JAVIER GARCIA-FRIAS

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EDUCATION

Doctor of Philosophy   University of California, Los Angeles, July 1999
Electrical Engineering   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.   Facultad de Ciencias Matematicas
Mathematics   Universidad Nacional de Educación a Distancia, Madrid,
September 1995

Ph.D. courses completed   Escuela Técnica Superior de Ingenieros de Telecomunicación
Signal Processing   Universidad Politécnica, Madrid, September 1994

Combined B.S. and M.S.   Escuela Técnica Superior de Ingenieros de Telecomunicación
Electrical Engineering   Universidad Politécnica, Madrid, October 1992

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PROFESSIONAL EXPERIENCE

Associate Professor   Department of Electrical and Computer Engineering
University of Delaware
September 2003-Present

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

Research Fellow	Telefónica Investigación y Desarrollo
	(R&D laboratory of the Spanish phone company)
	June 1994-July 1996

Teaching Assistant	Escuela Técnica Superior de Ingenieros de Telecomunicación
	Universidad Politécnica Madrid
	January 1993-May 1994

Research Fellow	Telefónica Investigación y Desarrollo
	(R&D laboratory of the Spanish phone company)
	May 1992-December 1992

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AWARDS AND HONORS

- Listed in Who's Who in American Education (7th edition, 2006-2007)

- Listed in Who's Who in Science and Engineering (8th and 9th edition, 2005-2007)

- Outstanding Junior Faculty of Engineering, University of Delaware, September 2004-August 2005

- Dean's congratulatory letter for ELEG 867-012 teaching, Spring 2003

- Listed in Who's Who in America (57th and 58th edition-2003, 2004)

- 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

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PROFESSIONAL ACTIVITIES

Editor for international journals

- IEEE Transactions on Wireless Communications (2003-Present)

- IEEE Transactions on Signal Processing (2004-Present)

- EURASIP Journal on Bioinformatics and Systems Biology (2005-Present)

- EURASIP Journal on Applied Signal Processing, Guess editor special issue "Theory and Applications of Distributed Source Coding for Signal Processing" (to appear 2006)

- IEEE Signal Processing Magazine, Guess editor special issue "Signal Processing for Multiterminal Communication Systems" (to appear 2007)

Member of technical committees

- Signal Processing for Communications Technical Committee. IEEE Signal Processing Society (2004-Present)

Organizer of special sessions

- 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 journal 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*
- *EURASIP Signal Processing*
- *Bioinformatics* journal
- *Computers and Chemical Engineering* journal
- Many international conferences

Panel reviewer for competitive proposals

- 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

- 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

- 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 Communications (SPAWC)
- Technical program committee member, 2007 Communications Theory Symposium of IEEE Globecom
- 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 Communications 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 Communications Theory Symposium of IEEE Globecom

- Technical program committee member, 2003 SPIE ITCom Conference "Internet Quality of Service"

- Technical program committee member, 2003 Communications 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)

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BOOK CHAPTERS AND THESES

B1. Y. Zeng, J. García-Frías, and A. Marsh: "Organization of Genes and Genome Domains", Genomics and Genetics, Wiley-VCH, To appear November 2006.

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.

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JOURNAL ARTICLES (PUBLISHED AND ACCEPTED)

J1. J. García-Frías and F. Cabarcas: "Approaching the Slepian-Wolf Boundary Using Practical Channel Codes", To appear in EURASIP Signal Processing.

J2. Y. Zhao, W. Zhong, and J. García-Frías: "Transmission of Correlated Senders over a Rayleigh Fading Multiple Access Channel", To appear in EURASIP Signal Processing.

J3.   Y. Zhao and J. García-Frías: "Turbo Compression/Joint Source Channel Coding of Correlated Binary Sources with Hidden Markov Correlation", To appear in EURASIP Signal Processing.

J4.   R. D. Souza, J. García-Frías, and R. da Rocha Lopes: "Turbo Equalization for Block Fading MIMO Channels Using Random Signal Mapping", To appear in Computers and Electrical Engineering.

J5.   R. D. Souza, J. García-Frías, and A. Haimovich: "Semi-Blind 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.

J6.   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.

J7.   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.

J8.   A. Marsh, Y. Zeng, and J. García-Frías: "The Expansion of Information in Ecological Systems: Emergence as a Quantifiable State", Ecological Informatics, pp. 107-116, January 2006.

J9.   R. D. Souza and J. García-Frías: "Performance of Symbol-Sampled Receivers over Unknown Continuous-Time Rayleigh Channels", IEEE Transactions on Wireless Communications, pp. 2020-2026, September 2005.

J10. W. Zhong and J. García-Frías: "LDGM Codes for Channel Coding and Joint Source Channel Coding of Correlated Sources", EURASIP Journal on Applied Signal Processing, pp. 942-953, May 2005.

J11. J. García-Frías and Y. Zhao: "Near Shannon/Slepian-Wolf Performance for Unknown Corrrelated Sources over AWGN Channels", IEEE Transactions on Communications, pp. 555-559, April 2005.

J12. Y. Zhao and J. García-Frías: "Joint Estimation and Compression of Correlated Non-Binary Sources Using Punctured Turbo Codes", IEEE Transactions on Communications, pp. 385-390, March 2005.

J13. R. D. Souza, J. García-Frías, and B. F. Uchoa-Filho: "Sobre o Desempenho de Receptores Operando à Taxa de Símbolos em Canais Contínuos Desconhecidos em Função do Modelo de Canal e do Filtro de Transmissão", Revista da Sociedade Brasileira de Telecomunicações, pp. 60-71, January 2005.

J14. J. García-Frías: "Decoding of Low-Density Parity Check Codes over Finite-State Binary Markov Channels", IEEE Transactions on Communications, pp. 1840-1843, November 2004.

J15. R. D. Souza and J. García-Frías: "Turbo Equalization for Unknown ISI Channels: A Semi-Blind Approach", IEEE Latin America. (Portuguese version: "Equalizacao Turbo para Canais Desconhecidos: Uma Abordagem Semi-Cega", Revista IEEE America Latina, June 2004).

J16. W. Zhu and J. García-Frías: "Stochastic Context-Free Grammars and Hidden Markov Models for Modeling of Bursty Channels'', IEEE Transactions on Vehicular Technology, pp. 666-676, May 2004.

J17. J. García-Frías and W. Zhong: "Approaching Shannon Performance by Iterative Decoding of Linear Codes with Low-Density Generator Matrix", IEEE Communications Letters, pp. 266-268, June 2003.

J18. J. García-Frías and W. Zhong: "LDPC Codes for Compression of Multi-Terminal Sources with Hidden Markov Correlation'', IEEE Communications Letters, pp. 115-117, March 2003.

J19. J. García-Frías and J. D. Villasenor: "Combined Turbo Detection and Decoding for Unknown ISI Channels'', IEEE Transactions on Communications, pp. 79-85, January 2003.

J20. J. García-Frías and Y. Zhao: "Compression of Binary Memoryles Sources Using Punctured Turbo Codes'', IEEE Communications Letters, pp. 394-396, September 2002.

J21. J. García-Frías and J. D. Villasenor: "Turbo Decoding of Gilbert-Elliot Channels", IEEE Transactions on Communications, pp. 357-363, March 2002.

J22. J. García-Frías and Y. Zhao: "Compression of Correlated Binary Sources Using Turbo Codes", IEEE Communications Letters, pp. 417-419, October 2001.

J23. J. García-Frías and J. D. Villasenor: "Joint Turbo Decoding and Estimation of Hidden Markov Sources", IEEE Journal on Selected Areas in Communications, pp. 1671-1679, September 2001.

J24. J. García-Frías and J. D. Villasenor: "Turbo Decoders for Markov Channels", IEEE Communications Letters, pp. 257-259, September 1998.

J25. J. García-Frías and P. Crespo: "Hidden Markov Models for Burst Error Characterization in Indoors Radio Channels", IEEE Transactions on Vehicular Technology, pp. 1006-1020, November 1997.

J26. J. García-Frías and J. D. Villasenor: "Combining Hidden Markov Source Models and Parallel Concatenated Codes", IEEE Communications Letters, pp. 111-113, July 1997.

J27. J. García-Frías and P. Crespo: "Red telefónica, bucle de abonado", Investigación y Ciencia (Spanish edition of Scientific American), pp. 73-76, December 1996.

J28. P. Crespo, R. Mann, J. P. Cosmas, and J. García-Frías: "Results of Channel Error Profiles for DECT", IEEE Transactions on Communications, pp. 913-917, August 1996.

J29. P. Crespo and J. García-Frías: "Estudio de las prestaciones de modems VADSL con modulaciones QAM para redes de acceso con configuración FTTC", Comunicaciones de Telefónica I+D, pp. 137-145, June 1995.

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CONFERENCES (PUBLISHED AND ACCEPTED)

C1. R. D. Souza and J. García-Frías: "On The Performance of Symbol Sampled Receivers over Unknown Continuous-Time Channels", To appear in VTC'06 (fall), September 2006, Montreal, Canada.

C2. M. Gonzalez-Lopez, F. J. Vazquez-Araujo, L. Castedo, and J. García-Frías: "Optimized Serially-Concatenated LDGM and Almouti Codes for Approaching MIMO Capacity", To appear in PIMRC'06, September 2006, Helsinki, Finland.

C3. M. Lamarca, H. Lou, and J. García-Frías, "Random Labeling: A New Approach to Achieve Capacity in MIMO Quasi-Static Fading Channels", ISIT´06, July 2006, Seattle, Washington.

C4. W. Zhong and J. García-Frías, "Design of Low-Rate Codes through Concatenation of LDGM and Repeat-Hadamard Codes", ISIT´06, July 2006, Seattle, Washington.

C5. M. Lamarca, H. Lou, and J. García-Frías, "Capacity Approaching Layered MIMO Schemes for Quasi-Static Fading Channels", SPAWC´06, July 2006, Cannes, France.

C6. F. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías, "Design of Serially-Concatenated LDGM Coded MIMO Systems", SPAWC´06, July 2006, Cannes, France.

C7. G. Shamir, R. D. Souza, and J. García-Frías, "Unequal Energy Allocation with Turbo Codes for Nonuniform Sources", International Symposium on Turbo Codes, April 2006, Munich, Germany.

C8. N. Duetsch, G. Sebastian, J. García-Frías, and J. Hagenauer, "Source Model Aided Lossless Turbo Source Coding", International Symposium on Turbo Codes, April 2006, Munich, Germany.

C9. J. del Ser, P. Crespo, I. Esnaola, and J. García-Frías, "Turbo Joint Source-Channel Coding of Sources with Memory using the Burrows Wheeler Transform", International Symposium on Turbo Codes, April 2006, Munich, Germany.

C10. F. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías, "Design of Serially-Concatenated Low-Density Generator Matrix codes using EXIT Charts", International Symposium on Turbo Codes, April 2006, Munich, Germany.

C11. M. Lamarca, H. Lou, and J. García-Frías, "MIMO Transmission Schemes in Block Fading Using Multilevel Codes with Multistage Decoding", International Symposium on Turbo Codes, April 2006, Munich, Germany.

C12. H. Lou and J. García-Frías, "On the Application of Error-Correcting Codes with Low-Density Generator Matrix over Different Quantum Channels", Proc. International Symposium on Turbo Codes, April 2006, Munich, Germany.

C13. W. Zhong and J. García-Frías, "Parallel LDGM Codes for the Transmission of Highly Correlated Senders over Rayleigh Fading Multiple Access Channels", CISS'06, March 2006, Princeton, New Jersey.

C14. W. Zhong and J. García-Frías, "LDGM Codes for Transmission of Correlated Senders over MAC", Allerton Conference on Communication, Control, and Computing, October 2005, Allerton, Illinois (invited paper).

C15. R. D. Souza, R. R. Lopes, and J. García-Frías: "Equalização Turbo com Complexidade Reduzida para Canais MIMO usando Mapeamento Aleatório", Simpósio Brasileiro de Telecomunicações, October 2005, Campinas-SP, Brazil.

C16. R. D. Souza and J. García-Frías: "Reduced Complexity Turbo Equalization for MIMO Channels Using Random Signal Mapping", VTC'05 (fall), September 2005, Dallas, Texas.

C17. W. Zhong, H. Chai, and J. García-Frías: "Approaching the Shannon Limit through Parallel Concatenation of Regular LDGM Codes", ISIT'05, September 2005, Adelaide, Australia.

C18. R. D. Souza, G. Shamir, J. García-Frías, and K. Xie: "Non-Systematic Turbo Coding with Unequal Energy Allocation for Nonuniform Memoryless Sources", ISIT'05, September 2005, Adelaide, Australia.

C19. Y. Zeng, J. García-Frías, and J. F. Tomb: "Evidence-N: Integrating Diverse Sources of Evidence for Automatic Bacteria Gene Identification", ISMB'05, June 2005, Detroit, Michigan.

C20. H. Lou and J. García-Frías: "Quantum Error-Correction Using Codes with Low-Density Generator Matrix", SPAWC'05, June 2005, New York City, New York.

C21. H. Chen, A. Haimovich, and J. García-Frías: "Applications of a Linear Precoder to Multi-Level Space-Time Coding", SPAWC'05, June 2005, New York City, New York.

C22. R. D. Souza and J. García-Frías: "Semi-Blind Combined Detection and Turbo Decoding for Unknown Block Fading Channels", VTC'05 (spring), May 2005, Stockholm, Sweden.

C23. J. García-Frías and Z. Xiong: "Distributed Source and Joint Source-Channel Coding: From Theory to Practice", ICASSP'05, March 2005, Philadelphia, Pennsylvania (invited paper).

C24. Y. Zhao, W. Zhong, and J. García-Frías: "Transmission of Correlated Senders over a Rayleigh Fading Multiple Access Channel", CISS'05, March 2005, Baltimore, Maryland.

C25. W. Zhong and J. García-Frías: "Combining Data Fusion with Joint Source-Channel Coding of Correlated Sensors Using IRA Codes", CISS'05, March 2005, Baltimore, Maryland.

C26. W. Zhong and J. García-Frías: "Compression of Non-Binary Sources Using LDPC Codes", CISS'05, March 2005, Baltimore, Maryland.

C27. H. Chai, W. Zhong, and J. García-Frías: "Parallel Concatenation of LDGM Codes to Approach Capacity Limits", CISS'05, March 2005, Baltimore, Maryland.

C28. H. Lou and J. García-Frías: "Concatenation of Space-Time Codes and Channel Coding versus BICM to Approach MIMO Capacity", CISS'05, March 2005, Baltimore, Maryland.

C29. H. Lou, and J. García-Frías: "Rate-Compatible Low-Density Generator Matrix Codes", CISS'05, March 2005, Baltimore, Maryland.

C30. R. D. Souza, H. Lou, and J. García-Frías: "On the Effect of Fading Correlation in the Performance of an Iterative Receiver for Quasi-Static ISI MIMO Channels", CISS'05, March 2005, Baltimore, Maryland.

C31. H. Lou and J. García-Frías: "Low-Density Generator Matrix Codes for Indoor and Markov Channels", Globecom'04, December 2004, Dallas, Texas.

C32. W. Zhong and J. García-Frías: "Combining Data Fusion with Joint Source-Channel Coding of Correlated Sensors", ITW'04, October 2004, San Antonio, Texas (invited paper).

C33. W. Zhong and J. García-Frías: "Joint Source-Channel Coding of Correlated Senders over Multiple Access Channels", Allerton Conference on Communication, Control, and Computing, October 2004, Allerton, Illinois (invited paper).

C34. H. Lou and J. García-Frías: "Improving the Performance of LDGM Codes over Indoor Channels by Exploiting the Channel Statistics", VTC'04 (fall), October 2004, Los Angeles, California.

C35. R. D. Souza, B. F. Uchoa-Filho, and J. García-Frías: "Um Esquema Semi-Cego de Estimação, Detecção e Decodificação Turbo Combinadas", Simpósio Brasileiro de Telecomunicações-SBrT'04, October 2004, Belém-PA, Brazil.

C36. F. J. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías: "BICM Using LDGM Codes and ML Channel Estimation for MIMO Channels", SAM'04, July 2004, Sitges, Spain.

C37. F. J. Vazquez-Araujo, M. Gonzalez-Lopez, L. Castedo, and J. García-Frías: "BICM for MIMO Channels Using LDGM Codes and Sphere Detection", SPAWC'04, July 2004, Lisbon, Portugal.

C38. F. Cabarcas and J. García-Frías: "Approaching the Slepian-Wolf Boundary Using Practical Channel Codes", ISIT'04, June 2004, Chicago, Illinois.

C39. 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.

C40. 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.

C41. R. D. Souza and J. García-Frías: "Performance of Symbol-Sampled Receivers over Unknown Continuous-Time Channels", ICC'04, June 2004, Paris, France.

C42. 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.

C43. 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.

C44. 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.

C45. 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.

C46. 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.

C47. 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.

C48. 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.

C49. H. Lou and J. García-Frías: "Low-Density Generator Matrix Codes for Finite-State Binary Markov Channels", CISS'04, March 2004, Princeton, New Jersey.

C50. 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.

C51. Y. Zeng and J. García-Frías: "A Novel HMM-based Cluster Validity Index for Time-Course Data", CISS'04, March 2004, Princeton, New Jersey.

C52. W. Zhong, Y. Zhao, and J. García-Frías: "Turbo-Like Codes for Distributed Joint Source-Channel Coding of Correlated Senders in Mutiple Access Channels", Asilomar Conference, November 2003, Monterey, California (invited paper).

C53. 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.

C54. 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.

C55. 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).

C56. 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.

C57. 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.

C58. 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).

C59. Y. Zeng and J. García-Frías: "A Novel Bayesian Network Model for the Study of Genetic Regulatory Networks'', ISMB03, June 2003, Brisbane, Australia.

C60. R. Craig, L. Liao, J. García-Frías, and A. Marsh: "SeqFreq: A Statistical Repetitive Motif Discovery Tool'', ISMB03, June 2003, Brisbane, Australia.

C61. T. Tian, J. García-Frías, and W. Zhong: "Density Evolution Analysis of Correlated Sources Compressed with LDPC Codes", ISIT'03, June 2003, Yokohama, Japan.

C62. X. Deng, A. Haimovich, and J. García-Frías: "Decision Directed Iterative Channel Estimation for MIMO Systems", ICC'03, May 2003, Anchorage, Alaska.

C63. 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.

C64. 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.

C65. W. Zhu and J. García-Frías: "A New Hidden Markov Model for Very Bursty Channels", VTC'03 (Spring), April 2003, Jeju, Korea.

C66. T. Tian, J. García-Frías, and W. Zhong: "Compression of Correlated Sources Using LDPC Codes", DCC'03, March 2003, Snowbird, Utah.

C67. 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.

C68. 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.

C69. 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).

C70. Y. Zeng, J. García-Frías, J. Tang, and G. Gao: "An Adaptive Meta-Clustering Approach: Combining the Information from Different Clustering Results'', IEEE Computer Society Bioinformatics Conference, August 2002, Stanford, California.

C71. 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.

C72. Y. Zeng, J. García-Frías, J. Tang, and G. Gao: "An Adaptive Meta-Clustering Approach for Bioinformatics Applications'', ISMB02, August 2002, Edmonton, Canada.

C73. Y. Zeng, R. Khan, J. García-Frías, and G. Gao: "Modeling Genetic Regulatory Networks Using Dynamic Bayesian Networks'', ISMB02, August 2002, Edmonton, Canada.

C74. W. Zhu and J. García-Frías: "Modeling of Bursty Channels Using Stochastic Context-Free Grammars", VTC'02, May 2002, Birmingham, Alabama.

C75. Y. Zhao and J. García-Frías: "Data Compression of Correlated Non-Binary Sources Using Punctured Turbo Codes", DCC'02, April 2002, Snowbird, Utah.

C76. 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.

C77. 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.

C78. 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.

C79. F. Cabarcas and J. García-Frías: "Asymmetric Energy Allocation Strategies to Improve Turbo Codes Performance", VTC'01, October 2001, Atlantic City, New Jersey.

C80. J. García-Frías: "Decoding of Low-Density Parity Check Codes over Finite-State Binary Markov Channels", ISIT'01, June 2001, Washington D.C.

C81. J. García-Frías: "Joint Source-Channel Decoding of Correlated Sources over Noisy Channels'', DCC'01, March 2001, Snowbird, Utah.

C82. J. García-Frías: "The Turbo Principle and Its Applications, CISS'01, March 2001, Baltimore, Maryland (invited paper).

C83. 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.

C84. 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.

C85. J. García-Frías and J. D. Villasenor: "Simplified Turbo Decoding for Binary Markov Channels", ISIT'00, June 2000, Sorrento, Italy.

C86. J. García-Frías and J. D. Villasenor: "Low Complexity Turbo Decoding for Binary Hidden Markov Channels", VTC'00, May 2000, Tokyo, Japan.

C87. J. García-Frías and J. D. Villasenor: "Turbo Codes for Continuous Markov Channels with Unkown Parameters", Globecom'99, December 1999, Rio de Janeiro, Brazil.

C88. J. García-Frías and J. D. Villasenor: "Simplified Methods for Combining Hidden Markov Models and Turbo Codes", VTC'99, September 1999, Amsterdam, The Netherlands.

C89. J. García-Frías and J. D. Villasenor: "Combined Blind Equalization and Turbo Decoding", ICC'99 (Communications Theory Miniconference), June 1999, Vancouver, Canada.

C90. J. García-Frías and J. D. Villasenor: "Blind Turbo Decoding and Equalization", VTC'99, May 1999, Houston, Texas.

C91. J. García-Frías and J. D. Villasenor: "Exploiting Binary Markov Channels with Unknown Parameters in Turbo Coding", Globecom'98, November 1998, Sydney, Australia.

C92. J. García-Frías and J. D. Villasenor: "Joint Source Channel Coding and Estimation of Hidden Markov Structures", ISIT'98, August 1998, Boston, Massachusetts.

C93. J. García-Frías and J. D. Villasenor: "Turbo Codes for Binary Markov Channels", ICC'98, June 1998, Atlanta, Georgia.

C94. J. García-Frías and J. D. Villasenor: "Turbo Decoding of Hidden Markov Sources with Unknown Parameters", DCC'98, March 1998, Snowbird, Utah.

C95. J. García-Frías and J. D. Villasenor: "Markov Structures in Turbo Decoding", ITW'98, February 1998, San Diego, California.

C96. 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.

C97. 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.

C98. 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.

C99. P. Crespo and J. García-Frías: "Copper Subscriber Loop and Advanced MM Services Deployment", ITS conference, June 1996, Sevilla, Spain.

C100. 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.

C101. P. Crespo and J. García-Frías: "Performance Analysis of QAM-VADSL Systems for FTTC Networks", Hybrid Fiber Coax Systems conference, October 1995, Philadelphia, Pennsylvania.

C102. 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.

C103. L. Weruaga and J. García-Frías et al: "Mejoras en cancelación de ecos acústicos", Symp. URSI, September 1993,Valencia, Spain.

C104. L. Weruaga and J. García-Frías et al: "Improvements in Subband Acoustic Echo Cancellation", COST 229 WG. 2 Workshop, June 1993,Vigo, Spain.
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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, Study Group 15, Working party 15/1, LBC-95-217, June 1995, Boston, Massachusetts.

S8. P. Crespo and 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 and J. García-Frías et al: "Feasibility of Enhanced Copper Technologies", Deliverable EURESCOM P-306, March 1995.
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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.

- **Kejing Liu**: "Applications of hidden Markov Models", passed Ph.D. qualifying exam, expected graduation date: Summer 2008.

- **Iñaki Esnaola**: Dissertation Topic to be defined, expected graduation date: Summer 2009.

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M.S. STUDENTS SUPERVISED

- **Felipe Carbarcas**: "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", expected graduation date: Winter 2006.

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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, "Incorporating hidden Markov models in turbo source coding", August 2004-September 2004.

- **Alvaro Jorge**, Universidad de Navarra, "Applications of hidden Markov models", July 2005-August 2005.

- **Peyman Meshkat**, "Signal processing in bioinformatics", January 2005-September 2005.

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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).

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COURSES TAUGHT

Fall 2005   ELEG 867: Information Theory (graduate).

Spring 2005   ELEG 867: Channel Coding Theory and Practice (graduate).

Fall 2004   ELEG 667: Information Theory (graduate).

Spring 2004   ELEG 867: Channel Coding Theory and Practice (graduate).

Fall 2003   ELEG 867: Information Theory (graduate).

Spring 2003   ELEG 867: Channel Coding Theory and Practice (graduate).

Fall 2002   ELEG 867: Information Theory (graduate).
               ELEG 667: Discovery Informatics I (graduate).

Spring 2002   ELEG 867: 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 Javier García-Frías.

Fall 1999   ELEG 305: Signal Processing I (undergraduate).

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UNIVERSITY SERVICE

- Member, University Judicial Board, Summer 2006.
- Member, Chair Review Committee of the ECE Department, 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-Present.
- Member, Faculty Search Committee of the ECE Department, 2000-2001, 2005-2006.
- 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".

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