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David V. Anderson

2026

Earned Degrees

1999 **Ph.D. in Electrical and Computer Engineering**
Georgia Institute of Technology

1994 **M.S. in Electrical Engineering**
Brigham Young University

1993 **B.S. in Electrical Engineering**
Brigham Young University

Employment History

2012-present **Professor**, *School of Electrical & Computer Engineering*, Georgia Institute of Technology, Atlanta, Georgia

2023-present **Assistant Director for Advocacy and Conflict Resolution**, *Office of Graduate and Postdoctoral Education*, Georgia Institute of Technology, Atlanta, Georgia

2019-present **Co-founder**, *AudioT, Inc.*, Atlanta, Georgia
Ag-tech startup for monitoring the welfare of birds in poultry operations.

2011–2021 **Partner**, *Ratrix Technologies, LLC*, Atlanta, Georgia
High-tech start-up with NSF SBIR funding to develop wireless data receivers

2005-2012 **Associate Professor**, *School of Electrical & Computer Engineering*, Georgia Institute of Technology, Atlanta, Georgia

2009 **Visiting Professor**, *Department of Computer Science*, Korea University, Seoul, South Korea

1999-2005 **Assistant Professor**, *School of Electrical & Computer Engineering*, Georgia Institute of Technology, Atlanta, Georgia

1999 **Education Specialist**, *Texas Instruments, Inc.*, Dallas, Texas

Honors and Awards (selected)

2022-2024 Georgia Tech Provost Teaching and Learning Fellow

2009 Nominated by the School of Electrical and Computer Engineering for the Institute 2009 Outstanding Faculty Leadership Award for the Development of Graduate Research Assistants

2006 Frontiers of Science Fellow, National Academy of Science

2006 US Frontiers of Engineering Fellow, National Academy of Engineering

2004 Presidential Early Career Award for Scientists and Engineers (PECASE)

2004 NSF Faculty Early Career Development (CAREER) Award

Research, Scholarship, and Creative Activities

Published Books

[1] Wayne T. Padgett and David V. Anderson. *Fixed-point Signal Processing*. Synthesis Lectures on Signal Processing. Morgan & Claypool Publishers, 2009.

Published Parts of Books

[1] J. H. McClellan, R. W. Schafer, and M. A. Yoder. *DSP First: A Multimedia Approach*. Prentice Hall, 1998. Assisted in the preparation of the multi-media CD-ROM that accompanies the text. Wrote and revised the laboratory projects included in the text.

[2] Sheng-Yu Peng, Paul E. Hasler, and David Anderson. An analog programmable multi-dimensional radial basis function based classifier. In *IFIP WG 10.5 International Conference on Very Large Scale Integration of System-on-Chip*, pages 13–18, Atlanta, GA, October 2007.

[3] Jorge Marin-Hurtado and David V. Anderson. *Independent Component Analysis for Audio and Biosignal applications*, chapter Preservation of Localization Cues in BSS-Based Noise Reduction: Application in Binaural Hearing Aids. InTech, 2012. Ganesh R Naik, ed.

Refereed Journal Publications

[1] Paul Hasler, Abhishek Bandyopadhyay, and David V. Anderson. High fill–factor imagers for neuromorphic processing enabled by floating–gate circuits. *EURASIP Journal on Applied Signal Processing*, 2003(7):676–689, June 2003. Invited paper for special issue on neuromorphic signal processing and implementation.

[2] Venkatesh Krishnan and David V. Anderson. Joint design of channel–optimized multistage vector quantizer. *IEEE Signal Processing Letters*, 11(1):5–7, January 2004.

[3] Venkatesh Krishnan, David V. Anderson, and Kwan Truong. Optimal multistage vector quantization of LPC parameters over noisy channels. *IEEE Transactions on Speech and Audio Processing*, 12(1):1–8, January 2004.

[4] Paul S. Hong, David V. Anderson, Doug B. Williams, Thomas P. Barnwell III Joel R. Jackson, Monson H. Hayes III, Ronald W. Schafer, and John D. Echard. "DSP for practicing engineers:" A case study in internet course delivery. *IEEE Transactions on Education*, 47(3):301–310, August 2004.

[5] Abhishek Bandyopadhyay, Paul Hasler, and David V. Anderson. A CMOS floating–gate matrix transform imager. *IEEE Sensors*, 5(3):455–462, 2005.

[6] Paul Hasler, Paul D. Smith, Rich Ellis, David Graham, and David Anderson. Analog floating–gate, on–chip auditory sensing system interfaces. *IEEE Sensors*, 5:1027–1034, October 2005.

[7] Sourabh Ravindran, Kristopher Schlemmer, and David V. Anderson. A physiologically inspired method for audio classification. *EURASIP Journal on Applied Signal Processing*, 2005(9):1374–1381, 2005.

[8] Tyson S. Hall, Christopher M. Twigg, Paul Hasler, and David V. Anderson. Developing large–scale field–programmable analog arrays for rapid prototyping. *International Journal for Embedded Systems*, 1(3/4):179–192, 2005.

[9] Sourabh Ravindran, Paul Smith, David Graham, Varinthira Duangudom, David Anderson, and Paul Hasler. Towards biologically inspired on–chip auditory processing. *EURASIP Journal on Applied Signal Processing*, 2005(7):1082–1092, 2005.

[10] Daniel J. Allred, David V. Anderson, Walter Huang, Venkatesh Krishnan, and Heejong Yoo. LMS adaptive filters using distributed arithmetic for high throughput. *IEEE Transactions on Circuits and Systems*, 52(7):1327–1337, July 2005.

[11] Tyson S. Hall and David V. Anderson. A framework for teaching real-time digital signal processing with field-programmable gate arrays. *IEEE Transactions on Education*, 48(3):551–558, August 2005.

[12] Tyson S. Hall, Christopher M. Twigg, Jordan D. Gray, Paul Hasler, and David V. Anderson. Large–scale field–programmable analog arrays for analog signal processing. *IEEE Transactions on Circuits and Systems*, 52(11):2298–2307, November 2005.

[13] Faik Baskaya, Sasank Reddy, Sung Kyu Lim, and David V. Anderson. Placement for large-scale floating-gate field programable analog arrays. *IEEE Transactions on Very Large Scale Integration Systems*, 14(8):906–910, August 2006.

[14] Sheng-Yu Peng, Paul Hasler, and David V. Anderson. An analog programmable multi-dimensional radial basis function based classifier. *IEEE Transactions on Circuits and Systems I*, 54(10):2148–2158, October 2007.

[15] Erhan Ozalevli, Walter Huang, Paul E. Hasler, and David V. Anderson. A reconfigurable mixed-signal VLSI implementation of distributed arithmetic used for finite-impulse response filtering. *IEEE Transactions on Circuits and Systems I*, 55(2):510–521, March 2008.

[16] Kofi M. Odame, David V. Anderson, and Paul Hasler. A bandpass filter for inherent gain adaptation for hearing applications. *IEEE Transactions on Circuits and Systems I*, 55(3):786–795, April 2008.

[17] Wei Zhang, Xiaoli Ma, Brian Gestner, and David V. Anderson. Designing low-complexity equalizers for wireless systems. *IEEE Communications Magazine*, 47(1):56–62, January 2009.

[18] Faik Baskaya, David V. Anderson, and Sung Kyu Lim. Net sensitivity based optimization of large-scale field programmable analog array (FPAA) placement

and routing. *IEEE Transactions on Circuits and Systems II*, 56(7):565–569, July 2009.

[19] L.J. Karam, I. Alkamal, A. Gatherer, G.A. Frantz, D.V. Anderson, and B.L. Evans. Trends in multicore DSP platforms. *IEEE Signal Processing Magazine*, 26(6):38–49, November 2009.

[20] Bo Marr, Jason George, Brian Degnan, David V. Anderson, and Paul E. Hasler. Error immune logic for low power probabilistic computing. *VLSI Design*, 2010. doi:10.1155/2010/460312.

[21] Walter Huang and David V. Anderson. Modified sliding-block distributed arithmetic with offset binary coding for adaptive filters. *Journal of Signal Processing Systems*, April 2010. http://dx.doi.org/10.1007/s11265-010-0479-4.

[22] David V. Anderson. Storytelling—the missing art in engineering presentations. *IEEE Signal Processing Magazine*, 28(2):109–111, March 2011.

[23] Brian Gestner, Wei Zhang, Xiaoli Ma, and David V. Anderson. Lattice reduction for MIMO detection: From theoretical analysis to hardware realization. *IEEE Transactions on Circuits and Systems I*, 58(4):813–826, April 2011.

[24] J. Marin Hurtado and David V. Anderson. FFT-based block processing in speech enhancement: Potential artifacts and solutions. *IEEE Transactions on Audio, Speech and Language Processing*, 19(8):2527–2537, November 2011.

[25] Brian Gestner, Xiaoli Ma, and David V. Anderson. Incremental lattice reduction: Motivation, theory, and practical implementation. *IEEE Transactions on Wireless Communications*, 11(1):188–198, January 2012.

[26] Bo Marr, Brian Degnan, Paul Hasler, and David V. Anderson. Scaling energy per operation via an asynchronous pipeline. *IEEE Transactions on VLSI*, PP(99):1–5, 2012.

[27] J.I. Marin-Hurtado, D.N. Parikh, and D.V. Anderson. Perceptually inspired noise-reduction method for binaural hearing aids. *Audio, Speech, and Language Processing, IEEE Transactions on*, 20(4):1372–1382, May 2012.

[28] B. Gestner, Xiaoli Ma, and D.V. Anderson. Incremental lattice reduction: Motivation, theory, and practical implementation. *Wireless Communications, IEEE Transactions on*, 11(1):188–198, January 2012.

[29] A.A. Kressner, D.V. Anderson, and C.J. Rozell. Evaluating the generalization of the hearing aid speech quality index (HASQI). *Audio, Speech, and Language Processing, IEEE Transactions on*, 21(2):407–415, February 2013.

[30] S. Ramakrishnan, A. Basu, Leung Kin Chiu, J. Hasler, D. Anderson, and S. Brink. Speech processing on a reconfigurable analog platform. *Very Large Scale Integration (VLSI) Systems, IEEE Transactions on*, 22(2):430–433, Feb 2014.

[31] Nashlie H Sephus, Aaron D Lanterman, and David V Anderson. Modulation spectral features: In pursuit of invariant representations of music with application to unsupervised source identification. *Journal of New Music Research*, 44(1):58–70, 2015.

[32] Jinwoo Kang, David V. Anderson, and Monson H. Hayes. Face recognition for vehicle personalization with near infrared frame differencing. *IEEE Transactions on Consumer Electronics*, 62(3):316–324, August 2016.

[33] B. T. Carroll, B. M. Whitaker, W. Dayley, and D. V. Anderson. Outlier learning via augmented frozen dictionaries. *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, 25(6):1207–1215, June 2017.

[34] Muhammad Rizwan and David V. Anderson. A weighted accent classification using multiple words. *Neurocomput.*, 277(C):120–128, February 2018.

[35] Chieh-Feng Cheng, Abbas Rashidi, Mark A. Davenport, and David V. Anderson. Activity analysis of construction equipment using audio signals and support vector machines. *Automation in Construction*, June 2017.

[36] Bradley M Whitaker, Pradyumna Byappanahalli Suresha, Chengyu Liu, Gari D Clifford, and David V Anderson. Combining sparse coding and time-domain features for heart sound classification. *Physiological Measurement*, 38:1701–1729, August 2017.

[37] Chris Sabillon, Abbas Rashidi, Biswanath Samanta, Mark A. Davenport, and David V. Anderson. An audio-based Bayesian model for productivity estimation of construction cyclic activities. *Journal of Computing in Civil Engineering*, 34(1), 2020.

[38] Muhammed Rizwan, Bradley M Whitaker, and David V Anderson. AF detection from ECG recordings using feature selection, sparse coding, and ensemble learning. *Physiological measurement*, 39(12), December 2018.

[39] M. N. Sahadat, N. Sebkhi, D. Anderson, and M. Ghovanloo. Optimization of tongue gesture processing algorithm for standalone multimodal tongue drive system. *IEEE Sensors Journal*, 19(7):2704–2712, April 2019.

[40] Kaitlin L. Fair, Daniel R. Mendat, Andreas G. Andreou, Christopher J. Rozell, Justin Romberg, and David V. Anderson. Sparse coding using the locally competitive algorithm on the truenorth neurosynaptic system. *Frontiers in Neuroscience*, 13:754, 2019.

[41] Chris Sabillon, Abbas Rashidi, Biswanath Samanta, Mark Davenport, and David Anderson. Audio-based bayesian model for productivity estimation of cyclic construction activities. *Journal of Computing in Civil Engineering*, 34:04019048, January 2020.

[42] N. Sebkhi, A. Bhavsar, D. V. Anderson, J. Wang, and O. T. Inan. Inertial measurements for tongue motion tracking based on magnetic localization with orientation compensation. *IEEE Sensors Journal*, 21(6):7964–7971, March 2021.

[43] Mohammad M. Salut and David V. Anderson. Online tensor robust principal component analysis. *IEEE Access*, 10:69354–69363, 2022.

[44] Mohammad M. Salut and David V. Anderson. Randomized tensor robust PCA for noisy hyperspectral image classification. *IEEE Geoscience and Remote Sensing Letters*, pages 1–1, 2023.

[45] Mohammad M. Salut and David V. Anderson. Tensor robust CUR for compression and denoising of hyperspectral data. *IEEE Access*, 11:77492–77505, 2023.

[46] Shoba S. Meera, Divya Swaminathan, Rahul Pawar, Lisa Yankowitz, Kevin Donovan, Khavi Khuu, Julia Parish-Morris, Steven F. Warren, Annette Estes, Lonnie Zwaigenbaum, Mark Clements, David V. Anderson, Robert T. Schultz, Heather C. Hazlett, Tanya St. John, Juhi Pandey, Natasha Marrus, Kelly Botteron, Stephen R. Dager, Meghan R. Swanson, Linda R. Watson, and Joseph Piven. Evaluating canonical babbling ratios extracted from day-long audio recordings in infants later diagnosed with autism spectrum disorder. *Infant Behavior and Development*, 79:102059, 2025.

[47] Nordine Sebkhi, Arpan Bhavsar, Nazmus Sahadat, Jesse Baldwin, Erica Walling, Amber Biniker, Michelle Hoefnagel, Geneva Tonuzi, Raine Osborne, David V. Anderson, and Omer T. Inan. Evaluation of a head-tongue controller for power wheelchair driving by people with quadriplegia. *IEEE Transactions on Biomedical Engineering*, 69(4):1302–1309, 2022.

[48] Oludotun Ode, David V. Anderson, and Omer T. Inan. Methods for optimizing photoplethysmography signal quality. *Sensors*, 26(20), 2026.

[49] A. I. Gillespie, M. Caveney, A. Rashied, D. Anderson, and A. M. Klein. Validation of wearable biofeedback technology for the treatment of communication deficits in people with parkinson’s disease. *Parkinsonism & Related Disorders*, 152, 2026/11/09 2026.

[50] A Klein, A Gillespie, D Anderson, M Caveney, and N Sundholm. Development and validation of personal technology to treat hypophonia in patients with parkinson's disease. In *MOVEMENT DISORDERS*, volume 40. WILEY, 111 RIVER ST, HOBOKEN 07030-5774, NJ USA, 2025.

Conference Presentations with Proceedings (Refereed)

[1] David V. Anderson, Richard W. Harris, and Douglas M. Chabries. Evaluation of a hearing compensation algorithm. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 5, pages 3531–3533, Detroit, May 1995.

[2] Douglas M. Chabries, David V. Anderson, Thomas G. Stockham, Jr., and Richard W. Christiansen. Application of a human auditory model to loudness perception and hearing compensation. In *Proceedings of the IEEE International*

Conference on Acoustics, Speech, and Signal Processing, volume 5, pages 3527–3530, Detroit, May 1995.

[3] David V. Anderson. Speech analysis and coding using a multi–resolution sinusoidal transform. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 2, pages 1037–1040, Atlanta, May 1996.

[4] David V. Anderson, James H. McClellan, Ronald W. Schafer, Jeffrey B. Schodorf, and Mark A. Yoder. DSP First - a first course in ECE. In *Proceedings of the 1996 Asilomar Conference on Circuits, Systems, and Computers*, volume 1, pages 226–230, Pacific Grove, CA, May 1996.

[5] David V. Anderson and Mark A. Clements. Audio signal noise reduction using multi-resolution sinusoidal modeling. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, pages 805–808, Phoenix, May 1999.

[6] David V. Anderson, Lonnie Harvel, Monson H. Hayes III, Y. Ishiguro, Joel R. Jackson, and Maria Pimentel. Internet course delivery-making it easier and more effective. In *Proceedings of the IEEE International Conference on Multimedia and Expo*, volume 1, pages 84–87, New York, July 2000.

[7] David V. Anderson, Thomas P. Barnwell, Monson H. Hayes III, and Joel R. Jackson. Effective and efficient distance learning over the internet: Implementation of an on-line DSP course. In *Proc. International Conference on Engineering Education*, Taiwan, August 2000.

[8] Joel R. Jackson, David V. Anderson, and Monson H. Hayes III. Effective and efficient distance learning over the internet: Tools and techniques. In *Proc. International Conference on Engineering Education*, Taiwan, August 2000.

[9] Monson H. Hayes III, Joel R. Jackson, and David V. Anderson. Producing effective internet courses with *in*Fusion. In *Proceedings Learning '00*, Madrid, Spain, October 2000.

[10] David V. Anderson, Thomas P. Barnwell, John Echard, Monson H. Hayes III, Joel R. Jackson, Ronald W. Schafer, and Douglas B. Williams. An on-line DSP course for practicing engineers. In *Signal Processing Education Workshop*, Hunt, TX, October 2000. Web Proceedings: `http://spib.ece.rice.edu/SPTM/DSP2000/`.

[11] David V. Anderson and Paul Hasler. Cooperative analog/digital signal processing. In *World Conference on Systemics, Cybernetics, and Informatics*, Orlando, FL, July 2001. *Invited Paper, Best Paper Award.*

[12] Matt Kucic, Paul Hasler, Jeff Dugger, and David V. Anderson. Programmable and adaptive analog filters using arrays of floating-gate circuits. In Erik Brunvand and Chris Myers, editors, *2001 Conference on Advanced Research in VLSI*, pages 148–162, Salt Lake City, March 2001. IEEE Computer Society.

[13] Joel R. Jackson, Thomas P. Barnwell, Douglas B. Williams, Monson H. Hayes III, David V. Anderson, and Ronald W. Schafer. DSP for practicing engineers: an online continuing DSP education course. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume V, pages 2721–2724, Salt Lake City, UT, May 2001.

[14] Joel R. Jackson, Thomas P. Barnwell, Douglas B. Williams, Monson H. Hayes III, David V. Anderson, and Ronald W. Schafer. Online DSP education: DSP for practicing engineers. In *American Society for Engineering Education Annual Conference*, Albuquerque, NM, June 2001.

[15] Joel R. Jackson, Thomas P. Barnwell, David V. Anderson, and Monson H. Hayes III. *in*Fusion: Simplifying online course creation. In *American Society for Engineering Education Annual Conference*, Albuquerque, NM, June 2001.

[16] Paul Smith, Matt Kucic, Rich Ellis, Paul Hasler, and David V. Anderson. Cepstrum frequency encoding in analog floating-gate circuitry. In *Proceedings of the IEEE International Symposium on Circuits and Systems*, volume IV, pages 671–674, Phoenix, AZ, May 2002.

[17] Paul Hasler and David V. Anderson. Cooperative analog-digital signal processing. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume IV, pages 3972–3975, Orlando, FL, May 2002.

[18] Heejong Yoo, David V. Anderson, and Paul Hasler. Continuous–time audio noise suppression and real-time implementation. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume IV, pages 3980–3983, Orlando, FL, May 2002.

[19] Richard Ellis, Heejong Yoo, and David V. Anderson. An analog floating-gate IC for audio noise suppression. In *Proceedings of the International Symposium on Circuits and Systems*, volume II, pages 728–31, Phoenix, AZ, May 2002. Invited Paper.

[20] Paul Hasler, Paul Smith, Richard Ellis, David Graham, and David V. Anderson. Biologically inspired auditory sensing system interfaces on a chip. In *2002 IEEE Sensors Conference*, Orlando, FL, June 2002. *Invited Paper, nominated for Best Paper of Conference.*

[21] Paul Hasler, Abhishek Bandyopadhyay, and David V. Anderson. Low–power analog image processing using transform imagers. In *IEEE Midwest Circuits and Systems*, Tulsa, OK, August 2002.

[22] Paul Hasler, Paul Smith, Chris Duffy, Christal Gordon, Jeff Dugger, and David Anderson. A floating-gate vector-quantizer. In *IEEE Midwest Circuits and Systems*, Tulsa, OK, August 2002.

[23] Tyson S. Hall, Paul Hasler, and David V. Anderson. Field-programmable analog arrays: A floating-gate approach. In *12th International Conference on Field Programmable Logic and Applications*, Montpellier, France, September 2002.

[24] Paul Hasler, Abhishek Bandyopadhyay, and David Anderson. Low-power analog image processing using transform imagers. In *Digital Signal Processing Workshop*, pages 333–338, Pine Mountain, Georgia, October 2002.

[25] David Anderson, Paul Hasler, Rich Ellis, Heejong Yoo, David Graham, and Mat Hans. A low–power, continuous–time system for audio noise suppression and a VLSI implementation. In *Digital Signal Processing Workshop*, pages 327–332, Pine Mountain, Georgia, October 2002.

[26] Tyson S. Hall and David V. Anderson. From algorithms to gates: Developing a pedagogical framework for teaching DSP hardware design. In *Signal Processing Education Workshop*, pages 157–161, Pine Mountain, Georgia, October 2002.

[27] P. Spencer Whitehead, David V. Anderson, and Mark A. Clements. Adaptive acoustic noise suppression for speech enhancement. In *Proceedings 2003 International Conference on Multimedia and Expo*, volume 1, pages 565–568, Baltimore, MD, June 2003.

[28] Cenk Demiroglu and David V. Anderson. Noise robust digit recognition with missing frames. In *8th European Conference on Speech Communication and Technology*, pages 2165–2168, Geneva, Switzerland, September 2003.

[29] Venkatesh Krishnan and David V. Anderson. Robust jointly optimized multistage vector quantization for speech coding. In *8th European Conference on Speech Communication and Technology*, pages 1093–1096, Geneva, Switzerland, September 2003.

[30] Sunil D. Kamath and David V. Anderson. Signal processing in digital and floating-gate analog circuits; design trade-offs. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2003.

[31] Heejong Yoo, David V. Anderson, and Paul Hasler. On delay structures for the analog adaptive filters with long filter taps. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2003.

[32] Daniel Allred, Venkatesh Krishnan, Walter Huang, and David V. Anderson. Implementation of an LMS adaptive filter on an FPGA employing multiplexed multiplier architecture. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2003.

[33] Sourabh Ravindran, Cenk Demiroglu, and David V. Anderson. Speech recognition using filter bank features. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2003.

[34] Thomas Barnwell III, Mark Clements, David Anderson, Elliot Moore, Matthew Lee, Erdem Ertan, Venkatesh Krishnan, Woosuk Choi, James Hu, Cenk Demiroglu, Spencer Whitehead, and Adriane Durey. Low bit-rate coding of speech in harsh conditions using non-acoustic auxiliary devices. In *Special*

Workshop in Maui: Lectures by the Masters in Signal Processing, Maui, HI, January 2004.

[35] Michael Healy, Sourabh Ravindran, and David V. Anderson. Effects of varying parameters in asymmetric adaboost on the accuracy of a cascade audio classifier. In *IEEE SoutheastCon 2004*, Greensboro, NC, March 2004.

[36] Tyson S. Hall, Christopher M. Twigg, Paul Hasler, and David V. Anderson. Developing large-scale field-programmable analog arrays. In *11th Reconfigurable Architectures Workshop (RAW 2004), 18th International Parallel and Distributed Processing Symposium*, pages 142–147, Santa Fé, NM, April 2004.

[37] Tyson S. Hall, Christopher M. Twigg, Paul Hasler, and David V. Anderson. Application performance of elements in a floating-gate FPAA. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

[38] Heejong Yoo, David Graham, David V. Anderson, and Paul Hasler. C4 band-pass delay filter for continuous-time subband adaptive tapped-delay filter. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

[39] Sourabh Ravindran and David V. Anderson. Boosting as a dimensionality reduction tool for audio classification. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

[40] Cenk Demiroglu and David V. Anderson. Two-sensor noise-robust ASR with missing frames for Aurora2 task. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

[41] Shyam Subramanian, David V. Anderson, and Paul Hasler. Synthesis of static multiple input multiple output MITE networks. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

[42] Haw-Jing Lo, Guillermo Serrano, Paul Hasler, David Anderson, and Bradley Minch. Programmable multiple input translinear elements. In *Proceedings of the International Symposium on Circuits and Systems*, Vancouver, Canada, May 2004.

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[44] Daniel J. Allred, Heejong Yoo, Venkatesh Krishnan, and David V. Anderson. A novel high performance distributed arithmetic adaptive filter implementation on an FPGA. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, Montreal, Canada, May 2004.

[45] Daniel J. Allred, Walter Huang, Venkatesh Krishnan, Heejong Yoo, and David V. Anderson. An FPGA implementation for a high throughput adaptive filter using distributed arithmetic. In *FCCM*, pages 324–325, 2004.

[46] Tyson S. Hall and David V. Anderson. Merging theory and implementation: A framework for teaching DSP hardware design. In *2004 ASEE Annual Conference*, Salt Lake City, UT, June 2004.

[47] Rongqiang Hu and David V. Anderson. Audio noise suppression based on neuromorphic saliency and phoneme adaptive filtering. In *IEEE Digital Signal Processing Workshop*, Taos, NM, August 2004.

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[50] Cenk Demiroglu and David V. Anderson. Noise robust digit recognition using a glottal radar sensor for voicing detection. In *International Conference on Spoken Language Processing*, Jeju, Korea, October 2004.

[51] Rongqiang (James) Hu and David V. Anderson. Single acoustic channel speech enhancement based on glottal correlation using non-acoustic sensors. In *International Conference on Spoken Language Processing*, Jeju, Korea, October 2004.

[52] Cenk Demiroglu and David V. Anderson. A soft decision MMSE amplitude estimator as a noise preprocessor to speech coders using a glottal sensor. In *International Conference on Spoken Language Processing*, Jeju, Korea, October 2004.

[53] Venkatesh Krishnan, Christopher Duffy, David V. Anderson, and Paul Hasler. Optimal quantization employing programmable flash analog to digital converters. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2004. Invited paper.

[54] Rongqiang Hu and David V. Anderson. Improved perceptually inspired speech enhancement using a psychoacoustic model. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2004.

[55] Cenk Demiroglu, Sunil Kamath, David V. Anderson, Mark A. Clements, and Thomas P. Barnwell III. Segmentation based speech enhancement using auxiliary sensors. In *Proceedings of the Asilomar Conference on Circuits, Systems, and Computers*, Pacific Grove, CA, November 2004.

[56] Teahyung Lee and David V. Anderson. The behavioral simulation results of the optical flow estimation algorithm for CADSP system design. In *Proceedings of*

the Asilomar Conference on Circuits, Systems, and Computers, Pacific Grove, CA, November 2004.

[57] Heejong Yoo and David V. Anderson. Hardware-efficient distributed arithmetic architecture for high-order digital filters. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 5, pages 125–128, Philadelphia, Pennsylvania, March 2005.

[58] Cenk Demiroglu, Sunil Kamath, and David V. Anderson. Segmentation-based speech enhancement for intelligibility improvement in MELP coders using auxiliary sensors. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing*, volume 1, pages 797–800, Philadelphia, Pennsylvania, March 2005.

[59] Faik Baskaya, Sasank Reddy, Sung Kyu Lim, Tyson Hall, and David V. Anderson. Mapping algorithm for large-scale field programmable analog array. In *ACM International Workshop on Physical Design*, pages 152–158, San Francisco, April 2005. ACM Press.

[60] Sourabh Ravindran and David V. Anderson. Audio classification and scene recognition for hearing aids. In *Proceedings of the International Symposium on Circuits and Systems*, volume 2, pages 830–863, Kobe, Japan, May 2005.

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[62] I. Faik Baskaya, Sasank Reddy, Sung Kyu Lim, and David Anderson. Hierarchical placement for large-scale FPAA. In *International Conference on Field Programmable Logic and Applications*, pages 421–426, Tampere, Finland, August 2005.

[63] Sourabh Ravindran, David Anderson, and James Rehg. Cascade jump support vector machine classifiers. In *Machine Learning in Signal Processing 2005*, pages 135–139, Mystic, Connecticut, September 2005.

[64] Rongqiang Hu, Venkatesh Krishnan, and David V. Anderson. Speech bandwidth extension by improved codebook mapping towards increased phonetic classification. In *Interspeech 2005*, pages 1501–1504, Lisbon, Portugal, September 2005.

[65] Rongqiang Hu, Sunil Kamath, and David V. Anderson. Speech enhancement using non-acoustic sensors. In *Interspeech 2005*, pages 2305–2308, Lisbon, Portugal, September 2005.

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Other Scholarly and Creative Accomplishments

2011–2020 Co-founder of Ratrix Technologies with Xiaoli Ma (GT-ECE) and Drayt Avera. Ratrix Technologies develops high–throughput wireless data solutions. Received NSF SBIR Phase I and Phase II funding

2018–present Co-founder of AudioT with Brandon Carroll (GT PhD grad) and Tom Darbonne. AudioT develops audio surveillance systems for use in livestock operations. Received FFAR Phase I and Phase II and STTR Phase I funding

Patents

[1] David V. Anderson, Kwan Truong, and Stephen McGrath. Adaptive filter featuring spectral gain smoothing and variable noise multiplier for noise reduction, and methods therefor. U.S. Patent no. 6,351,731, July 1999. Issued 2002.

[2] David V. Anderson, Kwan Truong, and Stephen McGrath. Speech activity detector for use in noise reduction system, and methods therefor. U.S. Patent no. 6,453,285, July 1999. Issued 2002.

[3] Jeffery Dugger, Tyson S. Hall, Paul Hasler, David V. Anderson, Paul D. Smith, Matthew R. Kucic, and Abhishek Bandyopadhyay. Floating-gate analog circuit. U.S. Patent no. 6,898.097, May 2005.

[4] Daniel J. Allred, David V. Anderson, Walter G. Huang, Venkatesh Krishnan, and Heejong Yoo. Distributed arithmetic adaptive filter and method. U.S. Patent application no. 20050201457, September 2005.

[5] Philomena Cleopha Brady, Haw-Jing Lo, Guillermo Jose Serrano, Farhan Adil, Matthew R. Kucic, Paul Hasler, David V. Anderson, and Angelo Pereira. Floating-gate reference circuit. U.S. Patent no. 7,034,603, April 2006.

[6] Erhan Ozalevli, Paul Hasler, David V. Anderson, and Walter G. Huang. Reconfigurable mixed-signal VLSI implementation of distributed arithmetic. U.S. Patent no. 7,348,909, March 2008.

[7] Richard T. Ellis, Heejong Yoo, David W. Graham, Paul E. Hasler, and David V. Anderson. Analog audio signal enhancement system using a noise suppression algorithm. U.S. Patent no. 7,590,250, September 2009.

[8] David Verl Anderson, Brian Gestner, and Xiaoli Ma. Incremental lattice reduction systems and methods. U.S. Patent no. 8,948,318 B2, February 2015.

[9] David Verl Anderson, Meredith A. Caveney, Reed Blevins, Amanda I. Gillespie, Ozioma Orjioke, Sandeep Shelly, Nathaniel Sundholm, and Adam M. Klein. Feedback system and method for speaker loudness correction, 2026. US Patent 12,706,088.

Ph.D. Students Graduated

2004 **Tyson S. Hall, Ph.D.**

Thesis: Field–Programmable Analog Arrays: A Floating–Gate Approach

2005 **Heejong Yoo, Ph.D.**

Thesis: Low–Power Audio Input Enhancements for Portable Devices

2005 **Venkatesh Krishnan, Ph.D.**

Thesis: A framework for low bit-rate speech coding in noisy environments

2006 **Cenk Demiroglu, Ph.D.**

Thesis: Multisensor Segmentation-based Noise Suppression for Intelligibility Improvement in MELP Coders

2006 **Rongqiang (James) Hu, Ph.D.**

Thesis: Multi-Sensor Noise Suppression and Bandwidth Extension for Enhancement of Speech

2007 **Sourabh Ravindran, Ph.D.**

Thesis: Physiologically Motivated Methods for Audio Pattern Classification

2007 **Shyam Subramanian, Ph.D.**

Thesis: Methods for Synthesis of Multiple-Input Translinear Element Networks

2007 **Teahyung Lee, Ph.D.**

Thesis: Algorithm-based Efficient Approaches for Motion Estimation Systems

2009 **Nikolaos Vasiloglou, Ph.D.**

Thesis: Isometry and Convexity in Dimensionality Reduction

2009 **Haw Jing (Michael) Lo, Ph.D.**

Thesis: Design of a Reusable Distributed Arithmetic Filter and its Application to the Affine Projection Algorithm

2009 **Ismail Faik Baskaya, Ph.D.**

Thesis: Physical Design Automation for Large Scale Field Programmable Analog Arrays

2009 **Walter Huang, Ph.D.**

Thesis: Implementation of Adaptive Digital FIR and Reprogrammable Mixed-Signal Filters using Distributed Arithmetic

2009 **Jungwon Lee, Ph.D.**

Thesis: Efficient Image Compression System with a CMOS Transform Imager

2009 **Harry (Bo) Marr, Ph.D.**

Co-advisor: Jennifer Hasler

Thesis: Learning, Probabilistic, and Asynchronous Technologies for an Ultra Efficient Datapath

2011 **Brian Gestner, Ph.D.**

Thesis: Lattice Reduction for MIMO Detection: From Theoretical Analysis to Hardware Realization

2012 **Jason George, Ph.D.**

Thesis: Harnessing Resilience: Biased Voltage Overscaling for Probabilistic Signal Processing

2012 **Leung Kin Chui, Ph.D.**

Thesis: Efficient audio signal processing for embedded systems

2012 **Jorge Marin, Ph.D.**

Thesis: Robust binaural noise-reduction strategies with binaural-hearing-aid constraints: design, analysis and practical considerations

2012 **Devangi Parikh, Ph.D.**

Thesis: Improving the quality of speech in noisy environments

2012 **Varinthira Duangudom, Ph.D.**

Thesis: Computational auditory saliency

2013 **Irteza Syed, Ph.D.**

Thesis: Classifiation using Residual Vector Quantization

2014 **Syed Hussain Raza, Ph.D.**

Thesis: Temporally Consistent Semantic Segmentation in Videos

2014 **Nashie Sephus, Ph.D.**

Thesis: A Framework for Exploiting Modulation Spectral Features in Music Data Mining and Other Applicaitons

2015 **Ryan Curtin, Ph.D.**

Thesis: Improving Dual-Tree Algorithms

2015 **Chu Meh Chu, Ph.D.**

Thesis: Exploiting Temporal and Spatial Redundancies for Vector Quantization of Speech and Images

2016 **Jinwoo Kang, Ph.D.**

Thesis: Face Recognition for Vehicle Personalization

2017 **Kaitlin Fair, Ph.D.**

Thesis: A Biologically Plausible Sparse Approximation Solver on Neuromorphic Hardware

2017 **Muhammad Rizwan, Ph.D.**

Thesis: Adaptation of Hybrid Deep Neural Network–Hidden Markov Model Speech Recognition System using a Sub-space Approach

2018 **Nathan Parrish, Ph.D.**

Thesis: System Configuration for Proportional Control of an Assistive Technology for Patients with Cervical Spinal Cord Injuries

2018 **Brandon Carroll**

Thesis: Characterizing Acoustic Environments with OLAF and ELSA

2018 **Bradley Whitaker**

Thesis: Modifying Sparse Coding for Imbalanced Classification

2018 **Babafemi Odelowo**

Thesis: Development of a Neural Network-Based Speech Enhancement System

2019 **Md Nazmus Sahadat**

Thesis: Design and Evaluation of a Multimodal Assistive Technology using Tongue Commands, Head Movements, and Speech Recognition for People with Tetraplegia

2019 **Chieh-Feng Cheng**

Thesis: Audio Classification for Small-sized and Weakly Labelled Data

2021 **Devon Janke**

Thesis: Overcoming Process Variations and Noise in Analog Neural Networks

2021 **Lee Richert**

Thesis: Multi-Layer Dictionary Learning Using Low-Rank Updates

2022 **You Wang**

Thesis: Attention-based Convolutional Neural Network Model and Its Combination with Few-Shot Learning for Audio Classification

2022 **Chuyao Feng**

Thesis: Intra-Speaker Voice Quality Recognition for Voice Therapy

2022 **Desmond Caulley**

Thesis: Improved Automatic Analysis Methods for Lena-Obtained Audio Recordings of Children with Autism Spectrum Disorder

2024 **Mohamad Salut**

Thesis: Randomized Online Tensor Robust Principal Component Analysis

2024 **Nicolas Shu**

Thesis: Generalized Real-Time Indoor Monitoring System via Audio applied to Interaction Analysis

Current Ph.D. Students

2020–present **Daniel Dicheck**. Thesis area: System Performance Analysis based on Anomaly Detection

2025–present **Xavier Velez**. Thesis area: Biomedical Signal Processing

2024–present **Meredith Caveney**. Thesis area: Signal processing for monitoring fiber optic systems—coadvised with Stephen Ralph

2025–present **Tianwei Jiang**. Thesis area: Audio analysis in multimodal systems.

2025–present **Quentin Truncale**. Thesis area: interference mitigation in synthetic aperture radar systems.

M.S. Students Graduated with Thesis

2002 **Hyung K. Choi**

Thesis: Blind Source Separation of the Audio Signals in a Real World

2003 **Paul Hultz**

Thesis: Backward Masking in the Human Auditory System

2006 **Daniel Allred**

Thesis: Evaluation and Comparison of Beamforming Algorithms for Microphone Array Speech Processing

2012 **Ailar Javadi**

Thesis: Bio-inspired noise robust auditory features

2012 **Guillermo Colón**

Thesis: Avian musing feature space analysis

2016 **Tushar Supe**

Thesis: Super–CORDIC: Low Delay CORDIC Architectures for Computing Complex Functions

2019 **Harish K Haresamudram**

Thesis: The Role of Representations in Human Activity Recognition

2020 **Maham Tanveer**

Thesis: Learning Distance Metrics for High-Dimensional Data

2020 **Yufeng Yeng**

Thesis: Speaker Recognition and Diarization

2020 **Hua Wang**

Thesis: Noise Suppression in Speech

2024 **Joshua De Filippe**

Thesis: Measurement and Classification of Acoustic and Light Events in Intensive Care Units for Enhanced Patient Recovery

2026 **Yuxuan Yang**

Thesis: Noise dependent music dynamic range control using Gabor analysis

2026 **Chanwoo Sohn**

Thesis: Real-time Speaker Diarization with Dynamic Enrollment using External Knowledge

2025 **Lakshmi Grishma Vennapusa**

Thesis: Comparing the Performance of Small Word-Size Floating-Point Numerics to Fixed-Point Numerics in Neural Networks

2024 **Yacine Benichou**

Thesis: Development of an intelligent headset system for continuous speech monitoring and feedback in Parkinson's Disease: bridging clinical therapy and daily life

2025 **Anaghaa Ravikiran**

Thesis: Development of enhanced feature set for improved performance on classification of stridor vs. other respiratory auscultation

2026 **Tianwei Jiang**

Thesis: Sound Event Detection in Multiple Real-World Applications

Undergraduate Research Students Supervised

- Supervised over 100 undergraduate research projects.

Other Professional Activities and Service

Society Offices, Activities, and Membership

1991–present Senior Member IEEE (Institute of Electrical and Electronics Engineers)
Member IEEE Signal Processing Society
Member IEEE Education Society
Member IEEE Communications Society

1994–2016 Member ASA (Acoustical Society of America)

2025–present Registered Neutral & Mediator (Georgia Supreme Court / GODR)

Other Professional Activities

2008 Technical Consultant, Sound Innovations, Inc., White River Junction, Vermont

2007–2008 Technical Consultant, Personics Labs, Boca Raton, Florida

2005–2008 Technical Consulant and Technical Advisory Board member, GTronix, Inc., Fremont, California

1998–2000 Technical Consultant, ASPI, Inc., Atlanta, Georgia

2006–2015 Judge for the Georgia FIRST Lego League State Championships robotics competition for middle school students

Organization and Chairmanship of Technical Sessions, Workshops, and Conferences

2014 Treasurer, IEEE Global Conference on Signal and Information Processing (GlobalSIP)

2010 Technical Area Chair for the Asilomar Conference on Signals, Systems, and Computers

2003 Co-Chair for the NSF Symposium on Next Generation Automatic Speech Recognition

2002 Local Arrangements Chair for the DSP Workshop

2002 Local Arrangements Chair for the Signal Processing Education Workshop

2002 Special Session Co-Chair at ICASSP 2002, Orlando, FL, May 2002. Session Title: "Cooperative Analog-Digital Signal Processing"

2000 Technical Co-Chair for Signal Processing Education Workshop

Other

2011–2019 ECE Advisory Board, Rose-Hulman Institute of Technology

1999–present Reviewer for numerous journals and conference publications

2020–present Assistant Editor, Frontiers in Signal Processing

Institute Service

2018–2021 Member, Georgia Tech Institute Research Faculty Promotions Committee

2018–2024 Member, Georgia Tech Faculty Senate

2016–present Faculty Advisor for Eagles @ GT student club

2011–2014 Chair, Institute Faculty Status Grievance Committee, Georgia Institute of Technology

2010–2016 Member, Institute Faculty Status Grievance Committee, Georgia Institute of Technology

2005–2008 Member, Institute Graduate Committee, Georgia Institute of Technology

2005-2008 Member, Georgia Tech Faculty Senate, Georgia Institute of Technology

School Service

2022–2026 Member, ECE Statutory Advisory Committee

2020–present Chair, ECE Graduate Committee

2017–2020	Member, ECE Graduate Student Recruiting Committee, Georgia Institute of Technology
2015–present	Member, ECE Graduate Committee
2020–2022	Associate Member, ECE Statutory Advisory Committee
2015–2019	Member, ECE Statutory Advisory Committee
2014–2015	Chair, Computer Systems and Software area in Electrical and Computer Engineering, Georgia Institute of Technology
2009–2014	Member, ECE Graduate Student Recruiting Committee, Georgia Institute of Technology
2006–2007	Associate Director, Center for Research in Embedded Systems Technology
2004–2007	Associate Director over Education Outreach for the Center for Research on Embedded Systems (CREST)
2001–2009	Member, ECE Graduate Committee, Georgia Institute of Technology
1999–2001	Member, ECE Computing Committee, Georgia Institute of Technology

Consulting

Served as an expert witness in over 30 intellectual property matters related to audio processing, speech recognition, and hardware design for clients including Google, Samsung, Motorola, and Nokia

Deposed over 25 times and testified in trials and hearings 6 times.