S. Lin),
Corre

77. Binary Convolutional Codes with Two Levels of Error Protection, (coauthor: H. Imai), Proceedings of the 1996 Symposium on Information Theory and Its Applications (SITA'96) pp. 213-216, Hakone, Japan, December 1996.

78. Bandwidth Efficient Multilevel Block Coding Schemes with Two Levels of Protection for 8-PSK Modulation over the AWGN Channel, (coauthors: M.P.C. Fossorier, H. Imai and S. Lin), ProTA'96)

90. New Methods for Computing the Weight Distribution of a Linear Block Code Based on Its Trellis Structure, (coauthors: T. Fujiwara, T. Kasami and Y. Desaki), Proceedings of the 1994