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Areas of expertise: Data modeling, statistical analysis, pattern recognition, signal processing, learning machines, neural networks, simulation, communication systems.

Education: Ph.D., Electrical Engineering, U. of Pennsylvania (1967)
M.S.E, Electrical Engineering, U. of Pennsylvania (1966)
B.S.E.E., Pennsylvania State University (1964)

Work Experience:

1990-2008: Consultant to AT&T, Lucent Technologies, and Bell Laboratories in the areas of learning theory, neural networks, pattern recognition, regression, classification, and relevance feedback.

2006- Emeritus Professor of Software Engineering, Monmouth University

1969- 2005: Professor of Software Engineering/Electrical Engineering, Monmouth University, West Long Branch, NJ.

2002: Consultant to Atlantic Consulting Services, Shrewsbury, NJ: Statistical analysis of data, data modeling, and communication simulations in the area of propagation theory and smart land mines.

1990: Consultant to: BDM Corporation, Eatontown, NJ: Performance evaluation of NATO communications systems, both mobile and fixed.

1984-1985: Consultant to Eagle Technologies, Eatontown, NJ: Computer protocols and communication systems evaluations. Secret clearance.

1982-1984: Consultant to BDM Corporation, Eatontown, NJ: Communication protocols, PLRS/JTIDS Hybrid spread spectrum communication systems.

1980-1982: Consultant to Perkin Elmer Corporation, Tinton Falls, NJ: speech recognition.

1979-1981: Consultant to Control Data Corporation: Interoperability studies, Top Secret clearance.

1976-1978: Consultant to Buck Engineering, Farmingdale, NJ: Training manuals for educational products.

1975: Consultant to Robert Wood Foundation: Hearing aid design.

1972-1975: Consultant to Honeywell Corporation: TEMPEST evaluation of speech processing, analog, and digital communication systems.

1971-1972: Principal investigator on two Ft. Monmouth contracts in speech recognition.

Publications: (downloadable publications may be obtained by closing out this window and then clicking on the Publications hyperlink at the top of that page)

“Content Personalization and Adaption for Three Screen Services”, ACM International Conference on Image and Video Retrieval, March 2008, with Z. Liu, D. Gibbon, and Basso

"Video Content Personalization for IPTV Services," with D. Gibbon, Z. Liu, B. Renger, L. Begeja, B. Shahraray, *IEEE Broadband Technology Symposium (BTS)*, March 28, 2007.

"Prototype Demonstration: Video Content Personalization for IPTV Services," with D. Gibbon, Z. Liu, B. Renger, L. Begeja, B. Shahraray, *IEEE Consumer Communications and Networking Conference (CCNC)*, January 12, 2007.

“Semantic Data Mining of Short Utterances” with D. Gibbon, P. Haffner, Z. Liu, B. Renger, and B. Shahraray, *ICASSP-2005*, Philadelphia, PA. 2005, Vol I. 493-496.

“Semantic Data Mining of Short Utterances”, with Lee Begeja, David Gibbon, Patrick Haffner, Bernard Renger, and Behzad Shahraray, *IEEE Transactions on Speech and Signal Processing*, Vol, 13, No. 5, September 2005

“Effect of pruning and early stopping on performance of a boosting ensemble”, *Computational Statistics and Data Analysis*, vol 18, pp. 395-406, 2002.

“Support vector machines: relevance feedback and information retrieval”, with David Gibbon and Behzad Shahraray *Information Processing and Management*, vol 38, pp. 305-323, 2002.

“Relevance feedback using support vector machines”, *Machine Learning: Proceedings of the Eighteenth International Conference*, eds: Carla Brodley and Andrea P. Danyluk, Morgan Kaufmann Publishers, San Francisco, pp. 122-129, 2001.

“Effect of Pruning and early stopping on a boosting ensemble”, *International Meeting on Nonlinear Methods and Data Mining*, eds: Simone Borra and Agostino DiCiaccio, Rome, Italy, 2000.

“Boosting Using Neural Nets” in *Combining Artificial Neural Nets: Ensemble and Modular Multi-Net Systems*. ed: Amada J.C. Sharkey, pp. 51-77, Springer, 1999.

“Z Splitting Criterion for Growing Trees and Boosting,” *Proceedings of the International Joint Conference on Neural Networks*, July, 1999, Washington, D.C.

"Support Vector Machines for Spam Categorization", *IEEE Trans. on Neural Networks*, to be published September, 1999 (with V. Vapnik and Dongui Wu).

“Fast Committee Machines for Regression and Classification”, *Third International Conference on Knowledge Discovery and Data Mining* eds: David Heckerman, Keikki Mannila, Daryl Pregibon, and Ramasamy Uthurusamy, AAAI Press, Menlo Park, CA 1997

“Improving Regressors using Boosting Techniques”, *Proceedings of the Fourteenth International Conference on Machine Learning*, ed: Douglas Fisher, Jr., pp.107-115, Morgan Kaufmann, 1997

"Support Vector Regression Machines", *Neural Information Processing Systems 9*, MIT press, 1997, with C.Burges, L.Kaufman, A.Smola, and V.Vapnik.

"Learning Algorithms for Classification: A Comparison on Handwritten Digit Recognition", *Neural Networks: The Statistical Mechanics Perspective*, eds: J.H. Oh and S. Cho, Word Scientific, pp. 261-276. with L.Bottou, C.Cortes, J.S.Denker, I.Guyon, L.D.Jackel, Y.LeCun, U.A.Muller, E.Sackinger, P.Simard, and V.Vapnik.

“Fast Decision Tree Ensembles for Optical Character Recognition”, *Proceedings of the Fifth Annual Symposium on Document Analysis and Information Retrieval*, 1996, pp. 137-147

"Boosting Decision Trees", *Neural Information and Processing Systems*, Morgan-Kaufman, NIPS-8, 1996, Denver, CO. eds: D.S. Touretzky, M.C.Mozer and M.E.Hasselmo with C. Cortes, MIT Press, 479-485.

"Predicting the Spread Between the Lending and Borrowing Rates", International Conference on Artificial Intelligence, *Proceedings, The First International Conference on Knowledge Discovery and Data Mining*. eds: U.M. Fayyad and R. U Uthurusamy, AAAI Press, Menlo Park, California, 1995.

"Learning Algorithms for Classification: A Comparison on Handwritten Digit Recognition", *Neural Network: The Statistical Mechanics Perspective*, eds: J.H. Oh, and S. Cho, Word Scientific, pp.261-276, 1995. with L Bottou, C. Cortes, J.S. Denker, I. Guyon, L.D. Jackel, Y. LeCun, U.A. Muller, E. Sackinger, P. Simard, and V. Vapnik.

"Comparison of Learning Algorithms for Handwritten Digit Recognition", *International Conference on Artificial Neural Networks*, eds: F. Fogelmand and P. Gallinari, EC2 & Cie Publishers, Paris, 1995, pp. 53-60, with Y. LeCun, L. Bottou, C. Cortes, J.S. Denker, I. Guyon, L.D. Jackel, U.A. Muller, E. Sackinger, P. Simard and V. Vapnik.

"Boosting and other Machine Learning Algorithms", *Proceedings of the Eleventh International Conference on Machine Learning*, 1994, with C. Cortes, J.D. Jacket, Y. LeCunn, V. Vapnik.

"Comparison of Classifier Methods: A Case Study In Handwritten Digit Recognition", *Proceedings of the 1994 International Conference on Pattern Recognition*, Jerusalem, 1994, with L. Bottou, C. Cortes, J.S. Denker, I. Guyon, L.D. Jackel, Y. LeCun, U.A. Muller, E. Sackinger, P. Simard, and V. Vapnik.

"Boosting and Other Ensemble Methods", *Neural Computation*, vol 6, no. 6, 1994, pp. 1287-1299, with C. Cortes, L.D. Jackel, Y. LeCun, and V. Vapnik

"Boosting Performance in Neural Networks", *International Journal of Pattern Recognition and Artificial Intelligence*, Vol. 7. No. 4 (1993), pp. 705-719. Also in *Advances in Pattern Recognition Systems using Neural Network Technologies*, I. Guyon and P.S.P. Wang, (eds) World Scientific Publishing Co. Pte. Ltd. Singapore, with R. Schapire and P. Simard

"Improving Performance in Neural Networks using a Boosting Algorithm", *Advances in Neural Information Processing Systems 5*, Giles, Hanson, and Cowan (eds.), Morgan Kaufmann Publishers, San Mateo, CA, 1993.

"Boosting and Neural Networks", Conference on Computational Learning Theory and Natural Learning Systems, Madison, Wisconsin, August 1992 (with R. Schapire and P. Simard).

Improving Generalization Performance in Character Recognition, 1991 IEEE Workshop on Neural Networks for Signal Processing, with Y. LeCunn.

"Double Back Propagation: Increasing Generalization Performance", *Proceedings of the International Joint Conference on Neural Networks*, Seattle, WA, July 1991.

"Implementation of Minimum Error Expert Systems." *Proceedings of the 1990 International Conference on Neural Networks*, San Diego, CA, June 1990.

"Effects of Slips on Facsimile Performance", 1988 Proceeding of International Conference on Communications, Philadelphia, PA.

"An X.25 Interface to the PLRS/JTIDS Network", *Proceeding of the 1983 Military Communications Conference* pp. 491-495, (oral presentation Washington, DC, October, 1983).

"Variable Filtering as a Function of the Listening Level for Loud, Moderate and Soft Conversational Speech", (with Paul Yanick, Jr.), *Hearing Aid Journal*, vol. 34, no. 9, July 1981, p. 10.

"A Microprocessor-Based Speech Processor", Chapter 11 of *Application of Signal Processing Concepts to Hearing Aids*, Yanick and Freifeld (Eds.), Grune & Stratton, 1978.

"Digital Approaches to Auditory Training", Chapter 8 of *Rehabilitation Strategies for Sensorineural Hearing Loss*, Paul Yanick, Jr. (ed.), Grune & Stratton, 1979.

"A Review of Signal Processing Techniques for the Hearing Impaired", Chapter 8 of *Application of Signal Processing Concepts to Hearing Aids*, Yanick and Freifeld (Eds.), Grune & Stratton, 1978.

"Signal Processing to Improve Intelligibility in the Presence of Noise for Persons with Ski-Slope Hearing Impairment", *IEEE Trans. on Acoustics, Speech and Signal Processing*, vol ASSP-24, #6, Dec. 1976, pp 507-511 with P. Yanick

"Real-Time Recognition of Vowel-like Phonemes in Continuous Speech", *IEEE Trans. on Audio and Electroacoustics*, vol. ASSP-22, no. 2, February 1974, pp. 74-76.

"Observation on Direct Search Procedures", (with C.O. Masters), *IEEE Trans. SCM*, April 1971.

"Computer Optimization of Recognition Networks", *IEEE Trans. on Computers*, vol. C-18, no. 10, October 1969, pp. 918-923.

"Detection of Noiselike Sounds in Telephone Speech", *J. Acoustical Society of America*, vol. 44, no. 1, July 1968, pp. 9-13.

"Speech Processing in a High Ambient Noise Environment", *IEEE Trans. Audio and Electroacoustics*, vol. AU-16, no. 2, June 1968.