Chapter 10

Bibliography

Bibliography

This chapter gives the bibliography which includes the list of references used in each chapter.

Chapter 1

[1] Rappaport S. et.al. "Wireless Communications: Past Events And a Future Perspective", IEEE Communication Magazine, pages 148-161, 2002.

[2] International Telecommunication Union "The world in 2011, ICT facts and figures". Technical report, International Telecommunication Union, 2011.

[3] Arogyaswami J Paulraj. et.al. "An Overview of MIMO Communications A Key to Gigabit Wireless". Proceedings of the IEEE, 92:198-218, 2004.

[4] Jack H. Winters, Jack Salz, and Richard D. Gitlin "The impact of antenna diversity on the capacity of wireless communication systems". IEEE Transactions on Communications, 42:1740-1751, 1994.

[5] R. T. Derryberry et.al. "Transmit diversity in 3G CDMA systems". IEEE Communication Magazine, 40(4):68-75, April 2002.

[6] Y. Xiao. "IEEE 802.11n: Enhancements for higher throughput in wireless LANs". IEEE Wireless Commun., 12(6):82-91, Dec 2005.

[7] Draft IEEE. "System requirements for IEEE 802.20 mobile broadband wireless access systems". IEEE 802.20-PD-06 version 14, July 2004.

[8] H. Ekstroem et.al. "Technical solutions for the 3G Long Term Evolution". IEEE Wireless Commun., 44(6):38-45, March 2006.

[9] Jan Mietzner, Robert Schober, Lutz Lampe, Wolfgang H Gerstacker, and Peter A Hoeher "Multiple-Antenna techniques for wireless communications A comprehensive literature survey". IEEE Communications Surveys and Tutorials, 11(2):87-105, 2009.

[10] 3GPP TS 36.300. LTE-Advanced (3GPP Release 10) datasheets.

[11] Jeanette Wannstrôm. "LTE-advanced http://www.3gpp.org/LTE-Advanced/". May 2012.

[12] Juho Lee, Jin-Kyu Han, and Jianzhong Zhang. "MIMO technologies in 3GPP LTE and LTE Advanced". EURASIP J. Wirel. Commun. Netw., pages 1-10, mar 2009.

[13] C.Mehlfuhrer, M.Wrulich, J.Colom Ikuno, D.Bosanska, and M.Rupp. "Simulating the Long Term Evolution physical layer". In Proc. 17th European Signal Processing Conference (EU-SIPCO 2009), pages 1471-1478, Glasgow, Scotland, August 2009.

[14] C.Mehlfuhrer, J.Colom Ikuno, M.Simko, S.Schwarz, M.Wrulich, and M.Rupp. "The vienna LTE simulators - enabling reproducibility in wireless communications research", EURASIP Journal on Advances in Signal Processing, Vol. 2011:1-13, 2011.

[15] [Online]. Available:http://www.nt.tuwien.ac.at/ltesimulator/.

[16] R. Mysore Rao,W. Zhu, and S. Lang et al. "MultiAntenna testbeds for research and education in wireless communications". IEEE Communications Magazine, pages 72-81, Dec 2004.

[17] T. Kaiser, A. Wilzeck, M. Berentsen, and M. Rupp. "Prototyping for MIMO systems - An overview". Proc. of the 12th European Signal Processing Conference (EUSIPCO), pages

[18] P. Belanovic et.al. "A consistent design methodology for wireless embedded systems". EURASIP Journal on Applied Signal Processing, 16:2598-2612, Oct 2005.

[19] Mika Vaittinen. "Developing wireless systems with MATLAb and simulink".

[20] Maria Erman. "Fuzzy Logic Applications in Wireless Communications". IFSA-EUSFLAT

[21] Amit Kumar, Dr. Yunfei Liu, Dr. Jyotsna Sengupta, and Divya. "Evolution of MobileWireless Communication Networks: 1G to 4G". International Journal of Electronics and Communication Technology, 1:68-72, 2010.

[22] Johanna Ketonen. "Equalization and Channel estimation algorithms and implementations for Cellular MIMO-OFDM downlink". University of Oulu Graduate School; Faculty of Technology, Department Of Communications Engineering; Centre For Wireless Communications; Infotech Oulu, Jun 2012.

[23] D.Han C. Li'n. "Robust ls channel estimation with phase rotation for single frequency network in OFDM". IEEE Transactions on Consumer Electronics, 52:1173-1178, 2006.

[24] Kanchan Sharma and Shweta Varshney. "Artificial neural network channel estimation for ofdm system". International Journal of Electronics and Computer Science Engineering (IJECSE), 1(3):1686-1691, 2012.

[25] J.Sun and Y.Dong-Feng. "Neural network channel estimation based on least mean error algorithm in the ofdm systems". International Symposium on Neural Networks (ISNN), Chengdu, China, 2006.

[26] Lizhong Zheng and David N. C. Tse. "Diversity and multiplexing: A fundamental tradeoff in multiple antenna channels". IEEE Trans. Inform. Theory, 49:1073-1096, 2002.

[27] R. W. Heath and D. J. Love. "Multimode antenna selection for spatial multiplexing systems with linear receivers". IEEE Trans. Signal Processing, 53:3042-3056, 2005.

[28] Michail Matthaiou, Matthew R. McKay, Peter J. Smith, and Josef A. Nossek. "On the condition number distribution of complex wishart matrices". IEEE Transactions On Communications,

[29] Antonio Forenza, Matthew R. Mckay, Iain B. Collings, and Robert W. Heath. "Switching between OSTBC and spatial multiplexing with linear receivers in spatially correlated MIMO channels". In Proc., IEEE Veh. Technology Conf, 2006.

Chapter 2

[1] European Commission Information Society and Media,"The Networked Future : Mobile and Wireless Communications", European communities, 2006.

[2] G. J. Foschini and M. J. Gans, "On Limits of Wireless Communications in a Fading Environment when Using Multiple Antennas," Wireless Personal Communications, vol. 6, no. 3, pp. 311-335, March 1998.

[3] E. Telatar, "Capacity of multi-antenna gaussina channels," Europ. Trans. Telecomm., vol. 10, no. 6, pp. 585-595, NovDec. 1999.

[4] A. J. Paulraj, D. A. Gore, R. U. Nabar, H. Bolcskei, and S. Member, "An Overview of MIMO Communications - A Key to Gigabit Wireless," vol. 92, no. 2, 2004.

[5] H. Ekstroem, A. Furuskaer, J. Karlsson, M. Meyer, S. Parkvall, J. Torsner, and M. Wahlqvist, "Technical solutions for the 3G longterm evolution," IEEE Commun. Mag., vol. 44, no. 3, pp. 38-45, Mar. 2006.

[6] B. Sklar, "Rayleigh Fading Channels in Mobile Digital Communication Systems Part I: Characterization," IEEE Communication Magazine, pp. 90-100, 1997.

[7] M. Chiani, M. Z. Win, and A. Zanella, "On the Capacity of Spatially Correlated MIMO Rayleigh-Fading Channels," IEEE Transactions on Information Theory, vol. 49, no. 10, pp. 2363-2371, 2003.

[8] J. H. Winters, "On the capacity of radio communication systems with diversity in Rayleigh fading environment," IEEE J. Select. Areas Commun., vol. JSAC-5, pp. 871-878, June 1987.

[9] T. L. Marzetta and B. M. Hochwald, "Capacity of a mobile multiple-antenna communication link in Rayleigh flat fading," IEEE Trans. Inform. Theory, vol. 45, pp. 139-157, Jan. 1999.

[10] P. J. Smith and M. Shafi, "On a Gaussian approximation to the capacity of wireless MIMO systems," in Proc. IEEE Int. Conf. Communications, vol. 1, New York, NY, May 2002, pp. 406-410.

[11] C. Shannon, "A mathematical theory of communication," Bell Syst. Tech. J., vol. 27, pp. 379-423 JulyOct. 1948.

[12] J. G. Proakis, "Digital Communications", New York: McGraw- Hill, 1989.

[13] D. Gesbert and J. Akhtar, "Breaking the barriers of Shannon s capacity : An overview of MIMO wireless systems," Telenor's Journa:Telektronikk pp. 1-9,2002.

[14] A. J. Paulraj, D. A. Gore, R. U. Nabar, and H. Blcskei, "An Overview of MIMO Communications A Key to Gigabit Wireless," Proceeding of the IEEE, vol. 92, no. 2, pp. 198-218, 2004.

[15] A. Paulraj, R. Nabar, and D. Gore, "Introduction to Space-Time Wireless Communications". Cambridge University Press, 2003.

[16] D. Seethaler, "Capacity Analysis of MIMO Systems", Thesis,Institute of Telecommunications, Vienna University of Technology, Vienna, Austria, 2006.

[17] T.Brown, E.Carvalho and P. Kyritsi, "Practical Guide to the MIMO Radio Channel-with MATLAB Examples", John Wiley and Sons Ltd.,2012.

[18] A. Goldsmith, S. A. Jafar, N. Jindal, and S. Vishwanath, "Capacity Limits of MIMO Channels," IEEE Journal on Selected Areas in Communications, vol. 21, no. 5, pp. 684-702, 2003.

[19] M.T.Ivrlac and J.A. Noseek, "Performance gains of MIMO signal processing" e& i Elektrotechnik und Informationstechnik, Volume 122, Issue 6, pp 210-216, June 2006.

[20] H. Boelcskei, "Fundamental tradeoffs in MIMO wireless systems," IEEE 6th CAS Symp. on Emerging Technologies: Mobile and Wireless Comm, May 31-Jun, 2004.

[21] A. Lozano and N. Jindal, "Transmit Diversity vs . Spatial Multiplexing in Modern MIMO Systems," IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, vol. 9, no. 1, pp. 186-197, 2010.

[22] A.Goldsmith, "Wireless Communications", Cambridge University Press, 2005

[23] A.Goldsmith and P.Varaiya, "Capacity of Fading Channels with Channel Side Information", IEEE Transactions on Information Theory, Vol. 43, no. 6, pp 1986-192, Nov 1997.

[24] "BERTool: A Bit Error Rate Analysis GUI- Communications Toolbox", User guide MATLAB.

[25] J.B.Anderson,"Array Gain and capacity for Known Random Channels with Multiple Element Arrays at Both Ends", IEEE Journal on Selected Areas in Communications, Vol. 18, no. 11, pp 2172-2178, Nov 2000.

[26] R.S.Blum,"MIMOCapacity with interference", IEEE Journal on Selected Areas in Communications, Vol 21, no. 5, pp 793-801, June 2003.

[27] T. Tang and R.W. Heath, "Space-time interference cancellation in MIMO-OFDM Systems", IEEE Transactions on Vehicular Technology, Vol. 54, no. 5, pp: 1802-1816, Nov 2005.

[28] G.J.Foschini,"Layered Space-Time Architecture for Wireless Communication in a Fading Environmetn When Using Multi-Element Antennas", Bell Labs Technical Journal, Autumn, Lucent Technologies, 1996.

[29] P.W.Wolniansky, G.J.Foschini, G.D.Golden and R.A. Valenzula, "V-BLAST: An architecture for Realizing Very High data Rates Over the Rich-scattering Wireless Channel", International Symposium on Signals, Systems and Electronics, pp 295-300, 1998.

[30] S. M. Alamouti, "A simple transmit diversity technique for wireless communications," IEEE Journal on Selected Areas in Communications, vol. 16, no. 8, pp. 1451-1458, 1998.

[31] L. Zheng and D. Tse, "Diversity and multiplexing: a fundamental tradeoff in multiple-antenna channels," Information Theory, IEEE Transactions on, vol. 49, no. 5, pp. 1073-1096, 2003.

[32] L. Ordnez,D. Palomar, and J. Fonollosa, "Fundamental Diversity , Multiplexing , and Array Gain Tradeoff Under different MIMO Channel models," IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2011, pp. 3252-3255, May 2011.

[33] K. Azarian and H. El Gamal, "The Throughput-Reliability Tradeoff in Block-Fading MIMO channels," IEEE Transactions on Information Theory, Vol. 53, no. 2, pp. 488-501, Feb. 2007.

[34] M. A. Hammouda, "The Power-Bandwidth Tradeoff in MIMO Systems," 2012.

[35] A.M.Tulino, A.Lozano and S. Verdu, "Bandwidth-Power Tradeoff of Multi-antenna Sytems in the Low-Power Regime," DIMACS Series in Discrete Mathematics and Theoritical Computer Science, vol. 62, pp. 15-24, American Mathematical Society, 2003.

[36] F. Heliot, O.Onireti and M.A. Imran, "An accurate Closed-Form Approximation of the Energy Efficiency-Spectral Efficiency Trade-off over the MIMO Rayleigh Fading channel,", IEEE International Conference on Communications Workshops (ICC), June 2011.

[37] J. Mietzner, R. Schober, S. Member, L. Lampe, S. Member, W. H. Gerstacker, P. A. Hoeher, and S. Member, "Multiple-Antenna Techniques for Wireless Communications A Comprehensive Literature Survey," IEEE Communications Surveys and Tutorials, vol. 11, no. 2, pp. 87-105, 2009.

[38] Nirmalendu Bikas Sinha,R. Bera, M. Mitra, "Capacity And V-Blast Techniques For MIMO Wireless," Journal of Theoretical and Applied Information Technology, 2005.

[39] Vibhav Kumar Sachan1, Ankur Gupta , Dr. Avinash Kumar,"Performance analysis of MIMO space diversity technique for wireless communications", 2008 IEEE.

[40] D. Gesbert, M. Shafi, D. Shiu, P. J. Smith, and A. Naguib, "From theory to practice: An overview of MIMO space-time coded wireless systems," IEEE J. Select. Areas Commun., vol. 21, no. 3, pp. 281-302, Apr. 2003.

[41] A. Paulraj, R. Narbar, D. Gore, "Introduction to Space-time Wireless communications", Cambridge University Press, 2003.

[42] V. Tarokh, N. Seshadri, and A. R. Calderbank, "Space-time codes for high data rate wireless communication: performance criterion and code construction," IEEE Transactions on Information Theory, vol. 44, no. 2, pp. 744765, 1998.

[43] Min Kim, "Exact BER analysis of OSTBCs in spatially correlated MIMO channels", IEEE Trans. Communication. Vol. 54, no. 8,pp. 1365-1373,2006.

[44] Liu Yuyu, Liu Yongzhi, Gao Yanping, "Research and Performance Simulation of OSTBC over Rayleigh Fading Channels," Wireless Communications, Networking and Mobile Computing, 1163-1166, WICOM 2007.

Chapter 3

[1] A. J. Paulraj, D. A. Gore, R. U. Nabar, and H. Boelcskei, "An overview of MIMO communications -A key to gigabit wireless," Proc. IEEE, vol. 92, no. 2, pp. 198-218, Feb. 2004.

[2] JA. Garcia-Naya, M. Gonzalez-Lopez and L.Castedo,"An overview of MIMO Testbed technology,"Proceesings of the 4th International Sympoisum on Image/Video Communications over Fixed and Mobile Networks (ISVIC '08), Spain, July 2008.

[3] T. Kaiser, A. Wilzeck, M. Berentsen, and M. Rupp, "Prototyping for MIMO Systems - An Overview", in Proc. of the 12th European Signal Processing Conference (EUSIPCO), pp. 681-688, Vienna, Austria, Sept. 2004.

[4] P. Belanovic, B. Knerr, M. Holzer, G. Sauzon, and M. Rupp, "A Consistent Design Methodology for Wireless Embedded Systems", EURASIP Journal on Applied Signal Processing, vol. 16, pp. 2598- 2612, Oct 2005.

[5] J. Terry and J. Heiskala,"OFDM Wireless LANs: A Theoretical and Practical Guide," Sams Publishers, December 2001.

[6] M. Pelcat, J. Piat, M. Wipliez, S. Aridhi and J. Nezan, "An open framework for Rapid Prototyping of Signal Processing Applications,", Design and Architecture for Signal and Image Processing, EURASIP Journal on Embedded Systems, 2009.

[7] F. Edman, "Digital Hardware Aspects of Multiantenna Algorithms," Thesis, Lund Univeristy, 2006.

[8] P. Murphy, F. Lou, A. Sabharwal, J.P. Frantz, "An FPGA based rapid prototyping platform for MIMO systems", Proc. of Asilomar, vol. 1, pp. 900904, Nov. 2003.

[9] S. Roy, L. Belanger, "The Design of an FPGA-Based MIMO Transceiver for Wi-Fi", Xilinx DSP Magazine, May 2006.

[10] P. Greisen, S. Haene and A.Burg, "Simulation and Emulation of MIMO Wireless Baseband Transceivers," Simulators and Experimental testbeds Design and Development for Wireless networks, Eurasip Journal on Wireless Communications and Networking, 2010.

[11] M. Rupp, S.Caban and C. Mehlfuhrer,"Challenges in Building MIMO Testbeds," Proceedings 15th European Signal Processing Conference (EUSIPCO), Poland, September 2007.

[12] P.Wolninasky, G.Foschini, G.Golden and R.Velenzula,"V-BLAST: an architecture for realizing very high data rates over the rich scattering wireless channel," IEEE International Symposium on Signals, Systems and Electronics, pp. 295-300, Sept. 1998.

[13] M. Rupp, C.Mehlfuhrer, S. Caban, R. Langwieser, L. W. Mayer, and L. Scholtz, "Testbeds and rapid prototyping in wireless system design", EURASIP Newsletter, vol. 17, no. 3, pp. 3250, Sep. 2006.

[14] Ettus Research, The USRP product family (2009, http://www.ettus.com

[15] GNU Radio, The GNU software radio (2009, http://www.gnuradio.org

[16] Rice University, WARP project: wireless open-access research platform (2009, ttp://warp.rice.edu

[17] F. Kaltenberger, R. Gaffar and R. Knopp,"Low-complexity distributed MIMO receiver and its implementaion on the OenAirInterface platform," Proceedings 20th International Sympoisum on Personal, Indoor and Mobile Radio Communications, pp. 2494-2498, Tokyo, Sept. 2009.

[18] K.Buchenrieder,"Rapid Prototyping of Embedded Hardware/Software Systems,"Design Automation for Embedded Systems, vol. 5,no. 3-4, pp.215-221, Kluwer Academic Publishers, 2000.

[19] E.Dillaber, L. Kendrick, W.Jim and V.Reddy, "Pragmatic Strategies for Adopting Model-Based Design for Embedded Applications", The Mathworks, SAE International, 2010.

[20] S.Note, P.vanLierop, J.van Ginderdeuren, Philips ITCL Belgium,"Rapid Prototyping of DSP systems: requirementsand solutions," Proceedings of Sixth International Workshop on Rapid System Prototyping, Chapel Hill, NC, pp 88-96, June 1995.

[21] C.Madritsch "Rapid Prototyping using Model-Based Design methodology: A Digital Signal Processing lecture case study," Proceedings of 33rd International Convention on Information

and Communication Technology, Electronics and Microelectronics MIPRO, Croatia, pp 849-851, May 2010.

[22] B.Daya "Rapid Prototyping of Embedded Systems using Field Programmable Gate Arrays," Summa Cum Laude Thesis, Bachelor of Science in Electrical Engineering, Spring 2009.

[23] G. Nicolescu and P. Mosterman, "Model-Based Design for Embedded Systems," CRC Press, Taylor and & Francis Group, 2010.

[24] S.Ginsburg, "Model-Based Design for Embedded Systems,", Embedded Computing Conference, ZHAW Winterhur, September 2008.

[25] R.Cofer and B.Harding, "Rapid System Prototyping with FPGAs Accelerating the Design process," Embedded technology Series, Newnes, Elsevier Inc. 2006.

[26] L. Shure, "MATLAB to FPGA using HDL Coder,", MATLAB 2013a. blogs.mathworks.com/loren/2013/04/11/matlab-to-fpga-using-hdl-codertm/

[27] http://www.xilinx.com/products/design-tools/ise-design-suite/

[28] http://www.mentor.com/company/higher_ed/modelsim-student-edition

[29] http://www.synopsys.com/Solutions/EndSolutions/FPGASolution/Pages/default.aspx

[30] EDA Simulator Link Getting Started Guide, The Mathworks Inc, 2003-2011.

[31] B.Rinner, m. Scchmid and R.Weiss,"Rapid prototyping of flexible embedded systems on mulit-DSP architectures," Proceedings Design, Automation and test in Europe Conference and Exhibition, pp. 1530-1591, 2003.

[32] "Real-Time Workshop For use with Simulink,"User Guide, The Mathworks Inc.

[33] "Embedded Coder Getting Started Guide," The Mathworks Inc, 2003-2011.

[34] Renzo Calcagno et.al ,"Application of Wireless Technologies in Automotive Production Systems", Comau spa Italy.

[35] Zhiguo Chen and Wenbo Xu,"Wireless Communication Application in Mobile Robot with Machine Vision" Wireless Communications, Networking and Mobile Computing, WiCom, pp. 24-26 Sept. 2009.

[36] Datasheet: C8051F340 Full Speed USB Flash MCU Family, Silicon Laboratories.

[37] The Silicon Laboratories Integrated Development Environment (IDE), `http://www.silabs.com/products/mcu/Pages/SiliconLaboratoriesIDE.aspx`

[38] Cx51 Compiler, Optimizing C Compiler and Library Reference, for Classic and Extended 8051 Microcontrollers, Users Guide 09.2001, Keil Software.

[39] Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", Second edition, Prentice Hall Software Series.

[40] HyperTerminal Private Edition 6.3, by Hilgraeve Inc., Copyright 2001.

[41] C8051F34X Development Kit Users Guide, Silicon Laboratories.

[42] Pololu Wixel User's Guide, 2001-2010 Pololu Corporation `http://www.pololu.com/docs/0J46`

[43] Datasheet: CC2511, Texas Instruments.

[44] Eclipse IDE for C/C++ Developers, `http://www.eclipse.org/downloads/packages/eclipse-ide-cc-developers-includes-incubating-components/indigosr2`

[45] Wireless Serial Application `http://www.pololu.com/docs/0J46/9.b`

Chapter 4

[1] ITU-R Recommendation M.1457: Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000).

[2] "Guidelines for evaluation of radio interface technologies for IMT-Advanced", ITU-R Report M.2135.

[3] Stephen M.Blust, "IMT-Advanced standards for mobile broadband communications," ITU WRC 2012 Reports `www.itu.int/net/newsroom/wrc/2012/features/imt.aspx`.

[4] `www.3gpp.org`.

[5] `www.3gpp.org/specifications/releases`

[6] R1-072444 TSG-RAN WG1-49 R1-072444 "Summary of Downlink Performance Evaluation", Ericsson, Kobe, Japan, May 7 11, 2007.

[7] T. Ali-Yahiya, "Understanding LTE and its performance",Springer New York, 2011.

[8] 3GPP TS 36.201 V8.3.0 (2009-03),"Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Physical Layer - General Description (Release 8)"

[9] 3GPP TS 24.301, "Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS)"

[10] TS 36.331, "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification"

[11] TS 36.323, "Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification"

[12] 3GPP TS 36.322, "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification"

[13] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification"

[14] 3GPP TS 36.201 V10.0.0 (2010-12),"Evolved Universal Terrestrial Radio Access (E-UTRA); LTE physical layer; General description (Release 10)"

[15] S. Schwarz, C. Mehlfuhrer, and M. Rupp, "Calculation of the Spatial Preprocessing and Link Adaption Feedback for 3GPP UMTS/LTE," in Proc. IEEE Wireless Advanced 2010, London, UK, 2010.

[16] S. Schwarz, M. Wrulich, and M. Rupp, "Mutual Information based Calculation of the Precoding Matrix Indicator for 3GPP UMTS/LTE," in Proc. IEEE Workshop on Smart Antennas 2010, (Bremen, Germany), February 2010.

[17] Schwarz, S., Rupp, M., "Throughput maximizing feedback for MIMO OFDM based wireless communication systems", SPAWC2011.

[18] 4G Americas,"MIMO Transmission Schemes for LTE and HSPA Networks", (June 2009).

[19] 4G Americas, "MIMO and Smart Antennas for 3G and 4G Wireless Systems: Practical Aspects and Deployment Considerations", (May 2010).

[20] Lee, J., Han, J. K. and Zhang, J., "MIMO technologies in 3GPP LTE and LTE-Advanced", EURASIP Journal on Wireless Communications and Networking, 2009, article ID 302092.

[21] Christopher Cox, "An Introduction to LTE: LTE, LTE-Advanced, SAE and 4G Mobile Communications", John Wiley and Sons Ltd. 2012.

[22] "LTE System Multiple Antenna Techniques", eRAN2.2 (MIMO and Beamforming), HUAWEI TECHNOLOGIES CO., LTD. 2012.

[23] C. Mehlfhrer, M. Wrulich, J. C. Ikuno, D. Bosanska and M. Rupp, "Simulating the Long Term Evolution Physical Layer," in Proc. of the 17th European Signal Processing Conference (EUSIPCO 2009), Aug. 2009, Glasgow, Scotland.

[24] C. Mehlfuhrer, J. Colom Ikuno, M. Simko, S. Schwarz, M. Wrulich, M. Rupp, "The Vienna LTE Simulators - Enabling Reproducibility in Wireless Communications Research", EURASIP Journal on Advances in Signal Processing, Vol. 2011, pages 1 - 13, 2011.

[25] "Vienna LTE Simulators LTE-A Link Level Simulator Documentation", v1.1 Institute of Telecommunications Vienna University of Technology, Austria.

[26] http://www.nt.tuwien.ac.at/research/mobile-communications/
lte-a-downlink-link-level-simulator.

[27] 3GPP TR 25.943 V10.0.0 (20011-04), "3GPP-Technical Specification Group Radio Access Network;: Deployment Aspects (Release 10)"

Chapter 5

[1] A. B. Kurhe, S. S. Satonkar, P. B. Khanale, and S. Ashok, "Soft Computing and its Applications," BIOINFO Soft Computing, vol. 1, no. 1, pp. 5-7, 2011.

[2] K. M. Saridakis and A. J. Dentsoras, "Soft computing in engineering design A review,"Advanced Engineering Informatics, vol. 22, pp. 202-221, 2008.

[3] S.H. Liao, "Expert system methodologies and applications-a decade review from 1995 to 2004," Expert Systems with Applications,Vol. 28, pp.93-103, 2005.

[4] Y. Dote, S.J. Ovaska, "Industrial applications of soft computing: a review," Proceedings of the IEEE, pp. 1243-1265, 2001, .

[5] S. Das, A. Kumar, B. Das and A.P.Burnwal, "On Soft Computing Techniques in Various Areas," Computer Science & Information Technology -CSCP, pp. 59-68, 2013.

[6] Maria Erman. "Fuzzy Logic Applications in Wireless Communications". IFSA- EUSFLAT 2009, pages 763-767, 2009.

[7] Base Station Placement and Channel Allocation. "Softcomputing in wireless mobile networks". pages 29-34.

[8] John K.William, Cathy Kessinger, Jennifer Abernethy, Cathy Kessinger and Scott Ellis, " Fuzzy Logic Applications", Artificial Intelligence Methods in the Environmental Sciences, pp 347-377, 2009.

[9] L.A. Zadeh, "Fuzzy sets," Information Control, Vol. 8, pp. 338-353, 1965.

[10] Kevin M. Passino and Stephen Yurkovich, "Fuzzy Control", Addison-Wesley.

[11] Zadeh, L. A. , "Outline of a New Approach to the Analysis of Complex Systems and Decision Processes", IEEE Transactions on System, Man, and Cybernetics, SMC Vol. 3 pp. 28-44, 1973.

[12] Zadeh, L. A. "The Calculus of Fuzzy Restrictions," Fuzzy Sets and Applications to Cognitive and Decision Making Processes, Eds. Zadeh, L.A. et. al., Academic Press, New York, 1975, 1-39.

[13] Zadeh, L.A. "The concept of a linguistic variable and its application to approximate reasoning". Information Sciences, Part I: 8, 1975, pp. 199-249; Part II: 8, pp. 301-357; Part III: pp. 43-80.
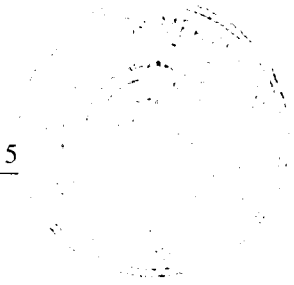
[14] Gottwald, S., "Fuzzy Sets and Fuzzy Logic", Vieweg, Wiesbaden, 1993.

[15] P. Hjek, "Mathematics of fuzzy logic," Kluwer Acad. Publ., Series Trends in Logic, London, 1998.

[16] G. Chen and T.T. Pham,"Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems," CRC Press LLC, 2000.

[17] N.Kataria, "A Comparative Study of the Defuzzification Methods in an Application," The IUP Journal of COmputer Sciences, Vol. IV, No. 4, pp. 48-54, Oct 2010.

[18] A.J.Rey Amaya, O. Lengerke, C.A.Cosenza, M.S.Dutra and M.J.M.Tavera,"Comparison of Defuzzification Methods: Automatic Control of Temperature and Flow in Heat Exchanger," www.intechopen.com/download/get/type/pdfs/id/8778

[19] "Fuzzy Logic Toolbox User's Guide," R2011a, The Mathworks, Inc.

[20] A.K.Jain, J.Mao and K.M.Mohiuddin,"Artificial Neural Networks: A Tutorial," IEEE Computer, Vol. 29, Issue. 3, pp. 31-44, March 1996.

[21] S.Brunak and B.Lautrup, "Neural Network, Computers with Intuition," World Scientific, Singapore, 1990.

[22] G.P.Zhang,"Neural Networks for Classification:A Survey," IEEE Transactions on Systems, Man and Cybernetics-Part C:Applications and reviews, Vol. 30, No.4, pp-451-462,Nov. 2000.

[23] S. Yang, T.O. Ting, K.L. Man and S. Guan"Investigation of Neural Networks for Function Approximation," First International Conference on Information Technology and Quantitative Management, Vol. 17, pp. 586-594,2013.

[24] H. N. Mhaskar and N. Hahm,"Neural networks for functional approximation and system identification,"December, 1995 http://web.calstatela.edu/faculty/hmhaska/ postscript/neursyst.pdf

[25] D. Wedge, D. Ingram, D. Mclean, C. Mingham and Z. Bandar, "On global-local artificial neural networks for function approximation ," Neural Networks, IEEE Transactions on, Volume 17, Issue:4, pp. 942 - 952, July 2006 .

[26] D.H.Kemsley, T.R.Martinez and D.M.Campbell,"A survey on Neural Network Research and Fielded Applications," International Journal of Neural Networks: Research and Application, Vol. 2, No. 2/3/4, pp. 123-133,1992.

[27] M.Yasmin, M.Sharif and S.Mohsin,"Neural network in Medical Imaging Applications: A Survey," World Applied Sciences Journal Vol. 2(1), pp. 85-96, 2013.

[28] W.W. McCulloch and W. Pitts, "A Logical Calculus of the Ideas Immanent in Nervous Activity," Bulletin of Mathematical Biophysics,Vol. 5, pp. 115-133, 1943.

[29] W. Pitts and W.W. McCulloch, "How We Know Universals," Bulletin of Mathematical Biophysics,Vol. 9,pp. 127-147, 1947.

[30] D. Andina, A. Vega-Corona, J. I. Seijas, J. Torres-Garca,"Neural Networks Historical Review," Computational Intelligence for Engineering and Manufacturing, pp 39-65, Springer 2007.

[31] A Krenker, J. Bester and A.Kos," Introduction to the Artificial Neural Networks," http://www.intechopen.com/download/get/type/pdfs/id/14881

[32] B.M.Wilamowski, "Neural network architectures and learning algorithms," Industrial Electronics Magazine, IEEE,Vol. 3,Issue 4,pp. 56-63, Dec. 2009

[33] A.Atiya,"Learning Algorithms for neural networks," PhD Thesis, California Institute of technology, 1991.

[34] D. Kriesel,"A brief introduction to Neural networks," 2005. www.dkriesel.com/_media/science/neuronalenetze-en-zeta2-2col-dkrieselcom.pdf

[35] E.Inohira and H.Yokoi,"An Optimal Design method for Artificial Neural Networks by using the design of Experiments," Journal of Advanced Computational Intellignce and Intelligent Informatics, Vol. 11, No. 6, pp. 2007.

[36] Anand, "Artificial neural Networks," Seminar on Computational Intelligence Applications to Renewable Energy, 2012 www.iitmandi.ac.in/ciare/files/7_Anand_ANN.pdf

[37] "Neural Network Toolbox User's Guide," R2011a, The Mathworks, Inc.

[38] P. Robin Jacob, "Design and Implementation of a Fuzzy Inference Engine on an FPGA," MSc. Dissertation Thesis, Department of Electrical Engineering, IIT, Delhi, March 2005.

[39] Mitchell Melanie, "An Introduction to Genetic Algorithms," A Bradford Book The MIT Press, 1996.

[40] J.H.Holland, "Adaptation in natural and Artificial Systems: An Introductory Analysis with Applications to Biology, Control and Artificial Intelligence," University of Michigan Press 1975.

[41] Colin Reeves, "Genetic Algorithms,", Handbook of Metaheuristics, International Series in Operations Research & Management Science Volume 57, 2003, pp 55-82.

[42] K. F. Man, K. S. Tang, and S. Kwong, "Genetic Algorithms: Concepts and Applications," IEEE Transactions on Industrial Electronics, Vol. 43, No. 5, Oct 1996.

[43] Mitsuo Gen, "Genetic Algorithms and Their Applications," Springer Handbook of Engineering Statistics, , pp 749-773, 2006.

[44] Ulrich Bodenhofer, "Genetic Algorithms: Theory and Applications," Lecture Notes, Johannes Kepler University, Austria, Austria. Second Edition WS 2001/2002

[45] Joe Geigel"Genetic Algorithms Tools," www.cs.rit.edu/~jmg/gas/tools.html

[46] "GA Related Software," www.geneticprogramming.com/ga/GAsoftware.html

[47] "Global Optimization Toolbox User's Guide," MATLAB, The Mathworks, Inc.

[48] A. A. Atayero and M. K. Luka,"Applications of Soft Computing in Mobile and Wireless Communications," International Journal of Computer Applications, Volume 45, No.22,pp. 48-54, May 2012.

[49] L.Wang,"Soft Computing in Communications," Series: Studies in Fuzziness and Soft Computing, Vol. 136, Springer, 2003

[50] R.K.Ghosh and P.Mitra, "Softcomputing in Wireless Mobile Networks". pp. 29-34,www.iitk.ac.in/directions/feb2006/PRINT~RATAN.pdf.

[51] Maria Erman,"Fuzzy Logic Applications in Wireless Communications," IFSA- EUSFLAT 2009, pp. 763-767, 2009.

[52] E.Alba and J.F. Chicano, "Evolutionary Algorithms in Telecommunications," IEEE Mediterranean Electrotechnical Conference, MELECON., pp. 795-798, May 2006.

[53] J. Fan and D. J. Parish, "Using a Genetic Algorithm to Optimize the Performance of a Wireless Sensor Network," PGNet, vol. ISBN: 1-9025-6016-7, 2007.

[54] Y.Park and G.Lee,"Applications of neural networks in high-speed communication networks," IEEE Communication Magazine, Vol. n33, Issue. 10, pp. 68-74, Oct 1995.

[55] C. G. C. and J. C. L. A.Patnaik, D.E. Anagnostou, R.K.Mishra, "Applications of Neural Networks in Wireless Communications," IEEE Antennas and Propagation Magazine, vol. 46, no. 3, pp. 130-137, 2004.

Chapter 6

[1] T. Yoo and A. Goldsmith, "Capacity of fading MIMO channels with channel estimation error.

[2] M. Biguesh and A. B. Gershman, "Training-based MIMO channel estimation: A study of estimator tradeoffs and optimal training signals," IEEE Transactions on Signal Processing, vol. 54, no. 3, 884-893, Mar. 2006.

[3] B. Hassibi and B. M. Hochwald, "How much training is needed in multiple-antenna wireless links?" , Bell Labs Technical Journal, 2000.

[4] B. Rajan and K. Kumar, "A Survey on Channel Estimation Schemes For MIMO Systems," International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE), Volume 2, Issue 1, January 2013.

[5] R.S.Ganesh and J.Jaya Kumari, "A Survey on Channel Estimation Techniques in MIMO-OFDM Mobile Communication Systems," International Journal of Scientific & Engineering Research, Volume 4, Issue 5, May-2013.

[6] E.Telatar, "Capacity of Multi-Antenna Gaussian Channels," European Transaction on Telecommunication (ETT), vol. 10, no. 6, pp. 585596, Nov 1999.

[7] L. Berriche, K. Abed-Meraim and J. Belfiore,"Investigation of the Channel Estimation Error on MIMO System Performance,",

[8] M. Medard, "The Effect Upon Channel Capacity in Wireless Communications of Perfect and Imperfect Knowledge of the Channel," IEEE. Transaction on Information Theory, vol. 46, pp. 933-946, May 2000.

[9] G. Caire and S. Shamai, "On the Capacity of Some Channels with Channel State Information," IEEE. Transaction on Information Theory, vol. 45, pp. 2007-2019, September 1999.

[10] T. Yoo and A. Goldsmith, "Capacity of Fading MIMO Channels with Channel Estimation Error," in Proc. ICC, Juin 2004, vol. 2, pp. 808-813.

[11] 3GPP TS 36.211, Evolved Universal Terrestrial Radio Access (EUTRA), Physical Channels and Modulation, (Release 10).

[12] Johanna Ketonen, "Equalization and Channel estimation algorithms and implementations for Cellular MIMO-OFDM downlink", University of Oulu Graduate School; Faculty of Technology, Department Of Communications Engineering; Centre For Wireless Communications;Infotech Oulu, June 2012.

[13] C. Lim, D.Han,"Robust LS channel estimation with phase rotation for single frequency network in OFDM", IEEE Transactions on Consumer Electronics, Vol. 52 , pp. 1173 1178, 2006. http.dx.doi.org/10.1109/TCE.2006.273130.

[14] Barnali Dey, Awanish Kumar, Prashant Kumar, Sanjit Lal, Naveen Kumar, Bikash Sharma, "Channel Estimation using LS and MMSE Algorithm", International Symposium on Devices MEMS, Intelligent Systems & Communication (ISDMISC) 2011.

[15] Saqib Saleem, "Channel Estimation using Adaptive Filtering for LTE-Advanced", International Journal of Computer Science (IJCSI) Issues, Vol. 8, Issue 3, No. 2, May 2011.

[16] A.Omri, R. Bouallegue, R. Hamila and M. Hasna,"Estimation of highly selective channels for downlink LTE MIMO-OFDM system by a robust neural network", International Journal of Wireless & Mobile Networks (IJWMN), Vol.2, No. 1 (2011), pp. 31 38.

[17] A. Omri, R. Bouallegue, R. Hamila and M. Hasna, "Channel estimation for LTE uplink system by Perceptron neural network", International Journal of Wireless & Mobile Networks (IJWMN), Vol.2, No. 3, pp. 155 165, August 2010. http.dx.doi.org/10.5121/ijwmn.2010.2311.

[18] Kanchan Sharma, Shweta Varshney, "Artificial Neural Network Channel Estimation for OFDM System", International Journal of Electronics and Computer Science Engineering (IJECSE), ISSN 2277-1956/V1N3-1686-1691.

[19] J.SUN, Y.Dong-Feng,"Neural Network Channel Estimation Based on Least Mean Error Algorithm in the OFDM Systems", International Symposium on Neural Networks (ISNN) 2006, Chengdu, China.

[20] Sun, J., & Yuan, D. F. (2006). "Neural network channel estimation based on least mean error algorithm in the OFDM systems". Advances in Neural Networks. Berlin: Springer.

[21] L. Anthony,"Reference Signals and Channel Estimation," Seminar Ausgewhlte Kapitel der Nachrichtentechnik, Nov 2009.

[22] M. Simko, D. Wu, C.Mehlfuhrer, J. Eilertz and D.Liu,"Implementation Aspects of Channel Estimation for 3GPP LTE Terminals,"

[23] Dave Anderson and George McNeill, "Artificial Neural Networks Technology, Kaman Sciences Corporation, New York.

[24] A. Cheema, "Channel Estimation for LTE Downlink," Thesis, Blekinge Institute of Technology, September 2009.

[25] James A. Freeman, David M. Skapura, "Neural Networks Algorithms, Applications, and Programming Techniques," Loral Space Information Systems and Adjunct Faculty, School of Natural and Applied Sciences University of Houston at Clear Lake, Addison-Wesley Publishing Company.

[26] Jatinder N.D. Guptaa, Randall S. Sextonb,"Comparing back propagation with a genetic algorithm for neural network training," International Journal of Management Science, pp. 679-684, 1999.

[27] Shaikh Abdul Hannan, R. R. Manza, R. J. Ramteke, "Generalized Regression Neural Network and Radial Basis Function for Heart Disease Diagnosis," International Journal of Computer Applications (0975 8887) Volume 7, No.13, October 2010.

[28] [Online].Available: http://home.iitk.ac.in/~mfelixor/Files/Lecture5_RBFN.pdf.

[29] Donald F. Specht, "A General Regression Neural Network," IEEE Transactions On Neural Networks. Vol. 2. NO. 6. November 1991.

[30] A. Ghaffari, H. Abdollahi,M.R. Khoshayand,I. Bozchalooi, A. Dadgar and M. Rafiee-Tehrani "Performance comparison of neural network training algorithms in modeling of bimodal drug delivery," International Journal of Pharmaceutics, 327, pp. 126138, 2006.

[31] J.D. Schaffer, D. Whitley and L.Eshelman,"Combination of Genetic Algorithms and Neural Networks: the state of the art," IEEE Computer Science, 1992.

[32] D. Whitley,"Chapter 11: Genetic Algorithms and Neural networks," Genetic Algorithms in Engineering and Computer Science, John Wiley and Sons Ltd. 1995.

[33] D. Whitley and T.Hanson,"Optimizing neural network using faster, more accurate genetic search," J.D. Schaffer (Ed.), third International Conference on Genetic Algorithms, CA, pp. 391-396, 1989.

[34] D.Monatana and L. Davis,"Training Feedforward neural networks using Genetic algorithms," Proceeding of Eleventh International Joint Conference on Artificial Intelligence, CA, pp. 762-767, 1989.

[35] I. Ileana, C. Rotar and A. Incze, "The Optimization of Feed Forward Neural Networks Structure Using Genetic Algorithms," Proceedings of the International Conference on Theory and Applications of Mathematics and Informatics - ICTAMI, Greece, pp. 223-234, 2004.

[36] D. Svozil, V. KvasniEka and J. Pospichal,"Introduction to multi-layer feed-forward neural networks," Chemometrics and Intelligent Laboratory Systems,No. 39,pp. 43-62, 1997.

[37] G. Bebis and M. Georgiopoulous, "Feed-forward neural Networks: Why Network size is so important," IEEE, pp. 27-31, 1994.

[38] B. Choi, J. H. Lee and D. H. Kim,"Solving local minima problem with large number of hidden nodes on two-layered feed-forward artificial neural networks," Neurocomputing, vol.71, no.16-18, pp.3640- 3643, 2008.

[39] M. L. Huang and Y. H. Hung, "Combining radial basis function neural network and genetic algorithm to improve HDD driver IC chip scale package assembly yield," Expert Systems with Applications, vol.34, no.1, pp.588-595, 2008.

[40] R. S. Sexton and J. N. D. Gupta,"Comparative evaluation of genetic algorithm and backprop-agation for training neural networks," Information Sciences, vol.129, no.1-4, pp.45-59, 2000.

[41] Z. Che, T. Chiang and Z. Che, "Feed-forward neural networks training: a Comparison between genetic algorithm and Back-propagation learning algorithm," International Journal of Innovative Computing, Information and Control Volume 7, Number 10, October 2011.

[42] D. E. Rumelhart, G. E. Hinton and R. J. Williams,"Learning representations by back-propagating errors," Nature, vol.323, no.6088, pp.533-536, 1986.

[43] [Online].Available: http://www.mathworks.in/support/solutions/en/data/1-EFLUUB/index.html?product=NN&solution=1-EFLUUB

Chapter 7

[1] L. Zheng and D. N. C. Tse, "Diversity and multiplexing: A fundamental tradeoff in multiple antenna channels," IEEE Trans. Inform. Theory, vol. 49, pp. 10731096, 2002.

[2] A. Forenza, M. R. Mckay, I. B. Collings, and R. W. Heath, "Switching between OSTBC and spatial multiplexing with linear receivers in spatially correlated mimo channels," in Proc., IEEE Veh. Technology Conf, 2006.

[3] T. H. Chan and M. Hamdi, "A link adaptation algorithm in MIMO-based WIMAX systems," Journal Of Communications, vol. 2, pp. 1624, 2007.

[4] R. Heath, Jr. and D. Love, "Multimode antenna selection for spatial multiplexing systems with linear receivers," IEEE Transactions on Signal Processing, vol. 53, no. 8, pp. 3042-3056, Aug 2005.

[5] R. W. Heath and A. J. Paulraj, "Switching between multiplexing and diversity based on constellation distance," in Proc. Allerton Conf. Commu., Contr., and Comput., Monticello, IL, USA, Oct 2000.

[6] M. U. Sheikh, R. Jagusz, and J. Lempiinen, "Performance evaluation of adaptive MIMO switching in long term evolution," in IWCMC. IEEE, 2011, pp. 866-870.

[7] M.S. Kim and Y.-H. Lee, "Effective SNR based MIMO switching in mobile wimax systems," in Proc. Wireless Broadband World Forum (WBWF), Oct 2007.

[8] Z. Zhang and L. Qiu, "Throughput-based mode switching for MIMO ARQ systems in presence of transmit correlation," Journal of Systems Engineering and Electrohics, vol. 24, no. 1, pp. 1-10, Feb 2013.

[9] D. W. Dongdong Li and M. Al-Shalash, "Probability based MIMO mode selection and switching system and method for wireless systems," U.S. Patent US20 100 290 553 A1, Nov 18, 2010.

[10] W. L. et.al, "Investigation of adaptive multi-antenna switching strategy in TD-LTE systems," in Progress In Electromagnetics Research Symposium Proceedings, Moscow, Russia, August 2012, pp. 19-23.

[11] A. M. Maria Erman and E. Rakus-Andersson, "Fuzzy logic applications in wireless communications," in IFSA/EUSFLAT Conf., 2009, pp. 763- 767.

[12] W.-C. Chung, C.-J. Chang, K.-T. Feng, and Y.-Y. Chen, "An mimo configuration mode and mcs level selection scheme by fuzzy Q-learning for HSPA+ systems," IEEE Transactions on Mobile Computing, vol. 11, no. 7, pp. 1151-1162, 2012.

[13] Y.-Y. C. Wen-Ching Chung and C.-J. Chang, "HARQ control scheme by Fuzzy Q-learning for HSPA+," in VTC Spring. IEEE, 2011, pp. 1-5.

[14] D. I. L. Michail Matthaiou and C.-X.Wang, "On analytical derivations of the condition number distributions of dual non-central wishart matrices," IEEE Transactions On Wireless Communications, vol. 8, pp. 1212-1217, 2009.

[15] M. Matthaiou, M. R. McKay, P. J. Smith and J. A. Nossek, "On the condition number distribution of complex wishart matrices," IEEE Transactions On Communications, vol. 58, pp. 1705-1717, 2010.

[16] D. S. B. Erceg, P. Soma and A. J. Paulraj, "Capacity obtained from multiple-input multiple-output channel measurements in fixed wireless environments at 2.5 GHz," in Proc. International Conf. Commun. (ICC), New York, USA, May 2002, pp. 396-400.

[17] L. Zhou and M. Shimizu, "A novel condition number-based antenna shuffling scheme for D-STTD OFDM system," in Vehicular Technology Conference. IEEE, 2009, pp. 1-5.

[18] G. M. Johannes Maurer and D. Seethaler, "Low-complexity and fulldiversity MIMO detection based on condition number thresholding," in IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Honolulu, Hawaii, USA, April 2007, pp. III-61- III-64.

[19] V. K. D. Wubben, R. Bohnke and K. D. Kammeyer, "MMSE-based lattice-reduction for near-ml detection of mimo systems," in Proc. ITG Workshop Smart Antennas, Munich, Germany, Mar 2004, pp. 106-113.

[20] D. S. H. Artes and F. Hlawatsch, "Efficient detection algorithms for MIMO channels: a geometrical approach to approximate ml detection," IEEE Trans. Signal Processing, vol. 51, pp. 2808-2820, 2003.

[21] J.Zik and B.Hoefler, "Maximizing LTE MIMO Throughput using Drive Test Measurements," PCTEL RF Solutions. www.rfsolutions.pctel.com/artifacts/ MIMOThroughputDriveTestWebinar.pdf

[22] S. W. Nydick, "The Wishart and Inverse Wishart Distributions," pp. 119, 2012.

[23] M. Kang and M.-S. Alouini, "Largest eigenvalue of complex Wishart matrices and performance analysis of MIMO MRC systems," IEEE J. Sel. Areas Commun., vol. 21, no. 3, pp. 418-426, Apr. 2003.

[24] S. Jin, M. R. McKay, X. Gao, and I. B. Collings, "MIMO multichannel beamforming: SER and outage using new eigenvalue distribution of complex noncentral Wishart matrices," IEEE Trans. Commun., vol. 56, no. 3, pp. 424-434, Mar. 2008.

[25] J. W. Demmel, "The probability that a numerical analysis problem is difficult," Math. Comput., vol. 50, pp. 449-480, 1988.

[26] A. Forenza, M. R. McKay, A. Pandharipande, R. W. Heath, and I. B. Collings, "Adaptive MIMO transmission for exploiting the capacity of spatially correlated channels," Vehicular Technology, IEEE Transactions on, vol. 56, no. 2, pp. 619-630, 2007.

[27] M. OHagan. "A fuzzy decision maker". [Online]. Available: http://www.csee.wvu. edu/classes/cpe521/old/Reading%20Assignment%204%20-%20Hagan% 20-%20Fuzzy%20decision%20making.pdf

[28] "Fuzzy Logic Toolbox," User's Guide, R2011a Mathworks.

[29] J. J. Saade and H. B. Diab, "Defuzzification techniques for fuzzy controllers," Trans. Sys. Man Cyber. Part B, vol. 30, no. 1, pp. 223-229, Feb 2000.

Chapter 8

[1] "Versatile FPGA Platform for University Classroom and research Environments- Atlys Spartan-6 Development Kit," Xilinx, Inc. 2010.

[2] "Atlys Board Reference Manual," Doc: 502-178, Digilent, Inc. 2013.

[3] "The Low-Cost Programmbale Silicon Foundation for targeted Deign Platform Spartan-6 FP-GAs," Xilinx, Inc. 2010.

[4] "Spartan-6 Family Overview," DS 160(v2.0) Xilinx, Inc. 2011.

[5] "TMS320C6713 DSK Technical Reference," Spectrum Digital, Inc. 2003.

[6] "TMS320C6713 Floating-Point Digital Signal Processor," SPRS186L, Texas Instruments, Inc. 2005.