# CURRICULUM VITAE

# Jerry M. Mendel

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## Short Summary

**Emeritus Professor of Electrical Engineering, University of Southern California**
**(Los Angeles, California, USA)**
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Jerry M. Mendel received the B.S. in Mechanical Engineering in 1959, an MS in Electrical Engineering in 1960 and a Ph. D. in Electrical Engineering in 1963, all from the Polytechnic Institute of Brooklyn, Brooklyn, NY. He spent 11 years in the aerospace industry working for McDonnell Douglas in the field of control theory. He then spent 44 years at the University of Southern California (USC), and retired at the beginning of 2018. He is now Emeritus Professor of Electrical Engineering at USC.

At McDonnell Douglas he worked on problems in state estimation, optimal control, adaptive control, learning control, system identification and artificial intelligence for control. At USC, he worked in the following fields: Model-based signal processing for exploration seismology; higher-order statistics for processing non-Gaussian data; petroleum reservoir signal processing using fuzzy logic and Extended Kalman filtering techniques; type-1 fuzzy sets and systems; type-2 fuzzy sets and systems; perceptual computing and the Perceptual Computer; computing with words; and fuzzy set qualitative comparative analysis.

He has published close to 600 technical papers and is author and/or co-author of 13 books, including: *Uncertain Rule-based Fuzzy Logic Systems: Introduction and New Directions* (Prentice-Hall, 2001), *Perceptual Computing: Aiding People in Making Subjective Judgments* (Wiley & IEEE Press, 2010), *Introduction to Type-2 Fuzzy Logic Control: Theory and Application* (Wiley & IEEE Press, 2014), *Uncertain Rule-based Fuzzy Systems: Introduction and New Directions, 2nd ed.* (Springer, 2017), and *Explainable Uncertain Rule-Based Fuzzy Systems, 3rd ed.* (Springer, 2024).

According to Google Scholar (as of March 16, 2024) he has 66,071 citations, an h-index of 100 and an i10-index of 332.

He is a Life Fellow of the IEEE, a Distinguished Member of the IEEE Control Systems Society, and a Fellow of the International Fuzzy Systems Association. Among his past many professional activities are: President of the IEEE Control Systems Society in 1986, Member of the Administrative Committee of the IEEE Computational Intelligence Society for nine years, and, Chairman of its Fuzzy Systems Technical Committee and the Computing With Words Task Force of that technical committee.

His awards include: 1983 Best IEEE Transactions Paper Award of the IEEE Geoscience and Remote Sensing Society; 1992 IEEE Signal Processing Society Outstanding Paper Award; 2002 and 2014 IEEE Transactions on Fuzzy Systems Outstanding Paper Awards; 1984 IEEE Centennial Medal; IEEE Third Millenium Medal; Fuzzy Systems Pioneer Award (2008) from the IEEE Computational Intelligence Society for "fundamental theoretical contributions and seminal results in fuzzy systems"; 2021 IEEE Lotfi A. Zadeh Pioneer Award for developing and promoting Type-2 fuzzy logic (maintained by the IEEE Systems, Man, and Cybernetics Society); and, 2015 USC Viterbi School of Engineering Senior Research Award.

His present research interests include: type-2 fuzzy logic systems and explainable AI (XAI) for rule-based fuzzy systems. He is especially interested in understanding why type-1 fuzzy systems can outperform non-fuzzy systems, why interval type-2 fuzzy systems can outperform type-1 fuzzy systems, why general type-2 fuzzy systems can outperform interval type-2 fuzzy systems, etc. His recent works on *sculpting the state space* provides novel answers to these questions (see jmmprof.com for the associated articles).

# Detailed CV

## I. Education

B. S. in Mechanical Engineering (cum laude), 1959

M. S. in Electrical Engineering, 1960

Ph. D. in Electrical Engineering, 1963

(All from the NYU Tandon School of Engineering, formerly, the Polytechnic Institute of Brooklyn, Brooklyn, NY)

## II. Employment History (after Ph. D.)

1. Douglas Aircraft Co./McDonnell-Douglas Astronautics Co., Guidance and Flight Mechanics Department, Santa Monica, CA/Huntington Beach, CA, July 1963 - January 1974:

   a. Principal Investigator on NASA-ERC Contract NAS12-23, "The Study of Applications of Artificial Intelligence Techniques to Spacecraft Control," July 1965 to October 1966.

   b. Principal Investigator on NASA-LRC Contract NAS1-9566, "Feasibility and Design Study of Adaptive Control of Flexible Highly Variable Space Stations," October 1969 to October 1970.

   c. Engineer Scientist (1963-1965).

   d. Senior Engineer/Scientist (1965-1971).

   e. Section Chief (1971-1974).

2. University of Southern California, Department of Electrical Engineering-Systems, Los Angeles, CA, February 1974 – Present.

   a. Visiting Associate Professor of Electrical Engineering (February 1974–August 1976).

   b. Research Associate Professor of Electrical Engineering (September 1976– June 1979).

   c. Research Professor of Electrical Engineering (July 1, 1979–August 1980).

   d. Professor of Electrical Engineering (September 1980– Jan. 4, 2018).

   e. Director of USC Geo-Signal Processing Program (1980–1984).

   f. Associate Department Chairman (1982– March 1984).

   g. Department Chairman (March 1984–August 15, 1991).

   h. Group Leader for the Signal & Image Processing Group (Fall 1991–Summer 1993).

   i. Director of Signal & Image Processing Institute (Fall 1991–Sept. 1994).

   j. Associate Department Chairman (Fall 1993–Aug. 1995).

   k. Director of Special Educational Projects, for the School of Engineering (Fall 1995–1997).

   l. Associate Director of Education and Outreach, Integrated Media Systems Center (Fall 1995–Spring 2003).

   m. Associate Director of Education, Outreach, and Student Affairs Integrated Media Systems Center (Spring 2003–Jan. 2005).

   n. Executive Director of Planning for the Ronald Tutor Hall (Jan. 1998–Spring 2002).

   o. Director of Academic Program Revision for the School of Engineering (Fall 2001–2003).

   p. Director of Graduate Advising for the EE-Systems Department (May, 2004–November 2017)

   q. Joint courtesy appointment as a faculty member in the Systems Architecture and Engineering Program (2005–Jan. 4, 2018)

r. Emeritus Prof. of EE (Jan. 5, 2018–present)

## III. Honors

1. Outstanding Sophomore Mechanical Engineering Student Award, from Pi Tau Sigma, 1956-1957.

2. Elected into Pi Tau Sigma, 1958.

3. Elected into Tau Beta Pi, 1958.

4. *Machinery*'s Achievement Award for Outstanding Excellence in Machine Design, 1959.

5. Recipient of *Sixth Tau Beta Pi Minneapolis Honeywell Fellowship* for graduate study, 1959-1960.

6. McDonnell Douglas Citation for Professional Achievement, each year from 1964 to 1974.

7. Outstanding Presentation Award (1976) for "Single-Channel White Noise Estimators for Predictive Deconvolution," from the Society of Exploration Geophysicists.

8. Fellow of IEEE (1978) for "Contributions to System Identification, State Estimation, and their Application to Aerospace Technology."

9. Two papers reprinted in *Deconvolution of Seismic Data* (J. K. Aggarwal and V. K. Arya, eds.), in the series **Benchmark Papers in Electrical Engineering and Computer Science**, Dowden, Hutchinson & Ross (1982).

10. Best Transactions Paper Award for the paper published in the 1983 *IEEE Trans. on Geoscience and Remote Sensing*, entitled "Maximum-Likelihood Seismic Deconvolution," (co-authored with J. Kormylo), pp. 72-82, January 1983.

11. Distinguished Member of IEEE Control Systems Society (1983 - present).

12. Invited to present a tutorial paper at 1983 IEEE International Symposium on Circuits and Systems, Newport Beach, CA, 1983.

13. IEEE Centennial Medal for Extraordinary Achievement (1984).

14. One paper reprinted in **Kalman Filtering: Theory and Applications** (H. W. Sorenson, ed.), IEEE Press, 1985.

15. Phi Kappa Phi Faculty Recognition Award for the book *Optimal Seismic Deconvolution: an Estimation Based Approach* and "Collection of Publications on Deconvolution," 1985 (citation and $1000 check).

16. 1985 Burlington Northern Foundation Faculty Achievement Award for Outstanding Scholar ($2,500 prize).

17. Invited PLENARY SPEAKER at 7th IFAC Symposium on Identification and System Parameter Estimation, York, England, 1985.

18. Consultant Professor at Northwestern Polytechnical University, Xian, People's Republic of China (1986 - 1995).

19. Invited KEYNOTE SPEAKER at 1991 Workshop on Higher-Order Statistics, La-Berangere, Chamrousse, France.

20. IEEE Signal Processing Society 1992 Paper Award for the paper, entitled “Identification of Non-Minimum Phase Systems Using Higher-Order Statistics” (co-authored with Georgios B. Giannakis), in the *IEEE Trans. on Acoustics, Speech and Signal Processing*, Vol. 37, March 1989.

21. Elected a member of Sigma Xi (1993-present).

22. School of Engineering 1993 Service Award.

23. One paper reprinted in **Fuzzy Logic Technology and Applications**, (R. J. Marks, II, Ed.), IEEE Technology Update Series, 1994.

24. Two papers reprinted in **Seismic Source Signature Estimation and Measurement**, (O. M. Osman and E. A. Robinson, Eds.), Society of Exploration Geophysicists, 1996.

25. Two papers reprinted in **Deconvolution 2** (E. A. Robinson and O. M. Osman, Eds.), Society of Exploration Geophysicists, 1996.

26. Invited KEYNOTE SPEAKER at World Automation Congress: Second International Symposium on Soft Computing for Industry, Anchorage, AK, May 1998.

27. Visiting Professor at Jilin Institute of Technology, Changchun, China, September 1999-2000.

28. Invited PLENARY SPEAKER at International Conference on Recent Advances in Soft Computing, DeMontfort Univ., Leicester, UK, June 29–30, 2000.

29. 2000—Recipient of IEEE Third Millenium Medal for Outstanding Contributions and Achievements.

30. Invited PLENARY SPEAKER at Third IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications, Taoyuan, Taiwan, March 20–23, 2001.

31. Invited PLENARY SPEAKER at IEEE FUZZ Conference, Melbourne, Australia, December 2–5, 2001.

32. 2002 *IEEE Transactions on Fuzzy Systems* Outstanding Paper Award for the paper entitled "Type-2 Fuzzy Logic Systems" (co-authored with Nilesh Karnik and Qilian Liang), *IEEE Trans. on Fuzzy Systems*, vol. 7, no. 6, pp. 643-658, Dec. 1999.

33. School of Engineering ***Special Education Award***, May 2002, for leadership in curriculum development and revision.

34. Visiting Professor to the Centre for Computational Intelligence, De Montfort Univ., Leicester, UK, to provide them with strategic advice for their research (Fall 2001-2003).

35. Invited KEYNOTE SPEAKER at 7th IASTED Int'l. Conf. Artificial Intelligence and Soft Computing, Banff, Canada, July 2003.

36. Life Fellow of the IEEE, Jan. 1, 2004.

37. Distinguished Lecturer of IEEE Computational Intelligence Society, 2004-present (until 2012).

38. Invited PLENARY SPEAKER at International Seminar of Computational Intelligence, IEEE Computational Intelligence Society Mexico Chapter and Tijuana Institute of Technology, Tijuana Mexico, Dec. 1, 2004.

39. Member of Advisory Board, Jisan Research Institute, Pasadena, CA, June 2004-2006.

40. Pioneer Award for Outstanding Contributions in Type-2 Fuzzy Systems, from the IEEE Granular Computing Conference, May 2006, Atlanta, GA.

41. PLENARY SPEAKER: International. Conf. Multisensor Fusion & Integration for Intelligent Systems, Heidelberg, Germany, August 2006.

42. KEYNOTE SPEAKER: IEEE 2006 International. Conf. on Granular Computing, Atlanta, GA. May 2006.

43. Invited Lecture at WCCI 2006, Vancouver, Canada, July 2006.

44. PLENARY SPEAKER at International Fuzzy Systems Association Conference, Cancun, Mexico, June 20, 2007.

45. PLENARY SPEAKER at IEEE International Conference on Fuzzy Systems, London, UK, July 26, 2007.

46. 2008 Fuzzy Systems Pioneer Award from the IEEE Computational Intelligence Society, "for fundamental theoretical contributions and seminal results in fuzzy systems." Awarded at WCCI 2008 in Hong Kong (June 1-5).

47. Nominated for the USC Mellon Awards recognizing excellence in mentoring: faculty mentoring graduate students.

48. Fellow of IFSA, July 2009, for outstanding technical contributions, pioneering applications, and support and development of the infrastructure of the fuzzy community.

49. KEYNOTE SPEAKER at Applied Computational Intelligence Conference, Buenos Aires, Argentina, July 23-24, 2009.

50. PLENARY SPEAKER at FUZZ-IEEE 2009, Jeju, Korea, June 2009.

51. KEYNOTE SPEAKER at FUZZYSS'09, Ankara, Turkey, October 2009.

52. KEYNOTE SPEAKER at Granular Computing Conference, San Jose, CA, August 2010.

53. PLENARY SPEAKER at NAFIPS, Univ. of Texas at El Paso, TX, March 2011.

54. KEYNOTE SPEAKER at IEEE Symposium Series in Computational Intelligence: Symposium on Advances in Type-2 Fuzzy Logic Systems, Paris France, April 2011.

55. PLENARY SPEAKER at IEEE International Conference on Fuzzy Systems. Taipei, Taiwan, June 2011.

56. Best Paper Award, 1st Place for the Special Session paper "Fuzzy Set Qualitative Comparative Analysis (fsQCA): Challenges and Applications," (M. M. Korjani, co-author), NAFIPS 2012, Aug. 6-8, Berkeley, CA.

57. Best Student Paper Award, 2nd Place for the Special Session paper "Solving Zadeh's Swedes and Italians Challenge Problem," (M. R. Rajati, co-author), NAFIPS 2012, Aug. 6-8, Berkeley, CA.

58. KEYNOTE SPEAKER at World Conference on Soft Computing, San Antonio, TX, December 2013.

59. 2014 *IEEE Transactions on Fuzzy Systems* Outstanding Paper Award for the paper entitled "On the Continuity of Type-1 and Interval Type-2 Fuzzy Logic Systems," *IEEE Trans. on Fuzzy Systems,* Feb. 2011, pp, 179-192.

60. PLENARY SPEAKER at World Conference on Computational Intelligence, Beijing, China, July 2014.

61. KEYNOTE SPEAKER at 11th Int'l. Conf. on Applications of Fuzzy Systems and Soft Computing, Paris France, Sept. 2014.

62. Viterbi School of Engineering Senior Research Award, 2015.

63. KEYNOTE SPEAKER at World Conference on Soft Computing, UC Berkeley, CA, May 2016.

64: *International Visiting Fellow* at the University of Essex, England, May 2, 2017–May 17, 2017.

65. KEYNOTE SPEAKER at World Conference on Soft Computing, Baku Azerbaijan, May 2018.

66. KEYNOTE TALK at 2019 IEEE CIS Summer School on Computational Intelligence for Human and Smart Machine Co-Learning, NKNU Kaohsiung, Taiwan, Dec. 21–13, 2019.

67. KEYNOTE SPEAKER at NAFIPS 2021, June 2021, Purdue University (Virtual on Zoom).

68. KEYNOTE SPEAKER at FUZZ-IEEE 2021, July 2021, Luxembourg (Virtual on Zoom).

69. 2021 IEEE Lotfi A. Zadeh Pioneer Award for developing and promoting Type-2 fuzzy logic (maintained by the IEEE Systems, Man, and Cybernetics Society).

70. Fellow of Asia-Pacific Artificial Intelligence Association (AAIA), June 2021.

71. KEYNOTE SPEAKER at FUZZ-IEEE 2023, August 2023, Incheon, Korea.

## IV. Editorships

1. Associate Guest Editor for the *IEEE Trans. on Automatic Control*'s special issue on the Linear-Quadratic-Gaussian Problem, 1971.

2. Associate Editor for *IEEE Trans. on Automatic Control*, for Adaptive and Learning Systems, Pattern Recognition, (1970-1971).

3. Editor-in-Chief of *IEEE Trans. on Automatic Control* (1973-1974).

4. Editor of **Control and Systems Theory Series** for Marcel Dekker, Inc. (Founding Editor) (1974-1980).

5. Guest Editor for a Special Issue of *IEEE Trans. on Geoscience Electronics* on "Seismic Data Processing," April 1978.

6. Associate Editor for *IEEE Trans. on Automatic Control*, for Surveys and Tutorials (1978).

7. Editorial Board of *IEEE Trans. on Pattern Analysis and Machine Intelligence* (1978-1980).

8. Associate Editor for "Signal Processing" area of *IEEE Trans. on Geoscience Electronics/IEEE Trans. on Geoscience and Remote Sensing* (1979-1986).

9. Associate Editor of *Automatica* (1979-1987).

10. Board of Editors of *IEEE Control Systems Society Magazine* (1980).

11. Consulting Editor of **Control and Systems Theory Series** for Marcel Dekker, Inc. (1981 - 1987).

12. Member of Editorial Board of *IEEE Trans. on Automatic Control*, for a "Special Issue on Applications of Kalman Filtering," (1982-1983).

13. Associate Editor at Large for *IEEE Trans. on Automatic Control* (1988 - 1990).

14. Editorial Board of *IEEE Proceedings* (1988 - 1993).

15. Editorial Board of *Applied Signal Processing* (1991-2002).

16. Guest Editor of special issue of *IEEE Trans. on Automatic Control* on "Applications of Higher-Order Statistics in System Theory and Signal Processing," January 1990 issue.

17. Co-Guest Editor of mini Special issue of *IEEE Trans. on Acoustics, Speech & Signal Processing*, on "Higher-Order Spectral Analysis," July 1990 issue.

18. Co-Guest Editor of Special Issue of IEE Proceedings Part F (Radar and Signal Processing) on Applications of Higher - Order Statistics, Dec. 1993 issue.

19. Associate Editor of *IEEE Trans. on Fuzzy Systems* (1994-1995, 1999-2016).

20. Member of Advisory Board for the Cambridge Univ. Press book series Advanced Artificial Intelligence (2001-2012).

21. Member of International Advisory Committee of the Berkeley Initiative on Soft Computing (BISC) special interest group on fuzzy logic and the Internet (2001-2012).

22. Editorial Board Representative for the EURASIP *J. on Applied Signal Processing's* Special Issue on *Smart Antenna Techniques* (Fall 2002-2004).

23. Editorial Board of *International J. of Innovative Computing & Information Control* (IJICIC) (July, 2004-2016).

24. Associate Editor of *Int'l. J. of Computational Intelligence Research* (May, 2005-2012).

25. Editorial Board of *Advances in Fuzzy Sets and Systems* (June 2006-2016)

26. Editorial Advisory Board of *International Journal of Granular Computing, Rough Sets and Intelligent Systems* (October, 2008-2016).

27. Editorial Board of *Journal of Advanced Research in Fuzzy and Uncertain Systems* (November, 2008-2012).

28. Guest Editor of Special Issue on Computing With Words, *IEEE Trans. on Fuzzy Systems*, 2009-2010.

29. Associate Editor of *IEEE Computational Intelligence Magazine*, 2010.

30. Editorial Board of *Evolving Systems* (Springer), 2010-2012.

31. Editorial Board of *Turkish Journal on Fuzzy Systems* (TJFS) May 2010-present.

32. Member of Advisory Board for *Handbook of Computational Intelligence*, (J. Kacprzyk and W. Pedrycz, Editors), Springer, Heidelberg and New York, 2010-2012.

33. Member of Editorial Committee of the *Science and Technology Journal*, Univ. of Palermo, Buenos Aires, Argentina, 2011-2012.

34. Lead co-Guest Editor of June 2013 Special Issue of *IEEE Trans. on Fuzzy Systems* on Type-2 Fuzzy Sets and Systems.

35. Advisory Board of *Evolving Systems* (2013-2016).

36. Member of Editorial Advisory Board of the *Journal on Intelligent and Cognitive Computing* for the Intelligent Systems Scientific Society of Iran (2014-present).

37. Advisory Board of *Granular Computing Journal*, Fall 2015-2017.

## V. Professional Service (Only those societies I have been very active in)

1. IEEE Control Systems Society

a. Chairman of Adaptive and Learning Systems, Pattern Recognition Technical Committee (1970-1971).
b. Chairman of Conf. on Decision and Control Steering Committee (1971-1972).
c. Elected member of AdCom (1974-1981, 1983-1985).
d. Editor of *IEEETrans. on Automatic Control* (1973-1974).
e. Chairman of Publications Committee (1976-1979).
f. Chairman of Awards and Fellow Nominations Committee (1980-1982).
g. Founding Chairman of Human Rights Committee (1981-1982); Chairman of Human Rights Committee (1988 - 1990).
h. Vice-President for Technical Activities (1983-1984).
I. President-Elect (1985).
j. Chairman of Long-Range Planning Committee (1985).
k. President (1986).
l. Chairman of Nominating Committee (1987).
m. Member of Field Award Committee (1988-1990)
n. External Liaison Representative to IEEE Neural Network Society (2002)

2. IEEE Systems, Man and Cybernetics Society

a. Member (1968-1977).
b. Founding Member of Los Angeles Chapter. Held every possible chapter office, including President (during 1969-1970).

3. IEEE Computational Intelligence Society (formerly, the Neural Network Society)

a. Member of the *Fuzzy Systems Technical Committee* (Jan. 2001-End of 2015).
b. Chairman of the *Fuzzy Systems Technical Committee* (Jan. 2003-Dec. 2007).
c. Elected member (3X) of the Administrative Committee (Jan. 1, 2004-2006; Jan. 2007-Dec. 2009, Jan. 2011-December 31, 2013).
d. Member of Fellow Evaluation Committee (2004-2006).
e. Member of Awards Committee (2004-2006).
f. Member of Standards Committee (2005-2008).
g. Member of Frank Rosenblatt IEEE Field Award Committee (2005-2007).
h. Member of Conference Committee (Dec. 2005-2006)
i. Member of Multi-media Tutorials Sub-Committee of the IEEE CIS Education Committee (Dec. 2005-2013).
j. Member of Emergent Technology Technical Committee (Feb. 2006-December 2008).
k. Chairman of *Task Force on Computing With Words* for the Fuzzy Systems Technical Committee of the IEEE CIS (2008-2010).
l. Member of University Curricula Sub-Committee of the IEEE CIS Education Committee (Jan. 2009–Dec. 2009).
m. Member of Educational Repository Sub-Committee of the IEEE CIS Education Committee (Jan. 2009 – 2011).
n. Chairman of Pre-College Education Sub-Committee of the Education Committee for the IEEE Computational Intelligence Society (Jan. 2010-2011).
o. Member of Outstanding Computational Intelligence Early Career Award Subcommittee, 2010.
p. Liaison to IEEE Press (Jan. 2011-2013).
q. Member of Distinguished Lecturer Committee (Jan. 2012-2014).
r. Member of Fuzzy Pioneer Award Committee (2014-2015, 2017).
s. Member of Outstanding Organization Award Committee, 2016.
t. Member of XAI Standards Committee, 2021-pesent.
u. Member of Industrial Activities Committee, 2021-present.
v. Member of Continuing Education sub-committee of the Education Committee, 2021-present.

w. Member of Fuzzy System's TC on XAI, July 2021–present.

4. Society of Exploration Geophysicists

   a. Associate Member (1976-1978).
   b. Member of Publications Committee (1977-1979).
   c. Active Member (1979 - 1997).

## VI. Ph.D. Students

1. **Hugh D. Washburn**: March 1977, "Multistage Estimation and State Space Layered Media Models."

2. **Johnetta R. MacCalla**: June 1978, "Simultaneous State and Parameter Estimation of Systems with Multiplicative Noise."

3. **Farrokh Habibi-Ashrafi**: August 1978, "Estimation of Parameters in Lossless Layered Media Systems."

4. **Fereydoun Aminzadeh**: June 1979, "Non-Normal Incidence State Space Model for Layered Media Systems."

5. **John Kormylo**: October, 1979, "Maximum-Likelihood Seismic Deconvolution."

6. **Ja Sung Lee**: November 1980, "Identification of Layered Media Systems."

7. **Mostafa Shiva**: April 1982, "Geo-Optimal Deconvolution."

8. **Chong-Yung Chi**: April 1983, "Single-Channel and Multichannel Deconvolution."

9. **A-Chuan Hsueh**: August 1983, "State Variable Modeling and Recursive Processing of 1-D and 2-D Non-Causal Systems."

10. **Surendra Ganesh Lele**: August 1985, "Minimum Variance Deconvolution for 1-D and 2-D Noncausal Systems with Colored Noise Input."

11. **Georgios B. Giannakis**: July 1986, "Signal Processing via Higher-Order Statistics."

12. **John Ioannis Goutsias**: August 1986, "Semi-Markov Random Field Models for Nonstationary Signal Processing."

13. **Ananthram Swami**: October 1988, "System Identification Using Cumulants."

14. **David Long**: January 1989, "Model-Based Estimation of Wind Fields Over the Oceans from Wind Scatterometer Measurements."

15. **Robert F. Popoli**: August, 1989, "Objective and Subjective Knowledge in Estimation."

16. **Li-Xin Wang**: May, 1992,"Analysis and Design of Fuzzy Systems."

17. **Mithat C. Dogan**: September, 1993, "Cumulants and Array Processing."

18. **George Mouzouris**: May 1996, "Non-Parametric Modeling of Nonlinear Processes Using a Fuzzy Set Theoretic Approach."

19. **Egemen Gönen**: May, 1997, “Cumulants and Subspace Techniques for Array Processing.”

20. **Wen Wei**: January 1998, “Constellation-Based Modulation Classification.”

21. **Nilesh Karnik**: August 1998," Type-2 Fuzzy Logic Systems."

22. **Tsung-Hsien Liu**: December 1998," Array Signal Processing Using Higher-Order and Fractional Lower-Order Statistics.”

23. **Qilian Liang**: May 2000, "Fading Channel Equalization and Video Traffic Classification Using Nonlinear Signal Processing Techniques."

24. **Hongwei Wu**: May 2004, “Rule-Based Systems for Data Processing.”

25. **Feilong Liu**: May 2008, “Intelligent Signal Processing for Oilfield Waterflood Management.”

26. **Dongrui Wu:** May 2009, “Intelligent Systems for Decision Support.”

27. **Jaoquin Rapella:** 2010, “Characterization of Visual Cells Using Generic Models and Natural Stimuli.”

28. **Daoyuan Zhai:** 2012, “Advanced Learning Systems for Highly Uncertain Environments.”

29. **Minshen Hao:** 2014, “Aggregation and Modeling Using Computational Intelligence Techniques.”

30. **Mohammad Reza Rajati:** 2015, “Advances in Linguistic Data-Oriented Uncertainty Modeling, Reasoning and Intelligent Decision Making.”

31. **Mohammad Mehdi Korjani**: 2015, “Intelligent Knowledge Acquisition Systems: from Descriptive to Predictive Models.”

## VII. Publications

### A. Journal Papers

1."Experimental Measurements Useful in Determining the Damping Ratio for a Second-Order Response," *IEEE Trans. on Automatic Control*, Vol. AC-8, No. 1, pp. 65-66, January 1963.

2."On the Use of Orthonormal Exponentials in a Feedback Application," *IEEE Trans. on Automatic Control*, Vol. AC-9, No. 3, pp. 310-312, July 1964.

3."Discussion of 'Transfer Function Tracking of a Linear Time-Invariant System by Means of Auxiliary Simple Lag Networks,'" *IEEE Trans. on Circuit Theory*, Vol. AC-9, No. 3, pp. 322-323, July 1964.

4. "On the Inversion of Laplace Transforms by Means of Truncated Series of Orthonormal Exponential Functions," *IEEE Trans. on Circuit Theory*, Vol. CT-11, No. 3, pp. 424-426, September 1964.

5."A Unified Approach to the Synthesis of Orthonormal Exponential Functions Useful in Systems Analysis," presented at the 1965 Joint Automatic Control Conference, June 1965; also published in *IEEE Transactions on Systems Science and Cybernetics*, Vol. SSC-2, No. 1, pp. 54-62, August 1966.

6. "Reply to 'A Note on Transfer Function Identification,'" *IEEE Transactions on Automatic Control*, Vol. AC-10, No. 4, pp. 491-492, October 1965.

7. "A Survey of Learning Control Systems," *ISA Transactions*, Vol. 5, No. 3, pp. 297-303, July 1966.

8. "The Effects of Threshold in an Error-Correction Learning Algorithm," *Proceedings of the National Electronics Conference*, pp. 26-28, 1967.

9. "Gradient, Error-Correction Identification Algorithms," *Information Sciences*, Vol. 1, No. 1, pp. 23-42, 1968.

10. "Performance Cost Functions for a Reaction-Jet Controlled System During an On-Off Limit Cycle," presented at the 1968 Joint Automatic Control Conference, June 1968; also published in *IEEE Trans. on Automatic Control*, Vol. AC-13, No. 4, pp. 362-368, August 1968.

11. "Performance Cost Functions for a Reaction-Jet Controlled System During an On-Off-On Limit Cycle," *IEEE Trans. on Automatic Control*, Vol. AC-15, No. 1, pp. 152-153, February 1970.

12. "On-Off Limit Cycle Controllers for Reaction-Jet Controlled Systems," *IEEE Trans. on Automatic Control*, Vol. AC-15, No. 3, pp. 285-299, June, 1970.

13. "Property of the Equation-Error Approach to Parameter Identification," *IEEE Trans. on Automatic Control*, Vol. AC-15, No. 6, pp. 676-678, December 1970.

14. "Identification of Decomposable Time-Varying Parameters by Means of Gradient Algorithms," presented at IEEE Symposium on Adaptive Processes: Decision and Control, Univ. of Texas, Austin, TX, Dec. 1970; also published in *Information Sciences*, Vol. 4, pp. 261-283, 1972.

15. "Computational Requirements for a Discrete Kalman Filter," *IEEE Trans. on Automatic Control*, Vol. AC-16, No. 6, pp. 748-758, December 1971.

16. "Bibliography on the Linear-Quadratic-Gaussian Problem," (D. L. Gieseking, co-author), *IEEE Trans. on Automatic Control*, Vol. AC-16, No. 6, pp. 847-869, December 1971.

17. "On the Need for and Use of a Measure of State Estimation Error in the Design of Quadratic-Optimal Control Gains," presented at 1971 Joint Control Conference, St. Louis, MO, August 1971; also published in *IEEE Trans. on Automatic Control*, Vol. AC-16, No. 5, pp. 500-503, October 1971.

18. "Invariant Poles Feedback Control of Flexible, Highly Variable Spacecraft," presented at 1972 Joint Automatic Control Conference, Stanford University, Stanford, CA, August 1972; also published in *IEEE Trans. on Automatic Control*, Vol. AC-17, No. 6, pp. 814-821, December 1972.

19 "A Four-Level Technique for Estimation of Tactical Missile Aerodynamic Parameters," presented at 1972 IEEE Conference on Decision and Control, New Orleans, Louisiana, December 1972; also published in *IEEE Trans. on Automatic Control*, Vol. AC-18, pp. 163-167, April 1973.

20. "A Concise Derivation of Optimal Constant Limited State Feedback Gains," *IEEE Trans. on Automatic Control*, Vol. AC-19, pp. 447-448, August 1974.

21. "Postflight Data Analysis by Means of Adaptive, Iterated, Extended Kalman Filtering," *IEEE Trans. on Automatic Control*, Vol. AC-19, pp. 467-474, October 1974.

22. "Gradient Estimation Algorithms for Equation Error Formulations," Special Issue of *IEEE Trans. on Automatic Control on Time Series and Identification*, Vol. AC-19, pp. 820-824, December 1974.

23. "On the Design of Optimal Time-Invariant Compensators for Linear Stochastic Time-Invariant Systems," *IEEE Trans. on Automatic Control*, Vol. AC-20, pp. 653-657, October 1975; also presented at the 1974 IEEE Conference on Decision and Control, Phoenix, Arizona, November 1974.

24. "Multi-Stage Least Squares Parameter Estimators," *IEEE Trans. on Automatic Control*, Vol. AC-20, pp. 775-782, December 1975.

25. "On the Identification of State-Derivative Coupled Systems," *IEEE Trans. on Automatic Control*, Vol. AC-20, pp. 782-785; also presented at the 1975 IEEE Conference on Decision and Control, Houston, TX, December 1975.

26. "Extension of Friedland's Bias Filtering Technique to a Class of Non-linear Systems," *IEEE Trans. on Automatic Control*, Vol. AC-21, pp. 296-298, April 1976.

27. "New Fast Optimal White-Noise Estimators for Deconvolution," (J. Kormylo, co-author), Special Issue on Geophysical Data Processing of *IEEE Trans. on Geoscience Electronics*, Vol. GE-15, pp. 32-41, January 1977.

28. "White-Noise Estimators for Seismic Data Processing in Oil Exploration," presented at 1976 Joint Automatic Control Conference, Purdue University, Lafayette, IN; USC EE Report 486, dated November 1975; also published in *IEEE Trans. on Automatic Control*, Vol. AC-22, pp. 694-706, October 1977.

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## B. Conference and Other Papers

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2. "Time-Optimal Control of a Stable Maneuverable Re-entry Vehicle," presented as part of Short Course 839.13, "Applications of Artificial Intelligence to Control System Design," University of California, Los Angeles, CA, October 3-7, 1966.

3. "Realization of Closed-Loop Optimal Controllers by Off-Line Training Techniques," (J. J. Zapalac, co-author) presented (1) at Control Theory Symposium, NASA G. C. Marshall Space Flight Center, Huntsville, AL, September 19-21, 1966 and (2) as part of Short Course 839.13 (see 2 above).

4. "Applications of Adaptive Computers to the Synthesis of Time-and-Fuel-Optimal Controllers," (J. J. Zapalac, co-author) presented at Short Course 839.13 (see 2 above).

5. "Realization of a Closed-Loop, Time, Suboptimal Controller by Off-Line Training Techniques," (J. J. Zapalac, co-author) presented at the 1967 Joint Automatic Control Conference, June 1967.

6. "Four Basic Concepts for On-Line Learning Control," presented at the 1968 IEEE International Convention, March 1968.

7. "A Priori and A Posteriori Identification of Time-Varying Parameters," presented at the Second Hawaii International Conference on System Sciences, University of Hawaii, Honolulu, HI, January 1969.

8. "A Steady-State Approach to the Analysis and Synthesis of Controllers for a Reaction-Jet Controlled Vehicle," presented at the AIAA Guidance, Control, and Flight Dynamics Conference, Princeton University, Princeton, NJ, August 1969. AIAA Paper No. 69-854.

9. "On-Off Limit Cycle Controllers for Reaction-Jet Controlled Systems: Part I, Analysis and Synthesis," presented at the 1969 Joint Automatic Control Conference, Boulder, CO, August 1969.

10. "Sequential Identification by Means of Gradient--Learning--Algorithms," presented at the U.S.-Japan Seminar on Learning Process in Control Systems, Nagoya, Japan, August 1970 (see C-8).

11. "Space Station Adaptive Control," presented at 1971 IEEE International Convention, March 1971.

12. "Post Flight Data Analysis by Means of Adaptive Iterated Extended Kalman Filtering," presented at the Naval Weapons Center Conference on the Application of Control Theory to Modern Weapons Systems, May 1973, California City, California, and 1973 IEEE Conference on Decision and Control, San Diego, CA, December 1973.

13. "Reinforcement Learning Models and Their Applications to Control Problems," presented at 1973 Joint Automatic Control Conference, American Automatic Control Council Special Session on Learning Systems, June 1973, Ohio State University, Ohio.

14. "Data Compression of Rectangular Arrays," presented at 1973 Conference on Decision and Control, San Diego, CA, December 1973.

15. "Learning Methods in Space Technology," presented at 1974 IEEE Conference on Decision and Control, Phoenix, AZ, November 1974.

16. "Optimal Time-Invariant Compensators for Linear Stochastic Time-Invariant Systems," presented at 1974 IEEE Conference on Decision and Control, Phoenix, AZ, November 1974.

17. "Multi-Stage Least Squares Parameter Estimation: An Approach to Modeling Large-Scale Systems," presented at the Fifth Symposium on Nonlinear Estimation and its Applications, San Diego, CA, September 1974.

18. "On Modeling High Performance Aerospace Vehicles for Maximum Likelihood Postflight Data Analysis," presented at the Sixth Annual Pittsburgh Conference on Modeling and Simulation, University of Pittsburgh, Pittsburgh, PA, April 1975.

19. "Computational Requirements for Multistage Least-Squares Estimators," presented at the Sixth Symposium on Nonlinear Estimation and its Applications,San Diego, CA, September 1974.

20. "Optimal Estimators of White Disturbances," presented at 5th NBER Conference on Stochastic Control and Economics, Stanford University, Stanford, CA, May 1976.

21. "Single-Channel White Noise Estimators for Predictive Deconvolution," presented at the 46th Annual Meeting of the Society of Exploration Geophysicists, Houston, TX, October 1976. Also published as USC EE Report 488, dated January 1976.

22. "A Time-Domain Approach to Seismogram Synthesis for Layered Media," (N. E. Nahi, co-author) presented at 46th Annual Meeting of the Society of Exploration Geophysicists, Houston, TX, October 1976. Also published as USC EE Report 490, dated June 1976.

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25. "State Space Models of Lossless Layered Media," (N. E. Nahi, L. M. Silverman, and H. D. Washburn, co-authors) presented at 1977 Joint Automatic Control Conference, San Francisco, CA, June 1977.

26. "Computational Solutions to a Non-Uniform Time-Delay Linear System," (W. M. Chan and N. E. Nahi, co-authors) presented at Symposium on Applications of Computer Methods in Engineering, University of Southern California, Los Angeles, CA, August 1977.

27. "On the Treatment of Spherical Divergence for Kalman Filtering Deconvolution," (J. Kormylo, principal author) presented at the 47th Annual Meeting of the Society of Exploration Geophysicists, Calgary, Alberta, Canada, September 1977.

28. "Reinforcement of Reflections," (J. S. Lee, co-author) presented at the 47th Annual Meeting of the Society of Exploration Geophysicists, Calgary, Alberta, Canada, September 1977.

29. "Simultaneous State and Parameter Estimation of Scalar Multiplicative Noise Systems," (J. MacCalla, principal author) presented at 1977 IEEE Conference on Decision and Control, New Orleans, LA, December 1977.

30. "Recursive Derivation of Reflection Coefficients from Noisy Seismic Data," (N. E. Nahi and L. M. Silverman, co-authors) USC EE Report 496; also, presented at 1978 IEEE International Conference on Acoustics, Speech, and Signal Processing, Tulsa, OK, April 978.

31. "Non-Normal Incidence State Space Models," (F. Aminzadeh, co-author) presented at 48th Annual Meeting of the Society of Exploration Geophysicists, San Francisco, CA, November 1978.

32. "On Maximum-Likelihood Detection and Estimation of Reflection Coefficients," (J. Kormylo, co-author) presented at 48th Annual Meeting of the Society of Exploration Geophysicists, San Francisco, CA, November 1978.

33. "Suppression of Multiple Reflections," (J. S. Lee, co-author) presented at 48th Annual Meeting of the Society of Exploration Geophysicists, San Francisco, CA, November 1978.

34. "An Extension of the Maximum A Posteriori Likelihood State and Parameter Estimator to Discrete Time Multivariable Systems with Multiplicative Noise," (J. MacCalla, co-author) presented at 17th IEEE Conference on Decision and Control, San Diego, CA, January 1979.

35. "Minimum-Variance State Estimation for Uniform Causal Functional Equations," (H. D. Washburn, co-author) presented at 17th IEEE Conference on Decision and Control, San Diego, CA, January 1979.

36. "Identification of Reflection Coefficients from Noisy Data by Means of Extended Minimum-Variance Estimators: A Critical Examination," presented at 17th IEEE Conference on Decision and Control, San Diego, CA, January 1979.

37. "A Survey of Approaches to Solving Inverse Problems for Lossless Layered Media Systems," (F. Habibi-Ashrafi, co-author) presented at 5th IFAC Symposium on Identification and System Parameter Estimation, Darmstadt, Federal Republic of Germany, Sept. 24-28, 1979.

38. "Suboptimal Estimation of Reflection Coefficients for Lossless Layered Systems from Noisy Data," presented at the 49th Annual Meeting of the Society of Exploration Geophysicists, New Orleans, LA, November 1979.

39. "Applying Maximum-Likelihood Deconvolution to Well Log Impedance Data," (J. Kormylo, co-author) presented at the 49th Annual Meeting of the Society of Exploration Geophysicists, New Orleans, LA, November 1979.

40. "Suppression of Surface Multiple in a Non-Normal Incidence Plane Wave Seismogram," (F. Aminzadeh, co-author) presented at the 49th Annual Meeting of the Society of Exploration Geophysicists, New Orleans, LA, November 1979.

41. "Simultaneous Estimation of Reflection Coefficients and Travel-Times in Lossless Layered Media Systems," (F. Habibi-Ashrafi, co-author) presented at the 49th Annual Meeting of the Society of Exploration Geophysicists, New Orleans, LA, November 1979.

42. "Maximum-Likelihood Estimation and Detection for Single-Channel Systems Having Limited Input Information," presented at Second Applied Time-Series Symposium, Tulsa, OK, March 3-5, 1980.

43. "Maximum-Likelihood Seismic Deconvolution," (J. Kormylo, co-author) presented at the 50th Annual Meeting of the Society of Exploration Geophysicists, Houston, TX, November 1980.

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48. "Applications of State Variable Technology in Reflection Seismology for Oil and Gas Exploration," presented at IFAC Congress VIII, Kyoto, Japan, August 1981.

49. "Maximum-Likelihood as Applied to Seismic Inversion Problems," presented at 6th IFAC Symposium on Identification and System Parameter Estimation, Washington, DC, June 1982.

50. "State Space Modeling of Non-Causal Impulse Responses," (A. C. Hsueh, co-author) presented at 1982 IEEE Conference on Decision and Control, Orlando, FL, December 1982.

51. "2-D Non-causal Systems: State Space Modeling for Half-Plane Support," (A. C. Hsueh and B. Lashgari, co-authors) presented at 1983 ICASSP, Boston, MA.

52. "Normal-Incidence Geo-Optimal Deconvolution," (M. Shiva, co-author) presented at the International Geophysics and Remote Sensing Symposium, San Francisco, CA, September 1983.

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55. "A Fast Approach to Identification Using Deconvolution," (C. Y. Chi, co-author) presented at the IEEE Conf. on Decision and Control, San Antonio, TX, December 1983.

56. "A Computationally-Fast Approch to Maximum-Likelihood Deconvolution," (C. Y. Chi and D. Hampson, co-authors) presented at the 1983 SEG Meeting, Las Vegas, NV, October 1983.

57. "Inversion and Deconvolution: Foreplay and Interplay," invited tutorial paper presented at 1983 IEEE International Symposium on Circuits and Systems, Newport Beach, CA, May 1983.

58. "Performance of Minimum-Variance Deconvolution Filter," (C. Y. Chi, co-author) presented at 1984 ICASSP, San Diego, CA, March 1984.

59. "A Fast Maximum-Likelihood Estimation and Detection Algorithm for Bernoulli-Gaussian Processes," (C. Y. Chi and J. Goutsias, co-authors) presented at 1985 ICASSP, Tampa, FL, March 1985.

60. "Some Representation, Measurement, Estimation and Validation Problems in Reflection Seismology," Plenary Paper presented at 7th IFAC/IFORS Symposium on Identification and System Parameter Estimation, York, UK, July 3-7, 1985.

61. "A 2-D Stochastic Earth Model for Seismic Inversion," (J. Goutsias, co-author) presented at SEG's 55th Annual International Meeting, Washington, D.C., October 6-10, 1985.

62. "Multichannel Maximum-Likelihood Deconvolution," (C. Y. Chi, co-author) presented at SEG's 55th Annual International Meeting, Washington, D.C., October 6-10, 1985.

63. "Stochastic Realization of Nonmiminum Phase Systems," (G. Giannakis, co-author), presented at 1986 American Automatic Control Conference, Seattle, WA, June 1986.

64. "Tomographic Wavelet Estimation via Higher Order Statistics," (G. Giannakis, co-author), presented at SEG's 56th Annual International Meeting, Houston, TX, November 1986.

65. "A 2-D Imaging System for Linearized Inversion," (J. Goutsias, co-author), presented at SEG's 56th Annual International Meeting, Houston, TX, November 1986.

66. "Approximate Realization and Model Reduction of Non-Minimum Phase Stochastic Systems," (G. Giannakis, co-author) presented at 25th IEEE Conference on Decision and Control, Athens, Greece, December 1986.

67. "Semi-Markov Random Field Models for Texture Synthesis," (J. Goutsias, co-author) presented at the Medical Imaging/Pattern Recognition and Acoustical Imaging International Symposium, Newport Beach, CA, February 1987.

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69. "ARMA Modeling Using Cumulant and Autocorrelation Statistics," (G. Giannakis, and W. Wang, co-authors) presented at 1987 ICASSP, Dallas, TX.

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71. "Constrained Total Least Squares," (T. Abatzoglou, co-author) presented at 1987 ICASSP, Dallas, TX.

72. "ARMA Order Determination via Higher-Order Statistics," (G. B. Giannakis, co-author) presented at MTNS Conference, Phoenix, AZ, June 1987.

73. "Use of Higher-Order Statistics in Signal Processing and System Theory: a Short Perspective," presented at MTNS Conference, Phoenix, AZ, June 1987.

74. "Relative Sufficiency," (R. Popoli, co-author) presented at 1987 Allerton Conference on Communication, Control and Computing, Illinois.

75. "Heuristically Constrained Estimation for Intelligent Signal Processing," (R. Popoli, co-author) presented at 1987 IEEE Conf. on Decision and Control, Los Angeles, CA, December 1987.

76. "Cumulant-Based Approach to the Harmonic Retrieval Problem," (A. Swami, co-author) presented at 1988 ICASSP, New York City, NY.

77. "Adaptive System Identification Using Cumulants," (A. Swami, co-author) presented at 1988 ICASSP, New York City, NY.

78. "Cumulant Based Parameter Estimation of Multichannel Moving-Average Processes," (Y. Inouye and G. B. Giannakis, co-authors) presented at 1988 ICASSP, New York City, NY.

79. "Maximum Entropy Extrapolation of Cumulant Statistics: Linear Processes," (G. B. Giannakis and A. Swami, co-authors) presented at 1988 ICASSP, New York City, NY.

80. "Model-Based Estimation of Wind Fields Over the Ocean from Wind Scatterometer Measurements," (D. Long, co-author) presented at IGARSS'88, Edinburgh, Scotland, September 1988.

81. "Recursive Methods for Computation of One-Dimensional Cumulants," (W. Wang, co-author) presented at 1988 American Control Conference, Atlanta, GA.

82. "Adaptive Cumulant-Based Estimation of ARMA Parameters," (A. Swami, co-author) presented at 1988 American Control Conference, Atlanta, GA.

83. "An Artificial Neural Minimum-Variance Estimator," (X. Zhao, co-author) presented at 1988 IEEE Int'l. Conf. on Neural Networks, San Diego, CA, July 1988.

84. "ARMA Parameter Estimation Using Only Output Cumulants," (A. Swami, co-author) presented at Fourth ASSP Workshop on Spectrum Estimation and Modeling, Minneapolis, MN, August 3-5, 1988.

85. "Use of Higher-Order Statistics in Signal Processing and System Theory: An Update," presented at SPIE Conf. on Advanced Algorithms and Architectures for Signal Processing III, San Diego, CA, August 15-17, 1988.

86. "Minimum-Variance Deconvolution Using Artificial Neural Networks," (X. Zhao, co-author) presented at 58th Annual Int'l. Meeting of the SEG, Anaheim, CA, October 30 - November 3, 1988.

87. "Computation of Cumulants of ARMA Processes," (A. Swami, co-author) presented at 1989 ICASSP, pp. 2318-2321, Glasgow, Scotland, May 1989.

88. "A Unified Approach to Modeling Multichannel ARMA Processes," (A. Swami and G. B. Giannakis, co-authors) presented at 1989 ICASSP, pp. 2182-2185, Glasgow, Scotland, May 1989.

89. "AR Identifiability Using Cumulants," (A. Swami, co-author) *Proc. of Workshop on Higher-Order Spectral Analysis*, Vail, CO, pp. 1-6, June 1989.

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## G. Patents

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18. "Maximum-Likelihood Estimation of Parameters in Layered Media Systems," presented at Instituto de Investigaciones en Matematicas Aplicadas y en Sistemas, University of Mexico, Mexico City, August 7, 1980.

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22. "Overview of USC Geo-Signal Processing Program," talk presented at: Schlumberger, Clamart, France, May 6, 1982; Pacific Coast Section of the SEG, Los Angeles and Ventura Groups, April 21, 1982; INRIA, Versailles, France, May 7, 1982; Union Oil Co., Brea, CA, August 1982; Phillips Ultrasound, Irvine, CA, December 1982.

23. "Non-Causal Systems: 1-Dimensional State-Variable Modeling and Minimum-Variance Deconvolution," talk presented at Rice University, September 23, 1982.

24. "Seismic Deconvolution," presented in the lecture series, "Digital Signal Processing and Digital Signal Control Application," sponsored by U. C. Irvine School of Engineering University Extension and IEEE Orange County Section, May 11, 1983.

25. "USC Geo-Signal Processing Program: Historical Perspective," Boeing Computer Services Co., Tukwila, WA, March 11, 1983.

26. "Maximum-Likelihood Deconvolution: Overview," Boeing Computer Services Co., Tukwila, WA, March 11, 1983.

27. "USC Geo-Signal Processing Program: Overview," presented to L. A. Chapter of IEEE Geoscience & Remote Sensing Society," April 1983.

28. "Maximum-Likelihood Deconvolution," Naval Civil Engineering Laboratory, Port Hueneme, CA, December 20, 1983.

29. "Maximum-Likelihood Deconvolution Software," SEG Deconvolution Workshop, Vail, CO, July 1984.

30. "Tenets of Maximum-Likelihood and Geooptimal Deconvolution," SEG Deconvolution Workshop, Vail, CO, July 1984.

31. "Maximum-Likelihood Seismic Deconvolution," presented at Union Oil Co., International Division, Los Angeles, CA, January 23, 1984.

32. "Inversion and Deconvolution," presented at the Aerospace Corp., El Segundo, CA, February 8, 1984.

33. "A Role for Estimation Theory in Digital Signal Processing," presented at meeting of Los Angeles Chapter of IEEE Control System Society, October 16, 1984.

34. "Minimum-Variance and Maximum-Likelihood Deconvolution for Noncausal Wavelets," presented at SEG-SIAM-SPE Conf. on Math. and Computational Methods in Seismic Exploration and Reservoir Modeling, Houston, TX, January 21-25, 1985.

35. "Entropy Interpretation of Maximum-Likelihood Deconvolution," (G. Giannakis, principal author) presented at SEG-SIAM-SPE Conf. on Math. and Computational Methods in Seismic Exploration and Reservoir Modeling, Houston, TX, January 21-25, 1985.

36. "Maximum Entropy Polyspectral Estimation," (G. Giannakis, principal author), presented at SIAM Conf. on Linear Algebra in Signals, Systems and Control, Aug. 12-14, 1986, Boston, MA.

37. "Some Estimation Problems in Reflection Seismology," presented at State-of the-Art and the Future in Electrical Engineering, A Symposium Celebrating the Centennial of Electrical Engineering at Polytechnic University and Honoring Dr. Ernst Weber on his 85th Birthday, Sept. 22-24, 1986, New York, NY.

38. "Some Modeling Problems in Reflection Seismology," presented at Oregon Graduate Center Seminar Series on Digital Signal Processing, Oct. 29, 1986, Beaverton, OR.

39. "Second or Higher-Order Statistics for ARMA Parameter Estimation and Order Determination," (G. Giannakis, principal author), presented at Third ASSP Workshop on Spectrum Estimation and Modeling, Nov. 17-18, 1986, Boston, MA.

40. "USC Applications of Higher-Order Statistics," presented at NOSC, San Diego, CA, Feb. 26, 1987.

41. "Higher Order Statistics in Signal Processing," presented at First Meeting of the IFAC Group on Signal and Control, Dubrovnik, Yugoslavia, July 22-23, 1987.

42. "Maximum-Likelihood Deconvolution: a New Perspective," presented at SEG Pacific Section, 63rd Annual Meeting, Santa Barbara, CA, April 17-19, 1988.

43. "Higher-Order Statistics in Parametric Signal Processing and System Theory," presented at U. C. Santa Barbara, EE-Dept., Signal Processing Colloquium, April 20, 1988.

44. "Higher-Order Statistics in Parametric Signal Processing and System Theory," presented at JPL, Pasadena, CA, Jan. 11, 1989.

45. "Higher-Order Statistics for Applications in Parametric Signal Processing," presented at Lockheed Missiles & Space Co., Inc., R & D, Palo Alto, CA, May 8, 1989.

46. Tutorial Talk (90 minutes): "Non-minimum Phase System Identification," Workshop on Higher-Order Spectral Analysis, Vail, CO, June 28-30, 1989.

47. "Applications of Higher-0rder Statistics to Some Signal Processing Problems," presented to JASONS, La Jolla, CA, July 13, 1989.

48. "Higher-Order Statistics in Parametric Signal Processing and System Theory," presented at Rockwell International Corp. Science Center, Thousand Oaks, CA, Oct. 5, 1989.

49. "Applications of Higher-Order Statistics to Some Signal Processing Problems, "presented at IEEE San Diego Section, March 22, 1990; IEEE ASSP Orange County Chapter Meeting, Feb. 22, 1990; IEEE ASSP Chapter of Santa Clara Valley Section, Jan. 23, 1990.

50. "Harmonic Retrieval Using Higher-Order Spectra," presented at 1990 Summer International Interdisciplinary Workshop on Time Series Analysis at the Institute for Mathematics and its Applications, July 5, 1990, Univ. of Minnesota, Minneapolis, MN.

51. "Electrical Engineering Education in the Nineties and on into the Twenty First Century," presented at 1990 WESCON Professional Development Panel, Nov. 15, 1990, Santa Ana, CA.

52. "Applications of Higher-Order Spectra to Some Acoustics Problems," presented at 120th Meeting of Acoustical Society of America, Nov. 27, 1990, San Diego, CA.

53. "Applications of Fuzzy System Theory to Some Tracking Problems," presented at IDA Advanced Concepts Panel, Nov. 29, 1990, Advanced Decision Systems, Mountain View, CA.

54. Tutorial Talk (90 minutes): "Non-minimum Phase System Identification," 11/2 hours of a three hour tutorial on "Higher-Order Spectral Analysis." at the 1991 ICASSP, Toronto, Canada, May, 1991.

55. "Some Applications of Neural Networks and Fuzzy Logic," presented at Shell Development Co., Bellaire Research Center, Houston, TX, June 10, 1991.

56. "Some Applications of Neural Networks and Fuzzy Logic," presented at ARCO, Dallas, TX, September 23, 1991.

57. "Fuzzy Logic Applied to Signal Processing Problems," presented at SAIC. San Diego, CA, September 30, 1991.

58. "Fuzzy Logic Applied to Signal Processing Problems," presented at Lockheed Research Center, Palo Alto, CA, October 23, 1991.

59. "Fuzzy Logic Applied to Signal Processing Problems," presented at NASA AMES Research Center, Moffett Field, CA, October 24, 1991.

60. "Applications of Higher Order Statistics to Harmonic Retrieval Problems," presented at Los Angeles joint chapter meeting of the Engineering Management, Education, and Professional Management Societies of the IEEE, Nov. 7, 1991.

61. "Fuzzy Logic Applied to Signal Processing Problems," presented at UNOCAL Science & Technology Division, LaPalma, CA, November 8, 1991.

62. “Fuzzy Basis Functions and Their Use in Signal Processing,” presented at Fourth Annual Rockwell International Control/Signal Processing Conf., Jan. 21-22, 1992, Anaheim, CA.

63. “Some Recent Applications of Higher-Order Statistics to Array Signal Processing and Speech Processing,” Conf. on Moments and Signal Processing, Naval Postgraduate School, Monterey, CA, March 30-31, 1992.

64. “Fuzzy Logic For Model-Based and Model-Free Problems,” presented at United Technologies Research Center, East Hartford, CT, June 1992.

65. “Designs of Fuzzy Logic Systems and Their Applications in Signal Processing,” presented at National Semiconductor, Santa Clara, CA, April 2, 1993.

66. “Fuzzy Logic and its Applications in Signal Processing,” presented at Iowa State Univ., May 6, 1993, and Univ. of Iowa, May 7, 1993.

67. “Joint Array Calibration and Direction Finding Using Higher-Order Statistics: 1,” CRASP Review, DOD, Baltimore, MD, March 1994.

68. “Joint Array Calibration and Direction Finding Using Higher-Order Statistics,” ESL, Sunnyvale, CA, Sept. 9, 1994.

69. “Joint Array Calibration and Direction Finding Using Higher-Order Statistics: 2,” CRASP Review, DOD, Baltmore, MD, Sept. 1994.

70. “Fuzzy Logic and Some Applications in Signal Processing,” Chevron Research Center, LaHabra, CA, Oct. 10, 1994.

71. “Fuzzy logic and its applications in signal processing,” 90 minute invited talk presented at Tsinghua University, Taiwan, March 12, 1996, and National Cheng Kung University, March 13, 1996.

72. “Array signal processing techniques applied to antenna applications,” 6-hour workshop presented at Tsinghua University, Taiwan, March 11, 1996.

73. Tutorial Talk (3 hours): “Fuzzy logic and its applications in signal processing,” International Conference on Acoustics, Speech and Signal Processing, Atlanta, GA, May 11, 1996.

74. “Joint array calibration and direction finding using higher-order statistics,” 90 minute invited talk at Stanford University EE 370 Seminar, Stanford, CA, May 2, 1996.

75. “Antenna array signal processing using higher-order statistics,” 2 hour invited talk presented at the Jet Propulsion Laboratory, Pasadena, CA, Sept. 26, 1996.

76. “Recent advances in antenna-array signal processing,” presented at Los Angeles Chapter meeting of the IEEE Antennas and Propagation Society, November 19, 1996.

77. “Robustness of VESPA,” 90 minute invited talk at TRW in Sunnyvale, CA, Nov. 18, 1997.

78. KEYNOTE TALK: "The fuzzy logic advisor: a new tool for making judgments," World Automation Congress: Second International Symposium on Soft Computing for Industry, Anchorage, AK, May 1998.

79. Tutorial Talk (3 hours): “Introduction to Type-2 Fuzzy Logic Systems,” IASTED Int'l Conference on Intelligent Systems & Control, Oct. 18-30, 1999, Santa Barbara, CA.

80. "Fuzzy logic and its applications in signal processing," 4 hours at Jilin Institute of Technology, Changchun, China, Sept. 1999.

81. "Array signal processing techniques using higher-order statistics for antenna applications," 6 hours at Jilin Institute of Technology, Changchun, China, Sept. 1999.

82. "Robustness of the virtual ESPRIT algorithm," 1 hour at Jilin Institute of Technology, Changchun, China, Sept. 1999.

83. "Uncertainty, fuzzy logic, and signal processing," 1 hour at Jilin Institute of Technology, Changchun, China, Sept. 1999.

84. “Using Type-2 Fuzzy Logic Systems to Handle Numerical and Linguistic Uncertainties,” Distinguished Lecture Series of the Army Research Laboratories, March 2000.

85. PLENARY TALK: “Uncertainty in Fuzzy Logic Systems,” International Conference on Recent Advances in Soft Computing, DeMontfort Univ., Leicester, UK, June 29–30, 2000.

86. “Fuzzy Logic in Life and Technology,” presented to IEEE Student Branch at USC, October 11, 2000.

87. “Uncertainty in Fuzzy Logic Systems,” Distinguished Lecture Series of USC Computer Science Department, November 22, 2000.

88. PLENARY TALK: “Uncertain Rule-Based Fuzzy Adaptive Filters for Wireless Communications,” Third IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications, Taoyuan, Taiwan, March 20–23, 2001.

89. PLENARY TALK: “Uncertain Rule-Based Fuzzy Logic Systems for Wireless Communications,” IEEE FUZZ Conference, Melbourne, Australia, December 2–5, 2001.

90. “Uncertain Rule-Based Fuzzy Adaptive Filters for Equalization of Time-Varying Digital Communication Channels,” presented at SIPI Distinguished Seminar Series, Oct. 18, 2002, USC.

91. Tutorial Talk (3 hours): "Uncertainty and How it is Handled Using Type-2 Fuzzy Logic Systems," 6th IASTED International Conference on ARTIFICIAL INTELLIGENCE AND SOFT COMPUTING—ASC 2002, Banff, Alberta, Canada, July 2002.

92. Tutorial Talk (2 hours): "Type-2 Fuzzy Logic: Expanded and Enhanced Fuzzy Logic," WCCI 2002, Honolulu, HI, May 12, 2002.

93. KEYNOTE TALK: "Fuzzy Sets for Words: Why Type-2 Fuzzy Sets Must be Used," 7th IASTED Int'l. Conf. Artificial Intelligence and Soft Computing, Banff, Canada, July 2003.

94. Tutorial Talk (3 hours): "Type-2 Fuzzy Logic Made Simple," 7th IASTED Int'l. Conf. Artificial Intelligence and Soft Computing, Banff, Canada, July 2003.

95. Tutorial Talk (3 hours): "Type-2 Fuzzy Logic Made Simple," FUZZ-IEEE, St. Louis, MO, May 26-28, 2003.

96. PLENARY TALK: "Interval Type-2 Fuzzy Logic Systems Made Simple," International Seminar of Computational Intelligence, IEEE Computational Intelligence Society Mexico Chapter and Tijuana Institute of Technology, Tijuana Mexico, Dec. 1, 2004.

97. "Ground Vehicle Classification Based on Acoustic Signatures Using Type-2 Fuzzy Techniques," Army Research Laboratory, Adelphi, MD, Nov. 16, 2004.

98. Tutorial Talk (2 hours): "Fuzzy Sets for Words: Why Type-2 Fuzzy Sets Should be Used and How They Can be Used," FUZZ-IEEE, Budapest, Hungary, July 25, 2004.

99. "On why type-2 fuzzy sets are needed for computing with words," One hour talk at Wayne State Univ., Detroit, MI, April 19, 2006.

100. "KEYNOTE TALK: Type-2 fuzzy sets for computing with words," IEEE 2006 Int'l. Conf. on Granular Computing, Univ. of Georgia, Atlanta, GA, May 12, 2006.

101. "INVITED TALK: Interval type-2 fuzzy logic systems made simple by using type-1 mathematics," IEEE World Congress on Computational Intelligence, Vancouver, Canada, July 20, 2006.

102. "PLENARY TALK: Signal fusion using novel weighted averages," Int'l. Conf. Multisensor Fusion & Integration for Intelligent Systems, Heidelberg, Germany, August 5, 2006.

103. "Signal fusion using novel weighted averages," One hour talks at UCLA Seminar Series in Electrical Engineering, Oct. 9, 2006.

104. "PLENARY TALK: Novel weighted averages as a computing with words engine," International Fuzzy Systems Association Conference, Cancun, Mexico, June 20, 2007.

105. "PLENARY TALK: An approach to computing with words," FUZZ-IEEE, London, UK, July 26, 2007.

106. Invited talk: "An Approach to Computing With Words," TOBB-Economics and Technology University, Ankara Turkey, October 13, 2008.

107. Invited talk: "Interval Type-2 Fuzzy Logic Systems Made Simple by Using Type-1 Mathematics," TOBB-Economics and Technology University, Ankara Turkey, October 13, 2008.

108. Invited talk: "Interval Type-2 Fuzzy Logic Systems Made Simple by Using Type-1 Mathematics," Bogazici University, Istanbul, Turkey, October 15, 2008; and at Turkish Air Force Academy, Aeronautics and Space Technologies Institute, Istanbul, Turkey, October 16, 2008.

109. Invited talk: "An Approach to Computing With Words," Bogazici University, Istanbul, Turkey, October 16,

2008.

110. Invited talk: "Signal Fusion Using Fuzzy Sets," Bogazici University, Istanbul, Turkey, October 17, 2008.

111. Invited Talk: "Perceptual Computing: One Instantiation of Zadeh's Computing With Words Paradigm," DeMontfort Univ., Leicester, UK, May 20 2009.

112. KEYNOTE TALK and IEEE CIS Distinguished Lecture: "Fuzzy Sets for Words: Why Type-2 Fuzzy Sets Must be Used," CICA 2009 (Congreso de Inteligencia Computacional Aplicada), Univ. of Palermo, Buenos Aires, Argentina, July 23-24 2009.

113. PLENARY TALK: "Perceptual Computing: One Implementation of Zadeh's Computing With Words Paradigm," FUZZ-IEEE, Jeju Island, Korea, August 2009.

114. Tutorial Talk: "Introduction to Type-2 Fuzzy Sets and Systems," IEEE International Conference on Fuzzy Systems, Jeju Island, Korea, August 2009.

115. KEYNOTE TALK: "Perceptual Computing Case Study: Investment Judgment Advisor," 1st International Fuzzy Systems Conference, Ankara, Turkey, October 1-2, 2009.

116. Invited Talk: "Perceptual Computing Case Study: Investment Judgment Advisor," Univ. of Missouri, Columbia, MI, November 3, 2009.

117. KEYNOTE TALK: "Interval Type-2 Fuzzy Logic System versus Perceptual Computer: Similarities and Differences," Granular Computer Conference, San Jose, CA, August 2010.

118. IEEE Distinguished Lecture Talk: "Perceptual Computing: an Implementation of Zadeh's Computing With Words Paradigm for Aiding People in Making Subjective Judgments," Univ. of Missouri at Rolla, MO, Sept. 2010.

119. Invited Talk: "Interval Type-2 Fuzzy Logic System versus Perceptual Computer: Similarities and Differences," European Centre for Soft Computing, July 2010.

120. Tutorial Talk: "Introduction to Type-2 Fuzzy Sets and Systems," FUZZ-IEEE, at the World Congress on Computational Intelligence, Barcelona, Spain, July 2010.

121. Invited Talk at CREATE Seminar: "Perceptual Computing: One Implementation of Zadeh's 'Computing With Words' Paradigm," USC, October 12, 2011.

122. KEYNOTE TALK: "KM Algorithms for Solving Type-2 Fuzzy Set Problems: To Use or Not to Use?," IEEE Computational Intelligence Society Symposium Series on Computational Intelligence: Symposium on Advances in Type-2 Fuzzy Logic Systems, Paris, France, April 2011.

123. PLENARY TALK: "Challenges in Per-C Applications and How They Were Overcome, " NAFIPS 2011, Univ. of Texas at El Paso, TX, March 2011.

124. PLENARY TALK: "Type-2 Sets and Systems: Challenges and Misconceptions," FUZZ-IEEE, Taipei, Taiwan, June 2011.

125. Invited Talk: "Interval type-2 fuzzy logic system versus Perceptual Computer: similarities and differences," Tainan University, Taiwan, June 2011.

126. Tutorial Talk: "Introduction to Type-2 Fuzzy Sets and Systems," FUZZ-IEEE 2011, Taipei, Taiwan, June 2011.

127. Seminar Series Talk (2 hours): "Perceptual Computing: Aiding People in Making Subjective Judgments," USC Annenberg Graduate Fellowship Micro Seminar Series," USC, Los Angeles, CA, Sept. 7, 2012.

128. Invited Talk: "Perceptual Computing: One Implementation of Zadeh's Computing With Words Paradigm," Electrical Engineering Department Seminar, Univ. of Texas at Arlington, TX, Nov. 15, 2012.

129. Tutorial Talk: "Introduction to type-2 fuzzy sets and systems," FUZZ-IEEE 2012, Brisbane, Australia, June 2012.

130. KEYNOTE TALK: "General Type-2 (GT2) Fuzzy Sets and Systems: Where are We Now and Where are We Heading?", World Conference on Soft Computing (WCSC), San Antonio, TX, December 2013.

131. Tutorial Talk: "Type-2 Fuzzy Sets and Systems With and Application to Perceptual Computing," IEEE International Conference on Fuzzy Systems, FUZZ-IEEE 2013, Hyderabad, India, July 2013.

132. Invited Talk: "Fuzzy logic in Life and technology," Tianjin Normal Univ., Tianjin China, July 2014.

133. Invited Talk: "Perceptual computing: aiding people in making subjective judgments," Tianjin Normal Univ., Tianjin China, July 2014.

134. Invited Talk: "From data to fuzzy set models for words," presented at Beihang Univ., Beijing China, July 9, 2014.

135. PLENARY TALK: "Type-2 fuzzy sets and systems: some questions and answers," World Conference on Computational Intelligence (WCCI), Beijing China, July 2014.

136. Tutorial Talk: "Type-2 fuzzy sets and systems with an application to perceptual computing," two-hour Tutorial at *IEEE Int'l. Conf. on Fuzzy Systems (FUZZ-IEEE)*, Beijing, China, July 2014.

137. KEYNOTE TALK: "Advanced computing with words: status and challenges," 11th Int'l. Conf. on Applications of Fuzzy Systems and Soft Computing, Paris France, Sept. 2014.

138. Invited Talk: "How I got into type-2 fuzzy sets," presented at the Zadeh Colloquium, USC, Sept. 18, 2014.

139. EE Pioneer Talk, "Ode to Joy of Research," May 5, 2015, USC.

140. KEYNOTE TALK: "Perspectives on type-2 fuzzy sets and systems," World Congress on Soft Computing," Berkeley CA May 2016

141. Invited Talk: "Fuzzy logic in life and Technology," Tianjin Normal University, April 2018.

142. Invited Talk: "Fuzzy sets and systems," Tianjin Normal University, April 2018.

143. Invited Talk: "Designing FLSs and some applications," Tianjin Normal University, April 2018.

144. Invited Talk: "Remarkable Trajectory (of Jerry M. Mendel)" Viterbi School of Engineering, Univ. of Southern California, Jan. 17, 2018.

145. Invited Talk: "Interacting with Perceptual Computers," Fribourg, Switzerland, May 2018.

146. PLENARY TALK: Sculpting the state space," WCSC, Baku Azerbaijan, May 28–31, 2018.

147. Tutorial: "Sculpting the state space: A new way to establish and explain the potential for improved performance when using rule-based fuzzy systems," FUZZ-IEEE 2019, New Orleans, LA, May 2019.

148. KEYNOTE TALK: “Patch learning: A new method of machine learning implemented by means of fuzzy sets,” 2019 IEEE CIS Summer School on Computational Intelligence for Human and Smart Machine Co-Learning, NKNU Kaohsiung, Taiwan. Dec. 21-23, 2019.

149. Invited Talk: “Fuzzy logic in life and Technology,” Tianjin Normal University, May 2019.

150. Tutorial: “Patch learning: a new method of machine learning, implemented by means of fuzzy sets,” WCCI 2020, Glasgow, Scotland (virtual on Zoom), July 19, 2020.

151. KEYNOTE TALK: “Explainable AI (XAI) for rule-based fuzzy systems,” NAFIPS 2021, Purdue University, Jun 7, 2021 (virtual on Zoom).

152. Tutorial: “A top-down approach to rule-based fuzzy systems,” FUZZ-IEEE 2021, Luxembourg, July 2021 (virtual on Zoom).

153. KEYNOTE TALK: “Why have fuzzy sets made almost no impact on AI, and can this be changed?,” FUZZ-IEEE 2021, Luxembourg, July 2021 (virtual on Zoom).

154. Invited Talk: “Explainable AI (XAI) for rule-based fuzzy systems,” (virtual on Zoom), Univ. of Cincinnati, Sept. 27, 2021.

155. Invited Talk: “Explainable AI (XAI) for rule-based fuzzy systems,” (virtual on Zoom), School of Economics and Management, Southeast University, Nanjing, China, Oct. 22, 2021.

156. Invited Talk: “Explainable AI (XAI) for rule-based fuzzy systems,” USC CSCI Colloquium, Nov. 11, 2021 (virtual on Zoom).

157. Invited Talk: “Sculpting the state space: A new way to establish and explain the potential for improved performance when using rule-based fuzzy systems,” Online workshop in Type-1 and Type-2 Fuzzy Logic and Its Applications, Indian Institute of Information Technology, Kota, (MNIT Campus Jaipur), Dec. 9, 2021.

158. KEYNOTE TALK: “Why this and why that?” FUZZ-IEEE 2023, Incheon, Korea, August 2023.

## IX. Miscellaneous Technical Activities

1. Organized a session on "Learning Control Systems" at the 1967 Joint Automatic Control Conference.

2. General Chairman and Program Chairman of IEEE Seventh Symposium on Adaptive Processes, Los Angeles, CA, 1968.

3. Invited participant in Japan - U. S. Seminar on Learning Process in Control Systems, Nagoya, Japan, August 1970.

4. Program Chairman of IEEE Ninth Symposium on Adaptive Processes, Decision and Control, 1970.

5. Session Chairman at 1970 IEEE Conf. on Decision and Control, San Diego, CA.

6. Member of Program Committee of 1971 IEEE Decision and Control Conference (including Tenth Symposium on Adaptive Processes).

7. General Chairman of the 1972 IEEE Conf. on Decision and Control, New Orleans, LA.

8. Session Chairman at 1972 Joint Automatic Control Conference, Stanford, CA.

9. Invited Participant in Research Workshop on Learning Systems Theory and its Practical Applications, Univ. of Florida, Gainesville, FL, October 1973.

10. Session Chairman at 1973 IEEE Conf. on Decision and Control, San Diego, CA.

11. Invited to participate in Engineering Foundation Conference on "Systems Engineering for Power: Status and Prospects," August 17-22, 1975, Henniker, NH.

12. Co-organizer of a theme session, i.e., a group of three sessions at the 1977 Joint Automatic Control Conference, on "Geophysical Data Processing."

13. General Chairman of IEEE 17th Symposium on Adaptive Processes, San Diego, CA, 1978.

14. Session Chairman at 48th Annual International Meeting of the Society of Exploration Geophysicists, San Francisco, CA, 1978.

15. Program Committee of 17th IEEE Conf. of Decision and Control, 1978.

16. Session Chairman at 5th IFAC Symposium on Identification and System Parameter Estimation, Darmstadt, Fed. Republic of Germany, 1979.

17. Member of International Program Committee for 6th IFAC Symposium on Identification and System Parameter Estimation (1980-1982).

18. Organized and taught part of a 1980 Pre-JACC Tutorial Workshop on "Maximum-Likelihood Identification," sponsored by IEEE Control Systems Society Education Committee.

19. Co-chairman of a session at the 6th IFAC Symposium on Identification and System Parameter Estimation, Washington, DC, 1982.

20. Member of International Program Committee for 7th IFAC Symposium on Identification and System Parameter Estimation (1983-1985).

21. Member of Program Committee for International Symposium on Pattern Recognition and Acoustical Imaging (1986-1987).

22. Organized a session at the 1987 Conf. on Mathematical Theory of Networks and Systems, Phoenix, AZ, on higher-order statistics in system theory and signal processing.

23. Session Chairman at 1988 American Control Conference, Atlanta, GA.

24. Chairman and co-organizer of Workshop on Higher-Order Spectral Analysis, Vail, CO, June 1989.

25. Session Chairman at 1991 ICASSP, Toronto, Canada.

26. Session Chairman at 1992 ICASSP, San Francisco, CA.

27. Member of Program Committee of 1993 IEEE International Conference on Neural Networks, San Francisco, CA.

28. Member of Program Committee of 1993 IEEE International Conference on Fuzzy Logic, San Francisco, CA.

29. Session Chairman at 1993 ICASSP, Minneapolis, MN.

30. Session Chairman at 1993 IEEE International Conference on Fuzzy Logic, San Francisco, CA.

31. Session Chairman at Third Workshop on Higher Order Statistics, Lake Tahoe, CA June 1993.

32. Co-Chairman and Co-organizer of half-day workshop on "Neural, Fuzzy, and Other Things," at 1993 Annual Meeting of the International Society of Exploration Geophysicists, Washington, D. C. Oct. 1, 1993.

33. Session Chairman at IEEE Statistical Signal and Array Processing Workshop, Corfu, Greece, June 1996.

34. Co-General Chairman of the 1997 IEEE Signal Processing Society Workshop on Higher-Order Statistics, Banff, Alberta, Canada, July 1997.

35. Session Chairman at 1998 International Joint Conference on Neural Networks, Anchorage, AK, May 1998.

36. Member of International Program Committee of Third international Symposium on Intelligent Automation and Control, Wailea, Maui, Hawaii, June 11-16, 2000.

37. Member of International Program Committee for IEEE FUZZ'00, San Antonio, TX, May 7-10, 2000.

38. Session Chairman or Co-Chairman of three sessions at IEEE FUZZ'00, San Antonio, TX, May 7-10, 2000.

39. Member of International Program Committee for IEEE FUZZ'01, Melbourne, Australia, December 2001.

40. Co-organized and co-chaired a special session at NAFIPS/IFSA Conference on *Uncertainty and Type-2 Fuzzy Logic*, Vancouver, British Columbia, Canada, July 2001.

41. Session Co-Chairman at NAFIPS/IFSA Conference on *Uncertainty and Type-2 Fuzzy Logic*, Vancouver, British Columbia, Canada, July 2001.

42. Co-organizer of a special session (with R. I. John) at the IEEE FUZZ 2002 Conf. on *Type-2 fuzzy set: theory and applications*.

43. Session Chair at the IASTED ASC 2002 Conference, for the session "Fuzzy Logic I," July 19, 2002, Banff, Alberta, Canada.

44. Member of International Advisory Committee of the Berkeley Initiative on Soft Computing (BISC) special interest group on Fuzzy Logic and the Internet (2001-2003).

45. Member of Advisory Board for the Cambridge Univ. Press book series *Advanced Artificial Intelligence* (2001-present).

46. Editorial Board Representative for the EURASIP *J. on Applied Signal Processing's* Special Issue on *Smart Antenna Techniques* (Fall 2002-2004).

47. Member of International Program Committee for IEEE FUZZ'03, St. Louis, MO, May 2003.

48. Member of the Australian and New Zealand Intelligent Information Systems Conference Technical Committee (ANZIIS-2003).

49. Member of Program Committee of Fourth International Conference on Intelligent Technologies (Intech '03), Chiang Mai, Thailand (Dec. 2003).

50. Session Chair of the session "Fuzzy Computing With Words," at FUZZ-IEEE '04, Budapest, Hungary.

51. Member of International Program Committee, 5th International Conference on Recent Advances in Soft Computing, EUSFLAT De Montfort Univ. and Univ of Nottingham, Nottingham, UK, Dec. 2004.

52. Member of International Program Committee, for IEEE FUZZ'05, Reno, NV, May 2005. (May 2004-May 2005).

53. Member of Program Committee, NAFIPS-2005, North American Fuzzy Information Society, Ann Arbor, MI, June 2005. (2004-June 2005)

54. Member of International Program Committee, International Conference on Computational Intelligence, IASTED, Calgary, Canada, July 2005. (Sept. 2004-July 2005)

55. Member of International Program Committee, International Conference on Artificial Intelligence and Soft Computing, IASTED, Benidorm, Spain, Sept. 2005. (Oct. 2004-Sept. 2005)

56. Member of International Advisory Board, Third Int'l. Conf. on Computational Intelligence, Robotics and Autonomous Systems, Third Int'l. Conf. on Computational Intelligence, Robotics and Autonomous Systems (2005).

57. Member of International Committee, Workshop IEEE, Arad, Romania, Dec. 2005. (2005)

58. Member of International Committee, 6th Int'l. Conference on Recent Advances in Soft Computing, Dep't. of Electronics, Univ. of Kent, Univ. of Kent, Canterbury, UK, July 2006 (2005-July 2006).

59. Member of Advisory and Program Committees, 11th FT&T, Fuzzy Theory &Technology, Taiwan, Oct. 2006 (2005-Oct. 2006).

60. Member of Scientific Committee, Artificial Intelligence and Soft Computing, Zakopane, Poland, June 2006 (2005-June 2006).

61. Member of Scientific Committee, 7th WSEAS Int'l. Conf. on Fuzzy Systems (FS'06), Cavtat, Croatia, June 2006 (2005-June 2006).

62. Member of Program Committee, WCCI, FUZZ 2006, Vancouver, CA, July 2006 (2005-July, 2006).

63. Member of International Program Committee, IPMU 2006, Paris, France (2005-July 2006).

64. Member of International Program Committee, IASTED International Conference on AI and Soft Computing, Palma De Morca, Spain, August 28, 2007 (2006-August 2007).

65. Member of International Program Committee, IASTED International Conference on Computational Intelligence, Banff, Canada, July 2, 2007 (2006-July 2007).

66. Member of International Program Committee, 3rd International Symposium on Computational Intelligence and Intelligent Informatics, Agadir, Morocco, March 28, 2007 (2006-March 2007).

67. Member of International Program Committee, IFSA 2007, Cancun, Mexico, June 17, 2007 (2006-June 2007).

68. Member of International Program Committee, NAFIPS '07, San Diego, CA, June 2007 (March 2007-June 2007).

69. Member of International Program Committee, IASTED International Conference on Artificial Intelligence and Soft Computing, Palma De Mallorca, Spain, August 2007 (November 2006-August 2007).

70. Co-Program Chair, Symposium on Foundations of Computational Intelligence, Honolulu, HIK, April 2007 (2005-April 2007).

71. Co-organizer (with Simon Coupland) of Special Sessions on Type-2 Fuzzy Logic Theory, at IEEE International Conference on Fuzzy Systems, London, UK, July 2007.

72. Conference Chair, IEEE International Conference on Granular Computing, San Jose, CA Nov. 2007 (late 2006-Nov. 2007).

73. Co-Program Chair, WCCI/FUZZ-IEEE 2008, Hong Kong, China (2006-2008).

74. Member of International Program Committee, IEEE Conf. on Intelligent Systems, Sept. 6-8, Varna Bulgaria (Sept. 2007-Sept. 2008).

75. Member of International Program Committee, IPMU 2008, Malaga, Spain, June 2008 (October 2007-June 27, 2008).

76. Member of International Program Committee, 9th International Conference "Artificial Intelligence and Soft Computing," Zakopane, Poland, June 2008 (August 11, 2007-June 26, 2008)

77. Organizer of Special Issue of *IEEE Computational Intelligence Magazine* on Type-2 Fuzzy Sets and Systems, Feb. 2007 issue.

78. Chairman of Best Paper Award Committee for FUZZ-IEEE 2008, Hong Kong, June 1-5, 2008.

79. Invited panelist on the panel "Foundations of Computational Intelligence," at the World Congress on Computational Intelligence, Hong Kong, China, June 2008.

80. Invited panelist of Computational Intelligence Pioneers on the panel "Challenges and Opportunities in Computational Intelligence Research," at the World Congress on Computational Intelligence, Hong Kong, China, June 2008.

81. Co-organizer and moderator of the panel "Type-2 Fuzzy Systems: Past, Present, Challenges and Future Directions," at the World Congress on Computational Intelligence, Hong Kong, China, June 2008.

82. Member of International Program Committee of 13th International Conference of the Fuzzy Theory and Technology (FT&T), a track of the 11th Joint Conference on Information Sciences (JCIS'2008). Shenzhen, China, Dec. 15-20, 2008 (May, 2008-December, 2008).

83. Member of International Program Committee of IEEE Congress on Evolutionary Computation 2009, Trondheim, Norway, May 18-21, 2009.

84. Member of International Program Committee for 15th MENDEL 2009 Soft Computing Conference, Brno, Czech Republic, April-June 2009.

85. Member of International Program Committee for IASTED, Fourth International Conf. on Computational Intelligence, Honolulu, HI, March-August, 2009.

86. Member of International Program Committee for International Conference on Fuzzy Computation, Madeira, Portugal, February-October, 2009.

87. Member of Program Committee for International Conf. on Soft Computing and Pattern Recognition, Malacca, Malaysia, July-December 2009.

88. Member of Scientific Committee for ICAISC 2010, Zakopane, Poland, April 2009-June 2010.

89. Member of Program Committee, IPMU 2010, Dortmond, Germany, October 2009-July 2010.

90. Member of the Technical Program Committee for 7th International Conf. on Fuzzy Systems and Knowledge Discovery, Yantai, China, December 2009-August 2010.

91. Member of International Program Committee for 5$^{th}$ IASTED International Conference on Computational Intelligence, Maui, HI, December 2009-August 2010.

92. Co-organizer (with Sergio Guadarrama) of FUZZ-IEEE 2010 Special Session on Computing With Words, Barcelona, Spain, July 2010.

93. Co-Chair and co-organizer of IEEE International Symposium on Advances in Type-2 Fuzzy Logic Systems, Paris France, July 2010-April 2011.

94. Member of Program Committee, World Conference on Soft Computing 2011, Berkeley, CA, September 2010-May 2011.

95. Member of Program Committee for 2011 IEEE International Symposium on Advances to Type-2 Fuzzy Logic (T2 FUZZ 2011), Paris France, July 2010-April 2011,

96. Member of International Program Committee of the IASTED International Conference on Artificial Intelligence and Soft Computing (ASC 2011), Crete, Greece, June 2010-June 2011.

97. Member of Organizing Committee, as Tutorials Chair, for FUZZ-IEEE 2011, Taipei, Taiwan, July 2010-June 2011.

98. Co-organizer (with Sergio Guadarrama) of FUZZ-IEEE 2011 Special Session on Computing With Words, Taipei, Taiwan, June 2011.

99. Member of Technical Program Committee of World Conference on Soft Computing, San Francisco, CA, December 2010-May 2011.

100. Member of Honorary Committee of Second International Fuzzy Systems Symposium (FUZZYSS'11), Ankara, Turkey, February 2011-November 2011.

101. Member of International Scientific Committee of Second International Symposium on Computing Science and Engineering (ISCSE 2011), Kusadasi, Turkey, February 2011-June 2011.

102. Member of Technical Program Committee of 2011 International Conference on Computational Intelligence and

103. Software Engineering (ciSE 2011), Wuhan, China, March 2011-December 2011.

104. Member of Technical Committee for the First International eConference on Computer and Knowledge Engineering (ICCKE), Department of Computer Engineering, Ferdowsi Univ. Iran, May 2011-October 2011.

105. Member of Steering Committee and Advisory Board, and Program Committee for the 2012 Granular Computing Conference, Hangzhou, China, October 2011-August, 2012.

106. Member of Technical Program Committee for 6th IEEE International Conference on Intelligent Systems, Sofia, Bulgaria, Sept. 2012.

107. Member of International Program Committee for 15th IASTED International Conference on Artificial Intelligence and Soft Computing (ASC 2012), Napoli, Italy, June 2012.

108. Member of International Program Committee for 18th International Conference on Soft Computing MENDEL 2012, Brno, Czech Republic, June 2012.

109. Co-organizer and Guest Editor of a Special Issue of the *IEEE Computational Intelligence Magazine* on Applications of Type-2 Fuzzy Sets and Systems, Vol. 3, 2012.

110. Member of International Program Committee of 2013 IFSA World Congress and NAFIPS Annual Meeting, Edmonton, Canada, June 2013.

111. Area Chair for Computing With Words, at 2013 IEEE International Conference on Fuzzy Systems, Hyderabad, India, July 2013.

112. Co-organizer and Lead co-Guest Editor of June 2013 Special Issue of *IEEE Trans. on Fuzzy Systems* on Type-2 Fuzzy Sets and Systems.

113. Co-organizer (with Mohammad Reza Rajati) of Special Session on "Basic and Advanced Computing With Words" at FUZZ-IEEE 2013, Hyderabad, India, July 2013.

114. Member of International Program Committee for 19th International Conference on Soft Computing MENDEL 2013, Brno, Czech Republic, June 2013.

115. Member of Program Committee for 2014 IEEE International Conference on Fuzzy Systems (FUZZ-IEEE 2014).

116. Organizer and moderator of *Panel on Big Data and Computational Intelligence*, *IEEE Int'l. Conf. on Fuzzy Systems (FUZZ-IEEE)*, Beijing, China, July 2014.

117. Organizer and moderator of Panel on "50 Years Later: Challenges to Worldwide Acceptance of Fuzzy Set and Systems," IEEE Int'l. Conf. on Fuzzy Systems (FUZZ IEEE), Istanbul, Turkey, 2015, and also at NAFIPS 2015, Redmond WA.

118. Organizer and moderator of Panel on "Fuzzy Logic Control: Past, Present and Future," at FUZZ-IEEE, Istanbul, Turkey 2015.

119. Organizer and moderator of Panel on "Explainability/Interpretability When Using Fuzzy Sets and Systems: Opportunities and Challenges," at FUZZ-IEEE, Glasgow, Scotland, UK, July 2020.