Javier Garcia-Frias

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EDUCATION

Doctor of Philosophy **Electrical Engineering**	University of California, Los Angeles, July 1999 Thesis title: Combining Hidden Markov Models and Turbo Codes Advisor: John D. Villasenor Major field: Communications Minor fields: Signal Processing and Mathematics
Combined B.S. and M.S. **Mathematics**	Facultad de Ciencias Matematicas Universidad Nacional de Educación a Distancia, Madrid, September 1995
Cursos doctorado completados	Escuela Técnica Superior de Ingenieros de Telecomunicación Universidad Politécnica, Madrid, September 1994
Ingeniero Telecomunicacion	Escuela Técnica Superior de Ingenieros de Telecomunicación Universidad Politécnica, Madrid, October 1992

PROFESSIONAL EXPERIENCE

Professor	Department of Electrical and Computer Engineering University of Delaware September 2008-Present Joint appointment at the Department of Mathematical Sciences (September 2014-2016)
Associate Professor	Department of Electrical and Computer Engineering University of Delaware September 2003-August 2008
Assistant Professor	Department of Electrical and Computer Engineering University of Delaware September 1999-August 2003

Research Assistant	Electrical Engineering Department University of California, Los Angeles August 1996-July 1999
Becario de Investigacion	Telefónica Investigación y Desarrollo **(**R&D laboratory of the Spanish phone company) June 1994-July 1996
Becario F.P.U.	Escuela Técnica Superior de Ingenieros de Telecomunicación Universidad Politécnica Madrid January 1993-May 1994
Becario de Investigacion	Telefónica Investigación y Desarrollo (R&D laboratory of the Spanish phone company) May 1992-December 1992

AWARDS AND HONORS

- IEEE Senior member, February 2008
- Competitive Award from "Universidad de Alcala", Madrid, to spend a sabbatical leave in Alcala, Madrid, Spain (June 2007-July 2007)
- Competitive Award from the Spanish government, given to foreign faculty to spend a sabbatical leave in Spain (October 2006-May 2007)
- 15th most downloaded article during the period January 2006-March 2006 in "Computational Statistics and Data Analysis" journal
- Listed in Who's Who in American Education (7^{th} edition, 2006-2007)
- Listed in Who's Who in Science and Engineering (8^{th} and 9^{th} edition, 2005-2007)
- Outstanding Junior Faculty of Engineering, University of Delaware, September 2004-August 2005
- Listed in Who's Who in America (58^{th} edition, 2004)
- Listed in Who's Who in America (57^{th} edition, 2003)
- Dean's congratulatory letter for ELEG 811-010 teaching, Spring 2003
- 2002 Best Poster Award in ISMB (given to the best 10 out of 500 posters)
- 2002 Dean's Merit Increase, College of Engineering, University of Delaware
- 2001 Presidential Early Career Award for Scientists and Engineers (PECASE): Given annually by the White House to 60 young scientists and engineers
- 2001 NSF CAREER award

- 2001 Dean's Merit Increase, College of Engineering, University of Delaware
- Dean's congratulatory letter for ELEG 867-012 teaching, Spring 2001
- Dean's congratulatory letter for ELEG 867-012 teaching, Spring 2000
- Electrical Engineering Department Fellowship, UCLA, 1996
- Spanish government fellowship (F.P.U.) to pursue Ph.D. studies in Electrical Engineering, 1993
- "Premio Nacional de Terminación de Estudios Universitarios 1992": National award given by the Spanish government to the top three best students in the country finishing their M.S. studies in E.E. (six year program) in 1992
- Highest Honors in the Electrical Engineering M.S. Thesis (October 1992)
- "Premio Extraordinario de Bachillerato 1985": State award given to the top best four High School Students in the state finishing in 1985

PROFESSIONAL ACTIVITIES

Editor for international journals

- IEEE Transactions on Wireless Communications (2003-2007)
- IEEE Transactions on Signal Processing (2004-2006)
- EURASIP Journal on Bioinformatics and Systems Biology (2005-2014)
- Signal Processing, Guest editor special issue "Theory and Applications of Distributed Source Coding for Signal Processing" (November 2006)
- IEEE Signal Processing Magazine, Guest editor special issue "Signal Processing for Multiterminal Communication Systems" (September 2007)
- EURASIP Journal on Bioinformatics and Systems Biology, Guest editor special issue "Applications of Signal Processing Techniques to Bioinformatics and Systems Biology" (2009)

Member of technical committees and advisory boards

- External Advisory Committee for the STC NSF Center for Science of Information (2010-2016)
- Signal Processing for Communications Technical Committee. IEEE Signal Processing Society (2004-2006)

Plenary Speaker

- 4th EURASIP-IEEE Spanish Workshop on Signal Processing, Information Theory and Communications, July 2016
- XXI Simposio Brasileiro de Telecomunicacoes, October 2011

Organizer of special sessions

- New Directions in Coding, 2019 IEEE Conference on Information Sciences and Systems (CISS)
- Distributed Source Coding (with S. Pradham), 2007 IEEE Information Theory Workshop (ITW)
- Distributed Source and Joint Source-Channel Coding (with Z. Xiong), 2005 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Applications of Turbo-Like Codes, 2005 IEEE International Worshop on Signal Processing Advances in Wireless Communications (SPAWC)

Technical reviewer for journals and conferences

- IEEE journals:
    - IEEE Transactions on Communications
    - IEEE Transactions on Information Theory
    - IEEE Transactions on Wireless Communications
    - IEEE Journal on Selected Areas in Communications
    - IEEE Transactions on Vehicular Technology
    - IEEE Transactions on Signal Processing
    - IEEE Transactions on Image Processing
    - IEEE Communications Letters
    - IEEE Signal Processing Letters
    - IEEE Signal Processing Magazine
    - IEEE Aerospace & Electronics Systems Magazine
- *Journal of Communications and Networks*
- *EURASIP Journal on Applied Signal Processing*
- *EURASIP Journal on Wireless Communications and Networking*
- *European Transactions on Telecommunications*
- *Electronics Letters*
- *Signal Processing*
- *Signal Processing: Image Communication*
- *Bioinformatics*
- *Computers and Chemical Engineering*
- *Computers in Biology and Medicine*
- *Journal of Computing in Civil Engineering*
- *ETRI Journal*

- Many international conferences

Panel reviewer for competitive proposals

- 2015 NSF Engineering Research Center Program: Electronics I Panel
- 2014 NSF Division of Computing and Communications Foundations
- 2013 NSF Division of Computing and Communications Foundations
- 2012 NSF Division of Computing and Communications Foundations
- 2010 NSF. Division of Electrical, Communications and Cyber Systems
- 2009 NSF. Division of Electrical, Communications and Cyber Systems
- 2007 NSF CAREER proposals. Division of Electrical, Communications and Cyber Systems
- 2004 NSF ITR Signal Processing
- 2003 NSF Sensor Networks. Division of advanced networking and infrastructure research
- 2003 NSF Course, Curriculum, and Laboratory Improvement Program. Division of undergraduate education
- 2002 NSF CAREER proposals. Division of communications research

External reviewer for competitive proposals

- External reviewer for the Research Grants Council of Hong Kong, 2017
- Reviewer for ORAU Powe internal papers, University of Delaware, 2016
- External reviewer for the Natural Sciences and Engineering Research Council of Canada (2013, 2015, and 2016 Discovery Grant proposal)
- External reviewer for the Spanish Agencia Nacional de Evaluación y Prospectiva, A.N.E.P. (2010 R&D National Plan).
- Out-of-state expert reviewer, 2003 and 2004 Research Competitiveness Subprogram of the Research and Development Program of the Lousiana Board of Regents (governing/coordinating body for higher education in the state)

Member in conference committees

- Co-Chair of the MIMO Systems Symposium of the 2008 International Wireless Communications and Mobile Computing Conference (IWCMCC)
- Co-Chair of the MIMO Systems Symposium of the 2007 ACM International Wireless Communications and Mobile Computing Conference (IWCMCC)
- Technical program committee member, 2020 Green Communications Systems and Networks Symposium of IEEE GlobeCom

- Technical program committee member, 2020 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2020 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2020 IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2020 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2020 Cognitive Radio and Networks Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2020 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, Track 1 of 2020 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
- Technical program committee member, 2019 Waveforms and Signal Processing of MILCOM
- Technical program committee member, 2019 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2019 IEEE Global Conference on Signal and Information Processing (GlobalSIP)
- Technical program committee member, 2019 IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, Track 1 of 2019 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
- Technical program committee member, 2019 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2019 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2019 Cognitive Radio and Networks Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2019 Green Communications Systems and Networks Symposium of IEEE GlobeCom
- Technical program committee member, 2019 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2019 International Conference on Telecommunications (ICT)

- Technical program committee member, 2018 Cognitive Radio and Networks Symposium of IEEE GlobeCom
- Technical program committee member, 2018 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2018 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2018 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2018 Cognitive Radio and Networks Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2018 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2018 International Conference on Telecommunications (ICT)
- Technical program committee member, 2018 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
- Technical program committee member, 2018 Waveforms and Signal Processing of MILCOM
- Technical program committee member, 2017 Cognitive Radio and Networks Symposium of IEEE GlobeCom
- Technical program committee member, 2017 Waveforms and Signal Processing of MILCOM
- Technical program committee member, 2017 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2017 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2017 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2017 Cognitive Radio and Networks Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2017 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2016 Waveforms and Signal Processing of MILCOM
- Technical program committee member, 2016 Wireless Communications Symposium of IEEE GlobeCom
- Technical program committee member, 2016 Cognitive Radio and Networks Symposium of IEEE GlobeCom

- Technical program committee member, 2016 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2016 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2016 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2016 IEEE Wireless Communications & Networking Conference (WCNC), Track 1 – PHY and Fundamentals
- Technical program committee member, 2016 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2015 Wireless Communication Symposium of IEEE Globecom
- Technical program committee member, 2015 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2015 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2015 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2015 IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2014 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2014 Wireless Communication Symposium of IEEE Globecom
- Technical program committee member, 2014 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2014 Communication theory, signal processing, information theory, antennas and propagation track of ISWCS
- Technical program committee member, 2013 IEEE GlobeCom
- Technical program committee member, 2013 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2013 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2013 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2013 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2012 Signal Processing for Communications Symposium of IEEE GlobeCom

- Technical program committee member, 2012 IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2012 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2012 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2012 Signal Processing for Communications Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2012 Wireless Communication Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2012 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2011 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2011 Physical Symposium of IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2011 Workshop On Cognitive & Cooperative Networks of IEEE Infocom
- Technical program committee member, 2011 Signal Processing Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2011 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)
- Technical program committee member, 2011 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2011 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2010 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2010 Physical Symposium of IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2010 MAC Symposium of IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2010 Communication Theory Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2010 Signal Processing Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2010 Wireless Communications Symposium of IEEE International Conference on Communications (ICC)

- Technical program committee member, 2010 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2010 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2010 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2009 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2009 Communication Theory Symposium of IEEE GlobeCom
- Technical program committee member, 2009 Multiple Access Symposium of IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2009 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2009 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2009 Communication Theory Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2008 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2008 Wireless Communications Symposium of IEEE GlobeCom
- Technical program committee member, 2008 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2008 Multiple Access Symposium of IEEE Wireless Communications & Networking Conference (WCNC)
- Technical program committee member, 2008 Communication and Information Theory Track of IEEE ICCCN
- Technical program committee member, 2008 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2008 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2008 Communication Theory Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2008 Signal Processing Symposium of IEEE International Conference on Communications (ICC)
- Technical program committee member, 2007 IEEE Information Theory Workshop (ITW)

- Technical program committee member, 2007 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2007 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)
- Technical program committee member, 2007 Communication Theory Symposium of IEEE GlobeCom
- Technical program committee member, 2007 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2007 European Signal Processing Conference (EUSIPCO)
- Technical program committee member, 2006 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2006 Radio Access Symposium of IEEE Vehicular Technology Conference (VTC)
- Technical program committee member, 2006 Communication Theory Symposium of IEEE GlobeCom
- Technical program committee member, 2006 European Signal Processing Conference (EUSIPCO)
- Organizing committee member, 2005 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2005 IEEE Conference on Acoustics and Signal Processing (ICASSP)
- Technical program committee member, 2005 Signal Processing Symposium of Wirelescom
- Technical program committee member, 2005 Signal Processing Symposium of IEEE GlobeCom
- Technical program committee member, 2004 IEEE GlobeCom
- Technical program committee member, 2004 Communication Theory Symposium of IEEE GlobeCom
- Technical program committee member, 2003 SPIE ITCom Conference "Internet Quality of Service"
- Technical program committee member, 2003 Communication Theory Symposium of IEEE GlobeCom
- Technical program committee member, 2003 Symposium of the Collaborative Technology Alliance for Communications and Networks (U.S. Army Research Laboratory)
- Technical program committee member, 2001 IEEE Workshop on Nonlinear Signal and Image Processing (NSIP)

BOOK CHAPTERS AND THESES

B1. Y. Zeng, J. García-Frías, and A. Marsh, "Organization of Genes and Genome Domains", Genomics and Genetics: From Molecular Details to Analysis and Techniques, Wiley-VCH, Vol. 2, pp. 229-268, December 2006. (reprint of B2 requested by the publisher for selected articles in the Encyclopedia of Molecular Cell Biology and Molecular Medicine).

B2. Y. Zeng, J. García-Frías, and A. Marsh, "Gene Distribution in the Human Genome", 2nd Edition of the Meyers R. A. (Ed.): Encyclopedia of Molecular Cell Biology and Molecular Medicine, Wiley-VCH, pp. 53-92, November 2003.

B3. J. García-Frías, "Combining Hidden Markov Models and Turbo Codes", Ph. D. Thesis, University of California, Los Angeles, July 1999.

B4. J. García-Frías, "Reduccion de Ruido Mediante una Red Neuronal, Tipo Perceptron Multicapa, Aplicada en el Dominio Cepstral", M.S. Thesis, Universidad Politecnica de Madrid, Madrid, October 1992.

JOURNAL PUBLICATIONS

J1. X. Ma, Y. Pan, S. Zhang, J. García-Frías, and G. R. Arce, "An Informational Lithography Approach Based on Source and Mask Optimization," *IEEE Transactions on Computational Imaging*, vol. 7, pp. 32-42, 2021, doi: 10.1109/TCI.2020.3048271, January 2021.

J2. I. Granada, P. M. Crespo, and J. García-Frías, "Rate Compatible Modulation for Non-Orthogonal Multiple Access", *IEEE Access*, vol. 8, pp. 224246-224259, 2020, doi: 10.1109/ACCESS.2020.3043529.

J3. J. Etxezarreta Martinez, P. Fuentes, P. M. Crespo, and J. García-Frías, "Approximating Decoherence Processes for the Design and Simulation of Quantum Error Correcting Codes on Classical Computers", *IEEE Access*, vol. 8, pp. 172623-172643, 2020, doi: 10.1109/ACCESS.2020.3025619.

J4. P. Fuentes, J. Etxezarreta Martinez, P. M. Crespo, and J. García-Frías, "An Approach for the Construction of Non-Calderbank-Steane-Short LDGM-Based Quantum Codes", *Physical Review A*, Vol. 102, No. 1, pp. 012423-012437; doi: 10.1103/PhysRevA.102.012423, July 2020.

J5. M. Hassanin and J. García-Frías, "Analog Mappings for Non-Linear Channels with Applications to Underwater Channels", *IEEE Transactions on Communications*, pp. 445-455, January 2020.

J6. J. Etxezarreta Martinez, P. M. Crespo, and J. García-Frías, "Depolarizing Channel Mismatch and Estimation Protocols for Quantum Turbo Codes", *Entropy* 2019, *21*, 1133; doi:10.3390/e21121133, November 2019.

J7. J. Etxezarreta Martinez, P. M. Crespo, and J. García-Frías, "On The Performance of Interleavers for Quantum Turbo Codes", *Entropy* 2019, *21*, 633; doi:10.3390/e21070633, June 2019.

J8. I. Granada, P. M. Crespo, and J. García-Frías, "Combining the Burrows-Wheeler Transform and RCM-LDGM Codes for the Tranasmission of Sources with Mewmory at High Spectral Efficiencies", *Entropy* 2019, *21*, 378; doi:10.3390/e21040378, April 2019.

J9. I. Granada, P. M. Crespo, and J. García-Frías, "Asymptotic BER EXIT Chart Analysis for High Rate Codes Based on the Parallel Concatenation of Analog RCM and Digital LDGM Codes", EURASIP Journal on Wireless Communications and Networking 2019**,** 11 (2019). https://doi.org/10.1186/s13638-018-1330-z, January 2019.

J10. M. Badiey and J. García-Frías, "Identification of Fish Species in Estuaries and Rivers Using Recorded Soundscape with Supervised Machine Learning", The Journal of The Acoustical Society of America Express, Vol. 144, No. 3, pp. 1777-1777, September 2018.

J11. Z. Wang, X. Ma, G. R. Arce, and J. García-Frías, "Information Theoretical Approaches in Computational Lithography", Optics Express, Vol. 26, No. 13, pp. 16736-16751, May 2018.

J12. J. A. Becerra, M. J. Madero-Ayora, J. Reina-Tosina, C. Crespo-Cadenas, J. García-Frías, and G. R. Arce, "A Doubly Orthogonal Matching Pursuit Algorithm for Sparse Predistortion of Power Amplifiers", IEEE Microwave and Wireless Components Letters, Vol. 28, No. 8, pp. 726-728-29057, June 2018.

J13. X. Ma, Z. Wang, Y. Li, G. R. Arce, L. Dong, and J. García-Frías, "Fast Optical Proximity Correction Method Based on Nonlinear Compressive Sensing", Optics Express, Vol. 26, No. 11, pp. 14479-14498, May 2018.

J14. X. Ma, H. Zhang, Z. Wang, Y. Li, G. R. Arce, J. García-Frías, and L Zhang, "Information Theoretical Aspects in Coherent Optical Lithography Systems", Optics Express, Vol. 25, No. 23, pp. 29043-29057, November 2017.

J15. P. Suarez-Casal, O. Fresnedo, L. Castedo, and J. García-Frías, "Analog Transmission of Correlated Sources over BC with Distortion Balancing", IEEE Transactions on Communications, pp. 4871-4885, November 2017.

J16. P. Suarez-Casal, O. Fresnedo, L. Castedo, and J. García-Frías, "Analog Transmission of Correlated Sources over Fading SIMO Multiple Access Channels", IEEE Transactions on Communications, pp. 2099-3011, July 2017.

J17. E. A. Hodgson, G. Brante, R. D. Souza, J. García-Frías, and J. L. Rebelatto, "Compensating Spectral Efficiency Loss of Wireless RF Energy Transfer with Analog Joint Source Channel Coding Compression", IEEE Sensors Journal, pp. 6458-6469, August 2016.

J18. O. Fresnedo, F. J. Vazquez-Araujo, L. Castedo, and J. García-Frías, "Analog Joint Source Channel Coding for Multiple Input Multiple Output- Orthogonal Frequency Division Multiplexing Systems", Transactions on Emerging Telecommunications Techniques, pp. 408-419, March 2016.

J19. O. Fresnedo, J. P. Gonzalez-Coma, M. Hassanin, L. Castedo, and J. García-Frías, "Evaluation of Analog Joint Source Channel Systems for Multiple Access Channels", IEEE Transactions on Communications, pp. 2312-2324, June 2015.

J20. S. M. Romero, M. Hassanin, J. Garcia-Frias, and G. R. Arce, "Analog Joint Source Channel Coding for Wireless Optical Communications and Image Transmission," IEEE/OSA Journal of Lightwave Technology, pp. 1654-1662, May 2014.

J21. O. Fresnedo, F. J. Vazquez-Araujo, L. Castedo, and J. García-Frías, "Analog Joint Source Channel Coding over MIMO Channels", EURASIP Journal on Wireless Communications and Networking.2014, 2014:25.

J22. O. Fresnedo, F. J. Vazquez-Araujo, L. Castedo, and J. García-Frías, "Low-Complexity Near-Optimal Decoding for Analog Joint Source Channel Coding Using Space-Filling Curves", IEEE Communications Letters, pp. 745-748, April 2013.

J23. I. Esnaola, A. M. Tulino, and J. García-Frías, "Linear Analog Coding of Correlated Multivariate Gaussian Sources", IEEE Transactions on Communications, pp. 3438-3447, August 2013.

J24. O. Fresnedo, F. J. Vazquez-Araujo, L. Castedo, and J. García-Frías, "Low-Complexity Near-Optimal Decoding for Analog Joint Source Channel Coding Using Space-Filling Curves", IEEE Communications Letters, pp. 745-748, April 2013.

J25. G. Brante, R. D. Souza, and J. García-Frías, "Spatial Diversity Using Analog Joint Source Channel Coding in Wireless Channels", IEEE Transactions on Communications, pp. 301-311, January 2013.

J26. F. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías, "Interleave-Division Multiple Access (IDMA) using Low-Rate Layered LDGM

Codes", Wireless Communications and Mobile Computing, pp. 1276-1283, October 2012.

J27. Y. Hu, J. García-Frías, and M. Lamarca "Analog Joint Source-Channel Coding Using Non-Linear Curves and MMSE Decoding", IEEE Transactions on Communications, pp. 3016-3026, November 2011.

J28. M. Gonzalez-Lopez, F. Vazquez-Araujo, L. Castedo, and J. García-Frías, "SCLDGM Codes for MIMO Systems with Spatial Multiplexing and Space-Time Block Codes", Wireless Communications and Mobile Computing, pp. 1226-1238, September 2011.

J29. J. del Ser, D. Manjarres, P. M. Crespo, S. Gil-Lopez, and J. García-Frías, "Iterative Fusion of Distributed Decisions over the Gaussian Multiple-Access Channel Using Concatenated BCH-LDGM Codes", EURASIP Journal on Wireless Communications and Networking, vol. 2011, Article ID 825327, 12 pages, doi:10.1155/2011/825327, 2011.

J30. F. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías, "Capacity Approaching Low-Rate LDGM Codes", IEEE Transactions on Communications, pp. 352-356, February 2011.

J31. J. del Ser, P. M. Crespo, I. Esnaola, and J. García-Frías, "Joint Source-Channel Coding of Sources with Memory using Turbo Codes and the Burrows-Wheeler Transform", IEEE Transactions on Communications, pp. 1984-1992, July 2010.

J32. M. Hernaez, P. M. Crespo, J. del Ser, and J. García-Frías, Erratum to "Serially-Concatenated LDGM Codes for Correlated Sources over Gaussian Broadcast Channels", IEEE Communications Letters, p. 235, March 2010.

J33. M. Hernaez, P. M. Crespo, J. del Ser, and J. García-Frías, "Serially-Concatenated LDGM Codes for Correlated Sources over Gaussian Broadcast Channels", IEEE Communications Letters, pp. 788-790, October 2009.

J34. H. Lou and J. García-Frías, "Rate-Compatible Low-Density Generator Matrix Codes", IEEE Transactions on Communications, pp. 321-324, March 2008.

J35. J. García-Frías, Y. Zhao, and W. Zhong, "Turbo-Like Codes for Transmission of Correlated Sources over Noisy Channels", IEEE Signal Processing Magazine, pp. 58-66, September 2007.

J36. R. D. Souza and J. García-Frías, "Effect of the Shaping Filter in the Performance of Symbol-Sampled Receivers over Unknown Continuous-Time Channels", Wireless Personal Communications, pp. 619-629, September 2007.

J37. F. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías, "Serially-Concatenated LDGM Codes for MIMO Channels", IEEE Transactions on Wireless Communications, pp. 2860-2871, August 2007.

J38. M. Gonzalez-Lopez, F. Vazquez-Araujo, L. Castedo, and J. García-Frías, "Serially-Concatenated Low-Density Generator Matrix (SCLDGM) Codes for Transmission over AWGN and Rayleigh Fading Channels", IEEE Transactions on Wireless Communications, pp. 2753-2758, August 2007.

J39. H. Lou and J. García-Frías, "Low Density Generator Matrix Codes for Markov and Indoor Channels", IEEE Transactions on Wireless Communications, pp. 1436-1445, April 2007.

J40. R. D. Souza, J. García-Frías, and R. da Rocha Lopes, "Turbo Equalization for Block Fading MIMO Channels Using Random Signal Mapping", Computers and Electrical Engineering, pp. 79-87, March 2007.

J41. S. Fu, H. Lou, X.-G. Xia, and J. García-Frías, "LDGM Coded Space-Time Trellis Codes from Differential Encoding", IEEE Communications Letters, pp. 61-63, January 2007.

J42. J. García-Frías and F. Cabarcas, "Approaching the Slepian-Wolf Boundary Using Practical Channel Codes", Signal Processing, pp. 3096-3101, November 2006.

J43. Y. Zhao, W. Zhong, and J. García-Frías, "Transmission of Correlated Senders over a Rayleigh Fading Multiple Access Channel", Signal Processing, pp. 3150-3159, November 2006.

J44. Y. Zhao and J. García-Frías, "Turbo Compression/Joint Source Channel Coding of Correlated Binary Sources with Hidden Markov Correlation", Signal Processing, pp. 3115-3122, November 2006.

J45. R. D. Souza, J. García-Frías, and A. Haimovich, "Semiblind EM-Based Iterative Receivers for Space-Time Coded Modulation and Quasi-Static Frequency Selective Fading Channels", IEEE Transactions on Vehicular Technology, pp. 1259-1268, July 2006.

J46. F. Cabarcas, R. D. Souza, and J. García-Frías, "Turbo Coding of Strongly Non-Uniform Memoryless Sources with Unequal Energy Allocation and PAM Signaling", IEEE Transactions on Signal Processing, pp. 1942-1946, May 2006.

J47. Y. Zeng and J. García-Frías, "A Novel HMM-Based Clustering Algorithm for the Analysis of Gene Expression Time-Course Data", Computational Statistics and Data Analysis, pp. 2472-2494, May 2006.

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C113. F. Cabarcas and J. García-Frías, "Approaching the Slepian-Wolf Boundary Using Practical Channel Codes", ISIT'04, June 2004, Chicago, Illinois.

C114. H. Lou and J. García-Frías, "Decoding of Linear Codes with Low-Density Generator Matrix over Finite-State Binary Markov Channels", ISIT'04, June 2004, Chicago, Illinois.

C115. F. Cabarcas, R. D. Souza, and J. García-Frías, "Source-Controlled Turbo Coding of Non-Uniform Memoryless Sources Based on Unequal Energy Allocation", ISIT'04, June 2004, Chicago, Illinois.

C116. R. D. Souza and J. García-Frías, "Performance of Symbol-Sampled Receivers over Unknown Continuous-Time Channels", ICC'04, June 2004, Paris, France.

C117. M. Gonzalez, L. Castedo, and J. García-Frías, "BICM for MIMO Systems Using Low-Density Generator Matrix (LDGM) Codes", ICASSP'04, May 2004, Montreal, Canada.

C118. R. D. Souza, J. García-Frías, and A. Haimovich, "Trade-off between Complexity and Performance for Iterative Receivers in MIMO Frequency Selective Quasi-Static Fading Channels", VTC'04 (spring), May 2004, Milan, Italy.

C119. R. D. Souza, J. García-Frías, and A. Haimovich, "Using Hidden Markov Models to Improve Performance of Space-Time Codes in MIMO Flat Fast-Fading Channels", VTC'04 (spring), May 2004, Milan, Italy.

C120. M. Gonzalez, L. Castedo, and J. García-Frías, "Low Density Generator Matrix Codes for Bit Interleaved Coded Modulation", VTC'04 (spring), May 2004, Milan, Italy.

C121. R. D. Souza, J. García-Frías, and A. Haimovich, "A Semi-Blind Receiver for Iterative Data Detection and Decoding of Space-Time Coded Data", WCNC'04, March 2004, Atlanta, Georgia.

C122. Y. Zeng and J. García-Frías, "A Novel HMM-based Cluster Validity Index for Gene Expression Time-Course Data", RECOMB'04, March 2004, San Diego, California.

C123. Y. Zeng and J. García-Frías, "A New HMM-based Clustering Technique for the Analysis of Gene Expression Time-Series Data", RECOMB'04, March 2004, San Diego, California.

C124. H. Lou and J. García-Frías, "Low-Density Generator Matrix Codes for Finite-State Binary Markov Channels", CISS'04, March 2004, Princeton, New Jersey.

C125. R. D. Souza and J. García-Frías, "A Semi-Blind Approach to Combined Detection and Turbo Decoding for Unknown ISI Channels", CISS'04, March 2004, Princeton, New Jersey.

C126. Y. Zeng and J. García-Frías, "A Novel HMM-based Cluster Validity Index for Time-Course Data", CISS'04, March 2004, Princeton, New Jersey.

C127. W. Zhong, Y. Zhao, and J. García-Frías, "Turbo-Like Codes for Distributed Joint Source-Channel Coding of Correlated Senders in Multiple Access Channels", 2003 Asilomar Conference, November 2003, Monterey, California (invited paper).

C128. R. D. Souza and J. García-Frías, "Desempenho de uma Estrutura Semi-Cega de Deteccao e Turbo Decodificacao Conjunta Aplicada a Canais Continuos no Tempo", Simposio Brasileiro de Telecomunicacoes-SBrT'03, October 2003, Rio de Janeiro, Brazil.

C129. R. D. Souza and J. García-Frías, "Receptores Iterativos Semi-Cegos para Modulacao Codificada Espacio-Temporal e Canais Seletivos Quasi-Estaticos", Simposio Brasileiro de Telecomunicacoes-SBrT'03, October 2003, Rio de Janeiro, Brazil.

C130. J. García-Frías, W. Zhong, and Y. Zhao, "Turbo-Like Codes for Source and Joint Source-Channel Coding", International Symposium on Turbo Codes and Related Topics, September 2003, Brest, France (invited paper).

C131. M. Gonzalez and J. García-Frías, "Bit Interleaved Coded Modulation Using Low-Density Generator Matrix Codes", Baiona Workshop on Signal Processing in Communications, September 2003, Baiona, Spain.

C132. Y. Zhao and J. García-Frías, "Turbo Codes for the Mutiple Access Channel with Correlated Senders", Internet Quality of Service Conference, IT-Com, September 2003, Orlando, Florida.

C133. W. Zhong, H. Lou, and J. García-Frías, "LDGM Codes for Joint Source-Channel Coding of Correlated Sources", ICIP'03, September 2003, Barcelona, Spain (invited paper).

C134. Y. Zeng and J. García-Frías, "A Novel Bayesian Network Model for the Study of Genetic Regulatory Networks'', ISMB'03, June 2003, Brisbane, Australia.

C135. R. Craig, L. Liao, J. García-Frías, and A. Marsh, "SeqFreq: A Statistical Repetitive Motif Discovery Tool'', ISMB'03, June 2003, Brisbane, Australia.

C136. T. Tian, J. García-Frías, and W. Zhong, "Density Evolution Analysis of Correlated Sources Compressed with LDPC Codes", ISIT'03, June 2003, Yokohama, Japan.

C137. X. Deng, A. Haimovich, and J. García-Frías, "Decision Directed Iterative Channel Estimation for MIMO Systems", ICC'03, May 2003, Anchorage, Alaska.

C138. J. García-Frías and W. Zhong, "LDPC Codes for Asymmetric Compression of Multi-Terminal Sources with Hidden Markov Correlation", CTA C&N 2003 Symposium, April 2003, College Park, Maryland.

C139. Y. Zhao and J. García-Frías, "Turbo Codes for Symmetric Compression of Correlated Binary Sources with Hidden Markov Correlation", CTA C&N 2003 Symposium, April 2003, College Park, Maryland.

C140. W. Zhu and J. García-Frías, "A New Hidden Markov Model for Very Bursty Channels", VTC'03 (Spring), April 2003, Jeju, Korea.

C141. T. Tian, J. García-Frías, and W. Zhong, "Compression of Correlated Sources Using LDPC Codes", DCC'03, March 2003, Snowbird, Utah.

C142. R. D. Souza and J. García-Frías, "An Iterative Receiver for Joint Data Detection and Decoding for Space-Time Coded Data over Unknown Quasi-Static ISI Channels", CISS'03, March 2003, Baltimore, Maryland.

C143. Z. Baranski, A. M. Haimovich, and J. García-Frías, "EM-Based Iterative Receiver for Space-Time Coded Modulation with Noise Variance Estimation'', Globecom'02, November 2002, Taipei, Taiwan.

C144. J. García-Frías, W. Zhong, and Y. Zhao, "Iterative Decoding Schemes for Source and Channel Coding of Correlated Sources", 2002 Asilomar Conference, November 2002, Monterey, California (invited paper).

C145. Y. Zeng, J. Tang, J. García-Frías, and G. Gao, "An Adaptive Meta-Clustering Approach: Combining the Information from Different Clustering Results'', IEEE Computer Society Bioinformatics Conference, August 2002, Stanford, California.

C146. R. Khan, Y. Zeng, J. García-Frías, and G. Gao, "A Bayesian Modeling Framework for Genetic Networks'', IEEE Computer Society Bioinformatics Conference, August 2002, Stanford, California.

C147. Y. Zeng, J. García-Frías, J. Tang, and G. Gao, "An Adaptive Meta-Clustering Approach for Bioinformatics Applications'', ISMB'02, August 2002, Edmonton, Canada.

C148. Y. Zeng, R. Khan, J. García-Frías, and G. Gao, "Modeling Genetic Regulatory Networks Using Dynamic Bayesian Networks'', ISMB'02, August 2002, Edmonton, Canada.

C149. W. Zhu and J. García-Frías, "Modeling of Bursty Channels Using Stochastic Context-Free Grammars", VTC'02, May 2002, Birmingham, Alabama.

C150. Y. Zhao and J. García-Frías, "Data Compression of Correlated Non-Binary Sources Using Punctured Turbo Codes", DCC'02, April 2002, Snowbird, Utah.

C151. Y. Zhao and J. García-Frías, "Joint Estimation and Data Compression of Correlated Non-Binary Sources Using Punctured Turbo Codes", CISS'02, March 2002, Princeton, New Jersey.

C152. Z. Baranski, A. Haimovich, and J. García-Frías, "Iterative Channel Estimation and Sequence Detection for Space-Time Coded Modulation", CISS'02, March 2002, Princeton, New Jersey.

C153. J. García-Frías and Y. Zhao, "Data Compression of Unknown Single and Correlated Binary Sources", Allerton Conference on Communication, Control and Computing, October 2001, Allerton, Illinois.

C154. F. Cabarcas and J. García-Frías, "Asymmetric Energy Allocation Strategies to Improve Turbo Codes Performance", VTC'01, October 2001, Atlantic City, New Jersey.

C155. J. García-Frías, "Decoding of Low-Density Parity Check Codes over Finite-State Binary Markov Channels", ISIT'01, June 2001, Washington D.C.

C156. J. García-Frías, "Joint Source-Channel Decoding of Correlated Sources over Noisy Channels'', DCC'01, March 2001, Snowbird, Utah.

C157. J. García-Frías, "The Turbo Principle and Its Applications, CISS'01, March 2001, Baltimore, Maryland (invited paper).

C158. J. García-Frías and F. Cabarcas, "Reducing the Error Floor in Turbo Codes by Using Non-Binary Constituent Encoders", VTC'00, September 2000, Boston, Massachusetts.

C159. J García-Frías and F. Cabarcas, "Design of Non-Binary Turbo Codes to Reduce the Error Floor", International Symposium on Turbo Codes and Related Topics, September 2000, Brest, France.

C160. J. García-Frías and J. D. Villasenor, "Simplified Turbo Decoding for Binary Markov Channels", ISIT'00, June 2000, Sorrento, Italy.

C161. J. García-Frías and J. D. Villasenor, "Low Complexity Turbo Decoding for Binary Hidden Markov Channels", VTC'00, May 2000, Tokyo, Japan.

C162. J. García-Frías and J. D. Villasenor, "Turbo Codes for Continuous Markov Channels with Unkown Parameters", Globecom'99, December 1999, Rio de Janeiro, Brazil.

C163. J. García-Frías and J. D. Villasenor, "Simplified Methods for Combining Hidden Markov Models and Turbo Codes", VTC'99, September 1999, Amsterdam, The Netherlands.

C164. J. García-Frías and J. D. Villasenor, "Combined Blind Equalization and Turbo Decoding", ICC'99 (Communications Theory Miniconference), June 1999, Vancouver, Canada.

C165. J. García-Frías and J. D. Villasenor, "Blind Turbo Decoding and Equalization", VTC'99, May 1999, Houston, Texas.

C166. J. García-Frías and J. D. Villasenor, "Exploiting Binary Markov Channels with Unknown Parameters in Turbo Coding", Globecom'98, November 1998, Sydney, Australia.

C167. J. García-Frías and J. D. Villasenor, "Joint Source Channel Coding and Estimation of Hidden Markov Structures", ISIT'98, August 1998, Boston, Massachusetts.

C168. J. García-Frías and J. D. Villasenor, "Turbo Codes for Binary Markov Channels", ICC'98, June 1998, Atlanta, Georgia.

C169. J. García-Frías and J. D. Villasenor, "Turbo Decoding of Hidden Markov Sources with Unknown Parameters", DCC'98, March 1998, Snowbird, Utah.

C170. J. García-Frías and J. D. Villasenor, "Markov Structures in Turbo Decoding", ITW'98, February 1998, San Diego, California.

C171. J. García-Frías, D. Benyamin, and J. D. Villasenor, "Rate-Distortion-Optimal Parameter Choice in a Wavelet Image Communications System", ICIP'97, October 1997, Santa Barbara, California.

C172. J. García-Frías and J. D. Villasenor, "Joint Source-Channel Decoding of Turbo Codes", International Symposium on Turbo Codes and Related Topics, September 1997, Brest, France.

C173. J. García-Frías and J. D. Villasenor, "An Analytical Treatment of Channel-Induced Distortion in Run Length Coded Subbands", DCC'97, March 1997, Snowbird, Utah.

C174. P. Crespo and J. García-Frías, "Copper Subscriber Loop and Advanced MM Services Deployment", ITS conference, June 1996, Sevilla, Spain.

C175. J. García-Frías and P. Crespo, "A New Generative Method for Simulation of Radio Channels Based on Hidden Markov Models", VTC'96, April 1996, Atlanta, Georgia.

C176. P. Crespo and J. García-Frías, "Performance Analysis of QAM-VADSL Systems for FTTC Networks", Hybrid Fiber Coax Systems conference, October 1995, Philadelphia, Pennsylvania.

C177. P. Crespo, A. Ferreras, and J. García-Frías, "Estudio de Prestaciones para Técnicas de Multiplexación Fija y Variable en Aplicaciones de Vídeo-Telefonía", Symp. URSI, September 1995,Valladolid, Spain.

C178. L. Weruaga, J. García-Frías et al, "Mejoras en Cancelación de Ecos Acústicos", Symp. URSI, September 1993,Valencia, Spain.

C179. L. Weruaga, J. García-Frías et al, "Improvements in Subband Acoustic Echo Cancellation", COST 229 WG. 2 Workshop, June 1993, Vigo, Spain.

STANDARDIZATION AND TECHNICAL REPORTS

S1. P. Crespo and J. García-Frías, "Models for Error Profile Generation to be used in the H.223 Error Resilence Tests for Mobile Applications", ITU Telecommunications Standardization Sector, Study Group 15, Working party 15/1, LBC-96-196, July 1996, London, England.

S2. P. Crespo and J. García-Frías, "Generative Models for the Canonical Radio Channels to be used in the Error Resilence Core Experiments", ISO/IEC JTC1/SC29/WG11 MPEG96/M0915, July 1996.

S3. J. García-Frías et al, "Realistic Tests for Error Resilience", ISO/IEC JTC1/SC29/WG11 MPEG96/M0706, January 1996.

S4. J. García-Frías and P. Crespo, "An ARQ Scheme for the Adaptation of H.324 to Mobile Networks", ITU Telecommunications Standardization Sector, Study Group 15, Working party 15/1, LBC-96-025, January 1996, San Jose, California.

S5. P. Crespo and J. García-Frías, "Simulation Results of the H22P/M Multiplexing Scheme", ITU Telecommunications Standardization Sector, Study Group 15, Working party 15/1, LBC-95-275, October 1995, Darmstadt, Germany.

S6. P. Crespo and J. García-Frías, "Multiplexing Protocol for Low Bit Rate Multimedia Mobile Communication", ITU Telecommunications Standardization Sector, Study Group 15, Working party 15/1, LBC-95-276, October 1995, Darmstadt, Germany.

S7. P. Crespo and J. García-Frías, "Proposal for Extension of Recommendation H.223 for Mobile Applications: H22P", ITU Telecommunications Standardization Sector, Sector, Study Group 15, Working party 15/1, LBC-95-217, June 1995, Boston, Massachusetts.

S8. P. Crespo, J. García-Frías et al, "UMTS Channel Coding for the MAVT", Deliverable RACE R2072/TEL/7.2/DR/L/041/a, June 1995.

S9. P. Crespo, J. García-Frías et al, "Feasibility of Enhanced Copper Technologies", Deliverable EURESCOM P-306, March 1995.

RESEARCH GRANTS

G1. FET: CIF: SMALL: GRAPH-BASED QUANTUM ERROR CORRECTING CODES, National Science Foundation, 10/01/20-09/15/23, PI, PI amount: $500,000.

G2. COLLABORATIVE RESEARCH: CIF: SMALL: BEYOND COMPRESSED SENSING: ANALOG CODING FOR COMMUNICATIONS, National Science Foundation, 07/01/20-06/15/23, PI with Co-PI Xiong (TAMU), PI amount: $270,000.

G3. HYBRID ANALOG-DIGITAL SCHEMES FOR JOINT SOURCE-CHANNEL CODING OF DIGITAL SOURCES, National Science Foundation, 06/15/16-05/31/21, PI, PI amount: $403,168.

G4. OVERHEAD-PERFORMANCE TRADEOFFS IN DISTRIBUTED WIRELESS NETWORKS: A UNIFYING FRAMEWORK, FUNDAMENTAL LIMITS, AND PRACTICAL CONTROLLERS, AFOSR, 01/01/12-03/30/15, Co-PI with Cimini (PI), Walsh (Drexel) and Weber (Drexel), Total amount: $1,441,807.

G5. ANOMALY PATTERN ANALYSIS AND PREDICTION USING LOW-RANK AND SPARSE MODELS, Michelin, 04/01/11-03/31/12, PI with Co-PIs Arce and Xia, Total amount: $100,000.

G6. SPECTRALLY ADAPTABLE COMPRESSIVE SENSING IMAGING SYSTEM, Office of Navy Research, 04/23/10-09/22/13, Co-PI with Arce (PI) and Prather, Total amount: $1,456,435.

G7. NON-LINEAR PROCESSING AND CODING FOR COMPRESSIVE SENSING WITH APPLICATIONS IN IMAGING, National Science Foundation, 07/01/09-09/30/13, PI with Co-PI Arce, Total amount: $499,995.

G8. EXPLOITING PRIOR KNOWLEDGE IN COMPRESSED SENSING, National Science Foundation, 09/01/07-08/31/12, PI with Co-PIs Arce and Kiamilev, Total amount: $300,000.

G9. TURBO LIKE CODES FOR DISTRIBUTED SOURCE AND JOINT SOURCE-CHANNEL CODING OF CORRELATED SOURCES, National Science Foundation, 07/15/03-07/14/08, PI, Total amount: $213,094.

G10. ITERATIVE DECODING SCHEMES FOR CHANNELS WITH MEMORY: APPLICATION TO FADING CHANNELS**,** National Science Foundation CAREER/PECASE Award, 02/15/01-02/14/08, PI, Total amount: $299,890.

G11. ITERATIVE DECODING SCHEMES FOR CHANNELS WITH MEMORY: APPLICATION TO FADING CHANNELS**,** National Science Foundation CAREER Award, 02/15/01-02/14/08, PI, Supplementary REU Award: $5,000.

G12. COLLABORATIVE TECHNOLOGY ALLIANCE CONSORTIUM PHASE II, Army through Telcordia Technologies 10/01/01-09/31/06, AI with Co-PIs Arce, Boncelet, Amer and Sethi, Total amount: $6,000,000.

G13. Pre-BISTI, National Institutes of Health, 09/01/02-08/31/05, Co-PI with faculty at TJU and UD, Co-PI with Schwaber (PI), Edwards, Gao, Gonye, Hoek, Kholodenko, Ogunnaike and Rogers, Total amount: $785,477.

G14. A NEW APPROACH TO IDENTIFY SECONDARY STRUCTURAL FEATURES AND ACTIVE SITES IN PROTEINS, National Institutes of Health (COBRE), 09/01/04-06/30/05, AI, Amount: $59,726.

G15. DEVELOPING A COMPREHENSIVE CLASSIFICATION SYSTEM FOR PROTEINS INVOLVED IN CELLULAR TRANSPORT, DuPont Central Research and Development, 01/01/04-05/31/04, 09/01/04-05/31/05, PI, Amount: $18,506.

G16. A META-GENOME LEVEL ANALYSIS OF AN EXTREME MICROBIAL SYMBIOSIS, National Science Foundation, 01/01/02-12/31/04, Co-PI with Cary (PI), Feldman, Gao and Murray, Total amount: $1,345,000.

G17. MULTI-TIME SCALE COMPLEX ADAPTION, Defense Advanced Research Project Agency, 09/01/01-08/31/04, Co-PI with Schwaber (PI), Gao, Gonye, Hoek, Kholodenko and Ogunnaike, Total amount: $1,323,000.

G18. TURBO-LIKE CODES FOR QUANTUM ERROR CORRECTION, UDRF, 09/01/02-08/31/03, PI, Total amount: $29,984.

G19. NEW CODING TECHNIQUES FOR IMPROVED PERFORMANCE IN REAL COMMUNICATIONS SYSTEMS, UDRF, 09/01/00-08/31/01, PI, Total amount: $29,950.

PH. D. STUDENTS SUPERVISED

- **Yujing Zeng**: "Probabilistic techniques for biological data analysis'', March 2005
- **Wei Zhong**: "Low density generator matrix codes for source and channel coding", June 2006
- **Hanqing Lou**: "LDGM codes for wireless and quantum systems", June 2006
- **Ying Zhao**: "Turbo codes for data compression and joint source-channel coding'', August 2006
- **Iñaki Esnaola**: "Exploiting prior knowledge in compressed sensing", November 2011
- **Kejing Liu**: "Exploiting prior knowledge in information processing", December 2012
- **Bo Lu**: "Analog Joint Source-Channel Coding for Non-Standard Scenarios", March 2015
- **Mohamed Hassanin**: "Analog Joint Source-Channel Coding for Multi-Terminal and Non-Linear Channels", May 2018
- **Lu Li**: "A Hybrid Analog-Digital Coding Scheme for Digital Sources", May 2018
- **Mariano Burich**: Started August 2017, passed Ph.D. qualifying exam
- **Yumin Li**: Started September 2019, passed Ph.D. qualifying

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M.S. STUDENTS SUPERVISED

- **Felipe Cabarcas**: "Turbo coding/decoding modifications for improved performance in non-standard environments", July 2002
- **Shervin Pirestani**: "Source controlled block turbo coding'', July 2005
- **Ran Li**: "Signal peptide prediction in the space-frequency domain'', January 2006
- **Huiqiong Chai**: "Parallel LDGM codes", December 2006
- **Yichuan Hu**: "Extensions of compressed sensing", June 2009
- **Iñaki Iglesias**: "Low Complexity Extensions of Non-Linear Mappings", July 2014
- **Mohamed Hassanin**: "Non Linear Joint Source Channel Coding for Broadcast Channels", June 2015

VISITING RESEARCHERS AND POSTDOCS

- **Tao Tian**, UCLA, "Density evolution techniques for channels with memory'', August 2002-September 2002
- **Miguel Gonzalez**, Universidad de A Coruna, Spain, "Incorporating iterative decoding schemes in space-time coding'', January 2003-August 2003
- **Richard Souza**, Universidade Federal de Santa Catalina, Brazil, "Semi-blind approaches for channel estimation in space-time coding'', March 2003-November 2003
- **Nicolas Dutsch**, Munich University of Technology, Germany, "Incorporating hidden Markov models in turbo source coding", August 2004-September 2004
- **Alvaro Jorge**, Universidad de Navarra, Spain, "Applications of hidden Markov models", July 2005-August 2005
- **Peyman Meshkat**, Postdoc, "Signal processing in bioinformatics", January 2005-September 2005
- **Javier del Ser**, Universidad de Navarra, Spain, "Coding in networks", August 2007-December 2007
- **Jose Emilio Vila Forcen**, Universidad Carlos III, Spain, "Distributed coding of correlated sources", October 2007-February 2008
- **Chou-Chang Yang**, Visiting student, "Applications of LDGM codes", November 2009-July 2010
- **Sergio Pino**, Visiting student, "Implementation of Software Defined Radios", June 2010-December 2010
- **David Rodriguez**, Visiting student, "CDMA coding for 3D location of IR emitters", December 2014-February 2015
- **Imanol Granada**, Visiting student, "Joint source-channel coding for multiple access-channels", March 2020

UNDERGRADUATE STUDENTS IN SUMMER RESEARCH

- **Jessica Ayers**: "Simulation of fading channels", summer 2001 (NSF REU)
- **Marnie DeJong**: "Inference in Bioinformatics utilizing Bayesian Networks", summer 2002 (Research Experience for Undergraduates, University of Delaware)

COURSES TAUGHT

Fall 2020	ELEG 667: Introduction to Quantum Error Correction (graduate)
Spring 2020	ELEG 630: Information Theory (graduate)
Fall 2019	ELEG 811: Channel Coding Theory and Practice (graduate)
Spring 2019	ELEG 630: Information Theory (graduate)
Fall 2018	ELEG 867: Compressed Sensing and Coding for Networks (graduate)
Spring 2018	ELEG 630: Information Theory (graduate)
Spring 2017	ELEG 630: Information Theory (graduate)
Fall 2016	ELEG 306: Digital Signal Processing (undergraduate)
Spring 2016	ELEG 630: Information Theory (graduate)
Fall 2015	ELEG 867: Compressed Sensing and Coding for Networks (graduate)
Spring 2015	ELEG 630: Information Theory (graduate)
Fall 2014	ELEG 834: Advanced Topics on Signal Processing (graduate) ELEG 811: Channel Coding Theory and Practice (graduate)
Spring 2014	ELEG 630: Information Theory (graduate)
Fall 2013	ELEG 834: Advanced Topics on Signal Processing (graduate) ELEG 811: Channel Coding Theory and Practice (graduate) ELEG 667: Information Theory (APG taught on-post, graduate)
Spring 2013	ELEG 630: Information Theory (graduate)
Fall 2012	ELEG 834: Advanced Topics on Signal Processing (graduate)
Spring 2012	ELEG 630: Information Theory (graduate)
Fall 2011	ELEG 811: Channel Coding Theory and Practice (graduate)
Spring 2011	ELEG 630: Information Theory (graduate)

Fall 2010	ELEG 306: Digital Signal Processing (undergraduate)
Spring 2010	ELEG 667: Information Theory (graduate)
Fall 2009	ELEG 811: Channel Coding Theory and Practice (graduate)
Spring 2009	ELEG 667: Information Theory (graduate)
Fall 2008	ELEG 811: Channel Coding Theory and Practice (graduate)
Spring 2008	ELEG 667: Information Theory (graduate)
Fall 2007	ELEG 811: Channel Coding Theory and Practice (graduate)
Fall 2005	ELEG 667: Information Theory (graduate)
Spring 2005	ELEG 811: Channel Coding Theory and Practice (graduate)
Fall 2004	ELEG 867: Information Theory (graduate)
Spring 2004	ELEG 811: Channel Coding Theory and Practice (graduate)
Fall 2003	ELEG 867: Information Theory (graduate)
Spring 2003	ELEG 811: Channel Coding Theory and Practice (graduate)
Fall 2002	ELEG 867: Information Theory (graduate) New course developed by J. García-Frías
	ELEG 667: Discovery Informatics I (graduate)
Spring 2002	ELEG 811: Channel Coding Theory and Practice (graduate)
	ELEG 667: Discovery Informatics II (graduate, co-instructor)
Fall 2001	ELEG 305: Signal Processing I (undergraduate)
	ELEG 667: Discovery Informatics I (graduate, co-instructor)
Spring 2001	ELEG 867: Channel Coding Theory and Practice (graduate)
	ELEG 667: Discovery Informatics II (graduate, co-instructor) New course developed jointly with G. Gao
Fall 2000	ELEG 305: Signal Processing I (undergraduate)
	ELEG 667: Discovery Informatics I (graduate, co-instructor) New course developed jointly with G. Gao

Spring 2000 ELEG 867: Topics in Coding (graduate)
New course developed by J. García-Frías

Fall 1999 ELEG 305: Signal Processing I (undergraduate)

UNIVERSITY SERVICE

- Associate Chair for Graduate Studies of the ECE Department, June 2018-Present
- Member, Faculty Search Committee of the Department of Civil Engineering, November 2019-March 2020
- Member, Executive Committee University-Wide MS on Data Science. September 2018-Present
- Member, University-wide Faculty Search Committee for Foundations of Data Science, September 2018-April 2019
- Coordinator of SPCC group, August 2013-August 2018
- Chair, ad hoc committee to reorganize the SPCC curriculum, September 2017-March 2018
- Member, Faculty Search Committee of the ECE Department, September 2017-May 2018
- Member, Graduate Committee of the ECE Department, June 2008-Present
- Member, Faculty Search Committee of the ECE Department for Strategic Computing and Information Sciences, September 2016-April 2017
- Chair, Faculty Search Committee of the ECE Department for Strategic Computing and Information Sciences, September 2015-April 2016
- Member, College of Engineering Promotion and Tenure Committee, September 2013-August 2016
- Member, ECE Chair Review Committee, January 2014-May 2014
- Member, Faculty Search Committee of the Department of Mathematical Sciences, November 2013-March 2014
- Member, College of Engineering Dean Search Committee, November 2012-June 2013
- Member, Faculty Search Committee of the Computer and Information Technologies cluster, September 2010-May 2011
- Member, Faculty Search Committee of the ECE Department, August 2009-May 2010
- Member ECE Strategic Committee, January 2009-March 2010
- Member, ECE Chair Search Committee, October 2008-May 2009

- Associate Chair for Graduate Studies of the ECE Department, June 2008-August 2013
- Member, Faculty Search Committee of the ECE Department, September 2007-April 2008
- Member, University Judicial Board, Summer 2006
- Member, Faculty Search Committee of the ECE Department, September 2005-February 2006
- Member, ECE Chair Review Committee, November 2004-March 2005
- Chair, Faculty Search Committee of the ECE Department, September 2003-August 2005
- Chair, Graduate Committee of the ECE Department, September 2003-August 2004
- Member, College of Engineering Elections Committee, 2001-2004
- Representation of the ECE Department in the "Delaware Discovery Days''
- Representation of the ECE Department in the "Laird Fellowships Receptions''
- Representation of the ECE Department in the "Blue and Gold Saturdays"
- Member, Faculty Search Committee of the ECE Department, September 2000-August 2001
