

April, 2014

CURRICULUM VITAE

GIBSON, Jerry Don

Citizenship: U.S.

Professor: Electrical Engineering

Birthdate: 12 May 1946

Birthplace: Ft. Worth, TX

Marital Status: Married

Number of Children: Two, Erin and Charles (deceased)

Business Address:

Department of Electrical & Computer Engineering
3163 Harold Frank Hall
University of California, Santa Barbara
Santa Barbara, CA 93106-9560
Phone: (805) 893-6187
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Home Address:

3768 Brenner Drive
Santa Barbara, CA 93105
Phone: (805) 687-7927

Professional Interests: Data, Speech, Image, and Video Compression, Multimedia over Networks, Wireless Communications, Multiuser Communications, Information Theory, Digital Signal Processing, and Adaptive Filtering

EDUCATION: Ph. D., Electrical Engineering, Southern Methodist University, 1973.
M. S., Electrical Engineering, Southern Methodist University, 1971.
B. S., Electrical Engineering, University of Texas at Austin, 1969.

EXPERIENCE:

Educational

Professor, Electrical & Computer Engineering Department, University of California, Santa Barbara, Aug. 2002-present.

Chair, Electrical & Computer Engineering Department, University of California, Santa Barbara, June 2008-June 2013.

Professor, Graduate Program in Media Arts and Technology, University of California, Santa Barbara, Aug. 2002 – Mar. 2010.

Professor and Chairman, Department of Electrical Engineering, SMU, Aug. 1997-
July 2002.

J. W. Runyon, Jr. Professor of Electrical Engineering, Texas A&M University, Sept.
1987 – July 1997.

Visiting Professor, Information Systems Laboratory, Department of Electrical
Engineering, Stanford University, Sept. – Dec. 1991.

Director, Telecommunications, Control and Signal Processing Research Center,
Texas A&M University, June 1987-August 1991.

Professor, Electrical Engineering, Texas A&M University, Sept. 1983 –July 1997.

Associate Professor, Electrical Engineering, Texas A&M University, Sept. 1978 –
Aug. 1983.

Assistant Professor, Electrical Engineering, Texas A&M University, Sept. 1976 –
Aug. 1978.

Assistant Professor, Electrical Engineering, University of Nebraska-Lincoln, Sept.
1974 – Aug. 1976.

Visiting Assistant Professor, Electrical Engineering, University of Notre Dame, Jan.
1974 - May 1974.

Research Associate, Electrical Engineering, University of Notre Dame, Sept. 1973 –
Dec. 1973.

Research Assistant, Electrical Engineering, Southern Methodist University, Aug.
1972 – Aug. 1973.

Research Assistant, Electrical Engineering, University of Texas, Jan. 1968 – Jan.
1969.

Industrial

Summer Faculty Appointment, Defense Communications Agency, Reston, VA, June
1974 – Aug. 1974.

Aerosystems Engineer, General Dynamics Corp., Ft. Worth, TX, Jan. 1969 – Jan.
1972.

Consultant for numerous companies and government agencies.

SOCIETY MEMBERSHIPS:

Institute of Electrical and Electronics Engineers, Fellow (Communications, Signal
Processing, and Information Theory Societies)

Eta Kappa Nu

Sigma Xi

AWARDS and RECOGNITION:

2010 *IEEE Transactions on Multimedia* Best Paper Award, for J. Hu, S. Choudhury and J. D. Gibson, "Video Capacity of WLANs with a Multiuser Perceptual Quality Constraint," *IEEE Trans. on Multimedia*, Vol. 10, No. 8, pp. 1465-1478, 2008.

IEEE Technical Committee on Wireless Communications Recognition Award for contributions in the area of "Wireless Communications Systems and Networks," 2009.

Distinguished Lecturer, IEEE Communications Society, 2007-2008.

Outstanding Electrical Engineering Professor, April 1999, the Graduate Student Council, School of Engineering and Applied Science, SMU.

IEEE Fellow, 1992, for contributions to the theory and practice of adaptive prediction and speech waveform coding.

1992 Frederick Emmons Terman Award, Electrical Engineering Division, American Society for Engineering Education, \$4,000.

J. W. Runyon, Jr. Professor of Electrical Engineering, Texas A&M University, Sep 1987 - Jul 1997, endowment of \$450,000 in July 1997.

Co-Recipient of the IEEE Signal Processing Society 1993 Senior Paper Award in Speech Processing.

One of 50 invited participants to the Colloquium on Information Theory: The First 50 Years and Beyond, Royal Academy of the Netherlands, June 17-19, 1998, Amsterdam.

Rated among the top 10 percent of the more than 200 short course instructors from industry, government, and academia who lectured for UCLA Extension in 1993/94.

The noise canceller in the Japanese half-rate digital cellular standard uses an algorithm from the paper, J. D. Gibson, et al, "Filtering of Colored Noise for Speech Enhancement and Coding, *IEEE Trans. on Signal Processing*, Vol. 39, Aug. 1991, pp. 1732-1742.

1986-1987 Dresser Industries Professor, Texas A&M University.

1985-1986 Dresser Industries Professor, Texas A&M University.

Senior TEES Research Fellow, 1985-1986, Texas Engineering Experiment Station, \$5,000. Research Award.

TEES Research Fellow, 1984 -1985, Texas Engineering Experiment Station, \$5,000. Research Award.

TEES Research Fellow, 1983-1984, Texas Engineering Experiment Station, \$5,000. Research Award.

NSF Young Investigator, 1974.

PATENTS:

U.S Patent: 6,650,762, Gibson, et al, issued November 18, 2003, Types-Based Lossy Data Embedding.

PROFESSIONAL SERVICES (Selected):

Chair, External Advisory Board, NSF Science and Technology Center for Science of Information, Purdue (lead), UC-Berkeley, Bryn Mawr, Howard, MIT, Stanford, Princeton, UIUC and UCSD, 2011-2014.

Member, Steering Committee, Wireless Communications and Networking Conference, IEEE Communications Society, 2000-2014.

Member, IEEE Awards Committee, 2008-2010.

Chair, Technical Panels, International Conference on Communications, Cape Town, South Africa, 2010.

Member, 2009 and 2010 IEEE Medal of Honor Selection Committee.

Member, Best Paper Award Committee, *IEEE Transactions on Multimedia*, 2008-2009.

Member, IEEE Communications Society Awards Committee, 2007.

Member, Board of Governors, IEEE Communications Society, 2005-2007.

Member, Technical Committee on Personal Communications, Recognition Award Committee, 2005-2008.

Member, Technical Program Committee, Forty-First Asilomar Conference on Signals, Systems, and Computers, Nov. 4-7, 2007.

Member, Technical Program Committee, 1st Multimedia Communications Workshop, June 11, 2006, Istanbul, Turkey.

Associate Editor, *IEEE Transactions on Information Forensics and Security*, IEEE Signal Processing Society, 2005-2006.

Member, Prize Paper Award Committee, *IEEE Transactions on Multimedia*, 2003.

Member, IEEE Communications Society Awards Committee, 2001-2003.

Member, IEEE Hamming Medal Committee, 2001-2003.

Conference Founder and First Technical Program Chair, IEEE Wireless Communications and Networking Conference, New Orleans, LA, Sept 21-25, 1999.

President, IEEE Information Theory Society, 1996.

Technical Program Chair, 1997 Asilomar Conf. On Signals, Systems & Computers, Monterey, CA.

Member, Information Theory Society Board of Governors, 1990-98.

First Vice-President, IEEE Information Theory Society, 1995.

Member, Speech Technical Committee, Signal Processing Society, 1992-95.

Member, Editorial Board, *Proceedings of the IEEE*, 1991-1996.

Second Vice-President, IEEE Information Theory Society, 1994.

Finance Chair, First IEEE International Conference on Image Processing, Nov. 1994, Austin, TX.

General Co-Chairman (with Robert M. Gray), 1993 International Symposium on Information Theory, San Antonio, TX.

Associate Editor for Communications, *IEEE Trans. on Information Theory*, Oct. 1988-1991.

Member, Technical Program Committee, 1995 IEEE Speech Coding Workshop, Annapolis, Maryland, 20-22 Sept. 1995.

Member, Technical Program Committee, 28th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, 31 Oct. - 2 Nov. 1994.

Program Committee, "Speech Coding for the Network of the Future," IEEE Workshop on Speech Coding for Telecommunications, St. Jovite, Quebec, Canada, 13-15 Oct. 1993.

Technical Program Committee, 1992 and 1993 IEEE International Workshop on Intelligent Signal Processing and Communication Systems, Taiwan, R.O.C.

Organizing Committee, 1992 IEEE Workshop on Visual Signal Processing and Communications, USA.

Program Committee, "Digital Voice for the Nineties," IEEE Workshop on Speech Coding for Telecommunications, Whistler, B.C., Canada, 11-13 Sept. 1991.

Associate Editor for Speech Processing, *IEEE Trans. on Communications*, Nov. 1981 - 1985.

Session Chair/Organizer for the sessions:

1. "Applied Source Coding," 1979 International Conference on Communications, Boston, MA, 10-14 June 1979.
2. "Data Compression Over Noisy Channels," 1980 National Telecommunications Conference, Houston, TX, 30 Nov. - 4 Dec. 1980.
3. "Error Control Coding," 1982 Global Communications Conference, Miami, FL, 29 Nov. - 2 Dec. 1982.
4. "Estimation and Control with Quantized Data," Twenty-Second Conference on Decision and Control, San Antonio, TX, 14-16 Dec. 1983.
5. "Picture Processing Technologies for Communications in the VLSI Era," 1984 International Conference on Communications, Amsterdam, 14-17 May 1984.

6. "Estimation and Identification for Speech Processing," Invited Session, Seventh IFAC Symposium on Identification and Parameter Estimation, University of York, United Kingdom, 3-7 July 1985.
7. "Speech and Image Coding," Twenty-Ninth Midwest Symposium on Circuits and Systems, Lincoln, NE, 11-12 Aug. 1986.
8. "Image Coding and Compression II," 1987 IEEE International Conf. on Acoustics, Speech, and Signal Processing, Dallas, TX, 6-9 Apr. 1987.
9. "Source Coding of Speech and Video," 1987 IEEE International Conf. on Communications, Seattle, WA, 7-10 June 1987.
10. "Speech and Image Compression," Thirty-First Midwest Symposium on Circuits and Systems, St. Louis, MO, 10-12 Aug. 1988.
11. "Adaptive Filters," Thirty-Second Midwest Symposium on Circuits and Systems, Urbana, IL, 14-16 Aug. 1989.
12. "Speech Coding for Telecommunications," 1990 IEEE Global Telecommunications Conf. Dallas, TX, 27-29 Nov. 1989.
13. "Source Coding II," 1990 IEEE International Symposium on Information Theory, San Diego, CA, 14-19 Jan. 1990.
14. "Detection and Estimation VI," 1990 International Symposium on Information Theory and Its Applications, Honolulu, HI, 27 -30 Nov. 1990.
15. "Quantization," 1991 IEEE International Symposium on Information Theory, Budapest, Hungary, 24-28 June 1991.
16. "Low Delay Speech Coding," IEEE Speech Coding Workshop, Whistler, B. C., Canada, 11-14 Sept. 1991.
17. "Speech Coding at Rates Below 4 KB/S," 1993 IEEE International Conf. on Acoustics, Speech, and Signal Processing, Minneapolis, MN, 27-30 Apr. 1993.
18. "Sensory Modeling and Analysis," Twenty-Eighth Annual Conference on Information Sciences and Systems, Princeton, NJ, 16-18 Mar. 1994.
19. "Quantization Techniques," 1994 IEEE International Symposium on Information Theory, Trondheim, Norway, 27 June - 1 July 1994.
20. "Estimation," 1995 IEEE International Symposium on Information Theory, Whistler, B. C., Canada, 17-22 Sept. 1995.
21. "Shannon Theory," 1996 IEEE International Symposium on Information Theory and Its Applications, Victoria, B. C., Canada, 17-20 Sept. 1996.
22. "Information Theoretic Methods in Probability and Statistics," Shannon Lecture presented by Imr  Csiz r, 1997 IEEE International Symposium on Information Theory, Ulm, Germany, 29 June - 4 July 1997.

23. "Source Coding Theory," 1998 IEEE International Symposium on Information Theory, MIT, Cambridge, MA, 16-21 Aug. 1998.
24. "Future Directions in Wireless Communications," Plenary Session, 1999 IEEE Wireless Communications and Networking Conference, New Orleans, LA, 22-24 Sept. 1999.
25. "Signal Processing," 2000 IEEE Emerging Technologies Symposium on Broadband, Wireless, Internet Access, Richardson, TX, 10-11 Apr. 2000.
26. "DSP Plenary I," Presentation by Tom Engibous, President and CEO of TI, Ninth IEEE DSP Workshop and the First DSP Education Workshop, Hunt, TX, 15-18 Oct. 2000.
27. "DSP for Communications II," Ninth IEEE DSP Workshop and the First DSP Education Workshop, Hunt, TX, 15-18 Oct. 2000.
28. "Information Hiding and Watermarking," Thirty-Ninth Allerton Conference on Communication, Control, and Computing, University of Illinois at Champaign-Urbana, Allerton House, Monticello, Illinois, 3-5 Oct. 2001.
29. "Watermarking," Fortieth Allerton Conference on Communication, Control, and Computing, University of Illinois at Champaign-Urbana, Allerton House, Monticello, Illinois, 3-5 Oct. 2002.
30. "Speech Coding," 37th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, 9-12 Nov. 2003.
31. "Joint Source/Channel Coding," First International Symposium on Control, Communications, and Signal Processing, Hammamet, Tunisia, 21-24 Mar. 2004.
32. "Speech and Audio Coding," 38th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, 7-10 Nov. 2004.
33. "Video and Applications," 39th Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, 30 Oct.-1 Nov. 2005.
34. "Multimedia over Wireless," International Wireless Communications and Mobile Computing Conference, Vancouver, B. C., Canada, 3-6 July, 2006.
35. "Multimedia QoS Support," IEEE Wireless Communications and Networking Conference, Las Vegas, NV, 31 March-3 April, 2008.
36. "QoE for Multimedia Communications I," QoMEX, First International Workshop on Quality of Multimedia Experience, San Diego, CA, 29-31 July, 2009.
37. "Speech Coding," 46th Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, Nov. 4-7, 2012.

Reviewer for: *IEEE Trans. on Communications, IEEE Transactions on Wireless Communications, IEEE Circuits and Systems Magazine, Journal of Multimedia, IEEE Communications Letters, IEEE Signal Processing Letters, IEEE Trans. on Information Theory, IEEE Trans. on Signal*

Processing, IEEE Trans. on Speech and Audio Processing, IEEE Trans. on Image Processing, National Science Foundation

COMMITTEE MEMBERSHIPS:

University of California, Santa Barbara

Chair, Budget Ad Hoc Committee, Electrical and Computer Engineering, 2009-2013.

Chair, External Affairs Committee, Electrical and Computer Engineering, 2009-2013.

Member, Admissions Committee, Media Arts and Technology, 2009-2010.

Chair, Advisory for Faculty Recruitment and Diversity Committee, Electrical and Computer Engineering, 2008-2013.

Member, Web Advisory Committee, Electrical and Computer Engineering, 2008-2013.

Member, Advisory for Merits and Promotions Committee, Electrical and Computer Engineering, 2008-2013.

Co-chair, Lecture Series Committee, Media Arts and Technology, 2008-2009.

Member, External Affairs Committee, Electrical and Computer Engineering, 2007-2008.

Member, ECE Graduate Affairs, Admissions Subcommittee, 2007-2008.

Representative to the UCSB Faculty Legislature, Media Arts & Technology Program, 2007-2008.

Co-Chair, Facilities and Technical Infrastructure Committee, Media Arts & Technology Program, 2007-2008.

Member, Strategic Planning and Development Committee, Media Arts & Technology Program, 2007-2008.

Chair, CCSP Faculty Search Committee, Electrical and Computer Engineering Department, 2006-2007.

Co-Chair, CIO Search Committee, UCSB, 2005-2007.

Member, MSO Selection Committee, Electrical and Computer Engineering Department, 2006.

Chair, Advisory Committee for Faculty Recruitment & Diversity, Electrical and Computer Engineering Department, 2006-2007.

Member, MSO Selection Committee, Media Arts & Technology Program, 2005.

Member, Undergraduate Curriculum Committee, Electrical & Computer Engineering, 2005-2006.

Member, Admissions Committee, Media Arts & Technology Program, 2002-Present.

Member, Curriculum Committee, Media Arts & Technology Program, 2002-Present.

Member, Infrastructure/Space Committee, Media Arts & Technology Program, 2002-Present.

Professional

Chair, Electrical and Computer Engineering Department Academic Program Review Committee, University of Arizona, Spring 2001.

Multimedia Communications Technical Committee, IEEE Communications Society, 2006-Present.

Wireless Communications Technical Committee, IEEE Communications Society, 1997 – Present.

Data Communication Systems Technical Committee, IEEE Communications Society, 1978 - Present.

Signal Processing and Electronics Technical Committee, IEEE Communications Society, 1981 - Present.

Southern Methodist University

Jerry R. Junkins' Building Oversight Committee, 1998-2002.

Jerry R. Junkins' Building Users Committee, Chairman, 1998-2002.

Benchmarking Committee, University-wide, 1998.

Research Policy Committee, University-wide, 1998-2000.

INVITED TALKS:

“Wireless Video: The Applications, the Challenges, and the Way Forward,” Distinguished Lecture, ECE Department, University of Arizona, March 13, 2014.

“Wireless Video: The Applications, the Challenges, and the Way Forward,” Weber Lecture, NYU Poly, April 11, 2013.

“Designing for Exponential Growth in Mobile Video Traffic: Applications, Codecs, Networks, and Quality,” Opening Keynote, IEEE ICC 2012 Workshop on Realizing Advanced Video Optimized Wireless Networks, Ottawa, Canada, June 15, 2012.

“Electrical and Computer Engineering Research in the Video and Voice over Networks Lab at the University of California, Santa Barbara,” Jackson State University, Jackson, MS, October 19, 2011.

“Advances in Audio/Video Coding,” Talk and Plenary Panel, 2011 ICME, Barcelona, Spain, July 12, 2011.

"Low Delay, Low Complexity Voice Coding and Bounding the Rate Distortion Performance of Voice Codecs," *Qualcomm*, San Diego, CA, June 24, 2011.

"Bounding the Rate Distortion Performance of Voice and Video Codecs," California Institute of Technology, Pasadena, CA, May 18, 2011.

"The 3-dB Transcoding Penalty in Digital Cellular and Interoperability with Future Voice/Audio Coding Standards," *Dallas Chapter of IEEE Signal Processing Society*, University of Texas at Dallas, TX, March 1, 2011.

"Rate Distortion Optimized and Routing Aware Multiple State Video Coding with Refined Error Concealment for Video over Mobile Ad Hoc Networks," Southern Methodist University, Dallas, TX, April 26, 2010.

"Voice and Video Communications over Wireless Networks," Ericsson Research USA, San Jose, CA, July 29, 2009.

"Voice and Video Communications over Wireless Networks," Applied Signal Technology, Inc., San Jose, CA, July 15, 2009.

Invited Participant, Panel on "Wireless Multimedia Communications," Wireless Communications and Networking Conference, Las Vegas, NV, April 1, 2008.

"Information Transmission over Single and 2X2 MIMO Channels," SMU, Dallas, TX, March 26, 2008.

"Voice and Video over Wireless Networks," Engineering Science Lecture Series, Sonoma State University, Sonoma, CA, Feb. 21, 2008.

"Voice and Video over Wireless Networks," Wireless Networking and Communications Seminar Series, Dept. of Electrical and Computer Engineering, University of Texas, Austin, TX, Sept. 20, 2007.

"Voice and Video over Wireless Networks," IEEE Communications Society Distinguished Lecture, National Instruments, Austin, TX, Sept. 20, 2007.

"Voice and Video over Wireless Networks," IEEE Communications Society Distinguished Lecture, Clear Lake-NASA, Sept. 19, 2007.

"Tandem Voice Communications," IEEE Communications Society Distinguished Lecture, Richardson, TX, Sept. 18, 2007.

"Voice and Video over Wireless Networks," NTTDoCoMo, San Jose, CA, March 17, 2006.

"Voice and Video over Wireless Networks," Intel Corp., Hillsboro, OR, Feb. 7, 2006.

"Voice and Video over Wireless Networks," Nokia Research Center, San Diego, CA, Jan. 11, 2006.

"Wide Open Spaces or Mostly Wireless, Most of the Time," Plenary Talk, 62nd IEEE Vehicular Technology Conference, Dallas, TX, Sept. 28, 2005

"VoIP, Voice over Wireless LANs, and Digital Cellular," Nokia Research Center, San Diego, CA, Jan. 5, 2005.

"Data Embedding Using the Method of Types," NTTDoCoMo Labs, San Jose, CA, May 4, 2004.

"Voice Communications over Tandem Networks," Electrical and Computer Engineering Department, Oklahoma State University, April 16, 2004.

"Voice Communications over Tandem Networks," Department of Electrical Engineering, University of Oklahoma, April 15, 2004.

"Multimedia Over Networks: Key Issues and (a Few) Answers," Department of Electrical and Computer Engineering, University of Miami, Dec. 5, 2003.

"Video and Audio Coding in the Signal Compression Lab at UCSB," Qualcomm, Inc., San Diego, CA, October 22, 2003.

"Data Embedding Using the Method of Types," Dolby, Inc., San Francisco, CA, August 27, 2003.

"Universal Receivers and Data Embedding," Department of Electrical and Computer Engineering, University of California, Santa Barbara, October 29, 2001.

"Universal Classification, the Method of Types, and Data Embedding," Department of Electrical and Computer Engineering, University of California, San Diego, October 19, 2001.

"Research Directions and Standards in Speech Coding," Department of Electrical Engineering, Texas A&M University, College Station, Texas, September 25, 2001.

"The Next New Thing in (Tele)Communications," Graduate Student Reception, School of Engineering, Southern Methodist University, Plano Centre, Plano, Texas, August 19, 2001.

"Universal Successive Refinement of CELP Speech Coders," Nowlin Distinguished Lecture Series in Telecommunications, Department of Electrical Engineering, University of Texas at Austin, Austin, Texas, March 8, 2001.

"Randomization and Whitening in Lossy Source Coding," HP Labs, June 22, 2000, Palo Alto, CA.

"Compressed Multimedia Over Wireless Networks," Fort Worth Section, IEEE Communications Society, Motorola Cellular, October 20, 1999, Fort Worth, TX.

"Strategies for Compressed Multimedia in Wireless Networks," Nortel Wireless Forum, poster presentation, October 18, 1999, Richardson, TX.

"Multiple Descriptions and Error Concealment for Image Coding," Dept. of Electrical Engineering, University of Nebraska-Lincoln, May 7, 1999, Lincoln, NE.

Panel on Wireless Communications, J. D. Gibson, T. Rappaport, A. J. Paulraj, H. Sobol, V. Prabhu, and R. Prakash, 1999 Emerging Technologies Symposium, April 12-13, 1999, Richardson, Texas.

"Multimedia Communications Over Low Rate Wireless Channels," IEEE Region 5 Meeting, TechCon '98, April 17, 1998, Fort Worth, TX.

"Multimedia Communications Over Networks," Dept. of Electrical Engineering, Southern Methodist University, Feb. 1997, Dallas, TX.

"Scalable Video Coding and Successive Refinement of Information," University of Nebraska -Lincoln, Nov. 8, 1996.

"Multimedia Communications over Networks," Bogazici University, Istanbul, Turkey, June 14, 1996.

"Multimedia Compression and DSP," University of Strathclyde, Glasgow, Scotland, June 3, 1996.

"Multimedia Communications over Networks," University of West England, Bristol, England, May 31, 1996.

"Multimedia Communications over Networks," School of Electrical Engineering, Cornell University, Ithaca, NY, Jan. 17, 1996.

"Data, Voice, and Video Over Circuit-Switched, Packet-Switched and Wireless Networks," Advanced Micro Devices, Sunnyvale, CA, Nov. 3, 1995.

"Layered Coding of H.261 Video and Low Complexity Multiresolution Video Coding Over the Internet," Hewlett-Packard, Palo Alto, CA, Nov. 2, 1995.

"Speech Coding," Department of Electrical Engineering, University of California-Los Angeles, 8 Aug. 1995.

"Layered Coding of H.261 Video," Department of Electrical Engineering, Duke University, March 6, 1995.

"Variable Rate Speech Coding," Department of Electrical Engineering, University of Nebraska-Lincoln, Oct. 6, 1994.

"Speech Coding," Motorola-Austin, Aug. 31, 1994.

"Multimedia Communications and Networking," AMD - Austin, TX, Jan. 21, 1994.

"Why the Academy?" A Seminar in University Research and Teaching (ASURT), Oct. 26, 1993.

"Progressive Encoding and Successive Refinement: Who Cares?" PictureTel Corp., Peabody, MA, Oct. 8, 1993.

"Code Generators for Tree Coding of Speech," Information Systems Laboratory, Stanford University, May 27, 1993.

“Progressive Encoding of Images and Successive Refinement of Information,”
Department of Electrical Engineering, Rice University, April 7, 1993.

SHORT COURSES:

“Multimedia Compression: Principles, Applications, and Standards,” UCLA Extension, 8-11 Aug. 1995, 6-8 Aug. 1996, 20-22 Aug. 1996 (at Motorola), and 6-9 May 1997 (at NSA). Course Coordinator and Lecturer.

“Multimedia Data Compression,” Imperial College, London, England, 28-30 June 1995. Course Coordinator and Lecturer.

“Digital Transmission for Multimedia and the Information Superhighway,” UCLA Extension, 8-10 Aug. 1994. Course Coordinator and Lecturer.

“Data, Speech, Image, and Video Compression: Principles, Applications, and Standards,” UCLA Extension, 6-10 Jan. 1992; 17-21 Aug. 1992; 9-13 Nov. 1992; 4-8 Jan. 1993; 9-13 Aug. 1993; 10-14 Jan. 1994; 25-27 May 1994; 10-12 Aug. 1994: Course Coordinator and Lecturer.

“Speech Coding and the Digital Cellular Standard,” BNR, Inc., 18 April 1990, Lecturer.

“Digital Communications,” TCSP Research Center, Texas A&M University, 10-12 April 1989, Course Coordinator and Lecturer.

“Digital Processing and Coding of Speech and Images,” UCLA Extension, 27-31 July 1981, Contributor, 2 days, 200 pages of notes, 205 transparencies.

“Digital Processing of Speech and Images,” UCLA Extension, 26-30 July 1982, Lecturer, 2 days, 200+ pages of notes, 200+ transparencies.

CURRENT RESEARCH SUPPORT:

Principal Investigator, “Cloud-Based HDR Video Post-Processing for Mobile and Asymmetrical Telepresence,” Cisco Systems, Inc, January 1, 2013-July 1, 2014, \$75,834.

Principal Investigator, “ViVoNets Collaboration with Jackson State University,” UC-HBCU Initiative,” July 1, 2011-July 1, 2014, \$36,900.

Principal Investigator, “Low Complexity Video Encoding,” Applied Signal Technology, December 16, 2011- December 31, 2013, \$96,000.

Co-Principal Investigator, “CIF: Small: A Unifying Framework for Aural Signal Coding,” National Science Foundation, July 1, 2009-June 30, 2013, \$498,363.

PREVIOUS RESEARCH SUPPORT:

Principal Investigator, "High Dynamic Range and 3D Video Compression and Transmission" HTC, April 1, 2011-June 30, 2012, \$50,000.

Principal Investigator, "Low Complexity Video Encoding," Applied Signal Technology, December 1, 2010-November 30, 2011, \$50,000.

Principal Investigator, "High Dynamic Range and 3D Video for Cloud Computing," Huawei, January 1, 2011-December 31, 2011, \$60,000.

Principal Investigator, "Speech Coding for Universal Voice Communications," National Science Foundation, October 1, 2007-September 30, 2011, \$373,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro/Applied Signal Technology, Dolby Laboratories, Qualcomm, Sony Ericsson and Cisco, August 24, 2007-December 31, 2010, \$207,175.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro/Applied Signal Technology and Sony Ericsson, August 15, 2008-December 31, 2010, \$139,550.

Principal Investigator, "Voice and Video Over Wireless Ad Hoc and Mesh Networks," UC Discovery/Applied Signal Technology, November 2, 2009 – November 1, 2010, \$59,453.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro/Applied Signal Technology, Dolby Laboratories and Qualcomm, August 17, 2006-December 31, 2009, \$144,054.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro, January 1, 2008-December 31, 2008, \$217,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," Applied Signal Technology, Dolby Laboratories and Qualcomm, August 11, 2004-December 31, 2008, \$76,584.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro, January 1, 2007-December 31, 2007, \$100,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro/Applied Signal Technology, Dolby Laboratories and Qualcomm, September 9, 2005-December 31, 2007, \$111,491.

Principal Investigator, "Voice Communications over Tandem Heterogeneous Networks," National Science Foundation, September 1, 2004-August 31, 2008, \$240,000.

Co-Principal Investigator, "Real Time Communication Support in an Ubiquitous Next-Generation Internet," National Science Foundation, September 1, 2004-August 31, 2008, \$900,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro, January 1, 2006-December 31, 2006, \$125,000.

Principal Investigator, "Cross Layer Designs for Voice over Wi-Fi Links in a Multi-Hop Network," UC Discovery Program/Nokia, May 17, 2005-May 16, 2006, \$86,261.79.

Principal Investigator, "Tandem Voice Communications," Nokia Research Center, July 31, 2004-June 15, 2005, \$50,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro, January 1, 2005-December 31, 2005, \$125,000.

Co-Principal Investigator, "Efficient Compression and Processing of Audio and Video Signals," UC Micro, January 1, 2004-December 31, 2004, \$140,000.

Principal Investigator, "Spectral Entropy and Adaptive, Lossy Source Coding," National Science Foundation, January 1, 2001-December 31, 2003, \$339,063.

Co-Principal Investigator, "Physical Layer Performance in 802.11a for Wireless LAN's," Nokia Research Center, January 1-December 31, 2002, \$67,584.

Co-Principal Investigator, "Optimal and Variable Bit Allocation in OFDM," Jan. 1, 2001-Dec. 31, 2001, \$121,143.

Principal Investigator, "30 kHz AMR," Nokia Mobile Phones, Dec. 1, 2000-May 31, 2002, \$105,606.

Principal Investigator, "Data Embedding, the Method of Types, and Universal Receivers," National Science Foundation, September 1, 2000-August 31, 2001, \$47,161.

Principal Investigator, "Space-Time Codes for Broadband Wireless," Advanced Micro Devices, January 1- December 31, 2000, \$35,536.

Co-Principal Investigator, "Physical Layer Performance in Draft 802.11a for Wireless LANs," Nokia Research Center USA, January 1-December 31, 2000, \$99,995.

Principal Investigator, "Broadband Networks and Applications," On Command, Inc., 1 July 1999 - 31 December 2000, \$50,000.

Principal Investigator, "Quality of Service in Multimedia Communications: Infrastructure and Research," Texas Instruments, Inc., January 1, 1998- December 31, 2000, \$200,000.

Principal Investigator, "Reduced Complexity Tree Coding of Speech in the Presence of Background Impairments," National Science Foundation, Sept. 1996-28 Feb. 2000, \$245,735.

Principal Investigator, "Dynamically Variable Rate Speech Coding," National Science Foundation, 1 June 1993 - 31 Aug. 1996, \$229,655.

Co-Principal Investigator, "Telecommunications Networks for Interactive Multimedia: Wideband to Wireless," Texas Advanced Technology Program, 1 Jan. 1994 - 31 Aug. 1996, \$207,586.

Co-Principal Investigator, "A New Method for Speech Segmentation," Texas A&M University Interdisciplinary Research Initiative, 1 May 1996 - 30 April 1997, \$24,927.50.

Principal Investigator, "Pyramidal Video, Wideband Audio, and Coding for Robustness to Packet Loss for CU-SeeMe," NSF/Cornell, 1 Jan. 1996 - 30 Nov. 1996, \$46,375.

Principal Investigator, "Low Complexity 8 kbits/s Packet Voice for Videoconferencing," NSF/Cornell, 1 May 1995 - 31 Aug. 1996, \$39,702.

Co-Principal Investigator, "Parametric Filtering for Speech Analysis and Recognition," Texas Instruments, 1 Feb. 1995 - 31 May 1997, \$20,000.

Co-Principal Investigator, "Servers for Multimedia Access in Manufacturing," Program for Automation in Manufacturing (Compaq), 1 Sept. 1993 - 31 August 1995, \$54,000.

Principal Investigator, "Variable Rate Speech Coding," Motorola - Austin, 1 June 1993 - 31 May 1995, \$35,000 (gift funds).

Principal Investigator, "Data Compression," Advanced Micro Devices, \$2,000.

Co-Principal Investigator, "Multiple Descriptions Source Codes with Applications to Packetized Speech," National Science Foundation, 15 Jul 1991 - 31 Dec 1993, \$226,548.

Principal Investigator, "Speech Coding Research," BNR, Inc., Sept. 1991 - Aug. 1993, \$50,000 (gift funds).

Principal Investigator, "Multi-Tree Coding of Speech," National Science Foundation, 1 June 1990 - 30 Nov. 1992, \$132,388.

Principal Investigator, "Speech Coding and Digital Communications," BNR, Inc., Oct. 1988 - Sept. 1991, \$150,000.

Principal Investigator, "Reduced Complexity Speech Coding," Texas Instruments, Inc., June 1988, \$18,000.

Principal Investigator, "Studies in Speech and Image Coding and Digital Communications," Tellabs, Inc., South Bend, IN, June, 1985, \$10,000; April 1986, \$5,000; Mar. 1987, \$7,500; May 1988, \$7,000; July 1989, \$7,000.

Principal Investigator, "Research in Digital Signal Processing," Lockheed, Inc., Austin, TX, June 1989, \$3,000.

Principal Investigator, "Speech Coding at 4 to 16 kbits/s," BNR, Inc., Jan. 1988, \$8,351.

Principal Investigator, "Non-Real Time Compression of Voice Signals," VMX, Inc., 15 Jan. 1987 - 14 Jan. 1988, \$53,238.

Principal Investigator, "Speech Coding and Digital Switching," Northern Telecomm Inc., Richardson, TX, March 1985, \$18,000.

Co-Principal Investigator, "Studies in Signal Processing," VMX, Inc., 1 June 1986 - 15 Jan. 1987, \$19,803.

Principal Investigator, "Data Compression of Intermittently Excited AR, ARMA, and MA Processes," Office of Naval Research, Statistics and Probability Program, 1 Oct. 1983 - 30 Sept. 1986, \$105,000.

Co-Principal Investigator, "Alphabet-Constrained Data Compression," Air Force Office of Scientific Research, Mathematical Sciences Division, Oct. 1983 – Sept. 1984, \$66,250.

Co-Principal Investigator, "Digital Signal Processing/Communications Equipment," National Science Foundation, 15 July 1983 - 31 Dec. 1984, \$40,000.

Principal Investigator, "Abstract Methods in Communication Theory," E-Systems, Inc., Dallas, TX, Sept. 1983 - May 1984, \$31,756.

Principal Investigator, "Sequential Adaptive Noise Spectral Shaping and Backward Adaptive Prediction for Differential Encoding Systems," Electrical and Optical Communications Program, National Science Foundation, 1 June 1981 - 30 Nov. 1983, \$60,000.

Principal Investigator, "Research in Digital Telephony," Fairchild Corp., Palo Alto, CA, 1 Sept. 1981 - 31 Aug. 1982, \$12,000.

Principal Investigator, "Adaptive Coders for Nonstationary Autoregressive Sources," Office of Naval Research, Statistics and Probability Program, 1 Jan. 1981 - 30 Sept. 1983, \$86,634.

Co-Principal Investigator, "Bit Weighting and Soft Decision Demodulation for Image Compression Error Control," Wright-Patterson Air Force Base, OH, 12 May 1980 - 30 June 1982, \$125,000.

Principal Investigator, "Adaptive Prediction in Differential Pulse Code Modulation Systems," National Science Foundation, Electrical and Optical Communications Program, 15 June 1978 - 15 June 1980, \$50,000.

Principal Investigator, "Speech Digitization Using Fixed-lag Smoothing," National Science Foundation, Research Initiation Grant, 1 April 1975 - 31 July 1976, \$17,000.

OTHER SUPPORT:

Lead Professor, "Master's Program in DSP with Applications to Wireless Communications and Multimedia," 1 June 1995 - 31 Aug. 1997, Texas Instruments, Inc., \$40,000 (equipment) plus \$230,000.

Principal Investigator, "Electrical Engineering Teaching Video and Handbook," Center for Teaching Excellence, Texas A&M University, 1 July 1993 - 31 March 1994, \$2,753.

POSTDOCTORAL SCHOLARS SUPERVISED:

S. Mangiat, January 2013-March 2013.

H. Dong (Joint with A. Gersho), September 2003-March 2004.

A. Servetti, March 2003-October 2003, Politecnico di Torino, Italy

OTHER STUDENTS SUPERVISED:

Yosef Borga, UC-HBCU student, Summer 2013

A. Gutema, UC-HBCU student, Summer 2013

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L. Nyuykongi, UC-HBCU student, Summer 2012

M. Hirschbeck, Visiting student, University of Erlangen-Nuremberg, Erlangen, Germany, Fall 2009

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M. Zoffoli, M. S. student, visiting from University of Bologna, Italy, Oct. 2007-June 2008

M. Nystrom, Visiting Ph. D. student, Lund University, Sweden, Spring and Oct. 2007

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CURRENT GRADUATE STUDENTS:

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GRADUATE STUDENTS SUPERVISED:

M. Bhaskaranand, Ph. D. December 2013. Dissertation: "Redistributed Video Codec Complexity with Relaxed Latency Constraints"

Y. Li, Ph. D. December 2012. Dissertation: "Low Delay, Low Complexity Multimode Tree Coding and Practical Rate Distortion Bounds for Speech"

S. Mangiat, Ph. D., October 2012. Dissertation: "High Dynamic Range and 3D Video Communications for Handheld Devices"

Y. Liao, Ph. D, December, 2010. Dissertation: "Error Resilient Multiple Description Video Coding over Wireless Ad-Hoc Networks"

P. Ramadas, M. S., Summer, 2010. Thesis: "Multimode Tree Coding of Speech"

M. Manohara, M. S., December 2009. Thesis: "Power Control and Error Correction Scheme for Reliable Transmission of Uncompressed HD Video over Wireless"

A. Gopalan, M. S., March 2009.

J. Hu, Ph. D., December 2007. Dissertation: "Fundamental Limits in Video Compression and Video Communications"

S. Choudhury, Ph. D., December 2007. Dissertation: "Link Adaptation and Cross Layer Design for Multimedia Communications"

N. Shetty, Ph. D., December 2007. Dissertation: "Tandeming in Multihop Voice Communications"

J. Balam, Ph. D., December 2007. Dissertation: "Multiple Description Coding for Voice Communications over Mobile Ad-Hoc Networks"

W. Bo, Ph. D., December 2005. Dissertation: "Voice Communications over Two-Hop Tandem Networks"

J. Jung, Ph. D., December 2005. Dissertation: "Signal Representations and Spectral Entropy"

J. Yue, Ph. D., May 2005. Dissertation: "Detection and Channel Estimation for MIMO-OFDM Wireless Communications"

H. Dong, Ph. D., December 2002. Dissertation: "Universal Successive Refinement of CELP Speech Coders"

M. G. Kokes, Ph. D., August 2002. Dissertation: "Spectral Entropy Based Wideband Speech Coding"

J. Wang, Ph. D., December 2001. Dissertation: "Error Concealment for IP Telephony"

B. Wei, M. S., August 2001. Thesis title: "Comparison of Distance Measures in Discrete Spectral Modeling"

J. Ridge, Ph. D., December 2000. Dissertation: "Smoothed Descriptions: Joint Encoder-Decoder Design for Robust Multichannel Transmission of Images"

N. Wang, M. S., August 2000.

F. W. Ware, Ph. D., May 2000. Dissertation: "A Robust Three-Layer Two-Description Image Coder"

H. Dong, M. S., August 1998. Thesis title: "Adaptive Code Generators for Tree Coding of Speech"

M. Budagavi, Ph. D., May 1998. Dissertation: "Multiframe Video Coding for Improved Performance Over Wireless Channels"

W. Yang, Ph. D., May 1998. Dissertation: "Coefficient Rate and Adaptive Coding of Side Information"

M. Kokes, M. S., Dec. 1997. Thesis title: "A Real-Time Implementation of G.726 with Tree Coding"

J. Ridge, M. Eng., Aug. 1997. Report title: "Multi-faceted Scalability of Video for Network Transmission"

M. Randolph, M. S., August 1996. Thesis title: "A Software Based Real-Time Internet Phone"

S. Sazzad, M. S., December 1995. Thesis title: "Design of a Three Resolution Video Coder"

J. Brewer, M. S., December 1995. Thesis title: "Synchronization of Audio and Video over Packet Switched Networks"

V. I. Rhee, Ph. D., August 1995. Dissertation: "Performance Comparisons and Information Theoretic Formulation for Layered Videoconferencing."

S. A. McClellan, Ph. D., August 1995. Dissertation: "Variable Rate Speech Coding Based on Subband Measures of Spectral Flatness."

M. L. Moodie, M. S., August 1995. Thesis: "Variable Rate CELP Speech Coding Using Widely Variable Parameter Updates."

V. D. Piard, M. S., May 1994. Thesis: "Analogy Between MSE Estimation and Information Theory in the Study of Tandem Communication Links."

W. R. Erhart, M. S., Dec. 1993. Thesis: "Odd-Even Sample Packet Recovery Using an AR Model Based Tree Search Interpolation Method."

S. H. Nam, Ph. D., Dec. 1992. Dissertation: "Analysis of the Smoothed Residual Driven Algorithms for Speech Coders."

I. Lee, Ph. D., Dec. 1992. Dissertation: "Robust Tree Coding Combined with Harmonic Scaling of Speech."

Y. C. Cheong, Ph. D., Aug. 1992. Dissertation: "Analysis and Design for Robust, Low Delay Tree Coding of Speech at 9.6 KBPS."

M. O. Cimdévilla, M. S., Dec. 1991. Thesis: "Relationship Between R_0 Bounds and Asymptotic Relative Efficiency for Quantized Receivers."

H. C. Woo, Ph. D., Dec. 1991. Thesis: "Robust, Low Delay Tree Coding of Speech."

J. Duchesne, M. S., Aug 1991. Thesis: "Aspects of the Rate Distortion Theory of Gaussian Sources Under Spectral Uncertainty."

S. A. McClellan, M. S., May 1991. Thesis: "Data Compression Using Inverted Block Codes."

W. A. Hohl, M. S., Dec. 1990. Thesis: "Kalman Prediction in the CCITT Standard for Coding Speech."

D. G. Jeong, Ph. D., Dec. 1990. Thesis: "Design of Cubic Lattice Vector Quantizers."

W. Sohn, M. S., May 1990. Thesis: "The Analysis of Convergence for Four Adaptive Filtering Algorithms."

V. B. Taylor, M. S., May 1990. Thesis: "A Codec for Low to Medium Bit-Rate Video."

W. W. Chang, Ph. D., May 1989. Thesis: "Analysis and Design of Low Rate Tree Codes."

B. Koo, Ph. D., Dec. 1988. Thesis: "Structures for Coding Noisy Speech at Medium-to-Low Bit Rates."

H. C. Woo, M. S., Dec. 1988. Thesis: "Bimodal Codebooks for CELP Speech Coding."

G. B. Haschke, M. S., May 1987. Thesis: "Adaptive Code Generators for Tree Coding of Speech at 16 kbps."

D. G. Jeong, M. S., May 1987. Thesis: "Data Compression of an LAR(1) Source."

S. D. Gray, M. S., Dec. 1986. Thesis: "The Minimum Variance of the Squared Error Adaptive Algorithm."

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D. K. Purcell, M. S., May 1982. Thesis: "Theoretical SNR for DPCM with Predictor Mismatch."

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V. P. Berglund, M. S., Dec. 1978. Thesis: "Kalman Prediction with Pitch Compensating Quantization for ADPCM Voice Coding."

E. A. Cross, M. Eng., May 1977. Reports: "A Study of Adaptive Quantizers Used in DPCM Systems" and "The Effects of Damping on the Stability of an Adaptive DPCM System Having Non-Optimal Prediction."

C. A. Cooper, M. S., May 1976. Thesis: "Optimal Filtering in DPCM Systems."

R. P. Schuessler, M. S., May 1976. Thesis: "Noniterative Automatic Equalization in a Digital Fiber Optic Receiver."

PUBLICATIONS:

Books and Book Chapters

J. D. Gibson and J. Hu, *Rate Distortion Bounds for Voice and Video, Foundations and Trends in Communications and Information Theory*, Now Publishers, 2014.

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Journal Papers

J. D. Gibson, "Synthesis Filter/Decoder Structures in Speech Codecs," *Multimedia Communications Technical Committee E-Letter*, Vol. 7, No. 2, pp. 6-11, Feb. 2012.

Y. Liao and **J. D. Gibson**, "Routing-aware Multiple Description Video Coding Over Mobile Ad-Hoc Networks," *IEEE Transactions on Multimedia*, Vol. 13, No. 1, pp. 132-142, Feb. 2011.

J. Hu and **J. D. Gibson**, "New Rate Distortion Bounds for Natural Videos Based on a Texture Dependent Correlation Model," *IEEE Transactions on Circuits and Systems for Video Technology*, Vol. 19, No. 8, pp. 1081-1094, August 2009.

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- S. Choudhury and **J. D. Gibson**, "Throughput Optimization for Wireless LANs in the Presence of Packet Error Rate Constraints," *IEEE Communications Letters*, Vol. 12 No. 1, pp.11-13, January 2008.
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- S. Choudhury and **J. D. Gibson**, "Payload Length and Rate Adaptation for Multimedia Communications in Wireless LANs," *IEEE J. Selected Areas in Communications* (Special issue on Cross-Layer Optimized Wireless Multimedia Communications), Vol. 25, No. 4, pp. 796-807, May 2007.
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S. McClellan and **J. D. Gibson**, "Variable-Rate CELP Based on Subband Flatness," *IEEE Trans. on Speech and Audio Processing*, Vol. 5, pp. 120-130, March 1997.

T.-H. Li and **J. D. Gibson**, "Speech Analysis and Segmentation by Parametric Filtering," *IEEE Trans. on Speech and Audio Processing*, vol. 4, no. 3, pp. 203-213, May 1996.

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D. G. Jeong and **J. D. Gibson**, "Image Coding with Uniform and Piecewise-Uniform Vector Quantizers," *IEEE Trans. on Image Processing*, vol. 4, pp. 140-146, Feb 1995.

K. Sayood and **J. D. Gibson**, "A Constrained Joint Source/Channel Coder Design," *IEEE Journal on Selected Areas in Communications*, vol. 12, no. 9, Dec 1994, pp. 1584-1593.

S. H. Nam and **J. D. Gibson**, "Analysis of the Smoothed Residual Driven Algorithm for Speech Coders," *IEEE Trans. Speech and Audio Processing*, vol. 2, pp. 371-379, July 1994.

H. C. Woo and **J. D. Gibson**, "Low-Delay Tree Coding of Speech at 8 Kbps," *IEEE Trans. Speech and Audio Processing*, vol. 2, pp. 361-370, July 1994.

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D. G. Jeong and **J. D. Gibson**, "Uniform and Piecewise Uniform Lattice Vector Quantization for Memoryless Gaussian and Laplacian Sources," *IEEE Trans. Inform. Theory*, vol. 39, pp. 786-804, May 1993.

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