

**CURRICULUM VITAE OF JAMES GEORGE DUNHAM**  
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Education: Stanford University BSEE June 1973  
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***II. CURRENT POSITION***

June 2004 to Present  
Associate Dean  
Southern Methodist University  
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October 2003 to May 2004  
Associate Dean of Academic Affairs  
Southern Methodist University  
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August 1984 to Present  
Associate Professor of Electrical Engineering  
Southern Methodist University  
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### ***III. PREVIOUS ACADEMIC POSITIONS***

January 1990 to July 1998  
Assistant Dean of Computer Operations  
Southern Methodist University  
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August 1996 to July 1997  
Acting Chair of the Electrical Engineering Department  
Southern Methodist University  
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January 1990 to August 1996  
Assistant Dean of Undergraduate and Graduate Studies  
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July 1981 to August 1984  
Associate Professor of Electrical Engineering  
Washington University  
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September 1980 to August 1984  
Research Associate  
Biomedical Computer Laboratory  
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April 1978 to July 1981  
Assistant Professor of Electrical Engineering  
Washington University  
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September 1977 to April 1978  
Lecturer in Electrical Engineering  
Washington University  
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### ***IV. PROFESSIONAL ACTIVITIES***

Phi Beta Kappa, Tau Beta Pi, Sigma Xi, Eta Kappa Nu, Upsilon Pi Epsilon  
Member IEEE, Member ASEE  
Secretary and Treasurer, SMU Chapter of Sigma Xi  
Treasurer, 1993 IEEE International Symposium on Information Theory

## V. PUBLICATIONS OF J.G. DUNHAM

### PAPERS

1. "A note on the abstract-alphabet block source coding with a fidelity criterion theorem," *IEEE Trans. on Inform. Theory*, vol. IT-24, p. 760, 1978.
2. "Abstract alphabet distortion-rate functions," *Inform. and Control*, vol. 40, no. 2, pp. 181-191, Feb. 1979.
3. "Performance bounds for convolutional codes with mismatched digital Viterbi decoders," with K.-H. Tzou, *Proceedings Seventeenth Annual Allerton Conference on Communication, Control and Computing*, Monticello, IL, pp. 802-809, Oct. 1979.
4. "Optimal noiseless coding of random variables," *IEEE Trans. on Inform. Theory*, vol. IT-26, no. 3, p. 345, May 1980.
5. "Bounds on message equivocation for simple substitution ciphers," *IEEE Trans. on Inform. Theory*, vol. IT-26, no. 5, pp. 522-527, Sep., 1980.
6. "Principle of conservation of entropy", *Proceedings Eighteenth Annual Allerton Conference on Communications, Control and Computing*, Monticello, IL, pp. 440-445, Oct. 1980.
7. "Variable-length to variable-length encoders are asymptotically mean stationary," with J.C. Kieffer, *Proceeding Eighteenth Annual Allerton Conference on Communications, Control and Computing*, Monticello, IL, pp. 438-439, Oct. 1980.
8. "Abstract alphabet sliding-block entropy compression coding with a fidelity criterion," *Annals of Probability*, vol. 8, no. 6, pp. 1085-1092, Dec. 1980.
9. "Performance bounds for convolutional codes on Rician fading channels," with K.-H. Tzou, *Proc. 1981 Int'l Conf. On Comm.*, Denver, CO, pp. 12.4.1-12.4.5, June 1981.
10. "Joint source and noisy channel trellis encoding," with R.M. Gray, *IEEE Trans. on Inform. Theory*, vol. IT-27, pp. 516-519, July 1981.
11. "Sliding-block decoding of convolutional codes," with K.-H. Tzou, *IEEE Trans. on Comm.*, vol. COM-29, pp. 1401-1403, Sep. 1981.
12. "Compression for picture archiving and communication in radiology," with R.L. Hill, G.J. Blaine, D.L. Snyder and R.G. Jost, *Proc. of the 1983 PACS Conference*, SPIE vol. 418, Kansas City, MO, pp. 201-208, May 1983.
13. "Performance bounds for convolutional codes with digital Viterbi decoders in Gaussian noise," with K.-H. Tzou, *IEEE Trans. on Comm.*, vol. COM-31, no. 10, pp. 1124-1132, Oct. 1983.
14. "On a type of stochastic stability for a class of encoding schemes," with J.C. Kieffer, *IEEE Trans. on Inform. Theory*, vol. IT-29, no. 6, pp. 793-797, Nov. 1983.
15. "Compression of digital diagnostic images in radiology," with S.E. Elnahas and R.G. Jost, *Proc. of Computers in Radiology*, St. Louis, MO, pp. 388-409, May 23-25, 1984.

16. "Applications of physiological human visual system model to image compression," with K.H. Tzou and T.R. Hsing, *Proc. of the 28th Annual Int'l Symposium and Instrument Display*, SPIE vol. 504, San Diego, CA, pp. 419-424, Aug. 19-24, 1984.
17. "Optimum uniform piecewise linear approximation of planar curves," *IEEE Trans. on Pattern Analysis and Machine Intelligence*, vol. PAMI-8, no. 1, pp. 67-75, Jan. 1986.
18. "Telecommunications graduate programs at Southern Methodist University," *Reconnaissance 1986 Proceedings*, Dallas, TX, pp. 82-87, May 14-15, 1986.
19. "Optimal discrete-time delta modulation systems," *IEEE Trans. on Comm.*, vol. COM-34, no. 5, pp. 510-512, May 1986.
20. "Telecommunications graduate programs at Southern Methodist University," *Proceedings Frontiers on Education*, Arlington, TX, pp. 94-97, Oct. 12-15, 1986.
21. "Entropy coding for low-bit rate visual telecommunications," with S.E. Elnahas, *IEEE J. Select. Areas Commun.*, vol. SAC-5, no. 7, pp. 1175-1183, Aug. 1987.
22. "Highly efficient Markov coding schemes based on chain code representations," with C.-C. Lu, *Proceedings 1987 IEEE Int'l Conference on Systems, Man and Cybernetics*, Alexandria, VA, pp. 536-539, Oct. 20-23, 1987.
23. "Hierarchical shape recognition using polygon approximation and dynamic alignment," with C.-C. Lu, *Proceedings Int'l Conf. Acoustics, Speech and Signal Processing*, New York, NY, pp. 976-979, Apr. 11-14, 1988.
24. "Adaptive data compression schemes using arithmetic coding," with C.-C. Lu, *Proceedings 31st Midwest Symposium on Circuits and Systems*, St. Louis, MO, pp. 908-911, Aug. 9-12, 1988 (Invited Paper).
25. "Improving DPCM system performance," with A. Ghosh, *GLOBECOM '89*, Dallas, TX., pp. 1890-1894, November 27-30, 1989.
26. "Matrix extensions of the RSA algorithm," with C.-C. Chuang, *Advances in Cryptography - CRYPTO '90*, pp. 140-155. *Lecture Notes in Computer Science*, Springer-Verlag, 1990.
27. "Highly efficient coding schemes for contour lines based on chain code representations," with C.-C. Lu, *IEEE Trans. on Comm.*, vol. COM-39, no. 10, pp. 1511-1514, 1991.
28. "A universal model based on minimax average divergence," with C.-C. Lu, *IEEE Trans. on Inform. Theory.*, vol. IT-38, no. 1, pp. 140-144, 1992.
29. "Shape matching using polygon approximation and dynamic alignment," with C.-C. Lu, *Pattern Recognition Letters*, vol. 14, pp. 945-949, Dec. 1993.
30. "Secret sharing model – GS<sup>3</sup>," with P.-L. Lin, *Electronics Letters*, vol. 30, no. 25, pp. 2116-2118, Dec. 1994.
31. "The effect of non-equiprobable source symbols on maximum-likelihood Viterbi decoder performance," with K.S. Barron, *1995 Intl. Conf. on Commun. Conf. Rec.*, Seattle, Wash., vol. 2, pp. 692-696, June 1995.

32. "Search-based subpixel tracking," with R.T. Derryberry, *1996 IEEE International Symposium on Circuits and Systems*, Supplementary Volume, Atlanta, GA, pp. 38-40, May 12-15, 1996.
33. "Key escrowing systems and limited one way functions," with William T. Jennings, *Proc. 19th National Information Systems Security Conference*, Baltimore, MD, vol. 1, pp. 202-214, Oct. 22-25, 1996. Reprinted in the *Datapro Information Services Group*.
34. "Block codes for collusion-nonpermissible secret sharing schemes," with Phen-Lan Lin, *Proceedings International Conference on Cryptology and Information Security (ICS'96)*, Kaoshung, Taiwan, pp. 27-34, Dec. 12-15, 1996.
35. "Multistage algorithm for limited one way functions," with William T. Jennings, *Proc. 20th National Information Systems Security Conference*, Baltimore, MD, vol. 1, pp. 150-161, Oct. 7-10, 1997.
36. "A statistical AVL technique using LMMSE estimates and time diversity," with Ibrahim Nomay, *The Tenth Int'l Conf. on Wireless Comm.*, Calgary, Alberta, Canada, pp. 600-604, July 6-8, 1998.
37. "ML estimate based AVL technique using signal strength measurement," with Ibrahim Nomay, *Proceedings Thirty-Sixth Annual Allerton Conference on Communication, Control and Computing*, Allerton House, Monticello, IL, pp. 167-176, Sep. 23-25, 1998.
38. "Performance analysis of CDMA mobile systems using antenna arrays and multi-user detection," with Nermin A. Mohamed, *Thirty Second Annual Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, pp. 1883-1887, Nov. 1-4, 1998.
39. "Adaptive beamforming for DS-CDMA using conjugate gradient algorithm in a multipath fading channel," with Nermin A. Mohamed, *1999 IEEE Emerging Technologies Symposium on Wireless Communications & Systems*, Dallas, TX, pp. 859-863, Apr. 12-13, 1999.
40. "AVL based virtual destination handoff algorithm," with Ibrahim S. Nomay, *49th Annual IEEE Vehicular Technology Conference*, Houston, TX, vol. 2, pp. 1599-1603 (CD-ROM 54.1-54.6), May 16-20, 1999.
41. "Performance analysis of an antenna array-based CDMA receiver using multi-user detection in a multipath channel," with Nermin A. Mohamed, *49th Annual IEEE Vehicular Technology Conference*, Houston, TX, vol. 2, pp. 1623-1627 (CD-ROM 337.1-337.5), May 16-20, 1999.
42. "A simple combined conjugate gradient beamforming and interference cancellation scheme for DS-CDMA in a multipath fading channel," with Nermin A. Mohamed, *IEEE Wireless Communications and Networking Conference 1999*, New Orleans, LA, vol. 2, pp. 857-861, Sep. 21-24, 1999.
43. "A combined antenna array and LMMSE multi-user detection DS-CDMA receiver in multipath fading channels," with Nermin A. Mohamed, *2000 IEEE Emerging Technologies Symposium on Broadband, Wireless Internet Access - Digest of Papers*, Richardson, TX, Section 3, Apr. 10-11, 2000.

44. "A low-complexity combined antenna array and interference cancellation DS-CDMA receiver in multipath fading channel," with Nermin A. Mohamed, *IEEE J. Select. Areas Commun.*, vol. SAC-20, no. 2, pp. 248-256, Feb. 2002.
45. "A combined antenna array and multi-user detection DS-CDMA receiver in single-path and multi-path fading channels," with Nermin A. Mohamed, *Wire*, vol. 20, no. 3, pp. 251-265, Mar. 2002.
46. "Secure rotation- and translation-resilient image watermarking based on Magic-Eye template detection," with Phen-Lan Lin, *Proceedings of The 2002 International Conference on Imaging Science, Systems and Technology (CISST'02)*, Las Vegas, NV, Jun. 2002.
47. "Using Neural Networks to Classify Homogeneous Delta Files," with Ming-Tan Sun and Zhi Gang Li, *Information Security Conference (ISC) 2003*, Chang Gung University, Taiwan, August 28-9, 2003.
48. "Classifying File Type of Strem Cipher in Depth Using Neural Networks," with Ming-Tan Sun and Judy C.R. Tseng, *ACS/IEEE International Conference on Computer Systems and Applications*, Cairo, Egypt, p. 97, Jan. 3-6, 2005.

### **ABSTRACTS**

1. "Joint source-channel time-invariant trellis encoding," with R.M. Gray, *Abstracts of Papers 1977 IEEE Int'l Symposium on Information Theory*, Ithaca, NY, p. 126, Oct. 1977.
2. "Mismatch theorems for trellis encoding communication systems," *Proceedings Sixteenth Annual Allerton Conference on Communication, Control and Computing*, Monticello, IL, p. 696, Oct. 1978.
3. "Block and sliding-block joint source-channel coding theorems," *Abstracts of Papers 1979 IEEE Int'l Symposium on Information*, Grignano, Italy, p. 50, June 1979.
4. "Joint source and channel mismatch theorems," *Abstracts of Papers 1979 IEEE Int'l Symposium on Information Theory*, Grignano, Italy, p. 61, June 1979.
5. "Key managed cryptographic systems," *Abstracts of Papers 1979 IEEE Int'l Symposium on Information Theory*, Grignano, Italy, p. 99, June 1979.
6. "Asymptotic properties of mismatch Chernoff bounds," *Proceedings of the 1980 Conference on Information Sciences and Systems*, Princeton University, Princeton, NJ, p. 436, March 1980.
7. "Bounds on message equivocation for simple substitution ciphers," *Abstracts of Papers 1981 IEEE Int'l Symposium on Information Theory*, Santa Monica, CA., p. 46, Feb. 1981.
8. "Coding large alphabet sources with ECG applications," *34<sup>th</sup> ACEMB*, Houston TX, p. 69, Sept. 1981.

9. "An experimental approach for designing variable-length codes," with N.R. Kolb, *Proceedings Nineteenth Annual Allerton Conference on Communications, Control and Computing*, Monticello, IL, p. 69, Oct. 1981.
10. "Substitution and transposition ciphers," *Proceedings Twentieth Annual Allerton Conference on Communications, Control and Computing*, Monticello, IL, p. 688, Oct. 1982.
11. "A physiological-based human visual system model for image processing," with K.-H. Tzou, *Abstracts of Papers 1983 IEEE Int'l Symposium on Information Theory*, St. Jovite, Canada, p. 33, Sep. 1983.
12. "Optimal source coders with real-time constraints," *Abstracts of Papers 1983 IEEE Int'l Symposium on Information Theory*, St. Jovite, Canada, p. 45, Sep. 1983.
13. "An iterative theory for code design," *Abstracts of Papers 1983 IEEE Int'l Symposium on Information Theory*, St. Jovite, Canada, pp. 89-90, Sep. 1983.
14. "Strongly ideal cryptographic systems for rational Markov processes," *Abstracts of Papers 1983 IEEE Int'l Symposium on Information Theory*, St. Jovite, Canada, p. 93, Sep. 1983.
15. "Structure of a causal communication system," *Abstracts of Papers 1985 IEEE Int'l Symposium on Information Theory*, Brighton, England, p. 173, June, 1985.
16. "Characterizations of the Shannon entropy using the symmetric group of degree 3," *Abstracts of Papers 1985 IEEE Int'l Symposium on Information Theory*, Brighton, England, p. 173, June, 1985.
17. "Source modeling for arithmetic codes with applications to low-rate image compression," with S.E. Elnahas and K.-H. Tzou, *Abstracts of Papers 1986 IEEE Int'l Symposium on Information Theory*, Ann Arbor, MI, p. 157, Oct. 6-9, 1986.
18. "Highly efficient arithmetic coding schemes for line drawings based on chain code representations," with C.-C. Lu, *Proceedings Twenty-Fifth Annual Allerton Conference on Communications, Control and Computing*, Monticello, IL, pp. 967-968, Sep. 30 - Oct. 2, 1987.
19. "Piecewise linear approximation of digital curves," with A. Ghosh, *Proceedings of the First Annual IEEE Symposium on Parallel and Distributed Processing*, Dallas, TX, pp. 47-48, May 22-23, 1989.
20. "A universal model based on minmax average divergence," with C.-C. Lu, *Abstracts of Papers 1990 IEEE Int'l Symposium on Information Theory*, San Diego, CA, p. 99, Jan. 14-19, 1990.
21. "Optimum scalar and vector predictive quantizer design," with A. Ghosh, *Abstracts of Papers 1990 IEEE Int'l Symposium on Information Theory*, San Diego, CA, pp. 79-80, Jan. 14-19, 1990.
22. "Optimal quantizers: computational improvement and performance," with S.C. Greer, *Proceedings Twenty-Eighth Annual Allerton Conference on Communication, Control and Computing*, Allerton House, Monticello, IL, pp. 713-714, Oct. 3-5, 1990.

23. "A theory for vector quantization," with S.C. Greer, *Abstracts of Papers 1991 IEEE Int'l Symposium on Information Theory*, Budapest, Hungary, p. 254, June 24-28, 1991.
24. "Classifying File Type of Stream Cipher in Depth Using Neural Networks," with Ming-Tan Sun and Judy C.R. Tseng, *Book of Abstracts ACS/IEEE International Conference on Computer Systems and Applications*, Cairo, Egypt, p. 97, Jan. 3-6, 2005.