CURRICULUM VITAE

PRAMOD KUMAR VARSHNEY

BORN: 1 July 1952, Allahabad, India, U.S. Citizen.

EDUCATION:

Ph.D. in Electrical Engineering, University of Illinois, 1976.
Title of Thesis: "Models and Efficient Receivers for Communication Channels
with Memory"

M.S. in Electrical Engineering, University of Illinois, 1974.
Title of Thesis: "Markov Gap Model with Memory for Digital Channels"

B.S. in Electrical Engineering and Computer Science, University of Illinois, (Highest
Honors), 1972.

EXPERIENCE:

Distinguished Professor, Syracuse Univ., 2007-present.
Director, The Center for Advanced Systems and Engineering (CASE), 2009-present
Professor, Syracuse Univ., 1986-2007.
Research Director, NY State Center for Advanced Technology in Computer Applications
and Software Engineering, Syracuse University, 2001-2008.
Leader, Intelligent Control and Management, Center of Excellence in Environmental
Systems, Syracuse University, 2002-present.
Adjunct Professor, Department of Radiology, Upstate Medical University, 2003-present.
Visiting Scientist, AFRL at Rome Research Site, 1997-1999.
Visiting Professor, De LaSalle University, Manila, Philippines, 1997.
Associate Chair, Electrical & Computer Engineering Dept., Syracuse Univ., 1993-1996.
Associate Professor, Syracuse University, 1980-1986.
Assistant Professor, Syracuse University, 1976-1980.
Visiting Professor, Indian Institute of Technology, Delhi, India, 1984-1985.
Research Associate, Rome Air Development Center, Summer 1979.
Graduate Assistant, University of Illinois, 1972-1976.

AREAS OF INTEREST:

Data and Information Fusion
Wireless Sensor Networks
Signal and Image Processing
Wireless Communications and Networks
Statistical Communication Theory
Remote Sensing

HONORS AND AWARDS:

UIUC ECE Distinguished Alumni Award, 2015
Doctor of Engineering *honoris causa*, Drexel University, 2014.
IEEE Judith A. Resnik Award, 2012.
Appointed Distinguished Professor at Syracuse University, 2007.
Honorable Mention for paper at the 2nd International Innovations and Real-time Applications of Distributed Sensor Networks Symposium 2006.
Best Paper Award, Fusion'2004.
Chancellor's Citation for Exceptional Academic Achievement 2000, Syracuse University.
IEEE Third Millennium Medal, 2000.
Crouse-Hinds Award for Excellence in Scholarship, Syracuse University, 1998.
Distinguished Lecturer, IEEE Aerospace and Electronic Systems Society, 1997-2012.
IEEE Fellow, 1997.
Dow Outstanding Young Faculty Award, St. Lawrence Section, American Society of Engineering Education, 1981.
AFOSR/SCEEE Fellow, 1979.
University of Illinois Fellow, 1972.
Bronze Tablet Senior, University of Illinois, 1972.
James Scholar; University of Illinois, 1970-1972.

PROFESSIONAL SOCIETY MEMBERSHIPS AND SELECTED ACTIVITIES:

Life Fellow, IEEE
Member, Tau Beta Pi
Member, International Society of Information Fusion
Vice President, Int. Society for Information Fusion, 2000
President, Int. Society for Information Fusion, 2001
Member, Board of Directors of the Int. Society for Information Fusion, 1998-2006
Technical Program Chair, FUSION 1999
Chair, Syracuse Section IEEE AES/COM Chapter 1990-2000
IEEE, Fellow Evaluation Committee (AES), 1998-2009
Member IEEE Fellow Committee, 2014-2016
Co-General Chair, 1997 IEEE National Radar Conference.
Guest Editor, Proceedings of the IEEE, Special Issue on Data Fusion, January 1997
Tech. Program Chair, IEEE Conf. on Adv. Video and Signal Based Surveillance, 2003
Co-General Chair IEEE Int. Conference on Ultra Wideband Communications, 2012
Editorial Boards of Paritantra, Cluster Computing, Information Fusion, Information Sciences, IEEE Trans. on Signal Processing, Journal on Advances on Information Fusion, IEEE Signal Processing Magazine

Co-TPC Chair, Int. Conf. on Computing, Networking and Communications (ICNC 2017)
Co-General Chair, Int. Conf. on Computing, Networking and Commun. (ICNC 2018)
Co-Chair of ACM Mobihoc Workshop on Dist. Info. Proc. in Wireless Networks, 2017

BIOGRAPHICAL LISTINGS:

Who's Who in Technology Today
Outstanding Young Men of America
Directory of World Researchers' 1980's Subjects
International Who's Who in Engineering
Dictionary of International Biography
American Men and Women of Science

PATENTS

Method and Apparatus for Wireless Image Transmission (with L. Ramac), US patent 6,915,016, B2, Awarded July 2005.

H. Chen, J. Michels and P.K. Varshney, Optimized Stochastic Resonance Method for Signal Detection and Image Processing, US 7,668,699 B2, Issued Feb. 23, 2010.

Anna Scaglione, Yao-Win Hong, Pramod K Varshney: Methods and systems for obtaining data from networks of sources. Cornell Research Foundation. Apr, 19 2011: US7929411

R. Peng, H. Chen and P.K. Varshney, "Optimized Stochastic Resonance Signal Detection Method." U.S. Patent Number 8,214,177, July 3, 2012.

SCHOLARLY PUBLICATIONS

BOOKS:

1. P.K. Varshney, *Distributed Detection and Data Fusion*, Springer-Verlag, 1997.
2. G.L.Foresti, C. S. Regazzoni and P.K.Varshney, Editors, *Multisensor Surveillance Systems: The Fusion Perspective*, Kluwer Academic Publishers, 2003
3. P.K.Varshney and M.K.Arora (Eds.), *Advanced Image Processing Techniques for Remotely Sensed Hyperspectral Data*, Springer Verlag, 2004.
4. Modern Approaches in Applied Intelligence: Part 1 (Eds. K. Mehrotra, C. Mohan, J. Oh, P. Varshney, and M. Ali), Springer LNAI 6703
5. Modern Approaches in Applied Intelligence: Part 2 (Eds. K. Mehrotra, C. Mohan, J. Oh, P. Varshney, and M. Ali), Springer LNAI 6704

6.   Developing Concepts in Applied Intelligence (Eds. K. Mehrotra, C. Mohan, J. Oh, P. Varshney, and M. Ali), Springer: *Studies in Computational Intelligence 363*

BOOK CHAPTERS:

1.   P.K. Varshney, "Decentralized Bayesian Detection Theory", Published in *Stochastic Large-Scale Engineering Systems*, S. Tzafestas and K. Watanabe, Editors, Marcel Dekker Inc., 1992.
2.   P.K. Varshney, "Information Theory and Coding", Published in the *MacMillan Encyclopedia of Computers*, Vol. 1, Gary G. Bitter, Editor, Macmillan, 1992.
3.   P.K. Varshney, "Coding Theory", Published in the *MacMillan Encyclopedia of Computers*, Vol. 1, Gary G. Bitter, Editor, Macmillan, 1992.
4.   P. K. Varshney, "Information Theory", in *Wiley Encyclopedia on Electrical and Electronics Engineering*, Vol. 10, pp. 139-145, 1999.
5.   Lit-Hsin Loo, Erwei Lin, Moshe Kam and Pramod Varshney, "Cooperative Multi-Agent Constellation Formation under Sensing and Communication Constraints", in *Cooperative Control and Optimization*, pp.143-170, Kluwer Academic Press, 2002.
6.   P. K. Varshney, "An Introduction to Distributed Detection Theory", in *Multisensor Fusion*, pp. 163-182, Kluwer Academic Press, 2002.
7.   Lisa Osadciw, Pramod Varshney, and Kalyan Veeramachaneni, "Optimum Fusion Rules for Multimodal Biometric Systems", Chapter 15, *Multisensor Surveillance Systems: The Fusion Perspective*, Kluwer Academic Publishers, 2003.
8.   H.M. Chen and P.K.Varshney, "MI Based Registration of Multi-Sensor and Multi-Temporal Images," Chapter 7 of *Advanced Image Processing Techniques for Remotely Sensed Hyperspectral Data*, pp.181-198. Editors: P.K. Varshney and M.K. Arora. Publisher: Springer Verlag, 2004.
9.   S.A.Robila and P.K. Varshney, "Feature Extraction from Hyperspectral Data Using ICA," Chapter 8 of *Advanced Image Processing Techniques for Remotely Sensed Hyperspectral Data*, pp.199-216. Editors: P.K. Varshney and M.K. Arora. Publisher: Springer Verlag, 2004.
10.   T. Kasetkasem, M.K.Arora, and P.K.Varshney, "An MRF Model Based Approach for Sub-pixel Mapping from Hyperspectral Data," Chapter 11 of *Advanced Image Processing Techniques for Remotely Sensed Hyperspectral Data*, pp.279-307. Editors: P.K. Varshney and M.K. Arora. Publisher: Springer Verlag, 2004.
11.   T. Kasetkasem and P.K.Varshney, "Image Change Detection and Fusion Using MRF Models," Chapter 12 of *Advanced Image Processing Techniques for Remotely Sensed Hyperspectral Data*, pp.257-277. Editors: P.K. Varshney and M.K. Arora. Publisher: Springer Verlag, 2004.
12.   H. M. Chen and P. K. Varshney, "Mutual Information Based Image Registration with Application to Medical Brain Imagery," Chapter 2 of *Multi-Sensor Image Fusion and Its Applications*, pp. 37-56, editors: R. S. Blum and Z. Liu. CRC Press, Taylor & Francis Group, 2005.

13. H. M. Chen and P. K. Varshney ,"Techniques for Mutual Information-Based Brain Image Registration and Their Application" for *Medical Imaging Systems Technology:Vol 1: Analysis and Computational Methods* edited by Cornelius T. Leondes. Publisher: World Scientific Publishing, Sept. 2005.

14. P.K.Varshney and C.K.Mohan, "On Sensor Networking and Signal Processing for Smart and Safe Buildings," in *Advances in Pervasive Computing and Networking*, B.K. Szymanski and B. Yener (Eds.) Springer, 2005.

15. P.K. Varshney and R. Viswanathan, "Detection in Communications and Radar", in *Encyclopedia of Statistical Sciences*, McGraw Hill, 2005.

16. P. K .Varshney, "Pervasive Sensing and Control," Invited Festschrift Contributions in *Glimpses of Systems Theory and Novel Applications*, H. S. Sekhon, R. K. Varshney, P. Kumar, J. M. Singh, and R. Prasad, Eds. Aligarh, India: Systems Society of India Punjab Chapter, 2005, pp. 144-148

17. Yao-Win Hong and Pramod K. Varshney, *Advanced Signal Processing for Sensor MAC Protocols*, in "Wireless Sensor Networks: Signal Processing and Communications Perspectives", Editors: A. Swami, Z. Qing, Y.-W. Hong and L. Tong, John Wiley and Sons, 2007.

18. D. Chen and P. K. Varshney, "Contention-Based Geographic Forwarding: A communication paradigm for efficient data delivery in wireless mesh networks," Wireless Mesh Networking: With 802. 16, 802. 11, and ZigBEE, pp. 42-50, 2008.

19. D. Chen and P. K. Varshney, "Geographic routing in wireless ad hoc networks," Guide to Wireless Ad Hoc Networks, Springer, 2008.

20. R. Rajagopalan, C. K. Mohan, K. G. Mehrotra and P. K. Varshney, "Multi-objective evolutionary algorithms for wireless sensor network design," Multi-objective Optimization in Computational Intelligence: Theory and Practice, IGI Global, 2008, pp. 208-238.

21. Luca Bixio, Andrea F. Cattoni, Carlo S. Regazzoni, Pramod K. Varshney, "Embodied Cognition-Based Distributed Spectrum Sensing for Autonomic Wireless Systems", in M. K. Denko, L. T. Yang, Y. Zhang , Autonomic Computing and Networking, Springer, USA, 2009

22. Arlene Cole-Rhodes and P.K.Varshney, "Image registration using mutual information." in Image Registration for Remote Sensing, edited by LeMoigne et al., May 2011

23. M. Xu and P.K.Varshney, "Bounding the performance of image registration" in Image Registration for Remote Sensing, edited by LeMoigne et al., May 2011

24. S. G. Iyengar, P. K. Varshney and T. Damarla, "Biometric Authentication: A Copula Based Approach", in B. Bhanu and V. Govindraju, Multibiometrics for Human Identification, Cambridge Univ. Press, June 2011

25. R. Niu, L. Zuo, E. Masazade, and P. K. Varshney, ``Conditional posterior Cramer-Rao lower bound and its applications in adaptive sensor management'', in Distributed Video Sensor Networks, Bhanu, B.; Ravishankar, C.V.; Roy-Chowdhury, A.K.; Aghajan, H.; Terzopoulos, D. (Eds.) Springer, 2011.

26. P.K. Varshney and R. Viswanathan, "Detection in Communications and Radar," in Methods and Applications of Statistics in Engineering, Quality Control, and the Physical Sciences, Editor: N. Balakrishnan, Wiley, NY, pp. 154-170, 2011

27. P.K. Varshney, E. Masazade, P. Ray, and R. Niu, "Distributed Detection in Wireless Sensor Networks," in Distributed Data Fusion for Network-Centric Operations, edited by D. L. Hall, C. Y. Chong, J. Llinas, and M. E. Liggins, CRC Press, 2012.

28. Q. Cheng, R. Niu, A. Sundaresan and P.K. Varshney, "Distributed Detection and Decision Fusion with Applications to Wireless Sensor Networks", Integrated Tracking, Classification, and Sensor Management: Theory and Applications, Wiley/IEEE, June 2012.

29. P. K. Varshney, E. Masazade "Distributed Signal Detection", *E-Reference Signal Processing*, Elsevier, 2014.

30. P. K. Varshney, Sensor Fusion, Encyclopedia of Computer Vision, Springer 2014.

31. S. G. Iyengar, H. He, A. Subramanian, R. Niu and P. K. Varshney, "Distributed Detection and Data Fusion with Heterogeneous Sensors," in Multisensor Data Fusion: From Algorithm and Architecture Design to Applications, H. Fourati, Ed. , pp. 127-145, CRC Press, 2015.

32. B. Kailkhura, A. Vempaty, and P. K. Varshney, "Collaborative Spectrum Sensing in the Presence of Byzantine Attacks", in Cooperative and Graph Signal Processing, Petar M. Djuric and Cedric Richard, Ed. Elsevier. 2018

33. D. Devicharan, C. K. Mohan, K. G. Mehrotra and P. K. Varshney, "Perturbed Attractor Particle Swarm Optimization for Image Restoration," Chapter 24 in Swarm Intelligence: From Concepts to Applications, ed. Ying Tan, Pub. Institute for Eng. Technology, UK, 2018

BOOK REVIEWS:

1. P.K.Varshney, "Review of Fundamentals of Multisite Radar Systems", Signal Processing, vol. 81, 2001.

REFEREED JOURNAL PAPERS:

1. P.K. Varshney and A.H. Haddad, "A Receiver with Memory for Fading Channels", *IEEE Trans. on Communications*, vol. COM-26, pp.278-283, Feb.1978.

2. P.K. Varshney and A.H. Haddad, "A One-Bit Memory Receiver for Channels with Memory", *IEEE Trans. on Aerospace and Electronic Systems*, vol. AES-14, pp. 906-911, Nov.1978.

3. P.K. Varshney, "On Analytical Modeling of Intermittent Faults in Digital Systems", *IEEE Trans. on Computers*, vol. C-28, pp.786-791, Oct.1979.

4. P.K. Varshney, "Quantization of a Signal Having Multiple Hypotheses", *Proc. IEEE* (letters), vol. 68, pp. 628-629, May 1980.

5.   P.K. Varshney, "Combined Quantization-Detection of Uncertain Signals", *IEEE Trans. on Information Theory*, vol. IT-27, pp.262-265, March 1981.

6.   P.K. Varshney, C.R.P. Hartmann, and J.M. Faria, "Application of Information Theory to Sequential Fault Diagnosis", *IEEE Trans. Computers*, vol. C-31, pp.164-170, Feb.1982.

7.   C.R.P. Hartmann, P.K. Varshney, K.G. Mehrotra and C.L. Gerberich, "Application of Information Theory to the Construction of Efficient Decision Trees", *IEEE Trans. on Information Theory*, vol. IT-28, pp.565-577, July 1982.

8.   J.G. Shanthikumar, P.K. Varshney and K. Sriram, "A Priority Cutoff Flow Control Scheme for Integrated Voice-Data Multiplexers", *ACM-Sigmetrics Performance Evaluation Review*, vol.11, pp.8-14, Fall 1982.

9.   V.C. Vannicola and P.K. Varshney, "Spectral Dispersion of Modulated Signals Due to Oscillator Phase Instability: White and Random Walk Phase Model", *IEEE Trans. on Communications*, vol. COM-31, pp.886-895, July 1983.

10.   K. Sriram, P.K. Varshney and J.G. Shanthikumar, "Discrete-Time Analysis of Voice-Data Multiplexers With and Without Speech Activity Detectors", *IEEE Journal on Selected Areas in Communications*, vol. SAC-1, pp.1124-1132, Dec. 1983.

11.   P.K. Varshney and C.R.P. Hartmann, "Sequential Fault Diagnosis of Modular Systems", *IEEE Trans. Computers*, vol. C-33, pp.194-197, Feb.1984.

12.   C.R.P. Hartmann, W.H. Debany, and P.K. Varshney, "Multiple Fault Detection in Fanout-Free Combinational Networks", *Electronics Letters*, vol. 20, No. 12, pp. 516-517, June 1984.

13.   Z. Chair and P.K. Varshney, "Optimal Data Fusion in Multiple Sensor Detection Systems", *IEEE Trans. on Aerospace and Elect. Syst.*, vol. AES-22, pp. 98-101, January 1986.

14.   W.H. Debany, Jr., P.K. Varshney and C.R.P. Hartmann, "Network Reliability Evaluation Using Probability Expressions", *IEEE Trans. on Reliability*, vol. R-35, pp.161-166, June 1986.

15.   W.H. Debany, Jr., P.K. Varshney and C.R.P. Hartmann, "Random Test Length With and Without Replacement", *Electronics Letters*, vol. 22, No. 20, pp. 1074-75, September 25, 1986.

16.   R.K. Varshney and P.K. Varshney, "Recursive Estimation with Uncertain Observations in a Multisensor Environment", *IEE Proceedings*, Part F, pp. 527-533, October 1986.

17.   Z. Chair and P.K. Varshney, "Distributed Bayesian Hypothesis Testing with Distributed Data Fusion", *IEEE Trans. on Systems, Man and Cybernetics*, vol. 18, pp. 695-699, Sept.-Oct. 1988.

18.   M. Barkat and P.K. Varshney, "Decentralized CFAR Signal Detection", *IEEE Trans. on Aerospace and Elect. Systems*, vol. 25, pp. 41-149, March 1989.

19.   I.Y. Hoballah and P.K. Varshney, "An Information Theoretic Formulation of the Distributed Detection Problem", *IEEE Trans. on Information Theory*, vol. 35, pp. 988-994, Sept. 1989.

20.   I.Y. Hoballah and P.K. Varshney, "Distributed Bayesian Signal Detection", *IEEE Trans. on Information Theory*, vol. 35, pp. 995-1000, Sept.1989.

21.   M. Barkat, S.D. Himonas, and P.K. Varshney, "CFAR Detection for Multiple Target Situations", *IEE Proceedings*, vol. 136, Part F, No. 5, pp.193-209, October 1989.

22.   P.K. Varshney and S. Dey, "Fairness in Computer Networks: A Survey", *Journal of Institute of Electronic and Telecommunication Engineers*, Special Issue on Digital Communications, May-June, 1990.

23.   A.M. Kabakcioglu, P.K. Varshney and C.R.P. Hartmann, "Application of Information Theory to Switching Function Minimization", *IEE Proceedings*, Part E, pp. 389-393, Sept. 1990.