Chandra Ramabhadra Murthy

CONTACT INFORMATION

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CURRENT SPONSORED PROJECTS

- 5G Research on Full Duplex Radios and Sparse Signal Processing - Building Next Gen Solutions for the Indian Market
    - Funding agency: Dept. of Electronics and Information Technology (DEITY)
    - Funding amount: Rs. 42 lakhs
    - Project duration: 2015-17
    - Co-investigators: Neelesh B. Mehta, IISc
- Distributed Bayesian learning for big data with application to 4G wireless networks
    - Funding agency: Dept. of Electronics and Information Technology (DEITY)
    - Funding amount: Rs. 29 lakhs
    - Project duration: 2014-16
    - Co-investigators: None
- Sparse array signal processing (sub-project under the DRDO-IISc Program on Mathematical Engineering)
    - Funding agency: DRDO, Govt. of India
    - Funding amount: Rs. 24 lakhs
    - Project duration: 2014-17
    - Co-investigators: None
- Green wireless sensor networks
    - Funding agency: Boeing/ANRC
    - Funding amount: US$50,000 per year
    - Project duration: 2015-17
    - Co-investigators: Neelesh Mehta (PI), Vinod Sharma
- D2D Communications for LTE-Advanced Cellular Networks
    - Funding agency: Indo-French Centre for the Promotion of Advance Research (IFCPAR)
    - Funding amount: Rs. 24 lakhs
    - Project duration: 2015-17
    - Co-investigators: Neelesh Mehta (IISc, PI), Ketan Rajawat (IITK), Rahul Vaze (TIFR-M), Vinod Kumar (Alcatel-Lucent Labs), Marceau Coupechoux (Telecom ParisTech)

PAST PROJECTS

- Cognitive radio design in interference limited environments (Boeing/ANRC)
- India-UK advanced technology centre (IU-ATC-Phase 2) of excellence in next generation networked systems and services (Govt. of India)
- Channel estimation and feedback in MIMO communication systems (Govt. of India)
- Wireless system design for deploying energy harvesting sensors in an airplane (Boeing/ANRC)
- Fundamental physical layer aspects of cognitive radio for onboard communications (Boeing/ANRC)
- Cognitive radio for rural broadband wireless access (Govt. of India, Microsoft Research India)
- Applications of compressive sensing in signal processing and communications (DRDO-IISc Program on Mathematical Engineering)
- Spectrum sensing, management and resource allocation for cognitive radio (DRDO)

EDUCATION	**University of California, San Diego, U.S.A.**

Ph.D., Electrical and Computer Engineering, August 2006

- Dissertation: "Feedback-based Communication with Multiple Antennas"
- Advisor: Prof. Bhaskar D. Rao

Stanford University, U.S.A.

Graduate coursework through the Stanford Center for Professional Development. August 2002

Purdue University, U.S.A.

M.S., Electrical and Computer Engineering, August 2000

Indian Institute of Technology Madras, Chennai, India

B.Tech., Electrical Engineering, August 1998

PROFESSIONAL EXPERIENCE

Indian Institute of Science, Bangalore

Associate Professor	**September 2013 - Present**
Assistant Professor	**September 2007 - September 2013**

Multiple-input multiple-output (MIMO) communication systems
- Robust and semi-blind channel estimation and tracking for MIMO systems
- Algorithms for interference alignment in multi-user MIMO interference channels
- Training sequence design for reciprocal MIMO systems

Cognitive Radio
- Fundamental limits of spectrum sensing with model uncertainties
- Optimal sensing and access mechanisms

Design and Optimization of Energy Harvesting Sensors
- Decision theoretic approaches to power management with packet retransmission
- Power management for utility maximization in wireless energy harvesting sensors

Compressed Sensing
- Joint sparse MIMO channel estimation and data detection
- Fundamental limits of sparse signal recovery

Beceem Communications, Inc., Bangalore

Staff Design Engineer	**September 2006 - September 2007**

- Implementation of advanced MIMO detectors for the 802.16e Mobile WiMAX system.
- Design and implementation of MIMO spatial multiplexing and beamforming algorithms for the 802.16e Mobile WiMAX system.

University of California, San Diego Electrical and Computer Engineering Department

Graduate Research Assistant	**September 2002 - August 2006**

- Multiple-input multiple-output (MIMO) channel estimation techniques.
- MIMO channel quantization and feedback optimization.
- Precoder design for MIMO with partial channel feedback.

Qualcomm, Inc. WCDMA baseband system design

Systems Engineer	**August 2000 - August 2002**

- WCDMA Transceiver design: demodulator front-end and frequency tracking loop.

- Fixing of bit-widths, truncation, saturation, pulse shaping, etc for meeting emission requirements.
- IEEE 802.11b Design: invented a low-complexity, optimal demodulation architecture

Purdue University Spread Spectrum and Satellite Communications Research Laboratory (S3CRL)

Graduate Research Assistantship   **January 1999 - August 2000**

- The project involved setting up and programming the HP waveform generator (HP8770A) and vector analyzer (HP89441A) using the HP-Instrument Basic language to transmit and receive data samples from a satellite (PanAM SAT5) for subsequent processing.
- Conducted literature surveys on spread spectrum (CDMA) systems. Topics: interference suppression for wideband CDMA, power control for W-CDMA, performance analysis of spread spectrum receivers, GSM, IS-95, ETSI and the Japanese cellular standard.

RESEARCH INTERESTS

Digital signal processing, information theory, estimation theory, stochastic optimization, and their applications in the optimization of MIMO, OFDM and CDMA wireless communication systems.

HONORS AND AWARDS

- 2014 Elected member of the IEEE Signal Processing Society's Technical Committee on Signal Processing and Communications for the years 2014-16.
- 2014 Won the best paper award for the paper: R. Prasad and C. R. Murthy, "Joint Approximately Group Sparse Channel Estimation and Data Detection in MIMO-OFDM Systems Using Sparse Bayesian Learning," *Proc. National Conference on Communications (NCC),* IIT Kanpur, Feb. 2014
- 2012 Associate editor, IEEE Signal Processing Letters, for the years 2012-2015
- 2013, 2012 Recognized as an **exemplary reviewer** for the IEEE Communication Letters
- 2006 Finalist in the Student Paper Contest, for the paper entitled "High-Rate Analysis of Vector Quantization for Noisy Channels" in the International Conference on Acoustics, Speech and Signal Processing (ICASSP), held May 14th - 19th at Toulouse, France.
- 2002-2003 Graduate Student Fellowship. University of California, San Diego.
- 2000 Inducted into the Tau-Beta-Phi honor society, Purdue University.
- 1997 Recipient of the Rajiv Gandhi Research Fellowship, Department of Science & Technology, Government of India, to conduct research at the Supercomputer Education Research Center, I.I.Sc., Bangalore, India.
- 1994 Ranked 243 (top 0.025%) in the IIT Joint Entrance Examination.
- 1992 Recipient of the National Talent Search Scholarship (NTSE) for Mathematics and Science.

PROFESSIONAL ACTIVITIES

- IEEE Senior Member No. 80631404, IEEE SP Society, IEEE Comsoc, IEEE IT Society
- Associate Editor for the IEEE Signal Processing Letters, 2012–2016
- Elected member, IEEE Signal Processing Society Technical Committee on Signal Processing and Communications, 2014–2016
- Chapter Chair, IEEE Signal Processing Society, Bangalore Chapter, 2014–2016
- Reviewer: IEEE Transactions on: Signal Processing, Wireless Communications, Communications, Information Theory, Networking. Also on the TPC of several IEEE conferences.
- Conference/Workshop Organization: NCC 2010, 2011, 2013, SPCOM 2010, 2012, 2014 (TPC Co-Chair) IWEHC 2012, 2013 (workshop in conjunction with ICC 2012) (TPC Co-Chair)
- TPC Member: Globecom, ICC, VTC (past 5 years), WiOpt 2013

COMPUTER SKILLS

- Languages: C, C++, Matlab, Unix shell scripts, Assembly Language Programming

BOOK CHAPTER

1. N. B. Mehta and C. R. Murthy, "Joint PHY-MAC optimization for green radio communications," in "Green Radio Communication Networks," Ekram Hossain and Vijay K. Bharghava (Eds.), Cambridge University Press, 2012.

1. Venugopalakrishna Y. R. and C. R. Murthy, "Performance Analysis of Co-phased Combining for Achieving Binary Consensus over Fading Wireless Channels with Imperfect CSI," Accepted, *IEEE Transactions on Sig. Proc.*, Jan. 2016.

2. S. Gurugopinath, R. Akula, C. R. Murthy, R. Prasanna, and B. Amruthur, "Design and Implementation of Spectrum Sensing for Cognitive Radios with a Frequency-Hopping Primary System," *Elsevier Physical Communication*, vol. 17, pp. 172 – 184, Dec. 2015.

3. S. Gurugopinath, C. R. Murthy, and V. Sharma, "Error Exponent Analysis of Energy-Based Bayesian Decentralized Spectrum Sensing Under Fading," *Elsevier Physical Communication*, vol. 17, pp. 94 – 106, Dec. 2015.

4. Sinchu P., R. G. Stephen, C. R. Murthy, and M. Coupechoux, "Training-Based Antenna Selection for PER Minimization: A POMDP Approach," *IEEE Transactions on Commun.*, vol. 63, no. 9, pp. 3247-3260, Sep. 2015.

5. R. Prasad, C. R. Murthy, and B. D. Rao, "Joint Channel Estimation and Data Detection in MIMO-OFDM Systems: A Sparse Bayesian Learning Approach," *IEEE Transactions on Sig. Proc.*, vol. 63, no. 20, pp. 5369-5382, Oct. 2015.

6. A. Manesh, C. R. Murthy, and R. Annavajjala, "Physical Layer Data Fusion via Distributed Co-Phasing with General Signal Constellations," *IEEE Transactions on Sig. Proc.*, vol. 63, no. 17, pp. 4660-4672, May 2015.

7. M. S. Veedu, C. R. Murthy, and L. Hanzo, "Single-RF Spatial Modulation Relying on Finite-Rate Phase-Only Feedback: Design and Analysis," *IEEE Transactions on Veh. Technol.*, Accepted for Publication, Apr. 2015.

8. T. Ganesan and C. R. Murthy, "Novel Transmit Precoding Methods for Rayleigh Fading Multiuser TDD-MIMO Systems with CSIT and no CSIR," *IEEE Trans. on Veh. Technol.*, vol. 64, no. 3, pp. 973-984, Mar. 2015.

9. A. Sharma and C. R. Murthy, "Group Testing Based Spectrum Hole Search for Cognitive Radios," *IEEE Trans. on Veh. Technol.*, vol. 63, no. 8, pp. 3794-3805, Oct. 2014.

10. R. Prasad, C. R. Murthy, and B. D. Rao, "Joint Approximately Sparse Channel Estimation and Data Detection in OFDM Systems using Sparse Bayesian Learning," *IEEE Trans. on Sig. Proc.*, vol. 62, no. 14, pp. 3591-3603, Jul. 2014.

11. B. N. Bharath and C. R. Murthy, "Power-Controlled Reverse Channel Training in a Multiuser TDD-MIMO Spatial Multiplexing System with CSIR," *IEEE Trans. on Veh. Technol.*, vol. 62, no. 9, pp. 4345-4356, Nov. 2013.

12. A. Aprem, C. R. Murthy, and N. B. Mehta, "Transmit Power Control Policies for Energy Harvesting Sensors with Retransmissions," *IEEE J. of Sel. Topics in Sig. Proc., special issue on Learning-Based Decision Making in Dynamic Systems under Uncertainty*, vol. 7, pp. 895-906, Oct. 2013.

13. R. Prasad and C. R. Murthy, "Cramér-RaoType Bounds for Sparse Bayesian Learning," *IEEE Trans. on Sig. Proc.*, vol. 61, no. 3, pp. 622-632, Mar. 2013.

14. R. S. George, C. R. Murthy, and M. Coupechoux, "A Markov Decision Theoretic Approach to Pilot Allocation and Receive Antenna Selection," *IEEE Trans. on Wireless Commun.*, vol. 12, no. 8, pp. 3813-3823, Aug. 2013.

15. T. Ganesan and C. R. Murthy, "Linear Filtering Methods for Fixed Rate Quantization with Noisy Symmetric Error Channels," *IET Sig. Proc.*, vol. 7, no. 9, pp. 888-896, Dec. 2013.

16. S. Kumar, N. Shende, C. R. Murthy, and A. Ayyagari, "Throughput Analysis of Primary and Secondary Networks in a Shared IEEE 802.11 System," *IEEE Trans. on Wireless Commun.*, vol. 12, no. 3, pp. 1006-1017, Mar. 2013.

17. K. G. Nagananda, P. Mohapatra, C. R. Murthy, and S. Kishore, "Multiuser Cognitive Radio Networks: An Information-Theoretic Perspective," *Int. J. of Advances in Engineering Sciences and Applied Mathematics, An IIT Madras Journal from Springer*, pp. 43-65, Mar. 2013.

18. J. Chandrasekhar and C. R. Murthy, "Noncoherent Integration for Signal Detection: Analysis Under Model Uncertainties," *IEEE Trans. on Aerospace and Electronic Systems*, vol. 49, no. 4, pp. 2413-2430, Oct. 2013.

19. P. Mohapatra and C. R. Murthy, "Outer Bounds on the Sum Rate of the K-User MIMO Gaussian Interference Channel," *IEEE Trans. on Commun.*, vol. 61, no. 1, pp. 176 - 186, Jan. 2013.

20. P. Mohapatra and C. R. Murthy, "Inner Bound on the GDOF of the K-User MIMO Gaussian Symmetric Interference Channel," *IEEE Trans. on Commun.*, vol. 61, no. 1, pp. 187 - 196, Jan. 2013.

21. B. N. Bharath and C. R. Murthy, "Channel Training Signal Design for Reciprocal Multiple Antenna Systems with Beamforming," *IEEE Trans. on Veh. Techol.*, vol. 62, no. 1, pp. 140 - 151, Jan. 2013.

22. B. N. Bharath and C. R. Murthy, "Power Controlled Reverse Channel Training Achieves an Infinite Diversity Order in a TDD-SIMO System with Perfect CSIR," *IEEE Commun. Lett.,* vol. 16, no. 11, pp. 1800-1803, Nov. 2012.

23. Venugopalakrishna Y. R., C. R. Murthy, and D. N. Dutt, "Multiple Transmitter Localization and Communication Footprint Identification using Energy Measurements," *Elsevier Phys. Commun., Special Issue on Cognitive Radio*, Sep. 2012.

24. B. N. Bharath and C. R. Murthy, "On the DMT of TDD-SIMO Systems with Channel-Dependent Reverse Channel Training," *IEEE Trans. on Commun.*, vol. 60, no. 11, pp. 3332-3341, Nov. 2012.

25. S. Reddy and C. R. Murthy, "Dual-Stage Power Management Algorithms for Energy Harvesting Sensors," *IEEE Trans. on Wireless Commun.*, vol. 11, no. 4, pp. 1434-1465, Apr. 2012.

26. T. Ganesan and C. R. Murthy, "Trellis Coded Block Codes: Design and Applications," *J. of Commun., Academy Publishers*, vol. 7, no. 1, pp. 73-85, Jan. 2012.

27. C. R. Murthy, E. Duni and B. D. Rao, "High-rate vector quantization for noisy channels with applications to wideband speech compression", *IEEE Trans. on Sig. Proc.*, vol. 59, no. 11, pp. 5390 - 5403, Nov. 2011.

28. P. Mohapatra, K. E. Nissar, and C. R. Murthy, "Interference alignment algorithms for the K-user constant MIMO interference channel", *IEEE Trans. on Sig. Proc.*, vol. 59, no. 11, pp. 5499 - 5508, Nov. 2011.

29. K. V. Krishna Chaythanya, R. Annavajjala and C. R. Murthy, "Comparative analysis of pilot-assisted distributed co-phasing approaches in wireless sensor networks", *IEEE Trans. on Sig. Proc.,* vol. 58, no. 8, pp. 3722–3737, Aug. 2011.

30. C. R. Murthy, "Power management and data rate maximization in wireless energy harvesting sensors", *Int. J. of Wireless Information Networks*, DOI: 10.1007/s10776-009-0104-2, Jul. 2009.

31. C. R. Murthy, J. Zheng and B. D. Rao, "Performance of quantized equal gain transmission with noisy feedback channels", *IEEE Trans. on Sig. Proc.*, vol. 56, no. 6, pp. 2451–2460, Jun. 2008.

32. C. R. Murthy and B. D. Rao, "Quantization methods for equal gain transmission with finite rate feedback", *IEEE Trans. on Sig. Proc.*, vol. 55, no. 1, pp. 233–245, Jan. 2007.

33. C. R. Murthy, A. K. Jagannatham and B. D. Rao, "Training-only and semi-blind channel estimation for maximum ratio transmission based MIMO systems," *IEEE Trans. on Sig. Proc.*, vol. 54, no. 7, pp. 2546–2558, Jul. 2006.

CONFERENCE PUBLICATIONS

1. G. Joseph and C. R. Murthy, "Reconstruction of a Gaussian random field with application to spectrum cartography," *Proc. IEEE Int. Conf. on Commun. (ICC)*, May 2016.

2. P. N. Karthik, R. Ramakrishna, G. Joseph, C. R. Murthy, J. Sebastian, and N. B. Mehta, "Model-Based Interference Cartography and Visualization," *Proc. National Conference on Communications (NCC),* IIT Guwahati, India, Mar. 2016.

3. G. Joseph, C. R. Murthy, R. Prasad, and B. D. Rao, "Online Recovery of Temporally Correlated Sparse Signals Using Multiple Measurement Vectors," *Proc. IEEE Globecom*, San Diego, CA, USA, Dec. 2015.

4. R. Annavajjala and C. R. Murthy, "Analysis of Error Probability with Maximum Likelihood Detection over Discrete-Time Memoryless Noncoherent Rayleigh Fading Channels," *Proc. IEEE Vehicular Technology Conference (Fall)*, Boston, MA, USA, Sep. 2015.

5. P. Mohapatra and C. R. Murthy, "Capacity of the Deterministic Z-Interference Channel with Unidirectional Transmitter Cooperation and Secrecy Constraints", *Proc. IEEE Symposium on Information Theory (ISIT)*, Hong Kong, P.R.C., Jun. 2015.

6. Venugopalakrishna Y. R., C. R. Murthy, P. Mishra, and J. Warrior, "A Column Matching Based Algorithm for Target Self-localization Using Beacon Nodes," *Proc. ACM/IEEE Int. Conf. on Inform. Process. in Sensor Networks (IPSN)*, Apr. 2015.

7. V. Vinuthna, R. Prasad, and C. R. Murthy, "Sparse signal recovery in the presence of colored noise and rank-deficient noise covariance matrix: an SBL approach," *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, Apr. 2015.

8. V. Bhardwaj and C.R. Murthy, "On optimal routing and power allocation for D2D communications," *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, Apr. 2015.

9. A. Sharma and C. R. Murthy, "On finding a subset of non-defective items from a large population using group tests: recovery algorithms and bounds," *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, Apr. 2015.

10. M. Sharma and C. R. Murthy, "Packet Drop Probability Analysis of ARQ and HARQ-CC with Energy Harvesting Transmitters and Receivers," *Proc. GlobalSIP*, Atlanta, Georgia, USA, Dec. 2014.

11. A. Devraj, M. Sharma and C. R. Murthy, "Power Allocation in Energy Harvesting Sensors with ARQ: A Convex Optimization Approach," *Proc. GlobalSIP*, Atlanta, Georgia, USA, Dec. 2014.

12. Sinchu P., R. S. George, C. R. Murthy, and M. Coupechoux, "A POMDP Solution to Antenna Selection for PER Minimization," *Proc. IEEE Global Commun. Conf. (Globecom)*, Austin, TX, USA, Dec. 2014.

13. Venugopalakrishna Y. R. and C. R. Murthy, "Physical Layer Binary Consensus Over Fading Wireless Channels and With Imperfect CSI," *Proc. IEEE Global Commun. Conf. (Globecom)*, Austin, TX, USA, Dec. 2014.

14. S. Khanna and C. R. Murthy, "Decentralized Bayesian Learning of Jointly Sparse Signals," *Proc. IEEE Global Commun. Conf. (Globecom)*, Austin, TX, USA, Dec. 2014.

15. P. Khanduri, B. N. Bharath, and C. R. Murthy, "Coverage Analysis and Training Optimization for Uplink Cellular Networks with Practical Channel Estimation," *Proc. IEEE Global Commun. Conf. (Globecom)*, Austin, TX, USA, Dec. 2014.

16. R. Prasad, C. R. Murthy, and B. Rao, "Nested Sparse Bayesian Learning for Block-Sparse Signals with Intra-Block Correlation," *Proc. IEEE Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP)*, Florence, Italy, May 2014.

17. T. Ganesan and C. R. Murthy, "Novel Precoding Methods for Rayleigh Fading Multiuser TDD-MIMO Systems," *Proc. IEEE Int. Conf. on Commun. (ICC)*, Sydney, Australia, Jun. 2014.

18. Sanjeev G., R. Akula, C. R. Murthy, Prasanna R., and B. Amrutur, "Spectrum Sensing with a Frequency-Hopping Primary: From Theory to Practice," *Proc. IEEE Int. Conf. on Commun. (ICC)*, Sydney, Australia, Jun. 2014.

19. P. Mohapatra and C. R. Murthy, "Outer Bounds on the Secrecy Rate of the 2-User Symmetric Deterministic Interference Channel with Transmitter Cooperation," *Proc. National Conf. on Commun. (NCC)*, IIT Kanpur, India, Feb. 2014.

20. R. Prasad and C. R. Murthy, "Joint Approximately Group Sparse Channel Estimation and Data Detection in MIMO-OFDM Systems Using Sparse Bayesian Learning," *Proc. National Conf. on Commun. (NCC)*, IIT Kanpur, India, Feb. 2014. NCC 2014 best paper award!

21. Sanjeev G., C. R. Murthy, and C. S. Seelamantula, "Zero-Crossings Based Spectrum Sensing Under Noise Uncertainties," *Proc. National Conf. on Commun. (NCC)*, IIT Kanpur, India, Feb. 2014.

22. R. Vaze and C. R. Murthy, "On whitespace identification using randomly deployed sensors," Invited paper, *Sixth Int. Conf. on Commun. Systems and Networks (COMSNETS)*, pp.17, Bangalore, India, Jan. 2014.

23. P. Mohapatra and C. R. Murthy, "Secrecy in the 2-User Symmetric Deterministic Interference Channel with Transmitter Cooperation," *Proc. IEEE 14th Workshop on Sig. Proc. Adv. in Wireless Commun. (SPAWC)*, Darmstadt, Germany, Jun. 2013. (Also accepted for Poster Presentation at the *IEEE Commun. Theory Workshop*, Phuket, Thailand, Jun. 2013.)

24. R. S. George, C. R. Murthy, and M. Coupechoux, "Pilot Allocation and Receive Antenna Selection: A Markov Decision Theoretic Approach," *Proc. IEEE International Conference on Communications (ICC)*, Budapest, Hungary, Jun. 2013.

25. A. Manesh, C. R. Murthy, and R. Annavajjala, "Design and Analysis of Distributed Co-Phasing with Arbitrary Constellations," *Proc. IEEE International Conference on Communications (ICC)*, Budapest, Hungary, Jun. 2013.

26. A. Sharma and C. R. Murthy, "On Finding a Set of Healthy Individuals from a Large Population," *Information Theory and Applications Workshop*, San Diego, CA, USA, Feb. 2013. (Invited Paper)

27. A. Sharma and C. R. Murthy, "A Group Testing Based Spectrum Hole Search Using a Simple Sub-Nyquist Sampling Scheme," *Proc. Global Communications Conference (Globecom)*, Anaheim, CA, USA, Dec. 2012.

28. A. Aprem, C. R. Murthy and N. B. Mehta, "Transmit Power Control with ARQ in Energy Harvesting Sensors: A Decision-Theoretic Approach," *Proc. Global Communications Conference (Globecom),* Anaheim, CA, USA, Dec. 2012.

29. B. N. Bharath and C. R. Murthy, "Channel Estimation at the Transmitter in a Reciprocal MIMO Spatial Multiplexing System," *Proc. National Conference on Communications,* Kharagpur, India, Feb. 2012.

30. S. Reddy and C. R. Murthy, "Duty Cycling and Power Management with a Network of Energy Harvesting Sensors", Invited paper, *Proc. The Fourth International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP),* San Juan, Puerto Rico, Dec. 2011.

31. Joseph J. C. and C. R. Murthy, "Packet Scheduling for Priority Based Transmission in Energy Harvesting Sensors", *Proc. IEEE Global Communications Conference (GLOBECOM),* Houston, TX, USA, Dec. 2011.

32. Sanjeev G., C. R. Murthy, and V. Sharma, "Error Exponent Analysis of Energy-Based Bayesian Spectrum Sensing Under Fading Channels", *Proc. IEEE Global Communications Conference (GLOBECOM),* Houston, TX, USA, Dec. 2011.

33. P. Mohapatra and C. R. Murthy, "Generalized degrees of freedom of the K-user symmetric MIMO interference channel", *Proc. IEEE Symposium on Information Theory (ISIT)*, St. Petersburg, Russia, Aug. 2011.

34. Venugopalakrishna Y. R., C. R. Murthy, D. N. Dutt and S. L. Kottapalli, "Multiple transmitter localization and communication footprint identification using sparse reconstruction techniques," *Proc. IEEE International Conference on Communications (ICC)*, Kyoto, Japan, Jun. 2011.

35. R. Prasad, B. N. Bharath, and C. R. Murthy, "Joint data detection and dominant singular mode estimation in time varying reciprocal MIMO systems," *Proc. IEEE International Conference on Speech, Acoustics and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.

36. Chandrasekhar J. and C. R. Murthy, "Robust GNSS signal detection in the presence of navigation data bits," *Proc. IEEE International Conference on Speech, Acoustics and Signal Processing (ICASSP)*, Prague, Czech Republic, May 2011.

37. A. Iyer, K. K. Chintalapudi, V. Navda, R. Ramjee, V. Padmanabhan, and C. R. Murthy, "Spectrum Sensing Sans Frontieres", *8th USENIX Symposium on Networked Systems Design and Implementation (NSDI '11)*, Mar. 2011.

38. R. Prasad and C. R. Murthy, "Bayesian Learning for Joint Sparse OFDM Channel Estimation and Data Detection", *Proc. Global Communications Conference (Globecom)*, Dec. 2010.

39. B. Deepa, A. Iyer and C. R. Murthy, "Cyclostationary-based Architectures for Spectrum Sensing in IEEE 802.22 WRAN", *Proc. Global Communications Conference (Globecom)*, Dec. 2010.

40. K. G. Nagananda, C. R. Murthy and S. Kishore, "Achievable Rates in Three-User Interference Channels with One Cognitive Transmitter", *Proc. International Conference on Signal Processing and Communications (SPCOM)*, Bangalore, India, Jul. 2010.

41. S. Gopinath, K. V. K. Chaythanya and C. R. Murthy, "Bayesian Decentralized Spectrum Sensing in Cognitive Radio Networks", *Proc. International Conference on Signal Processing and Communications (SPCOM)*, Bangalore, India, Jul. 2010.

42. A. K. Jayaprakasam, V. Sharma, C. R. Murthy and P. Narayanan, "Cooperative Spectrum Sensing Algorithms For OFDM Systems with Frequency Selective Channels", *Proc. International Conference on Signal Processing and Communications (SPCOM)*, Bangalore, India, Jul. 2010.

43. A. Kadri and C. R. Murthy, "Cooperative Sequential Binary Hypothesis Testing Using Cyclostationary Features", *Proc. IEEE Int. Conf. on Sig. Proc. Advances in Wireless Communications (SPAWC)*, Marrakech, Morocco, Jun. 2010.

44. B. Deepa and C. R. Murthy, "Performance Comparison of Energy, Matched-Filter and Cyclostationarity-Based Spectrum Sensing", *Proc. IEEE Int. Conf. on Sig. Proc. Advances in Wireless Communications (SPAWC)*, Marrakech, Morocco, Jun. 2010.

45. A. K. Jayaprakasam, V. Sharma, C. R. Murthy and P. Narayanan, "Cyclic Prefix Based Cooperative Sequential Spectrum Sensing Algorithms for OFDM", *Proc. IEEE Int. Conf. on Communications (ICC)*, Cape Town, South Africa, May 2010.

46. V. Shenoy and C. R. Murthy, "Throughput Maximization of Delay-Constrained Traffic in Wireless Energy Harvesting Sensors", *Proc. IEEE Int. Conf. on Communications (ICC)*, Cape Town, South Africa, May 2010.

47. S. Reddy and C. R. Murthy, "Profile-Based Load Scheduling in Wireless Energy Harvesting Sensors for Data Rate Maximization", *Proc. IEEE Int. Conf. on Communications (ICC)*, Cape Town, South Africa, May 2010.

48. Chandrasekhar J. and C. R. Murthy, "GNSS Signal Detection Under Noise Uncertainty", *Proc. IEEE Int. Conf. on Communications (ICC)*, Cape Town, South Africa, May 2010.

49. B. N. Bharath and C. R. Murthy, "On the Improvement of Diversity-Multiplexing Gain Trade-off in a Training Based TDD-SIMO System", *Proc. IEEE Int. Conf. on Acoustics, Speech and Sig. Proc.*, Dallas, TX, USA, Mar. 2010.

50. Sowmya R. and C. R. Murthy, "Receiver-Only Optimized Vector Quantization for Fading Channels", *Proc. National Conference on Communications*, Chennai, India, Jan. 2010.

51. S. B. Pai, T. Datta and C. R. Murthy, "On the Design of Location-Invariant Sensing Performance for Secondary Users", *Proc. First UK-India International Workshop on Cognitive Wireless Systems (UKIWCWS 2009)*, New Delhi, Dec. 2009.

52. M. Khandwawala, N. Shende, C. R. Murthy, "Cooperative Change Detection using Physical Layer Fusion" , *Proc. First UK-India International Workshop on Cognitive Wireless Systems (UKIWCWS 2009)*, New Delhi, Dec. 2009.

53. T. Ganesan and C. R. Murthy, "Receiver-Only Optimized Semi-Hard Decision VQ For Noisy Channels", *Proc. IEEE Global Commun. Conf., (Globecom)*, Honolulu, Hawaii, USA, Nov. 2009.

54. K. G. Nagananda and C. R. Murthy, "Information Theoretic Results for Three-User Cognitive Radio Channels", *Proc. IEEE Global Commun. Conf., (Globecom)*, Honolulu, Hawaii, USA, Nov. 2009.

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