

**JAMES E. FOWLER**  
William L. Giles Distinguished Professor  
Billie J. Ball Endowed Professorship  
Department of Electrical and Computer Engineering  
Mississippi State University  
IEEE Fellow

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## CONTACT

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## EDUCATION

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### **Ph.D. in Electrical Engineering**

The Ohio State University, Columbus, OH, August 1996

### **M.S. in Electrical Engineering**

The Ohio State University, Columbus, OH, June 1992

### **B.S. in Computer and Information Science Engineering**

The Ohio State University, Columbus, OH, March 1990

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## PROFESSIONAL EXPERIENCE

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**National Science Foundation**, Communication and Information Foundations (CIF) program,  
Division of Computing and Communication Foundations (CCF),  
Directorate of Computer and Information Science and Engineering (CISE), Alexandria, VA  
Program Director — 2022 to present

**Mississippi State University**, Department of Electrical & Computer Engineering, Starkville, MS  
William L. Giles Distinguished Professor — April 2020 to present  
Billie J. Ball Endowed Professorship in Engineering — January 2011 to present  
Interim Department Head — July 2019 to July 2020  
Graduate Program Director — June 2008 to June 2019  
Professor — August 2007 to present  
Associate professor — August 2002 to July 2007  
Assistant professor — August 1997 to July 2002

**Mississippi State University**, Distributed Analytics and Security Institute (DASI), Starkville, MS  
Associate Director — 2014 to 2017

**Polytech’Nantes, Université de Nantes**, Nantes, France  
Visiting professor — June 2009

**École Nationale Supérieure des Télécommunications**, Département TSI, Paris, France  
Visiting professor — May to December 2004

**Université de Nice–Sophia Antipolis**, Laboratoire I3S, Sophia Antipolis, France  
Postdoctoral researcher — January to July 1997 and May to June 1998

**The Ohio State University**, Department of Electrical Engineering, Columbus, OH  
Graduate research associate — September 1990 to August 1996

**The Ohio State University**, Department of Electrical Engineering, Columbus, OH  
Instructor — spring quarter 1996

**AT&T Bell Laboratories**, Holmdel, NJ  
Member of Technical Staff, Level 1, Visual Communications Department — June to August 1995

**Ohio Department of Transportation**, Columbus, OH  
Computer programmer — April 1990 to August 1990

**Intergraph Corporation**, Huntsville, AL  
Computer programmer — June 1988 to September 1988

**Ohio Department of Transportation**, Columbus, OH  
Computer programmer and draftsman — June 1987 to September 1987

**Intergraph Corporation**, Huntsville, AL  
Computer draftsman — June 1986 to September 1986 and June 1985 to September 1985

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## ADMINISTRATIVE EXPERIENCE

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**Program Director** Communication and Information Foundations (CIF) program, Division of Computing and Communication Foundations (CCF), Directorate of Computer and Information Science and Engineering (CISE), National Science Foundation (NSF), 2022 to present

### **CIF Program**

- Main program director for signal- and information-processing (SIP) programmatic activities
- Create and oversee proposal-review panels
- Assign proposals to panels and reviewers
- Make funding recommendations incorporating panel feedback and agency policies and priorities
- Interact with proposers, principal investigators, and other members of the research community
- Develop and oversee new and existing programs
- Interact with other program directors and administrative staff both within the division and across the directorate and NSF, as well as work in conjunction with other Federal agencies and partners, to advance crosscutting programs

### **CISE Design for Environmental Sustainability in Computing (DESC) Program**

- Co-lead for the CISE-wide program that addresses the substantial environmental impacts that computing has through its entire lifecycle from design and manufacturing, through deployment into operation, and finally into reuse, recycling, and disposal
- Set program direction and goals
- Coordinate the formation and execution of all program review panels
- Liaise between program team and directorate and division administrative management
- Oversee proposal-review panels and make funding recommendations
- Interact with proposers, principal investigators, and other members of the research community

### **CISE Minority-Serving Institutions Research Expansion (CISE-MSI) Program**

- CCF representative for the primary CISE-wide initiative aimed at broadening participation by increasing the number of CISE-funded research projects from MSIs and to develop research capacity toward successful submissions to core CISE programs
- Oversee proposal-review panels make funding recommendations
- Interact with proposers, principal investigators, and other members of the research community

### **Smart Health and Biomedical Research in the Era of Artificial Intelligence and Advanced Data Science (SCH)**

- CCF representative to this interagency (NSF and NIH) program that supports the development of transformative high-risk, high-reward advances in computer and information science, engineering, mathematics, statistics, behavioral and/or cognitive research to address pressing questions in the biomedical and public health communities
- Oversee proposal-review panels and make funding recommendations in coordination with NIH colleagues
- Interact with proposers, principal investigators, and other members of the research community

**Interim Department Head** Department of Electrical and Computer Engineering, Mississippi State University, 2019 to 2020

#### **Responsibilities**

- Managed department of 21 faculty and 10 staff (Starkville campus), 2 faculty and 1 staff (Mississippi Gulf Coast campus)
- Managed academic program consisting of 616 undergraduates, 34 masters, and 72 doctoral students
- Oversaw unprecedented move to all-online instruction during Spring 2020 and Summer 2020 semesters
- Mentored junior faculty resulting in three NSF CAREER awards
- Semesterly course schedule and faculty teaching assignments
- Annual faculty and staff reviews
- Annual departmental budget
- Annual faculty promotion and tenure
- Faculty and staff hiring
- Monthly faculty meetings
- Biannual external advisory board meetings

**Graduate Program Director** Department of Electrical and Computer Engineering, Mississippi State University, 2008 to 2019

#### **Responsibilities**

- Advised around 110 graduate students each semester, including around 65 doctoral students
- Responded to over 300 graduate-admissions inquiry emails each year, clarifying departmental admissions procedures and requirements
- Rendered graduate-admission decisions on more than 200 applications to departmental MS and PhD programs each year
- Conducted graduate-student orientation sessions for 10–20 incoming graduate students each year, providing first-semester advising on selection of courses and registration procedures
- Hired, assigned, and supervised more than 20 teaching assistants in departmental lab and course positions each fall and spring semester, and 5–7 teaching assistants in the summer
- Collected applications for, approved, and created course sections for 5–10 sections of graduate-level directed individual study each year
- Created, proctored, coordinated the grading of, and reported results from the departmental PhD qualifying examination for 10–15 students each fall and spring semester
- Coordinated the graduation of 20–30 graduate students each year, including a departmental audit of graduating-student paperwork and liaison to the Office of the Graduate School during their audit
- Produced yearly accreditation reports for all of the department's graduate programs and degrees
- Maintained a database of metrics on graduating students; report data on institutional-assessment evaluations each year
- Attended monthly college-level meetings of department graduate coordinators
- Processed numerous paperwork items throughout the semester—course adds/drops, unclassified graduate-student enrollment, program-requirement waivers, permissions to register, enrollment-verification letters
- Liaison between departmental faculty and students and the Associate Dean for Graduate Studies in the Bagley College of Engineering as well as the Office of the Graduate School
- Coordinated submission of proposal paperwork for graduate-level course addition, distance-education approval, and special-topic courses to the Bagley College of Engineering Committee on Courses and

Curricula and the University Committee on Courses and Curricula

- Coordinated submission of graduate-faculty paperwork for graduate-committee-participant appointments for external committee members

#### **Accomplishments**

- Created the ECE Graduate Handbook which overviews policies and procedures for graduate studies in the department; updated annually
- Created procedures for formal, quantitative evaluation of thesis/dissertation defenses as well as non-thesis oral comprehensive examinations
- Created fill-in PDF forms for directed individual study, examination/defense evaluation, graduation exit survey, and qualifying-exam registration; several of these forms have been modified and adopted by other departments in the college
- Merged the separate Computer Engineering (CPE) and Electrical Engineering (EE) graduate degrees into single MS and PhD degrees in Electrical and Computer Engineering (ECE), including submission of paperwork to college, university, and IHL along with revision of qualifying examination, transfer of legacy CPE students to new ECE degrees, and revision of relevant institutional-assessment procedures
- Oversaw the approval process for distance education for 19 graduate-level courses in the department
- Completely rewrote the graduate-studies section of the departmental website

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## **GRANTS AND CONTRACTS**

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- Co-principal investigator, “SimBRS WD60: Storage and Management of Large Data Sets,” Department of Defense, \$399,988, December 13, 2015–December 14, 2016 (with R. King, S. Zhang, T. J. Jankun-Kelly, and N. Younan).
- Senior investigator, “Idaho Bailiff, Task C5,” Department of Defense, \$600,000, May 13, 2015–May 15, 2016 (with W. McGrew and D. Glendowne)
- Principal investigator, “Idaho Bailiff, Task 2,” Department of Defense, \$532,937, July 24, 2014–May 31, 2015 (with Q. Du, N. Younan, D. Anderson, C. Archibald, and J. Ball).
- Senior personnel, “Redundant Wavelet Transforms and Information Fusion for Robust Hyperspectral ATR,” National Geospatial Intelligence Agency (NGA) NURI, \$298,580, September 1, 2009–August 31, 2011 (with S. Prasad and L. M. Bruce).
- Principal investigator, “Compressive-Projection Principal Component Analysis,” National Science Foundation, Award No. CCF-0915307, \$423,119, July 15, 2009–June 30, 2013.
- Principal investigator, “Random Projections for Dimensionality Reduction of Hyperspectral Data,” National Geospatial Intelligence Agency (NGA) NURI Award No. HM1582-08-1-0014, \$300,000, August 16, 2008–September 30, 2011 (with Q. Du).
- Co-principal investigator, “Remote Visualization Using ParaView Enterprise Edition (PVEE),” DoD HPCMO PET initiative, \$150,114, June 2006–May 2007 (with R. Moorhead, PI).
- Co-principal investigator, “Integrated Management Systems for Invasive Aquatic Plants and Terrestrial Grasses,” US Geological Survey Biological Resources Discipline, \$893,000, August 9, 2005–September 30, 2007 (with J. D. Madsen, D. R. Shaw, J. D. Byrd, R. L. Brown, L. M. Bruce, E. R. Dibble, G. R. Ervin).
- Principal investigator, “Poste de Chercheur Associé,” CNRS, 17,038€, July–December 2004.
- Co-principal investigator, “Enabling Technologies for Exploiting EOS Data for Decision Support,” NASA, \$592,000, February 2001–February 2005 (with R. L. King, N. Younan, L. Bruce).
- Principal investigator, “Video Coding Using Multihypothesis Motion Compensation in the Redundant Wavelet Domain,” National Science Foundation, Award No. CCR-0310864, \$239,615, August 15, 2003–July 31, 2007.
- Principal investigator, “EVITA — A Prototype System for Efficient Visualization and Interrogation of Terascale Datasets,” National Science Foundation, Large Scientific and Software Data Set Visualization Program (LSSDSV) Award No. ACI-9982344, \$1,267,500, January 1, 2000–December 31, 2003 (with R. Machiraju, D. Thompson, B. Soni, and W. Schroeder).

- Principal investigator, “Wavelet Compression of 3D Grids,” Navy Research Laboratory-SSC, \$89,315, January 1, 2000–May 6, 2002.
- Co-principal investigator, “Integrated Systems and Remote Visualization,” Naval Oceanographic Office, \$1,097,079, September 24, 1999–December 31, 2001 (with R. Moorhead, PI).
- Co-principal investigator, “Generalized Wavelet Based Feature Detection for Computational Field Simulation,” \$115,484, MSU/NSF ERC, April 15, 1998–April 14, 1999 (with R. Machiraju, PI).
- Co-principal investigator, “Advanced Data and Image Visualization,” \$88,442, NASA Stennis Space Center, February 16, 1998–December 31, 1998 (with R. Moorhead, PI).
- Principal investigator, “Wavelet-Based Subband Coding for Video Using Adaptive Vector Quantization,” Mississippi State University Office of Research, 1998 Summer Research Program, \$1,444, May 15–June 14, 1998.
- Principal investigator, “Packet-Based Video On Demand Using Wavelet-Based Subband Coding and Adaptive Vector Quantization,” Mississippi State University Office of Research, 1998 Research Initiation Program Award, \$6,000, January 1, 1998–December 31, 1998.
- Principal investigator, “Wavelet-Based Subband Coding for Video Using Adaptive Vector Quantization,” National Science Foundation, NSF International Research Fellow Award No. INT-9600260, \$39,380, January 1, 1997–July 31, 1997 and May 15, 1998–June 15, 1998, postdoctoral research.

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## PUBLICATIONS

### Book Chapters

- W. Zhu, Q. Du, and J. E. Fowler, “Hyperspectral Image Compression Using Segmented Principal Component Analysis,” in *Satellite Data Compression*, B. Huang, Ed., chapter 11, pp. 233–252, Springer, 2011.
- J. E. Fowler and Q. Du, “Reconstructions from Compressive Random Projections of Hyperspectral Imagery,” in *Optical Remote Sensing: Advances in Signal Processing and Exploitation Techniques*, S. Prasad, L. M. Bruce, and J. Chanussot, Eds., chapter 3, pp. 31–48, Springer, 2011.
- J. E. Fowler and J. T. Rucker, “3D Wavelet-Based Compression of Hyperspectral Imagery,” in *Hyperspectral Data Exploitation: Theory and Applications*, C.-I. Chang, Ed., chapter 14, pp. 379–407, John Wiley & Sons, Inc., Hoboken, NJ, 2007.
- R. Machiraju, J. E. Fowler, D. Thompson, B. Soni, and W. Schroeder, “EVITA - Efficient Visualization and Interrogation of Tera-Scale Datasets,” in *Data Mining for Scientific and Engineering Applications*, R. L. Grossman, C. Kamath, P. Kegelmeyer, V. Kumar, and R. R. Namburu, Eds., chapter 15, pp. 257–279, Kluwer Academic Publishers, Norwell, MA, 2001.

### Refereed Journal Articles

- Z. Ye, T. Sun, Z. Cao, L. Bai, and J. E. Fowler, “Few-Shot Learning Using Residual Channel Attention and Prototype Domain Adaptation for Hyperspectral Image Classification,” *IEEE Geoscience and Remote Sensing Letters*, vol. 20, 2023.
- W. C. Karl, J. E. Fowler, C. A. Bouman, M. Çetin, B. Wohlberg, and J. C. Ye, “The Foundations of Computational Imaging,” *IEEE Signal Processing Magazine*, vol. 40, pp. 40-53, July 2023.
- Z. Ye, C. Li, Q. Liu, L. Bai, and J. E. Fowler, “Computationally Lightweight Hyperspectral Image Classification Using a Multiscale Depthwise Convolutional Network with Channel Attention,” *IEEE Geoscience and Remote Sensing Letters*, vol. 20, 2023
- Z. Ye, T. Sun, S. Shi, L. Bai, and J. E. Fowler, “Local-Global Active Learning Based on a Graph Convolutional Network for Semi-Supervised Classification of Hyperspectral Imagery,” *IEEE Geoscience and Remote Sensing Letters*, vol. 20, 2023
- Z. Ye, C. Li, Q. Liu, L. Bai, and J. E. Fowler, “Multiscale Spatial-Spectral Feature Extraction Network for Hyperspectral Image Classification,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 15, pp. 4640–4652, 2022.
- N. Liu, L. Li, W. Li, R. Tao, J. E. Fowler, and J. Chanussot, “Hyperspectral Restoration and Fusion With Multispectral Imagery via Low-Rank Tensor-Approximation,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 59, no. 9, pp. 7817–7830, September 2021.

- J. Xu, J. E. Fowler, and L. Xiao, “Hypergraph-Regularized Low-Rank Subspace Clustering Using Superpixels for Unsupervised Spatial-Spectral Hyperspectral Classification,” *IEEE Geoscience and Remote Sensing Letters*, vol. 18, no. 5, pp. 871–875, May 2021.
- N. Liu, W. Li, R. Tao, and J. E. Fowler, “Wavelet-Domain Low-Rank/Group-Sparse Destriping for Hyperspectral Imagery,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 57, no. 12, pp. 10310–10321, December 2019.
- M. Lv, J. E. Fowler, and L. Jing, “Spatial functional data analysis for the spatial-spectral classification of hyperspectral imagery,” *IEEE Geoscience and Remote Sensing Letters*, vol. 16, no. 6, pp. 942–946, June 2019.
- Z. Ye, J. E. Fowler, and L. Bai, “Spatial-Spectral Hyperspectral Classification Using Local Binary Patterns and Markov Random Fields,” *Journal of Applied Remote Sensing*, vol. 11, no. 3, July 2017.
- J. E. Fowler, “Compression of Virtual-Machine Memory in Dynamic Malware Analysis,” *Journal of Digital Forensics, Security and Law*, vol. 12, no. 1, pp. 41–46, March 2017.
- W. Liu, J. E. Fowler, and C. Zhao, “Spatial Logistic Regression for Support-Vector Classification of Hyperspectral Imagery,” *IEEE Geoscience and Remote Sensing Letters*, vol. 14, no. 3, pp. 439–443, March 2017.
- V. Menon, Q. Du, and J. E. Fowler, “Random Hadamard Projections for Hyperspectral Unmixing,” *IEEE Geoscience and Remote Sensing Letters*, vol. 14, no. 3, pp. 419–423, March 2017.
- V. Menon, Q. Du, and J. E. Fowler, “Fast SVD with Random Hadamard Projection for Hyperspectral Dimensionality Reduction,” *IEEE Geoscience and Remote Sensing Letters*, vol. 13, no. 9, pp. 1275–1279, September 2016.
- J. Wen, J. E. Fowler, M. He, Y. Zhao, C. Deng, and V. Menon, “Orthogonal Nonnegative Matrix Factorization Combining Multiple Features for Spectral-Spatial Dimensionality Reduction of Hyperspectral Imagery,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 54, no. 7, pp. 4272–4286, July 2016.
- M. Trocan, E. W. Tramel, J. E. Fowler, and B. Pesquet-Popescu, “Compressed-Sensing Recovery of Multiview Image and Video Sequences Using Signal Prediction,” *Multimedia Tools and Applications*, vol. 72, no. 1, pp. 95–121, September 2014.
- N. H. Ly, Q. Du, and J. E. Fowler, “Sparse Graph-Based Discriminant Analysis for Hyperspectral Imagery,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 52, no. 7, pp. 3872–3884, July 2014.
- N. H. Ly, Q. Du, and J. E. Fowler, “Collaborative Graph-Based Discriminant Analysis for Hyperspectral Imagery,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 7, no. 6, pp. 2688–2696, June 2014.
- Q. Du, N. Ly, and J. E. Fowler, “An Operational Approach to PCA+JPEG2000 Compression of Hyperspectral Imagery,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 7, no. 6, pp. 2237–2245, June 2014.
- W. Li, S. Prasad, and J. E. Fowler, “Decision Fusion in Kernel-Induced Spaces for Hyperspectral Image Classification,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 52, no. 6, pp. 3399–3411, June 2014.
- C. Chen, W. Li, E. W. Tramel, M. Cui, S. Prasad, and J. E. Fowler, “Spectral-Spatial Preprocessing Using Multihypothesis Prediction for Noise-Robust Hyperspectral Image Classification,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 7, no. 4, pp. 1047–1059, April 2014.
- W. Li, E. W. Tramel, S. Prasad, and J. E. Fowler, “Nearest Regularized Subspace for Hyperspectral Classification,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 52, no. 1, pp. 477–489, January 2014.
- C. Chen, W. Li, E. W. Tramel, and J. E. Fowler, “Reconstruction of Hyperspectral Imagery from Random Projections Using Multihypothesis Prediction,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 52, no. 1, pp. 365–374, January 2014.
- Z. Ye, S. Prasad, W. Li, J. E. Fowler, and M. He, “Classification Based on 3-D DWT and Decision Fusion for Hyperspectral Image Analysis,” *IEEE Geoscience and Remote Sensing Letters*, vol. 11, no. 1, pp. 173–177, January 2014.
- W. Li, S. Prasad, and J. E. Fowler, “Hyperspectral Image Classification Using Gaussian Mixture Models and Markov Random Fields,” *IEEE Geoscience and Remote Sensing Letters*, vol. 11, no. 1, pp. 153–157, January 2014.

- S. Prasad, M. Cui, W. Li, and J. E. Fowler, “Segmented Mixture-of-Gaussian Classification for Hyperspectral Image Analysis,” *IEEE Geoscience and Remote Sensing Letters*, vol. 11, no. 1, pp. 138–142, January 2014.
- W. Li, S. Prasad, and J. E. Fowler, “Integration of Spectral-Spatial Information for Hyperspectral Image Reconstruction from Compressive Random Projections,” *IEEE Geoscience and Remote Sensing Letters*, vol. 10, no. 6, pp. 1379–1383, November 2013.
- W. Li, S. Prasad, and J. E. Fowler, “Noise-Adjusted Subspace Discriminant Analysis for Hyperspectral-Image Classification,” *IEEE Geoscience and Remote Sensing Letters*, vol. 10, no. 6, pp. 1374–1378, November 2013.
- N. Ly, Q. Du, and J. E. Fowler, “Reconstruction from Random Projections of Hyperspectral Imagery with Spectral and Spatial Partitioning,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 6, no. 2, pp. 466–472, April 2013.
- W. Li, S. Prasad, and J. E. Fowler, “Classification and Reconstruction from Random Projections for Hyperspectral Imagery,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 51, no. 2, pp. 833–843, February 2013.
- S. Prasad, W. Li, J. E. Fowler, and L. M. Bruce, “Information Fusion in the Redundant Wavelet Transform Domain for Noise Robust Hyperspectral Classification,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 50, no. 9, pp. 3474–3486, September 2012.
- W. Li, S. Prasad, J. E. Fowler, and L. M. Bruce, “Locality-Preserving Dimensionality Reduction and Classification for Hyperspectral Image Analysis,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 50, no. 4, pp. 1185–1198, April 2012.
- J. E. Fowler, S. Mun, and E. W. Tramel, “Block-Based Compressed Sensing of Images and Video,” *Foundations and Trends in Signal Processing*, vol. 4, no. 4, pp. 297–416, March 2012.
- J. E. Fowler and Q. Du, “Anomaly Detection and Reconstruction from Random Projections,” *IEEE Transactions on Image Processing*, vol. 21, no. 1, pp. 184–195, January 2012.
- W. Li, S. Prasad, J. E. Fowler, and L. M. Bruce, “Locality-Preserving Discriminant Analysis in Kernel-Induced Feature Space for Hyperspectral Classification,” *IEEE Geoscience and Remote Sensing Letters*, vol. 8, pp. 894–898, September 2011.
- W. Zhu, Q. Du, and J. E. Fowler, “Multi-Temporal Hyperspectral Image Compression,” *IEEE Geoscience and Remote Sensing Letters*, vol. 8, pp. 416–420, May 2011.
- Q. Du, W. Zhu, H. Yang, and J. E. Fowler, “Segmented Principal Component Analysis for Parallel Compression of Hyperspectral Imagery,” *IEEE Geoscience and Remote Sensing Letters*, vol. 6, pp. 713–717, October 2009.
- J. E. Fowler, “Compressive-Projection Principal Component Analysis,” *IEEE Transactions on Image Processing*, vol. 18, pp. 2230–2242, October 2009.
- Q. Du, J. E. Fowler, and W. Zhu, “On the Impact of Atmospheric Correction on Lossy Compression of Multispectral and Hyperspectral Imagery,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 47, pp. 130–132, January 2009.
- Q. Du and J. E. Fowler, “Low-Complexity Principal Component Analysis for Hyperspectral Image Compression,” *International Journal of High Performance Computing Applications*, vol. 22, pp. 438–448, November 2008.
- J. Zhang, J. E. Fowler, and G. Liu, “Lossy-to-Lossless Compression of Hyperspectral Imagery Using Three-Dimensional TCE and an Integer KLT,” *IEEE Geoscience and Remote Sensing Letters*, vol. 5, pp. 814–818, October 2008.
- Q. Du, W. Zhu, and J. E. Fowler, “Anomaly-Based JPEG2000 Compression of Hyperspectral Imagery,” *IEEE Geoscience and Remote Sensing Letters*, vol. 5, pp. 696–700, October 2008.
- J. B. Boettcher and J. E. Fowler, “Video Coding Using a Complex Wavelet Transform and Set Partitioning,” *IEEE Signal Processing Letters*, vol. 14, pp. 633–636, September 2007.
- G. Feideropoulou, M. Trocan, J. E. Fowler, B. Pesquet-Popescu, and J.-C. Belfiore, “Rotated Constellations for Video Transmission over Rayleigh Fading Channels,” *IEEE Signal Processing Letters*, vol. 14, pp. 629–632, September 2007.
- Q. Du and J. E. Fowler, “Hyperspectral Image Compression Using JPEG2000 and Principal Component Analysis,” *IEEE Geoscience and Remote Sensing Letters*, vol. 4, pp. 201–205, April 2007.

- J. E. Fowler and B. Pesquet-Popescu, “Wavelets in Source Coding, Communications, and Networks: An Overview,” *EURASIP Journal on Image and Video Processing*, vol. 2007, Article ID 60539, 27 pages, 2007.
- J. E. Fowler, S. Cui, and Y. Wang, “Motion Compensation Via Redundant-Wavelet Multihypothesis,” *IEEE Transactions on Image Processing*, vol. 15, pp. 3102–3113, October 2006.
- S. Cui, Y. Wang, and J. E. Fowler, “Motion Estimation and Compensation in the Redundant-Wavelet Domain Using Triangle Meshes,” *Signal Processing: Image Communication*, vol. 21, pp. 586–598, August 2006.
- G. Feideropoulou, M. Trocan, J. E. Fowler, B. Pesquet-Popescu, and J.-C. Belfiore, “Joint Source-Channel with Partially Coded Index Assignment for Robust Scalable Video,” *IEEE Signal Processing Letters*, vol. 13, pp. 201–204, April 2006.
- Y. Wang, S. Cui, and J. E. Fowler, “3-D Video Coding with Redundant-Wavelet Multihypothesis,” *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 16, pp. 166–177, February 2006.
- J. E. Fowler, “The Redundant Discrete Wavelet Transform and Additive Noise,” *IEEE Signal Processing Letters*, vol. 12, pp. 629–632, September 2005.
- L. Hua and J. E. Fowler, “Wavelet-Based Coding of Time-Varying Vector Fields of Ocean-Surface Winds,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 42, pp. 1283–1290, June 2004.
- Y. Wang, J. T. Rucker, and J. E. Fowler, “Three-Dimensional Tarp Coding for the Compression of Hyperspectral Images,” *IEEE Geoscience and Remote Sensing Letters*, vol. 1, pp. 136–140, April 2004.
- J. E. Fowler, “Embedded Wavelet-Based Image Compression: State of the Art (Eingebettete Wavelet-basierte Bildkompression: Stand der Technik),” *Information Technology*, vol. 25, pp. 256–262, September–October 2003.
- J. E. Fowler and L. Hua, “Wavelet Transforms for Vector Fields Using Omnidirectionally Balanced Multi-wavelets,” *IEEE Transactions on Signal Processing*, vol. 50, pp. 3018–3027, December 2002.
- J. E. Fowler and D. N. Fox, “Embedded Wavelet-Based Coding of Three-Dimensional Oceanographic Images With Land Masses,” *IEEE Transactions on Geoscience and Remote Sensing*, vol. 39, pp. 284–290, February 2001.
- J. E. Fowler, “Adaptive Vector Quantization for Efficient Zerotree-Based Coding of Video with Nonstationary Statistics,” *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 10, pp. 1478–1488, December 2000.
- J. E. Fowler, “Generalized Threshold Replenishment: An Adaptive Vector Quantization Algorithm for the Coding of Nonstationary Sources,” *IEEE Transactions on Image Processing*, vol. 7, pp. 1410–1424, October 1998.
- J. E. Fowler, K. C. Adkins, S. B. Bibyk, and S. C. Ahalt, “Real-Time Video Compression Using Differential Vector Quantization,” *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 5, pp. 14–24, February 1995.
- J. E. Fowler, M. R. Carbonara, and S. C. Ahalt, “Image Coding Using Differential Vector Quantization,” *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 3, no. 5, pp. 350–367, October 1993.
- C. Mills, S. C. Ahalt, and J. Fowler, “Compiled Instruction Set Simulation,” *Software–Practice and Experience*, vol. 21, pp. 877–889, August 1991.

#### Journal Editorials

- J. E. Fowler, “A Brief Message From the New Editor-In-Chief,” *IEEE Signal Processing Letters*, vol. 24, no. 2, p. 135, February 2017.

#### Refereed Conference Papers

- N. Liu, W. Li, R. Tao, J. E. Fowler, and L. Yang, “Hyperspectral Stripes Removal with Wavelet-Domain Low-Rank/Group-Sparse Decomposition,” in *Proceedings of the Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing*, Amsterdam, The Netherlands, September 2019.
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## CREATIVE WORKS

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### Software

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<http://www.ece.msstate.edu/~fowler/CPPCA/>
- *BCS-SPL—Block Compressed Sensing with Smooth Projected Landweber Reconstruction*  
<http://www.ece.msstate.edu/~fowler/BCSSPL/>
- *PCA+JPEG2000—Compression of Hyperspectral Imagery*  
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- *QccPack—Quantization, Compression, and Coding Library*  
Open-source collection of library routines and utility programs for quantization, compression, and coding; over 55,000 lines of C code implementing over 500 library routines; under development since January 1997  
<http://qccpack.sourceforge.net>
- *EVITA—Efficient Visualization and Interrogation of Terascale Datasets*  
Open-source system to facilitate exploration of terascale datasets by using a wavelet-based representational scheme allowing ranked access to macroscopic data features  
<http://evita.sourceforge.net>

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## PLENARY PRESENTATIONS AT PROFESSIONAL MEETINGS

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- “Low-Rank and Sparse Representations in Signal Processing,” *IEEE International Conference on Signal, Information and Data Processing*, Chongqing, China, December 13, 2019.
- “Reconstruction and Analysis of Hyperspectral Imagery Using Random Projections,” *International Conference on Progress in Informatics and Computing*, Nanjing, China, December 16, 2017.
- “Random Projections and the Acquisition, Reconstruction, and Analysis of Hyperspectral Imagery,” *IEEE China Summit & International Conference on Signal and Information Processing*, Xi’an, China, July 11, 2014.
- “Block-Based Compressed Sensing of Images and Video,” *Data Compression Conference*, Snowbird, UT, March 24, 2010.

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## PRESENTATIONS AT PROFESSIONAL MEETINGS

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- “Multiresolution DECOLOR for Camouflaged Moving Foreground Detection Using a Redundant Wavelet Transform,” oral presentation, *Computational Imaging XX*, San Jose, CA, January 19, 2022.
- “Wavelet-Domain Low-Rank/Group-Sparse Destriping for Hyperspectral Imagery,” poster presentation, *IMA Workshop on Computational Imaging*, Minneapolis, MN, October 15, 2019.
- “Spatial Functional Data Analysis for the Spatial-Spectral Classification of Hyperspectral Imagery,” *Southeast Symposium on Contemporary Engineering Topics*, oral presentation, Huntsville, AL, August 3, 2018.
- “Compression of Virtual-Machine Memory in Dynamic Malware Analysis,” oral presentation, *International Conference on Systematic Approaches to Digital Forensic Engineering*, Kyoto, Japan, September 21, 2016.
- “Delta Encoding of Virtual-Machine Memory in the Dynamic Analysis of Malware,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 31, 2016.
- “Decentralized Reconstruction from Compressive Random Projections Driven by Principal Components,” poster presentation, *European Signal Processing Conference*, Nice, France, September 29, 2015.
- “Compressive Pushbroom and Whiskbroom Sensing for Hyperspectral Remote-Sensing Imaging,” oral presentation, *IEEE International Conference on Image Processing*, Paris, France, October 28, 2014.

- “Motion-Compensated Compressed-Sensing Reconstruction for Dynamic MRI,” poster presentation, *IEEE International Conference on Image Processing*, Melbourne, Australia, September 17, 2013.
- “Single-Image Super-Resolution Using Multihypothesis Prediction,” oral presentation, *46th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 5, 2012.
- “DPCM for Quantized Block-Based Compressed Sensing of Images,” poster presentation, *European Signal Processing Conference*, Bucharest, Romania, August 29, 2012.
- “Compressed-Sensing Recovery of Images and Video Using Multihypothesis Predictions,” oral presentation, *45th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 8, 2011.
- “Decoder-Side Dimensionality Determination for Compressive-Projection Principal Component Analysis of Hyperspectral Data,” poster presentation, *IEEE International Conference on Image Processing*, Brussels, Belgium, September 12, 2011.
- “Multiscale Block Compressed Sensing with Smoothed Projected Landweber Reconstruction,” poster presentation, *European Signal Processing Conference*, Barcelona, Spain, August 31, 2011.
- “Multistage Compressed-Sensing Reconstruction of Multiview Images,” oral presentation, *International Workshop on Multimedia Signal Processing*, Saint-Malo, France, October 4, 2010.
- “Compressed Sensing of Multiview Images Using Disparity Compensation,” oral presentation, *IEEE International Conference on Image Processing*, Hong Kong, September 29, 2010.
- “Random Projections for Dimensionality Reduction of Hyperspectral Data,” oral presentation, *2010 NGA Academic Research Program (NARP) Symposium and Workshops*, Washington, DC, September 14, 2010.
- “Block Compressed Sensing of Images Using Directional Transforms,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 25, 2010.
- “Block Compressed Sensing of Images Using Directional Transforms,” oral presentation, *IEEE International Conference on Image Processing*, Cairo, Egypt, November 10, 2009.
- “Random Projections for Dimensionality Reduction of Hyperspectral Data,” oral presentation, *2009 NGA Academic Research Program (NARP) Symposium and Workshops*, Washington, DC, September 29, 2009.
- “Compressive-Projection Principal Component Analysis and the First Eigenvector,” oral presentation, *Data Compression Conference*, Snowbird, UT, March 17, 2009.
- “Compressive-Projection Principal Component Analysis for the Compression of Hyperspectral Signatures,” oral presentation, *Data Compression Conference*, Snowbird, UT, March 25, 2008.
- “Graph-Cut Rate Distortion Algorithm for Contourlet-Based Image Compression,” oral presentation, *IEEE International Conference on Image Processing*, San Antonio, TX, September 18, 2007.
- “Hyperspectral Image Compression with the 3D Dual-Tree Wavelet Transform,” oral presentation, *IEEE International Geoscience and Remote Sensing Symposium*, Barcelona, Spain, July 24, 2007.
- “Spectral-Decorrelation Strategies for the Compression of Hyperspectral Imagery,” oral presentation, *IEEE International Geoscience and Remote Sensing Symposium*, Barcelona, Spain, July 24, 2007.
- “A Modified BISK Algorithm for 3D Dual-Tree Wavelet Transform Coding,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 28, 2007.
- “Shape-Adaptive Embedded Coding of Ocean-Temperature Imagery,” oral presentation, *40th Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 1, 2006.
- “Video Coding with Wavelet-Domain Conditional Replenishment and Unequal Error Protection,” poster presentation, *IEEE International Conference on Image Processing*, Atlanta, GA, October 10, 2006.
- “Tarp Filtering of Block-Transform Coefficients for Embedded Image Coding,” oral presentation, *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Toulouse, France, May 16, 2006.
- “Analysis of Redundant-Wavelet Multihypothesis for Motion Compensation,” oral presentation, *Data Compression Conference*, Snowbird, UT, March 30, 2006.
- “Joint Source-Channel Coding of Scalable Video with Partially Coded Index Assignment Using Reed-Muller Codes,” poster presentation, *IEEE International Conference on Image Processing*, Genoa, Italy, September 14, 2005.

- “Shape-Adaptive Coding Using Binary Set Splitting with  $k$ -d Trees,” oral presentation, *IEEE International Conference on Image Processing*, Singapore, October 26, 2004.
- “Shape-Adaptive Tarp Coding,” oral presentation, *IEEE International Conference on Image Processing*, Barcelona, Spain, September 15, 2003.
- “Multihypothesis Motion Compensation in the Redundant Wavelet Domain,” oral presentation, *IEEE International Conference on Image Processing*, Barcelona, Spain, September 16, 2003.
- “Fully Scalable Video Coding Using Redundant-Wavelet Multihypothesis and Motion-Compensated Temporal Filtering,” poster presentation, *IEEE International Conference on Image Processing*, Barcelona, Spain, September 16, 2003.
- “Embedded Wavelet-Based Compression of Hyperspectral Imagery Using Tarp Coding,” oral presentation, *IEEE International Geoscience and Remote Sensing Symposium*, Toulouse, France, July 25, 2003.
- “Unequal Error Protection of Embedded Multimedia Objects for Packet-Erasure Channels,” poster presentation, *International Workshop on Multimedia Signal Processing*, St. Thomas, US Virgin Islands, December 10, 2002.
- “Mesh-Based Motion Estimation and Compensation in the Wavelet Domain Using a Redundant Transform,” poster presentation, *IEEE International Conference on Image Processing*, Rochester, NY, September 23, 2002.
- “A Performance Analysis of Spread-Spectrum Watermarking Based on Redundant Transforms,” oral presentation, *IEEE International Conference on Multimedia and Expo*, Lausanne, Switzerland, August 29, 2002.
- “An Image-Adaptive Watermark Based on a Redundant Wavelet Transform,” poster presentation, *IEEE International Conference on Image Processing*, Thessaloniki, Greece, October 9, 2001.
- “Evaluation and Extension of SGI Vizserver,” oral presentation, *Visualization of Temporal and Spatial Data for Civilian and Defense Applications III*, SPIE Aerosense, Orlando, FL, April 16, 2001.
- “Wavelet-Based Coding of Three-Dimensional Oceanographic Images Around Land Masses,” poster presentation, *IEEE International Conference on Image Processing*, Vancouver, Canada, September 12, 2000.
- “QccPack: An Open-Source Software Library for Quantization, Compression, and Coding,” oral presentation, *Applications of Digital Image Processing XXII*, SPIE Annual Meeting, San Diego, CA, August 1, 2000.
- “QccPack: An Open-Source Software Library for Quantization, Compression, and Coding,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 29, 2000.
- “Video Coding Using Perceptually Weighted Vector Zerotrees and Adaptive Vector Quantization,” oral presentation, *IEEE International Conference on Image Processing*, Chicago, IL, October 5, 1998.
- “Video Coding Using Vector Zerotrees and Adaptive Vector Quantization,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 31, 1998.
- “Adaptive Vector Quantization Using Generalized Threshold Replenishment,” oral presentation, *Data Compression Conference*, Snowbird, UT, March 27, 1997.
- “Adaptive Vector Quantization—Part I: A Unifying Structure,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 26, 1997.
- “Adaptive Vector Quantization—Part II: Classification and Comparison of Algorithms,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 26, 1997.
- “Adaptive Vector Quantization of Image Sequences Using Generalized Threshold Replenishment,” poster presentation, *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Munich, Germany, April 24, 1997.
- “Optimal Linear Prediction for the Lossless Compression of Volume Data,” poster presentation, *Data Compression Conference*, Snowbird, UT, March 29, 1995.
- “Differential Vector Quantization of Real-Time Video,” oral presentation, *Data Compression Conference*, Snowbird, UT, March 30, 1994.
- “Lossless Compression of Volume Data,” oral presentation, *Symposium on Volume Visualization*, Washington, DC, October 17, 1994.

- “Variable Bit-rate Coding Using Entropy-biased ANN Codebooks,” poster presentation, *NASA Space Communications Symposium*, Cleveland, OH, October 1992.

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## INVITED LECTURES

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- “Low-Rank and Sparse Representations in Signal Processing,” Sichuan University, Chengdu, China, December 17, 2019.
- “Low-Rank and Sparse Representations in Signal Processing,” University of Electronic Science and Technology of China, Chengdu, China, December 16, 2019.
- “Reconstruction and Analysis of Hyperspectral Imagery Using Random Projections,” Beijing University of Chemical Technology, Beijing, China, June 26, 2018.
- “Reconstruction and Analysis of Hyperspectral Imagery Using Random Projections,” University of Electronic Science and Technology of China, Chengdu, China, June 14, 2017.
- “Anomaly Detection, Classification, and Reconstruction of Hyperspectral Imagery With Random Projections,” invited lecture, Northwestern Polytechnic University, Xi’an, China, July 8, 2014.
- “Anomaly Detection, Classification, and Reconstruction of Hyperspectral Imagery With Random Projections,” invited lecture, The Ohio State University, Columbus, OH, October 25, 2013.
- “Random Projections for Dimensionality Reduction of Hyperspectral Data,” invited lecture, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, December 6, 2011.
- “Block Compressed Sensing for Images and Video,” invited lecture, Prairie View A&M University, Prairie View, TX, September 11, 2009.
- “Block Compressed Sensing for Images and Video,” invited lecture, École Nationale Supérieure des Télécommunications–Paris, Paris, France, July 8, 2009.
- “Block Compressed Sensing for Images and Video,” invited lecture, Université de Nantes, Nantes, France, June 16, 2009.
- “Random Projections for Dimensionality Reduction of Hyperspectral Data,” invited lecture, Université de Nantes, Nantes, France, November 6, 2008.
- “Random Projections for Dimensionality Reduction of Hyperspectral Data,” invited lecture, Scientific Computing Research Group, Bagley College of Engineering, Mississippi State University, September 4, 2008.
- “Image and Video Coding Using Complex Dual-Tree Wavelet Transforms,” invited lecture, École Nationale Supérieure des Télécommunications–Paris, Paris, France, February 21, 2008.
- “A Compressed-Sensing Approach to Principal Component Analysis,” invited lecture, École Nationale Supérieure des Télécommunications–Paris, Paris, France, October 12, 2007.
- “A Compressed-Sensing Approach to Principal Component Analysis,” invited lecture, Texas A&M University, September 20, 2007.
- “Analysis of Redundant-Wavelet Multihypothesis for Motion Compensation,” invited lecture, École Nationale Supérieure des Télécommunications–Paris, Paris, France, May 23, 2006.
- “Research Activities,” invited lecture, ECE 1002 Introduction to ECE, Mississippi State University, October 20, 2005.
- “Multihypothesis Motion Compensation in the Redundant Wavelet Domain,” invited lecture, École Nationale Supérieure des Télécommunications–Paris, Paris, France, June 29, 2004.
- “Wavelet Transforms for Vector Fields Using Omnidirectionally Balanced Multiwavelets,” invited lecture, Graduate Student Seminar Series, Department of Electrical & Computer Engineering, Mississippi State University, Starkville, MS, September 27, 2002.
- “Wavelet Transforms for Vector Fields Using Omnidirectionally Balanced Multiwavelets,” invited lecture, Universität Konstanz–Informatik und Informationswissenschaft, Konstanz, Germany, August 30, 2002.
- “Recent Work in Data Compression at MSU ERC,” invited lecture, Institut für Informatik, Universität Leipzig, Leipzig, Germany, October 5, 2000.

- “Codage de Vidéo par Quantification Vectorielle Adaptative,” invited lecture, Laboratoire I3S, Université de Nice-Sophia Antipolis, Sophia Antipolis, France, June 12, 1998. Given in French.
- “Digital Image Processing,” invited lecture, Agricultural and Biological Engineering Graduate Seminar ABE8921, Mississippi State University, February 10, 1998.
- “Adaptive Vector Quantization Using Generalized Threshold Replenishment,” invited lecture, Institut für Informatik, Universität Freiburg, Freiburg, Germany, February 1997.
- “A Survey of Adaptive Vector Quantization,” invited lecture, Institut für Informatik, Universität Freiburg, Freiburg, Germany, February 1997.

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## PROFESSIONAL ACTIVITIES

### Editorships

- Moderator, arXiv eess.IV (Image and Video Processing), 2021 to present
- Editor-in-Chief, *IEEE Signal Processing Letters*, 2017 to 2019
- Senior Area Editor, *IEEE Transactions on Image Processing*, 2015 to 2016
- Associate Editor, *IEEE Transactions on Computational Imaging*, 2014 to 2016
- Associate Editor, *IEEE Transactions on Image Processing*, 2009 to 2015
  - Outstanding Member of the Editorial Board award, 2015
- Associate Editor, *IEEE Transactions on Multimedia*, 2008 to 2011
- Associate Editor, *EURASIP Journal on Image & Video Processing*, 2005 to present
- Associate Editor, *IEEE Signal Processing Letters*, 2005 to 2009
- Guest Editor, special issue on “Wavelets in Source Coding, Communications, and Networks,” *EURASIP Journal on Image & Video Processing*, January 2007.

### Professional Society

- Computational Imaging Technical Committee—IEEE Signal Processing Society
  - Chair—2022 to present
  - Vice Chair—2021
  - Member—2015 to present
- IEEE Signal Processing Society Conference Board
  - Member—2015 to 2017, 2023 to present
  - Executive Subcommittee—2017
- IEEE Signal Processing Society Fellow Evaluation Committee
  - Member—2020 to 2022
- IEEE Signal Processing Society Publications Board
  - Member—2016 to 2019
- IEEE Signal Processing Society Nominations and Appointments Committee
  - Member—2017 to 2018
- Image, Video, & Multidimensional Signal Processing (IVMSP) Technical Committee—IEEE Signal Processing Society
  - Past Chair—2014 to 2015
  - Chair—2012 to 2013
  - Vice Chair—2010 to 2011
  - Member—2007 to 2012
  - Policies & Procedures Subcommittee—2010 to 2015
  - Webmaster—2008 to 2010
  - Awards Subcommittee—2008 to 2010
- Strategic Planning Committee (SPC) of the IEEE Publication Services and Products Board (PSPB)
  - Member—2013

- SigView—the IEEE Signal Processing Society Online Video Library
  - Chief Editor-Elect—2015 to 2016
  - Editor—2013 to 2015

#### **Conference Organization and Program Committees**

- Track Chair—Speech, Image, and Video Processing—Asilomar Conference on Signals, Systems, and Computers, 2021
- General co-Chair—IEEE International Conference on Image Processing, Paris 2014
- Publicity Chair—Data Compression Conference, 2009 to present
- Program Committee—Data Compression Conference, 2005 to present
- Special-Sessions Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2017.
- Track Chair—Speech, Image, and Video Processing—Asilomar Conference on Signals, Systems, and Computers, 2013
- Area Chair—IEEE International Conference on Image Processing, 2016.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2016.
- Area Chair—IEEE International Conference on Image Processing, 2015.
- Area Chair—IEEE International Conference on Image Processing, 2013.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2013.
- Area Chair—IEEE International Conference on Image Processing, 2012.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2012.
- Area Chair—IEEE International Conference on Image Processing, 2011.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2011.
- Technical Program Committee—European Signal Processing Conference, 2011.
- Area Chair—IEEE International Conference on Image Processing, 2010.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2010.
- Area Chair—IEEE International Conference on Image Processing, 2009.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2009.
- Technical Program Committee—European Signal Processing Conference, 2009.
- Area Chair—IEEE International Conference on Image Processing, 2008.
- Area Chair—European Signal Processing Conference, 2008.
- Area Chair—IEEE International Conference on Acoustics, Speech, and Signal Processing, 2008.
- Technical Program Committee—IEEE International Conference on Image Processing, 2007.

#### **Conference Session Chair**

- Computational Imaging XXI, San Francisco, CA, January 2023
- IEEE International Conference on Image Processing, Bordeaux, France, October 2022
- Data Compression Conference, Snowbird, UT, March 2022
- IEEE International Conference on Image Processing, Taipei, Taiwan, September 2019
- Data Compression Conference, Snowbird, UT, March 2019
- IEEE International Conference on Image Processing, Athens, Greece, October 2018
- Data Compression Conference, Snowbird, UT, March 2018
- Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2017.
- Data Compression Conference, Snowbird, UT, April 2017
- IEEE International Conference on Image Processing, Phoenix, AZ, September 2016
- Data Compression Conference, Snowbird, UT, March 2016
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Shanghai, China, March 2016
- IEEE International Conference on Image Processing, Québec, Canada, September 2015
- European Signal Processing Conference, Bucharest, Romania, September 2015
- Data Compression Conference, Snowbird, UT, April 2015

- IEEE International Conference on Acoustics, Speech, and Signal Processing, Florence, Italy, April 2014
- Data Compression Conference, Snowbird, UT, March 2014
- Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, November 2013.
- IEEE International Conference on Image Processing, Melbourne, Australia, September 2013
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Vancouver, Canada, April 2013
- Data Compression Conference, Snowbird, UT, March 2013
- IEEE International Conference on Image Processing, Orlando, FL, October 2012
- European Signal Processing Conference, Bucharest, Romania, August 2012
- Data Compression Conference, Snowbird, UT, April 2012
- IEEE International Conference on Image Processing, Brussels, Belgium, September 2011
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Prague, Czech Republic, May 2011
- Data Compression Conference, Snowbird, UT, March 2011
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Dallas, TX, March 2010
- Data Compression Conference, Snowbird, UT, March 2010
- IEEE International Conference on Image Processing, Cairo, Egypt, November 2009
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Taipei, Taiwan, April 2009
- Data Compression Conference, Snowbird, UT, March 2009
- IEEE International Conference on Image Processing, San Diego, CA, October 2008
- Data Compression Conference, Snowbird, UT, March 2008
- IEEE International Conference on Image Processing, San Antonio, TX, September 2007
- IEEE International Geoscience and Remote Sensing Symposium, Barcelona, Spain, July 2007
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Honolulu, HI, April 2007
- Data Compression Conference, Snowbird, UT, March 2007
- Asilomar Conference on Signals, Systems, and Computers—Special Session on Geospatial Image Processing, Pacific Grove, CA, October 2006
- IEEE International Conference on Image Processing, Atlanta, GA, October 2006
- IEEE International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, May 2006 (2 sessions)
- Data Compression Conference, Snowbird, UT, March 2006
- IEEE International Conference on Image Processing, Singapore, October 2004
- IEEE International Geoscience and Remote Sensing Symposium, Toulouse, France, July 2003
- IEEE International Conference on Image Processing, Rochester, NY, September 2002

#### **Society Memberships**

- Fellow, IEEE
- Member, IEEE Signal Processing Society
- Member, IEEE Information Theory Society
- Member, European Association for Signal Image Processing
- Member, American Society for Engineering Education
- Member, Eta Kappa Nu Electrical and Computer Engineering Honor Society
- Member, Tau Beta Pi Engineering Honor Society
- Member, Phi Kappa Phi Honor Society

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#### **UNIVERSITY SERVICE**

##### **University Committees**

- University Online Instructional Improvement Committee, 2016
- University Committee on Courses & Curricula, representative for College of Engineering, 2013–2014

- Search Committee—Associate Vice President and Dean of the Graduate School, 2012–2013
- Search Committee—Associate Dean of the Graduate School, 2012
- University Library Committee, 2003–2009

#### **College Committees**

- Strategic Hiring Committee, 2015 to 2018
  - Chair, 2016–2017
- College Curriculum Committee, 2005–2014
  - Chair, 2007–2009, 2013–2014

#### **Departmental Committees**

- Promotion and Tenure Committee, 2002–2005, 2007–2010, 2011–2014, 2017–2019, 2021 to present
  - Chair, 2007–2010, 2013–2014, 2017–2019
- Graduate Committee, 2008–2019
  - Chair, 2008–2019
- Undergraduate Committee, 2005–2008
  - Chair, 2006–2007
- Department Head Search Committee, 2002–2003
- Computer Planning Committee, 1997–2005
  - Chair, 1999–2001
- Signal Processing and Machine Learning Emphasis Area Committee, 2018 to present
  - Chair, 2018–2019
- Signal Processing Emphasis Area Committee, 1999 to 2018
  - Chair, 2015 to 2018
- Circuits Core Committee, 2001–2005
- Communications Emphasis Area Committee, 1997–1999
  - Chair, 1997–1999

#### **Other**

- ECE Department MSU Library Representative, 1999 to present

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## **STUDENTS ADVISED**

#### **Doctoral Dissertations Directed**

##### *Completed:*

- Vineetha Menon, Electrical and Computer Engineering, December 2016. Dissertation: “Dimensionality Reduction of Hyperspectral Imagery Using Random Projections.”
- Zhen Ye (Northwestern Polytechnical University, Xi’an, China), 2015. Co-directed with Mingyi He.
- Nam H. Ly, Electrical and Computer Engineering, December 2013. Dissertation: “Dimension Reduction for Hyperspectral Imagery.”
- Sungkwang Mun, Computer Engineering, December 2012. Dissertation: “Block Compressed Sensing of Images and Video.”
- Eric W. Tramel, Computer Engineering, December 2012. Dissertation: “Distance-Weighted Regularization for Compressed-Sensing Signal Recovery and Supervised Hyperspectral Classification.”
- Wei Li, Electrical Engineering, May 2012. Dissertation: “Pattern Classification and Reconstruction for Hyperspectral Imagery.” Co-directed with S. Prasad.
- Jing Zhang (Xi’an Jiaotong University, Xi’an, China), December 2009. Dissertation: “Research on 3D Hyperspectral Imagery Compression.” Co-directed with G. Liu.
- Maria Trocan (École Nationale Supérieure des Télécommunications, Paris, France), October 2007. Dissertation: “Hierarchical Subband Representations: Application to Video.” Co-directed with B. Pesquet-Popescu.
- Yonghui Wang, Computer Engineering, December 2003. Dissertation: “Fully Scalable Video Coding Using Redundant-Wavelet Multihypothesis and Motion-Compensated Temporal Filtering.”

- Suxia Cui, Computer Engineering, August 2003. Dissertation: “Motion Estimation and Compensation in the Redundant Wavelet Domain.”
- Li Hua, Electrical Engineering, August 2003. Dissertation: “Vector Wavelet Transforms for the Coding of Static and Time-Varying Vector Fields.”

#### **Masters Theses Directed**

##### *Completed:*

- Chen Chen, Electrical Engineering, May 2012. Masters Thesis: “Multihypothesis Prediction for Compressed Sensing and Super-Resolution of Images.”
- Kristen M. Bradley, Electrical Engineering, December 2007. Masters Thesis: “Watermarking with Wavelet Transforms.”
- Joseph B. Boettcher, Computer Engineering, December 2007. Masters Thesis: “Video Coding with 3D Wavelet Transforms.”
- Justin T. Rucker, Electrical Engineering, December 2005. Masters Thesis: “3D Wavelet-Based Algorithms for the Compression of Geoscience Data.”
- Madhavi Marka, Electrical Engineering, August 2002. Masters Thesis: “Object-Based Unequal Error Protection.”

#### **Non-thesis Masters Students Supervised**

##### *Completed:*

- Christopher E. Stefanovic, Electrical & Computer Engineering, October 2019
- Amit Das, Electrical & Computer Engineering, October 2019
- Mark Ewing, Electrical & Computer Engineering, February 2018
- Samuel N. Fischbach, March 2015
- Tong Chu, Computer Engineering, December 2000. Masters Project report: “SGI Vizserver Extension.”

#### **Doctoral Committee Participation**, committee member

- Chiranjibi Shah, December 2021
- Long Tian, March 2019
- Yan Xu, March 2019
- Muhammad Aminul Islam, May 2018
- Nicolas Sockeel, March 2018
- Sheng Cai, December 2016
- Sergio Salinas Monroy, May 2015
- Alex Sumarsono, December 2015
- Ming Li, May 2014
- Arun Thapa, May 2014
- Ben Ma, October 2012.
- Sean Ziegeler, August 2012.
- Wei Zhu, March 2011.
- Tao Ma, November 2010.
- Sundararajan Srinivasan, November 2010.
- Anish Chand Turlapaty, March 2010.
- Weiwei Hu, March 2010.
- Naveen Parihar, October 2009.
- Nareenart Raksuntorn, April 2009.
- Shangshu Cai, December 2008.
- Saurabh Prasad, October 2008.
- John E. Ball, May 2007.
- Nishant Chandra, May 2007.
- Xingjun Zhang, August 2005.
- Pushkar S. Pradhan, August 2005.

- Yanlin Guan, November 2002.
- Jiang Li, October 2002.

#### **Doctoral Committee Participation**, external review

- External reviewer of dissertation of Marc Thiesse, Université de Nice–Sophia Antipolis, Sophia Antipolis, France, April 2012. Dissertation: “Codage Vidéo Flexible par Association d’un Décodeur Intelligent et d’un Encodeur Basé Optimisation Débit-Distorsion.”
- External reviewer of dissertation of Vijayaraghavan Thirumalai, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, December 2011. Dissertation: “Distributed Compressed Representation of Correlated Image Sets.”
- External reviewer of dissertation of Mounir Kaaniche, École National Supérieure des Télécommunications, Paris, France, December 2010. Dissertation: “Schémas de Lifting Vectoriels Adaptatifs et Applications à la Compression d’Images Stéréoscopiques.”
- External reviewer of dissertation of Claudia Teodora Petrișor, École National Supérieure des Télécommunications, Paris, France, September 2009. Dissertation: “Décompositions en Ondelettes Redondantes pour le Codage par Descriptions Multiples des Images Fixes et des Séquences Vidéo.”
- External reviewer of dissertation of Guillaume Jeannic, École Polytechnique de l’Université de Nantes, Nantes, France, November 2008. Dissertation: “Représentation Structurale d’Images par Transformées Locales en Ondelettes Orientées et Codage.”
- External reviewer of dissertation of Antoine Robert, École National Supérieure des Télécommunications, Paris, France, February 2008. Dissertation: “Transformées Orientées par Blocs pour le Codage Vidéo Hybride.”
- External reviewer of dissertation of Emmanuel Christophe, École Nationale Supérieure d’Électrotechnique, d’Électronique, d’Informatique, d’Hydraulique et des Télécommunications, Toulouse, France, October 2006. Dissertation: “Compression des Images Hyperspectrales et son Impact sur la Qualité des Données.”
- External reviewer of dissertation of Tong Gan, Nanyang Technological University, Singapore, June 2004. Dissertation: “Scalable Video Transmission Across Reservation-Based Networks and Best-Effort Networks.”
- External reviewer of dissertation and defense of Marcel Wagner, Institut für Informatik, Universität Freiburg, Freiburg, Germany, October 2000. Dissertation: “Video Coding with Adaptive Vector Quantization and Rate Distortion Optimization.”

#### **Masters Committee Participation**, external review

- External reviewer of thesis of Mow Song Ng, Multimedia University, Cyberjaya, Malaysia, January 2006. Thesis: “Scalable Subband Coding of Images.”
- External reviewer of thesis of Emna Aissa, École Nationale Supérieure des Télécommunications, Paris, France, June 2004.

#### **Undergraduate Advising**

- Senior Design Team, Alex Rogers, Christopher Trieu, Nathan Bond, “CareVision,” Fall 2021 – Spring 2022.
- Zoe Fowler, undergraduate research, “Multiresolution DECOLOR for Camouflaged Moving Foreground Detection Using a Redundant Wavelet Transform,” Fall 2019 – Spring 2021.
- Senior Design Team, Zoe Fowler, Chris Slagell, Ryan Hopson, Muammar Saeed, Holiday Garrison “Gait Analysis System,” Fall 2020 – Spring 2021.
- Senior Design Team, Kristen Bray, Taylor Johnson, Josh Gordon, Rushie Moore, Griffen Turner, “Railcar CFAD,” Spring 2019 – Fall 2019.
- Senior Design Team, Blake Nelson, Tim Brown, Caleb Hamill, Kelvin Smith, “Wood Resistance Meter,” Fall 2016 – Spring 2017.
- Senior Design Team, Alyssa Lomas, Darrell Cleveland, Ryan Smith, David Patterson, “RADD Baby Monitor,” Fall 2012 – Spring 2013.
- Ryan Irwin, 2006
- Makesha Busby, 2006
- Justin T. Rucker, undergraduate research, “Compression of Hyperspectral Imagery,” August 2002 – December 2003.

- Senior Design Team, Kristen Bradley, Justin Rucker, Mandy Baker, Jason Wilson, Philip Conley, Joe Boettcher, “SECON Hardware Competition,” Summer 2002, Fall 2002, & Spring 2003.
- Senior Design Team, Kendall Ladner, Ben Hogan, Jeffrey Jue, Brad Patano, “Radio-Controlled Duck Decoy,” Fall 2001 & Spring 2002.
- Senior Design Team, Ian Smith, April Martin, Paul Easterling, and Daniel Ling, “Wireless Modem,” Spring 2000 & Fall 2000.
- Senior Design Team, Leslie Regala and Mark McKinney, “Auto Dialing System,” Fall 1999 & Spring 2000.
- Senior Design, Andrew Tomilson, “ADC of LP record,” Fall 1999.
- Senior Design, Jason Bridges, “Audible Calling Line Identification Systems,” Fall 1998.

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## COURSE COORDINATION

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**Course Sequence Coordinator**—Circuits & Electronics Sequence, 2005–2009

- ECE3413—Introduction to Electronic Circuits
- ECE3424—Intermediate Electronic Circuits
- ECE3434—Advanced Electronic Circuits
- ECE3163—Signals and Systems

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## COURSES TAUGHT

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### Fall 2021

- ECE3413—Introduction to Electronic Circuits, 100 students, undergraduate
- ECE8483—Image and Video Coding, 2 students, graduate

### Spring 2021

- ECE3443—Signals and Systems, 63 students, undergraduate
- ECE8813—Information Theory, 7 students, graduate

### Fall 2020

- ECE8453—Introduction to Wavelets, 14 students, graduate

### Spring 2019

- ECE8813—Information Theory, 13 students, graduate

### Fall 2018

- ECE3443—Signals and Systems, 43 students, undergraduate

### Spring 2018

- ECE3443—Signals and Systems, 41 students, undergraduate

### Fall 2017

- ECE8453—Introduction to Wavelets, 9 students, graduate

### Spring 2017

- ECE8813—Information Theory, 7 students, graduate

### Fall 2016

- ECE8483—Image & Video Coding, 4 students, graduate

### Spring 2016

- ECE3443—Signals and Systems, 35 students, undergraduate

### Fall 2015

- ECE8453—Introduction to Wavelets, 9 students, graduate

### Spring 2015

- ECE8813—Information Theory, 8 students, graduate

### Spring 2014

- ECE3443—Signals and Systems, 39 students, undergraduate

**Fall 2013**

- ECE8453—Introduction to Wavelets, 10 students, graduate

**Spring 2013**

- ECE8813—Information Theory, 4 students, graduate

**Fall 2012**

- ECE3413—Introduction to Electronic Circuits, 30 students, undergraduate

**Spring 2012**

- ECE3443—Signals and Systems, 24 students, undergraduate

**Fall 2011**

- ECE8453—Introduction to Wavelets, 5 students, graduate

**Spring 2011**

- ECE8813—Information Theory, 9 students, graduate

**Fall 2010**

- ECE3443—Signals and Systems, 18 students, undergraduate

**Spring 2010**

- ECE8483—Image & Video Coding, 5 students, graduate

**Fall 2009**

- ECE8453—Introduction to Wavelets 17 students, graduate

**Spring 2009**

- ECE8813—Information Theory, 14 students, graduate

**Fall 2008**

- ECE3413—Introduction to Electronic Circuits, 42 students, undergraduate

**Spring 2008**

- ECE8483—Image & Video Coding, 9 students, graduate
- ECE3163—Signals and Systems, 15 students, undergraduate

**Fall 2007**

- ECE8453—Introduction to Wavelets, 21 students, graduate

**Spring 2007**

- ECE8813—Information Theory, 6 students, graduate

**Fall 2006**

- ECE4990/6990—Multimedia Signal Processing, 17 students, undergraduate/graduate
- ECE3163—Signals and Systems, 21 students, undergraduate

**Spring 2006**

- ECE3163—Signals and Systems, 28 students, undergraduate

**Fall 2005**

- ECE3163—Signals and Systems, 24 students, undergraduate
- ECE8453—Introduction to Wavelets, 8 students, graduate

**Spring 2005**

- ECE8990—Information Theory, 18 students, graduate
- ECE8483—Image & Video Coding, 6 students, graduate

**Spring 2004**

- ECE3163—Signals and Systems, 28 students, undergraduate

**Fall 2003**

- ECE8453—Introduction to Wavelets, 23 students, graduate

**Spring 2003**

- ECE8990—Information Theory, 13 students, graduate

**Fall 2002**

- ECE8483—Image & Video Coding, 11 students, graduate

**Spring 2002**

- ECE3163—Signals and Systems, 55 students, undergraduate

**Fall 2001**

- ECE8453—Introduction to Wavelets, 15 students, graduate

**Spring 2001**

- ECE8990—Information Theory, 15 students, graduate

**Fall 2000**

- ECE8990—Image & Video Coding, 10 students, graduate

**Spring 2000**

- CPE8113—Digital Image Processing, 25 students, graduate

**Fall 1999**

- EE8990—Introduction to Wavelets, 21 students, graduate
- EE4813/6813—Communications Theory, 23 students, undergraduate/graduate

**Spring 1999**

- CPE8113—Digital Image Processing, 14 students, graduate
- EE3153—Circuit Analysis II, 24 students, undergraduate

**Fall 1998**

- EE4990/6990—Introduction to Wavelets, 16 students, graduate/undergraduate

**Spring 1998**

- CPE8113—Digital Image Processing, 11 students, graduate
- EE3123—Networks II, 22 students, undergraduate

**Fall 1997**

- EE4816/6813—Communications Theory, 28 students, undergraduate/graduate

**Spring 1996**

- EE305—Circuit Analysis, Design, and Simulation III, 60 students, undergraduate (Ohio State University)

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**HONORS AND AWARDS**


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- William L. Giles Distinguished Professor, Mississippi State University, 2020
- Outstanding Paper Award, Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, 2019
- Southeastern Conference Faculty Achievement Award, Mississippi State University, 2018
- IEEE Fellow, 2017, for contributions to lossy source coding and dimensionality reduction of multidimensional data
- Outstanding Member of the Editorial Board, *IEEE Transactions on Image Processing*, 2015.
- Top 10% Award, “Hyperspectral Classification Using a Composite Kernel Driven by Nearest-Neighbor Spatial Features,” *IEEE International Conference on Image Processing*, Québec City, Canada, September 2015.
- Top 10% Award, “Compressive Data Fusion for Multi-Sensor Image Analysis,” *IEEE International Conference on Image Processing*, Paris, France, October 2014.
- Top 10% Award, “Compressive Pushbroom and Whiskbroom Sensing for Hyperspectral Remote-Sensing Imaging,” *IEEE International Conference on Image Processing*, Paris, France, October 2014.
- Best Paper Award, “Dimensionality Reduction of Hyperspectral Imagery with Sparse and Collaborative Graphs,” *Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing*, Lausanne, Switzerland, June 2014.
- Bagley College of Engineering Faculty Research Award, 2014

- Bagley College of Engineering Career Achievement Award, 2014
- Billie J. Ball Endowed Professorship in Engineering, 2011 to present
- 2010 Mississippi State University StatePride Faculty Award
- 2005 Bagley College of Engineering Outstanding Research Paper, Mississippi State University
- 2003 Bagley College of Engineering Outstanding Research Paper, Mississippi State University
- Hearin Distinguished Professor, Bagley College of Engineering, Mississippi State University, 2001–2002
- 1999 Bagley College of Engineering Outstanding Research Paper, Mississippi State University
- Outstanding Research Paper, Department of Electrical & Computer Engineering, Mississippi State University, 1998, 2001, & 2002
- Recipient, International Research Fellow Award from the National Science Foundation, one year of postdoctoral research, 1997
- Châteaubriand Fellowship from the French Government for postdoctoral research, 1997 (declined)
- Recipient, Ph.D. Scholarship from the AT&T Foundation, 4 years of graduate support, 1993
- Recipient, NASA Space Grant/OAI Graduate Fellowship from the Ohio Space Grant Consortium, 2 years of graduate support, 1991
- Recipient, Ohio State University Fellowship for graduate study, 2 years of graduate support, 1990
- Graduated *summa cum laude*, The Ohio State University, rank in 1990 graduating class: 1 out of 1173
- Ohio State University Top Ten Outstanding Senior Award, the most selective award for seniors, 1990
- Marshall Scholarship finalist — invited to Chicago for an interview before the Midwest Region Marshall Scholarship Committee, 1989
- Buckeye Student Leadership Award, The Ohio State University, 1989
- Sphinx Senior Class Honorary, The Ohio State University, 1988
- Bucket and Dipper Junior Class Honorary, The Ohio State University, 1987
- Romophos Sophomore Class Honorary, The Ohio State University, 1986
- Alpha Lambda Delta/Phi Eta Sigma Freshman Class Honoraries, The Ohio State University, 1986
- Ohio Academic Scholarship from the Ohio Board of Regents, 4 yr. undergraduate scholarship, 1985

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## LANGUAGES

- Native language – English
- Fluent speaking, reading, and writing in French