Charles Casimiro Cavalcante

Professor

Department of Teleinformatics Engineering
Federal University of Ceará (UFC)
Fortaleza-CE, C.P. 3225, 60.416-200, Brazil

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+55 85 3366-9469

Personal Information

Date of birth: April 22nd, 1976

Nationality: Brazilian

Education

Ph.D

University of Campinas, Campinas, Brazil, April 2004
Electrical Engineering
Dissertation topic: "*On Blind Source Separation: Proposals and Analysis of Strategies for Multiuser Processing*"

M.Sc.

Federal University of Ceará, Fortaleza, Brazil, February 2001
Electrical Engineering
Master thesis: "*Neural Prediction and Probability Density Function Estimation Applied to Blind Equalization*"

B.Sc.

Electrical Engineering
Federal University of Ceará, Fortaleza, Brazil, March 1999

Research Interests

Statistical signal processing, machine learning, information geometry, wireless and digital communication systems.

Experience

Professor,
Department of Teleinformatics Engineering
Federal University of Ceará, Fortaleza-CE
November 2024 - present

Associate Professor,
Department of Teleinformatics Engineering
Federal University of Ceará, Fortaleza-CE
November 2016 - November 2024

Visiting Senior Professor,
Laboratoire Lagrange
Université Côte d'Azur, Nice, France
December 2023 - February 2024

Visiting Assistant Professor,
Computer Science and Electrical Engineering Department (CSEE)
University of Maryland, Baltimore County (UMBC)
August 2014 - July 2015

Assistant Professor,
Department of Teleinformatics Engineering
Federal University of Ceará, Fortaleza-CE
November 2008 - November 2016

Visiting Professor,
Department of Teleinformatics Engineering
Federal University of Ceará, Fortaleza-CE
March 2007 - October 2008

Research Associate,
Department of Teleinformatics Engineering
Federal University of Ceará, Fortaleza-CE
May 2004 - February 2007

Awards and Honorary Society Memberships

Senior Member

- Institute of Electrical and Electronics Engineers (IEEE), 2011
- Brazilian Telecommunications Society (SBrT), 2012

Conference Best Paper Awards

Best Ph.D. Student Paper
2nd Radio and Antenna Days of the Indian Ocean (RADIO), 2014.

Best Paper Award
The 13th International Symposium on Wireless Personal Multimedia Comm. (WPMC2010), 2010.

Professional Activities

Editor-in-Chief

- *Journal of Communication and Information Systems*
  April 2014 - February 2018

Area Editor

- *eNewsletter, IEEE Signal Processing Magazine*
  January 2024 - December 2026

Subject Editor

- *Signal Processing Elsevier*
  January 2024 - December 2026

Associate Editor

- *IET Signal Processing*
  February 2019 - Present
- *KSII Transactions on Internet and Information Systems*
  March 2012 - January 2018

General Chair

- *XXXI Brazilian Telecommunications Symposium* (SBrT 2013), Fortaleza-CE, Brazil, 2013

Track Co-Chair

- *2014 IEEE International Telecommunications Symposium* (ITS2014), São Paulo, Brazil, 2014 (Signal Processing and Multimedia Track)

Publicity Chair

- *10th IEEE Latin-American Conference on Communications* (LATINCOM 2018), Guadalajara, Mexico, 2018
- *The Ninth International Symposium on Wireless Communication Systems* (ISWCS 2012), Paris, France, 2012

Executive Technical Committee

- *9th IEEE International Workshop on Signal Processing Advances in Wireless Communications* (SPAWC2008), Recife-Brazil, 2008

Finance Chair

- *IEEE 18th International Conference on High Performance Switching and Routing* (HPSR2017), Campinas, Brazil, 2017
- *IEEE Information Theory Workshop* (ITW), Paraty, Brazil, 2011
- *8th International Conference on Independent Component Analysis and Signal Separation* (ICA2009), Paraty-Brazil, 2009
- *IEEE International Telecommunications Symposium* (ITS 2006), Fortaleza - CE, Brazil, 2006

Board Member

Brazilian Telecommunications Society (SBrT)

- *President*, March 2018 - February 2020
- *Vice-President of External Relationships*, April 2016 - February 2018
- *Vice-President of Development and Diffusion*, April 2012 - March 2014
- *Vice-President of Finance*, April 2010 - March 2012

IEEE Signal Processing Society

- *Chair of Scholarship Committee*, *Membership Board*, January 2023 - December 2025
- *Regional Director-at-Large, Regions 7&9*, January 2020 - December 2021
- *Board Standing Committee, Regional Committee (Regions 7&9) Member*, January 2019 - December 2019

European Association For Signal Processing

- *Signal Processing for Multisensor Systems - SPMuS*, Member, January 2022 - December 2024

Coordination of Evaluation Committee

Coordination for the Improvement of Higher Education Personnel (CAPES)
Ministry of Education, Brazil
Evaluation of Ph.D. Graduation Programs in Brazil
Deputy Head for Professional Programs on the Area of Engineering IV
April 2018 - Present

Member of Evaluation Committee

National Council of Scientific and Technological Development (CNPq)
Ministry of Science, Technology and Inovation, Brazil
Evaluation Committee on Electrical and Biomedical Engineering
July 2024 - June 2027

Coordination for the Improvement of Higher Education Personnel (CAPES)
Ministry of Education, Brazil
Evaluation of Ph.D. Graduation Programs in Brazil
June 2013 - March 2018

Associate Member
IEEE Sensor Array and Multichannel Technical Committee (SAM-TC)

Affiliate Member
IEEE Machine Learning for Signal Processing Technical Committee (MLSP-TC)
IEEE Signal Processing for Comm. and Networking Technical Committee (SPCOM-TC)
IEEE Signal Processing Theory and Methods (SPTM-TC)

Member
Institute of Electrical and Electronics Engineers (IEEE)
Brazilian Telecommunications Society (SBrT)
American Mathematical Society (AMS)
Society for Industrial and Applied Mathematics (SIAM)
Brazilian Automation Society (SBA)
Brazilian Mathematical Society (SBM)

Reviewer of Periodicals

- IEEE Transactions on Signal Processing
- IEEE Communications Letters
- IET Communications
- Signal Processing
- IET Electronics Letters
- IEE proceedings. Vision, image and signal processing
- IEEE Signal Processing Letters
- Circuits, Systems & Signal Processing
- Computers & electrical engineering
- IEEE Transactions on Antennas and Propagation
- EURASIP Journal on Wireless Communications and Networking
- International Journal of Adaptive Control and Signal Processing
- Digital Signal Processing
- Neurocomputing
- International Journal of Communication Systems
- Computer Communications
- Wireless Personal Communications

- IEICE Transactions on Fundamentals of Electronics, Communications and Computers
- IEEE Transactions on Wireless Communications
- Journal of the Brazilian Computer Society
- IEEE Transactions on Communications
- IEEE Antennas and Wireless Propagation Letters
- Biomedical Signal Processing and Control
- Wireless Networks
- IEEE Transactions on Circuits and Systems. I, Regular Papers
- IEEE Transactions on Vehicular Technology
- Sensors (MDPI)
- IET Signal Processing
- PLOS ONE
- Entropy
- Pattern Analysis and Applications
- Journal of the Franklyn Institute
- Journal of Healthcare Engineering
- IEEE Transactions on Information Theory
- EURASIP Journal on Advances in Signal Processing
- Journal of Selected Topics in Signal Processing

Technical/Program Committee Member

- IEEE International Telecommunications Symposium (ITS2006) (Fortaleza-Brazil, 2006)
- 25th Brazilian Telecommunications Symposium (SBrT2007) (Recife-Brazil, 2007)
- 9th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC2008) (Recife-Brazil, 2008)
- 26th Brazilian Telecommunications Symposium (SBrT2008) (Rio de Janeiro-Brazil, 2008)
- II Workshop on Computational Intelligence (Salvador-Brazil, 2008)
- 8th International Conference on Independent Component Analysis and Signal Separation (ICA2009) (Paraty-Brazil, 2009)
- 27th Brazilian Telecommunications Symposium (SBrT2009) (Blumenau-Brazil, 2009)
- 16th International Conference on Digital Signal Processing (DSP2009), Santorini, Greece, 2009
- 13th International Symposium on Wireless Personal Multimedia Communications (WPMC 2010) (Recife-Brazil, 2010)
- 7th International Symposium on Wireless Communication Systems (ISWCS'10) (York, United Kingdom, 2010)
- 7th IEEE International Telecommunication Symposium (ITS2010) (Manaus-Brazil, 2010)
- 9th International Conference on Latent Variables Analysis and Signal Separation (LVA/ICA 2010) (Saint Malo - France, 2010): formely the International Conference on Independent Component Analysis and Signal Separation (ICA)

- III Workshop on Computational Intelligence (WCI 2010) (São Bernardo do Campo-Brazil, 2010)
- 29th Brazilian Telecommunications Symposium (SBrT 2011) (Curitiba-Brazil, 2011)
- 30th Brazilian Telecommunications Symposium (SBrT 2012) (Brasília-Brazil, 2012)
- The Ninth International Symposium on Wireless Communication Systems (ISWCS 2012), Paris, France, 2012
- The 2012 International WDN Workshop on Cooperative and Heterogeneous Cellular Networks (WDN-CN2012)
- 18th International Conference on Digital Signal Processing 2013 (DSP 2013), Santorini, Greece, 2013
- The Tenth International Symposium on Wireless Communication Systems (ISWCS 2012), Ilmenau, Germany, 2013
- Geometric Science of Information (GSI2013), Paris, France, 2013
- International Conference on Telecommunications (ICT), Lisbon, Portugal, 2014
- 7th The International WDN Workshop on Cooperative and Heterogeneous Cellular Networks (WDN-CN2014), Washington-DC, USA
- 33rd Brazilian Telecommunications Symposium (SBrT2015) (Juiz de Fora-Brazil, 2015)
- 19th International ITG Workshop on Smart Antennas (WSA 2015), Ilmenau, Germany
- 2nd Conference on Geometric Science of Information (GSI 2015), Paris-Saclay, France, 2015
- 2016 IEEE 9th Sensor Array and Multichannel Signal Processing Workshop (SAM 2016), Rio de Janeiro, Brazil, 2016
- 20th International ITG Workshop on Smart Antennas (WSA 2016), Ilmenau, Germany
- 24th European Signal Processing Conference (EUSIPCO) 2016, Budapest, Hungary
- 34th Brazilian Telecommunications and Signal Processing Symposium (SBrT2016), Santarém-Brazil, 2016
- IEEE Radio and Antenna Days of the Indian Ocean (RADIO), Réunion Island, 2016
- 13th International Conference on Latent Variable Analysis and Signal Separation (LVA-ICA), Grenoble-France, 2017
- IEEE Wireless Communications and Networking Conference (WCNC) 2017, San Francisco, USA
- 85th IEEE Vehicular Technology Conference (VTC) 2017, Sydney, Autralia
- 21st International ITG Workshop on Smart Antennas (WSA 2017), Berlin, Germany
- 7th IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), Curaçao, Dutch Antilles, 2017
- 25th European Signal Processing Conference (EUSIPCO), Kos, Greece, 2017
- 35th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2017), São Pedro-Brazil, 2017
- IEEE Radio and Antenna Days of the Indian Ocean (RADIO), Cape Town - South Africa, 2017
- 22st International ITG Workshop on Smart Antennas (WSA 2018), Bochum, Germany

- IEEE Wireless Communications and Networking Conference (WCNC 2018), Barcelona, Spain
- 2018 IEEE 1st 5G World Forum (5GWF'18), Santa Clara, CA, USA
- 2018 IEEE 10th Sensor Array and Multichannel Signal Processing Workshop (SAM 2018), Sheffield, United Kingdom, 2018
- 14th International Conference on Latent Variable Analysis and Signal Separation (LVA/ICA 2018), Guildford, United Kingdom, 2018
- 2018 26th European Signal Processing Conference (EUSIPCO), Rome, Italy, 2018
- 2018 International Symposium on Wireless Communication Systems (ISWCS), Lisbon, Portugal, 2018
- 2018 IEEE International Workshop on Machine Learning for Signal Processing, Aalborg, Denmark, 2018
- 36th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2018), Campina Grande-Brazil, 2018
- 2019 3rd International Conference on Recent Advances in Signal Processing, Telecommunications & Computing (SigTelCom), HaNoi, Vietnam, 2019
- 23rd International ITG Workshop on Smart Antennas (WSA 2019), Wien, Austria
- IEEE Wireless Communications and Networking Conference (WCNC 2019), Marrakech, Morocco
- 2019 IEEE 5G World Forum (5GWF), Dresden, Germany,
- 2019 26th International Conference on Telecommunications (ICT), Hanoi, Vietnam
- 16th International Symposium on Wireless Communication Systems (ISWCS'2019), Oulu, Finland
- 20th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC'19), Cannes, France
- 4th conference on Geometric Science of Information (GSI2019), Toulouse, France, 2019
- 37th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2019), Petrópolis-Brazil, 2019
- 11th Latin-American Conference on Communications (LATINCOM 2019), Salvador-Brazil, 2019
- 24th International Workshop on Smart Antennas (WSA 2020), Hamburg, Germany, 2020
- IEEE 91st Vehicular Technology Conference (VTC2020-Spring), Antwerp, 2020
- 17th International Symposium on Wireless Communication Systems (ISWCS 2020), Berlin, Germany, 2020
- 11th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2020), Hangzhou, China, 2020
- 21st IEEE Statistical Signal Processing Workshop (SSP 2020), Rio de Janeiro, Brazil, 2020
- 16th International conference on Wireless Communications & Mobile Computing (IWCMC 2020), Limassol, Cyprus, 2020
- 38th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2020), Florianópolis, Brazil, 2020

- 12th IEEE Latin-American Conference on Communications (IEEE LATINCOM 2020), Santo Domingo, Dominican Republic, 2020
- IEEE 93rd Vehicular Technology Conference (VTC2021-Spring), Helsinki, Finland, 2021
- 17th International Wireless Communications & Mobile Computing Conference (IWCMC 2021), Harbin, China, 2021
- 2021 IEEE 93rd Vehicular Technology Conference (VTC2021-Spring), Helsinki, Finland, 2021
- 28th International Conference on Telecommunications (ICT 2021), London, United Kingdom, 2021
- 39th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2021), Fortaleza, Brazil, 2021
- 22nd IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2021), Lucca, Italy, 2021
- 2022 IEEE 95th Vehicular Technology Conference (VTC2022-Spring), Helsinki, Finland, 2022
- 18th International Wireless Communications and Mobile Computing Conference (IWCMC 2022), Communication & Signal Processing Symposium, Dubrovnik, Croatia, 2022
- 40th Brazilian Telecommunications and Signal Processing Symposium (SBrT 2022), Santa Rita de Sapucaí, Brazil, 2022
- 23rd IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2022), Oulu, Finland, 2022
- 12th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2022), Trondheim, Norway, 2022
- 14th IEEE Latin-American Conference on Communications (IEEE LATINCOM 2022), Rio de Janeiro, Brazil, 2022
- 18th International Symposium on Wireless Communication Systems (ISWCS 2022), Hanzhou, China, 2022
- 2022 IEEE 95th Vehicular Technology Conference (VTC2022-Spring), Helsinki, Finland, 2022
- 2023 IEEE International Conference on Communications (ICC): Wireless Communications Symposium, Rome, Italy, 2023
- 2023 IEEE 97th Vehicular Technology Conference (VTC2023-Spring), Florence, Italy, 2023
- 31st European Signal Processing Conference (EUSIPCO 2023), Helsinki, Finland, 2023
- 2023 IEEE Statistical Signal Processing Workshop (SSP 2023), Hanoi, Vietnam, 2023
- 41st Brazilian Telecommunications and Signal Processing Symposium (SBrT 2023), São José dos Campos, Brazil, 2023
- 15th Latin-American Conference on Communications (IEEE LATINCOM 2023), Panama City, Panama, 2023
- 2024 IEEE International Conference on Communications (ICC): SAC Reconfigurable Intelligent Surfaces and Smart Environments Track, Denver USA, 2024
- 2024 IEEE International Conference on Communications (ICC): Wireless Communications Symposium, Denver USA, 2024

- 19th International Symposium on Wireless Communication Systems (ISWCS 2024), Rio de Janeiro, Brazil, 2024
- 2024 IEEE 99th Vehicular Technology Conference (VTC2024-Spring), Track: IoV, IoT, M2M, Sensor Networks, and Ad-Hoc Networking, Singapore, 2024
- 13th IEEE Sensor Array and Multichannel Signal Processing (SAM 2024), Corvallis, Oregon, USA, 2024
- 25th IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2024), Lucca, Italy, 2024
- 42nd Brazilian Telecommunications and Signal Processing Symposium (SBrT 2024), Belém, Brazil, 2024
- 2024 IEEE 100th Vehicular Technology Conference (VTC2024-Fall), Washington DC, USA, 2024
- EEE 2025 Statistical Signal Processing Workshop (SSP2025), Edinburgh, UK, 2025.

Research Funding and Projects

Pr37. *Signal Processing Meets Machine Learning: Federated Learning and Conformal Prediction*
Productivity Researcher Grant, National Council of Scientific and Technological Development (CNPq)
March 2024 - February 2028

Pr36. *Advanced AI and Signal Processing Techniques for Modeling of Complex Dynamical Systems*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
February 2022 - February 2024

Pr35. *Optimization and Estimation in Distributed Systems: Robust Statistics and Machine Learning*
Productivity Researcher Grant, National Council of Scientific and Technological Development (CNPq)
March 2021 - February 2024

Pr34. *Smart Water: Internet of Things for Water Distribution Systems (SWITS)*
Coordination for the Improvement of Higher Education Personnel (CAPES)
April 2018 - December 2021

Pr33. *Geometry and Optimization on Statistical Manifolds: Applications in Signal and Image Processing (GROSS)*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
April 2018 - May 2022

Pr32. *Distributed Information Systems: Information Geometry and Complex-Valued Signals*
National Council of Scientific and Technological Development (CNPq)
August 2017 - May 2021

Pr31. *5GRAN - 5G Radio Access Network*
Ericsson Telecommunications
November 2016 - October 2018

Pr30. *Signal Processing Methods for Information Recovery*
Productivity Researcher Grant, National Council of Scientific and Technological Development (CNPq)
March 2015 - February 2018

Pr29. *Distributed Optimization and Massive MIMO Transceivers for 5G Wireless Communications*
Ericsson Telecommunications
October 2014 - September 2016

Pr28. *Signal Processing in Information Systems*
Productivity Researcher Grant, National Council of Scientific and Technological Development (CNPq)
March 2012 - February 2015

Pr27. *Signal Processing and Cross-Layer Optimization in Wireless MIMO Systems*
Productivity Researcher Grant, National Council of Scientific and Technological Development (CNPq)
March 2009 - February 2012

Pr26. *Information Geometry: Methods and Advances in Modern Information Systems*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
March 2013 - February 2016

Pr25. *Interference Alignment and Compressive Sensing in Wireless Communication Systems*
National Council of Scientific and Technological Development (CNPq)
March 2012 - February 2014

Pr24. *Capacity of Cooperative MIMO Systems: Bounds and Transceiver Design*
Bank for the Development of the Northest Region (BNB)
March 2012 - February 2014

Pr23. *Transceiver Design in MIMO Communication Systems: Distributed Processing and Large Scale Approaches*
Ericsson Telecommunications
August 2012 - July 2014

Pr22. *Heterogeneous Communication Networks: Interference Alignment and Cognitive Radio*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
August 2012 - July 2014

Pr21. *MIMO Transceivers and Cooperation for Multiuser Wireless Communications*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
August 2010 - July 2012

Pr20. *Advanced MIMO Transceivers and Matrix Decompositions for Wireless Systems*
Ericsson Telecommunications
August 2010 - July 2012

Pr19. *Excellence Research Center on Signal Processing for Communications: Signal Processing Strategies for Cross-Layer Optimization in Next Generation Wireless Systems*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
August 2019 - July 2012

Pr18. *Interference Management in Advanced Wireless Systems*
Ericsson Telecommunications
August 2009 - July 2010

Pr17. *Classical and Quantum Communications in Teleinformatics Engineering*
Coordination for the Improvement of Higher Education Personnel (CAPES)
September 2009 - August 2014

Pr16. *Advanced Transceivers with Cross-Layer Optimization and Limited Feedback Channel for Wireless MIMO-OFDM Systems*
Ericsson Telecommunications
August 2008 - July 2010

Pr15. *Signal Processing Strategies for Cross-Layer Optimization of Next Generation Wireless Systems*
National Council of Scientific and Technological Development (CNPq)
August 2008 - July 2009

Pr14. *On MIMO-OFDM Cooperative Transceivers and Link Adaptation for Multiuser Wireless Systems*
National Council of Scientific and Technological Development (CNPq)
March 2008 - February 2009

Pr13. *New Mathematical Tools of Signal Processing for Future MIMO Wireless Communication Systems*
Coordination for the Improvement of Higher Education Personnel (CAPES) and French Committee for the Evaluation of Academic and Scientific Cooperation with Brazil (COFECUB)
March 2007 - February 2010

Pr12. *Differential Geometry on the Study of Signals in Communications*
Foundation for Support to the Development of Science and Technology of Ceará (FUNCAP)
March 2007 - February 2009

Pr11. *Interference Management and Resource Allocation for Wireless Communication Systems of Next Generation*
Ericsson Telecommunications
December 2006 - July 2009

Pr10. *Link Management with Cross-Layer Optimization for MIMO-OFDM Wireless Systems*
Ericsson Telecommunications
August 2006 - July 2008

Pr9. *Advanced Techniques of Statistical Signal Processing in Communications and Automation*
National Council of Scientific and Technological Development (CNPq)
March 2005 - February 2007

Pr8. *Multiuser Detection for Telecommunication Wireless Systems with Spread Spectrum*
National Council of Scientific and Technological Development (CNPq)
March 2005 - February 2007

Pr7. *State of the Art on Algorithms for Advanced OFDM Receivers*
Ericsson Telecommunications
August 2005 - July 2006

Pr6. *Intelligent Techniques of Signal Processing for Digital Communication Systems*
National Council of Scientific and Technological Development (CNPq)
May 2005 - February 2007

Pr5. *Excellence Research Center on Signal Processing for Communications: Conception of an Adaptive Air-Interface for Next Generation Wireless Systems*
National Council of Scientific and Technological Development (CNPq)
March 2004 - February 2006

Pr4. *Link Adaptation, Transceiver Architectures and Channel Estimation for OFDM Wireless Systems*
Ericsson Telecommunications
August 2004 - July 2006

Pr3. *Advanced Techniques of Signal Processing in Telecommunications: Deconvolution and Identification*
Research Foundation of the State of São Paulo (FAPESP)
December 2003 - July 2007

Pr2. *Radio Resource Management for Efficient Provision of 3G Services*
Ericsson Telecommunications
August 2002 - July 2004

Pr1. *Advanced Simulator of Smart Antennas for Wireless Internet in 3G Wireless Systems*
Ericsson Telecommunications
February 2001 - July 2003

Ph.D. Dissertation Supervision

Vinícius Silva Osterne Ribeiro
"*Joint modeling approach with Cholesky decomposition using the scale mixtures of normal distributions*".
Ph.D., February 2025 (with Prof. Lionel Bombrun)
(Data Scientist at LexisNexis Risk Solutions, Brazil)

Diego Perdigão Sousa
"*Leakage Detection in a Real Water Distribution Network Through a Federated Prototype-Based Model*".
Ph.D., January 2024
(Researcher at Eletra, Brazil)

Fazal E Asim
"*Array Processing and Precoding Design for Next Generation of Wireless Communication Systems*".
Ph.D., October 2020 (with Dr. Josef Nossek)
(Assistant Professor at UFC, Brazil)

Francisca Leidmar Josué Vieira
"*Deformed Exponentials in Statistical Manifolds: Characterization and Analysis of Family of Entropies*".
Ph.D., January 2020
(Assistant Professor at URCA, Brazil)

Ana Flávia Paiva Rodrigues
"*Deformed Exponentials and Financial Markets: Applications to Portfolio Selection and Asset Pricing*".
Ph.D., March 2018
(Researcher at IPEA, Brazil)

Luiza Helena Felix de Andrade
"*Advances on Generalized Statistical Manifolds: An Extension to Exponential and Mixture Arcs*".
Ph.D., March 2018
(Associate Professor at UFERSA, Brazil)

David Carneiro de Souza
"*Generalized Statistical Manifolds and a Modification of the Maximum Likelihood Estimator*".
Ph.D., December 2016
(Assistant Professor at IFCE, Brazil)

Igor Moáco Guerreiro
"*Distributed Optimization Techniques for 4G and Beyond*".
Ph.D., September 2016
(Assistant Professor at UFC, Fortaleza, Brazil)

Antônio Alisson Pessoa Guimarães
"*Wireless Ad-Hoc Networks Study Using Stochastic Geometry Approach*".
Ph.D., July 2014
(Assistant Professor at Unilab, Brazil)

Rui Facundo Vigelis
"*On Musielak-Orlicz Function Spaces and Applications to Information Geometry*".
Ph.D., June 2011
(Associate Professor at Federal University of Ceará, Brazil)

Lígia Maria Carvalho Sousa
"*Statistical Modelling and Precoder Design for Coordinated MIMO Wireless Communication Systems*"
Ph.D. May 2011
(Associate Professor at Unilab, Brazil)

Antônio Macilio Pereira de Lucena
"*Study of the Communication Systems with Frequency Superposed Non-Orthogonal Signals*"
Ph.D. August 2006 (co-supervised with Dr. João Cesar Moura Mota)
(Senior Researcher at National Center for Space Research, Brazil)

M.S. Thesis Supervision

Genilson Gomes da Silva
"*Geometric Distance Between Positive Symmetric Matrices with Different Dimensions: A Case of Study for Financial Portfolio Selection*",
M.Sc. Thesis, September 2023
(Federal Institute of Technology - Ceará, Brazil)

Ana Carolina Nepomuceno Costa
"*Evaluation of the Prediction of Violence Against Women by Means of Machine Learning Strategies*",
M.Sc. Thesis, June 2023
(Data Scientist at ION Systems, Brazil)

Rafael Moreira Albuquerque
"*Optimization of the Proficiency Estimation in Computerized Adaptive Testing via Kalman Filtering*",
M.Sc. Thesis, February 2023
(Secretary of Education of Ceará, Brazil).

Rafael de Carvalho Bluhm
"*Improper Complex-Valued Signals: Adaptive Filtering and Natural Gradient*",
M.Sc. Thesis, February 2023
(pursuing Ph.D. at Federal University of Ceará, Brazil)

Lucas de Paula Damasceno
"*Independent Vector Analysis Using Semi-Parametric Density Estimation Via Multivariate Entropy Maximization*",
M.Sc. Thesis, May 2021 (with Dr. Zois Boukouvalas)
(pursuing Ph.D. at Federal University of Ceará, Brazil)

Júlio Peixoto da Silva Júnior
"*Feature Extraction Methods for Seizure Detection: A Comparative Approach*",
M.Sc. Thesis, February 2019
(Data Scientist at ENEL-Fortaleza, Brazil)

Diego Perdigão Sousa
"*Short-Circuit Fault Detection in Three Phase Induction Motor using Prototype-Based Classifiers*",
M.Sc. Thesis, February 2019
(pursuing Ph.D. at Federal University of Ceará, Brazil)

Daniel Matias Silva dos Santos
"*Pilot Selection in Wireless Communication Systems*",
M.Sc. Thesis, July 2016
(Federal Institute of Technology - Ceará, Brazil)

Henriques Mateus Joaquim Zacarias
"*Evaluation of the Fetus Heart Frequency Based on Nonlinear Metrics*",
M.Sc. Thesis, August 2015
(Researcher at Centrovita, Angola)

Raymundo Nogueira de Sá Netto
"*Analysis of Compressive Sensing for Limited Feedback Channel with Quantization Errors and Noise in SM-MIMO Systems*",
M.Sc. Thesis, January 2013
(Researcher at Petrobrás Company of Oil and Gas, Brazil)

Raphael Torres Santos Carvalho
"*Wavelet Transform on the Detection of Larynx Pathologies*",
M.Sc. Thesis, March 2012
(Assistant Professor at Federal Institute of Technology - Ceará, Brazil)

Igor Moáco Guerreiro
"*Game-Theoretic Antenna Subset Selection for Multiuser MIMO Systems*",
M.Sc. Thesis, January 2010
(Senior Researcher at Wireless Telecommunications Research Center, Fortaleza, Brazil)

Antônio Alisson Pessoa Guimarães
"*On Capacity Bounds for the MIMO Channel with Rice Fading: An Approach by Majorization Theory*",
M.Sc. Thesis, July 2010
(Associate Professor at Unilab, Brazil)

Cibelly Azevedo de Araújo
"*Reduction of Required Feedback in Wireless Communication Systems Using a Cross-Layer Approach*",
M.Sc. Thesis, April 2008
(Assistant Professor at Federal University of Ceará, Brazil)

Darlan Cavalcante Moreira
"*Channel Estimation Strategies for Link Adaptation in MIMO-OFDM Systems*",
M.Sc. Thesis, August 2006
(Senior Researcher at Wireless Telecommunications Research Center, Fortaleza, Brazil)

Rui Facundo Vigelis
"Estimation Strategies for Time Varying Channels in OFDM Systems",
M.Sc. Thesis, September 2006
(Associate Professor at Federal University of Ceará, Brazil)

Books

B3. R. F. Coelho, V. H. Nascimento, R. L. Queiroz, J. M. T. Romano and C. C. Cavalcante (Editors), "*Signals and Images: Advances and Results in Speech, Estimation, Compression, Recognition, Filtering, and Processing*", 1st ed. Boca Raton, FL, CRC Press, 2015.

B2. J. M. T. Romano, R. R. F. Attux, C. C. Cavalcante and R. Suyama, "*Unsupervised Signal Processing: Channel Equalization and Source Separation*, 1st ed. Boca Raton, FL: CRC Press, 2010.

B1. C. C. Cavalcante, R. F. Colares and P. C. Barbosa (Editors) "*Telecommunications: Advances and Trends in Transmission, Networking and Applications*, 1st ed. Fortaleza: Universidade de Fortaleza, 2006.

Book Chapters

BC15. Diego P. Sousa, José M. B. da Silva Jr, Charles C. Cavalcante, and Carlo Fischione "*A Federated Prototype-Based Model for IoT Systems: A Study Case for Leakage Detection in a Real Water Distribution Network*", in Wireless Sensor Networks in Smart Environments (eds. D. Ciuonzo and P. Salvo Rossi), Chapter 12, pages 273-298, 2025. DOI: 10.1002/9781394249879.ch12

BC14. Lucas P. Damasceno, Allison Shafer, Nathalie Japkowicz, Charles C. Cavalcante and Zois Boukouvalas, "*Efficient Multivariate Data Fusion for Misinformation Detection During High Impact Events*", in Poncelet Pascal and Dino Ienco (Editors), Discovery Science (DS 2022). Lecture Notes in Computer Science (LNCS), vol 13601. pp. 253-268, Springer, Cham, 2022. DOI: 10.1007/978-3-031-18840-4_19

BC13. Luiza H. F. de Andrade, Francisca L. J. Vieira, and Charles C. Cavalcante, "*On Normalization Functions and φ-Families of Probability Distributions*", in Frank Nielsen (Editor), Progress in Information Geometry: Theory and Applications, Springer, pp. 19-39, 2021. DOI: 10.1007/978-3-030-65459-7_2

BC12. D. P. Sousa, G. A. Barreto, C. C. Cavalcante and C. M. S. Medeiros, "*LVQ-type Classifiers for Condition Monitoring of Induction Motors: A Performance Comparison*", chapter in A. Vellido, K. Gibert, C. Angulo and M. Guerrero. (Orgs.). Advances in Self-Organizing Maps, Learning Vector Quantization, Clustering and Data Visualization. WSOM 2019. Advances in Intelligent Systems and Computing, vol 976. Springer, Cham, pp. 130-139.

BC11. F. L. J. Vieira, R. F. Vigelis, L. H. F. de Andrade and C. C. Cavalcante, "*Deformed Exponential and the Behavior of the Normalizing Function*". chapter in F. Nielsen and F. Barbaresco F. (Eds), Geometric Science of Information. GSI 2019. Lecture Notes in Computer Science, vol 11712. Springer, Cham, pp. 271-278.

BC10. R. F. Vigelis, L. H. F. de Andrade and C. C. Cavalcante, "*On the Existence of Paths Connecting Probability Distributions*", chapter in Frank Nielsen; Frédéric Barbaresco. (Orgs.). Geometric Science of Information: Third International Conference, GSI 2017 (Lecture Notes in Computer Science), vol 10589, pp. 801–808. Springer, Cham, 2017.

BC9. L. H. F. de Andrade, R. F. Vigelis, F. L. J. Vieira and C. C. Cavalcante, "*Normalization and φ-function: Definition and Consequences*". chapter in Frank Nielsen; Frédéric Barbaresco. (Orgs.). Geometric Science of Information: Third International Conference, GSI 2017 (Lecture Notes in Computer Science), vol 10589, pp. 231–238. Springer, Cham, 2017.

BC8. R. F. Vigelis and C. C. Cavalcante, "*Information Geometry: An Introduction to New Models for Signal Processing*", chapter in R. F. Coelho; V. H. Nascimento; R. L. Queiroz; J. M. T. Romano; C. C. Cavalcante (Orgs.). Signals and Images: Advances and Results in Speech, Estimation, Compression, Recognition, Filtering, and Processing, 1st ed. Boca Raton, FL, CRC Press, 2015.

BC7. R. F. Vigelis, D. C. de Souza and C. C. Cavalcante, "*New Metrics and Connections in Statistical Manifolds*", chapter in Frank Nielsen; Frédéric Barbaresco. (Orgs.). Geometric Science of Information: Second International Conference, GSI 2015 (Lecture Notes in Computer Science), pp. 222-229. Springer International Publishing, 2015, v. 9389.

BC6. L. M. C. Sousa, T. F. Maciel and C. C. Cavalcante, "*Precoder Design for Coordinated Multipoint Systems*, chapter in Francisco Rodrigo Porto Cavalcanti. (Org.). Resource Allocation and MIMO for 4G and Beyond. 1ed.New York: Springer New York, 2014.

BC5. I. M. Guerreiro, C. C. Cavalcante and D. Hui, "*Distributed Optimization Techniques in Wireless Communication Networks*, chapter in Francisco Rodrigo Porto Cavalcanti. (Org.). Resource Allocation and MIMO for 4G and Beyond. 1ed.New York: Springer New York, 2014.

BC4. R. F. Vigelis and C. C. Cavalcante, "*The Δ_2-Condition and ϕ-Families of Probability Distributions*", chapter in Frank Nielsen; Frédéric Barbaresco. (Orgs.). Geometric Science of Information: First International Conference, GSI 2013 (Lecture Notes in Computer Science), pp. 729-736, Springer Berlin Heidelberg, 2013, v. 8085.

BC3. R. F. Vigelis, D. C. Moreira and C. C. Cavalcante, "*Channel Estimation for OFDM Systems: Techniques, Algorithms, and Performance*", chapter in Francisco Rodrigo Porto Cavalcanti; Sören Andersson. (Orgs.). Optimizing Wireless Communication Systems. 1ed.New York: Springer US, 2009.

BC2. D. C. Moreira, W. C. Freitas Jr., C. A. Araújo and C. C. Cavalcante, "*Link Adaptation for MIMO-OFDM Systems*, chapter in Francisco Rodrigo Porto Cavalcanti; Sören Andersson. (Orgs.). Optimizing Wireless Communication Systems. 1ed.New York: Springer US, 2009.

BC1. R. Suyama, L. T. Duarte, A. O. Neves, R. Ferrari, R. R. F. Attux, C. C. Cavalcante, C. Junqueira and J. M. T. Romano, "*Unsupervised Signal Processing: Concepts, Applications and Trends*, chapter in Charles Casimiro Cavalcante; Ricardo Fialho Colares; Paulo Cezar Barbosa. (Orgs.): Advances and Trends in Transmission, Networking and Applications. Fortaleza: Universidade de Fortaleza, 2006.

Journal Articles

J47. Vinícius Silva Osterne Ribeiro, Lionel Bombrun, Juvêncio Santos Nobre, Charles Casimiro Cavalcante, and Yannick Berthoumieu, "*Alternative Cholesky Decomposition and family of scale mixture of Normal distribution: A joint modeling approach*", Signal Processing, 110207, 2025. DOI: 10.1016/j.sigpro.2025.110207.

J46. Vinícius Silva Osterne Ribeiro, Lionel Bombrun, Juvêncio Santos Nobre, Charles Casimiro Cavalcante, and Yannick Berthoumieu, "*A general robust approach for joint modeling of the family of scale mixture of Normal distribution*", Signal Processing, 109426, 2024. DOI: 10.1016/j.sigpro.2024.109426.

J45. Lucas P. Damasceno, Egzona Rexhepi, Allison Shafer, Ian Whitehouse, Nathalie Japkowicz, Charles C. Cavalcante, Roberto Corizzo, and Zois Boukouvalas, "*Exploiting Sparsity and Statistical Dependence in Multivariate Data Fusion: An Application to Misinformation Detection for High-Impact Events*", Machine Learning, Volume 113, pp. 2183–2205, April 2024. DOI: 10.1007/s10994-023-06424-8.

J44. Diego Sousa, Rong Du, José Mairton Barros da Silva Jr, Charles Casimiro Cavalcante, and Carlo Fischione, "*Leakage detection in water distribution networks using machine-learning strategies*", Water Supply 2023; ws2023054. DOI: 10.2166/ws.2023.054

J43. Fazal-E-Asim, Charles C. Cavalcante, Felix Antreich, André L. F. de Almeida, and Josef A. Nossek, "*Efficient Hybrid A/D Beamforming for Millimeter-Wave Systems Using Butler Matrices*", IEEE Transactions on Wireless Communications, vol. 22, no. 2, pp. 1001-1013, February 2023. DOI: 10.1109/TWC.2022.3200298.

J42. Fazal-E-Asim, A. L. F. de Almeida, F. Antreich, M. Haardt and Charles C. Cavalcante, "*Kronecker Product Based Space-Time Block Codes*", IEEE Wireless Communications Letters, vol. 11, no. 2, pp. 386-390, February 2022, DOI: 10.1109/LWC.2021.3129460.

J41. Fazal-E-Asim, Felix Antreich, Charles C. Cavalcante, André L. F. de Almeida and Josef A. Nossek, "*Two-Dimensional Channel Parameter Estimation for Millimeter-Wave Systems using Butler Matrices*", IEEE Transactions on Wireless Communications, vol. 20, no. 4, pp. 2670-2684, April 2021. DOI: 10.1109/TWC.2020.3043958.

J40. Fazal-E-Asim, Felix Antreich, Charles C. Cavalcante, André L. F. de Almeida and Josef A.Nossek, "*Channel Parameter Estimation for Millimeter-Wave Cellular Systems with Hybrid Beamforming*", Signal Processing, Vol. 176, Pages: 107715, 2020, DOI: 10.1016/j.sigpro.2020.107715.

J39. Fazal-E-Asim, André L. F. de Almeida, Martin Haardt, Charles C. Cavalcante and Josef A. Nossek, "*Rank-one Detector for Kronecker-Structured Constant Modulus Constellations*", IEEE Signal Processing Letters, Vol. 27, Pages: 1420-1424, 2020, DOI: 10.1109/LSP.2020.3010133.

J38. Rui Facundo Vigelis, Luiza H. F. de Andrade and Charles C. Cavalcante, "*Conditions for the Existence of a Generalization of Rényi Divergence*, Physica A: Statistical Mechanics and its Applications, vol. 558, pages 124953, 2020.

J37. Luiza H. F. Andrade, Rui F. Vigelis and Charles C. Cavalcante, "*A generalized quantum relative entropy*", Advances in Mathematics of Communications, Volume 13, Issue 3, pp. 413-422, August 2020, DOI: 10.3934/amc.2020063

J36. R. F. Vigelis, L. H. F. de Andrade and Charles C. Cavalcante, "*Properties of a Generalized Divergence Related to Tsallis Relative Entropy*," IEEE Transactions on Information Theory, vol. 66, no. 5, pp. 2891-2897, May 2020, DOI: 10.1109/TIT.2019.2953029.

J35. Xingwang Li, Qunshu Wang, Hongxing Peng, Hui Zhang, Dinh-Thuan Do, Khaled M. Rabie, Rupak Kharel and Charles C. Cavalcante, "*A Unified Framework for HS-UAV NOMA Networks: Performance Analysis and Location Optimization*", IEEE Access, vol. 8, pp. 13329-13340, 2020, DOI: 10.1109/ACCESS.2020.2964730

J34. Y. Zhang, X. Li, G. Zhao, B. Lu and Charles C. Cavalcante, "*Signal Reconstruction of Compressed Sensing Based on Alternating Direction Method of Multipliers*", Circuits, Systems, and Signal Processing, Vol. 39, pp. 307-323, 2020, DOI: 10.1007/s00034-019-01174-2.

J33. Y. R. Ortega, I. M. Guerreiro, D. Hui, Charles C. Cavalcante and F. R. P. Cavalcanti, "*Supervised learning and graph signal processing strategies for beam tracking in highly directional mobile communications*", Transactions on Emerging Telecommunications Technologies, Volume 30, Issue 9, Special Issue: Machine Learning/AI for IoT, M2M, and Computer Communication, September 2019, e3687, DOI: 10.1002/ett.3687.

J32. X. Li, M. Huang, J. Li, Q. Yu, K. Rabie and Charles C. Cavalcante, "*Secure Analysis of Multi-Antenna Cooperative Networks with Residual Transceiver HIs and CEEs*", IET Communications, Vol. 13, Issue, 17, 2019, DOI: 10.1049/iet-com.2019.0011

J31. X. Tian, Q. Li, X. Li, H. Zhang, K. Rabie, Charles C. Cavalcante, "*Performance Analysis of Two-Way Relay NOMA Systems with Hardware Impair-ments and Channel Estimation Errors*", KSII Transactions on Internet and Information Systems, Vol. 13, No. 11, November 30, 2019, DOI: 10.3837/tiis.2019.11.006.

J30. A. F. P. Rodrigues, Charles C. Cavalcante and V. L. Crisóstomo, "*A projection pricing model for non-Gaussian financial returns*", Physica A: Statistical Mechanics and its Applications, Volume 534, 2019, 122181; DOI: 10.1016/j.physa.2019.122181

J29. F. L. Josué Vieira, L. H. Félix de Andrade, R. Facundo Vigelis, and Charles C. Cavalcante, "*A Deformed Exponential Statistical Manifold*, Entropy, 2019, 21, 496; DOI: 10.3390/e21050496

J28. Jin Jin, Xiang-Chuan Gao, Xingwang Li, Charles C. Cavalcante and Lihua Li, "*Low-Overhead Feedback Topology Design for the K-User MIMO Interference Alignment*", KSII Transactions on Internet and Information Systems, Vol. 12, No.11, pp. 5304-5322, 2018. DOI: 10.3837/tiis.2018.11.008.

J27. Xueyan Chen, Li Guo, Xingwang Li, Chao Dong, Jiaru Lin and Charles C. Cavalcante, "*Full-Duplex Wireless-Powered Jammer Aided Secure Communication for Cognitive Radio Networks*", Physical Communication, Elsevier, Volume 31, December, Pages 103-112, 2018. DOI: 10.1016/j.phycom.2018.10.003.

J26. C. Deng, X. Zhao, D.Zhang, X. Li, J. Li and Charles C. Cavalcante, "*Performance Analysis of NOMA-based Relaying Networks with Transceiver Hardware Impairments*", KSII Transactions on Internet and Information Systems, vol. 12, no. 9, pp. 4295-4316, 2018. DOI: 10.3837/tiis.2018.09.010.

J25. A. F. P. Rodrigues and Charles C. Cavalcante, "*Principal Curves for Statistical Divergences and an Application to Finance*", Entropy, 2018, 20 (5), 333; DOI: 10.3390/e20050333.

J24. A. F. P. Rodrigues, I. M. Guerreiro and Charles C. Cavalcante, "*Deformed Exponentials and Portfolio Selection*", International Journal of Modern Physics C: Computational Physics and Physical Computation, Volume 29, Number 3, Page 1850029, 2018. DOI: 10.1142/S0129183118500298

J23. Luiza H.F. de Andrade, Francisca L. J. Vieira, Rui F. Vigelis and Charles C. Cavalcante, "*Mixture and Exponential Arcs on Generalized Statistical Manifold*", Entropy, 2018, 20(3), 147; DOI: 10.3390/e20030147

J22. X. Chen, L. Guo, C. Dong, J. Lin, X. Li and Charles C. Cavalcante, "*Probabilistic Constrained Approach for Distributed Robust Beamforming Design in Cognitive Two-way Relay Networks*", KSII Transactions on Internet and Information Systems, vol. 12, no. 1, pp. 21-40, 2018. DOI: 10.3837/tiis.2018.01.002

J21. X. Li, Y. Li, L. Li, J. Jin and C. C. Cavalcante, "*Performance analysis of distributed MIMO with ZF receivers over gamma shadowed correlated Rician fading channels*", Physical Communication, Vol. 25, pp. 54-65, 2017. DOI: 10.1016/j.phycom.2017.08.013

J20. C. Deng, Z. Wang, X. Li, H. Li and C. C. Cavalcante, "*An Improved Remote Sensing Image Fusion Algorithm Based on IHS Transformation*", KSII Transactions on Internet and Information Systems, Volume 11, No. 3, pp. 1633-1649, 2017. DOI: 10.3837/tiis.2017.03.021.

J19. D. C. de Souza, R. F. Vigelis and C. C. Cavalcante, "*Geometry Induced by a Generalization of Rényi Divergence*", Entropy, Volume 18, Issue 11, Page 407; DOI:10.3390/e18110407, 2016.

J18. X. Li, J. Wang, L. Li, and C. C. Cavalcante, "*Capacity Bounds on the Ergodic Capacity of Distributed MIMO Systems over K Fading Channels*", KSII Transactions on Internet and Information Systems, Volume 10, No. 7, July 31, 2016, DOI: 10.3837/tiis.2016.07.007.

J17. A. A. P. Guimarães, M. Kountouris and C. C. Cavalcante, "*Bounds and approximations on the ergodic mutual information of spatially correlated Nakagami-m MIMO channels*", Transactions on Emerging Telecommunications Technologies, Volume 27, Issue 6, pages 842–856, June 2016, DOI: 10.1002/ett.3032.

J16. I. M. Guerreiro, C. C. Cavalcante and D. Hui, "*Precoder selection scheme based on message-passing approach: a practical perspective*". IOP Conference Series: Materials Science and Engineering, v. 67, p. 012023, 2014, DOI: 10.1088/1757-899X/67/1/012023.

J15. R. F. Vigelis and C. C. Cavalcante, "*Smoothness of the Orlicz norm in Musielak-Orlicz function spaces*". Mathematische Nachrichten, Volume 287, Issue 8-9, p. 1025-1041, July 2014, DOI: 10.1002/mana.201200214.

J14. F. R. Guimarães, D. B. da Costa, T. Tsiftsis, C. C. Cavalcante and G. Karagiannidis, "*Multi-User and Multi-Relay Cognitive Radio Networks Under Spectrum Sharing Constraints*". IEEE Transactions on Vehicular Technology, v. 63, p. 433-439, January, 2014, DOI: 10.1109/TVT.2013.2275201.

J13. I. M. Guerreiro, D. Hui and C. C. Cavalcante, "*A distributed approach to precoder selection using factor graphs for wireless communication networks*". EURASIP Journal on Advances in Signal Processing (Online), v. 2013, p. 83, 2013, DOI: 10.1186/1687-6180-2013-83.

J12. R. F. Vigelis and C. C. Cavalcante, "*On φ-Families of Probability Distributions*". Journal of Theoretical Probability, v. 26, p. 870-884, 2013, DOI: 10.1007/s10959-011-0400-5.

J11. D. B. da Costa, S. Aïssa and C. C. Cavalcante, "*Performance Analysis of Partial Relay Selection in Cooperative Spectrum Sharing Systems*". Wireless Personal Communications, v. 64, p. 79-92, 2012, DOI: 10.1007/s11277-012-0518-5.

J10. A. A. P. Guimarães and C. C. Cavalcante , "*Upper Bound of Ergodic Capacity for MIMO Channels with Ricean-Fading using Majorization Theory*". Journal of Communication and Information Systems, v. 27, p. 10-14, 2012, DOI: 10.14209/jcis.2012.2.

J9. W. C. Freitas Jr., D. C. Moreira, C. C. Cavalcante and A. L. F. de Almeida, "*Backward Recursion in Layered Space-Time Non-linear Interference Cancellation Detectors*". Journal of communication and information systems, v. 2011, p. 30-34, 2011, DOI: 10.14209/jcis.2011.4.

J8. C. C. Cavalcante and G. A. Barreto, "*Recuperação de Fontes e Análise por Componentes Independentes: Conceitos, Fundamentos e Aplicações em Linguística*" (Source Recovering and Independent Component Analysis: Concepts, Fundamentals and Applications in Linguistics). Revista de Letras (Fortaleza), v. 30, p. 58-69, 2011.

J7. A. M. P. de Lucena, J. C. M. Mota and C. C. Cavalcante, "*Optimum detection of non-orthogonal QAM signals with spectral overlapping*". IET Communications, v. 3, p. 249-256, 2009, DOI: 10.1049/iet-com:20080157.

J6. C. C. Cavalcante and J. M. T. Romano, "*On the Relationships Between MMSE and Information-Theoretic-Based Blind Criterion for Minimum BER Filtering.* Lecture Notes in Computer Science, v. 5441, p. 17-24, 2009, DOI: 10.1007/978-3-642-00599-2_3.

J5. F. R. P. Cavalcanti, W. C. Freitas Jr. and C. C. Cavalcante, "*Sistemas de Comunicações Móveis de Próxima Geração Multiantenas e Multiportadoras*" (Multiantenna and Multicarrier Next Generation Wireless Communication Systems). Telecomunicações (Santa Rita do Sapucaí), v. 12, p. 1-20, 2009.

J4. C. C. Cavalcante, D. Zanatta Filho and J. M. T. Romano, "*Multiuser processing using blind source separation methods*". European Transactions on Telecommunications, v. 19, p. 827-836, 2008, 10.1002/ett.1327.

J3. R. Suyama, C. C. Cavalcante, L. T. Duarte, R. Ferrari, L. E. P. Rangel, R. R. F. Attux, F. J. Von Zuben, J. M. T. Romano, "*A Nonlinear Prediction Approach to the Blind Separation of Convolutive Mixtures*". EURASIP Journal on Advances in Signal Processing (Online), v. 2007, p. 043860-1, 2007, DOI: 10.1155/2007/43860.

J2. C. C. Cavalcante and J. M. T. Romano, "*Multi-user pdf estimation based criteria for adaptive blind separation of discrete sources*". Signal Processing, Suíça, v. 85, p. 1059-1072, 2005, DOI: 10.1016/j.sigpro.2004.11.023.

J1. C. C. Cavalcante, F. R. P. Cavalcanti and J. C. M. Mota, "*Adaptive Blind Multiuser Separation Criterion Based on Log-Likelihood Maximization*". Electronics Letters, Inglaterra, v. 38, p. 1231-1233, 2002, DOI: 10.1049/el:20020785.

Invention Disclosures and Patents

P4. C. C. Cavalcante, I. M. Guerreiro and D. Hui, "*Reduced-Size Message Pass in Factor Graphs for Wireless Commmunications Networks*", United States Patent and Trademark Office (USPTO), Patent number: US9743397 B2, Granted on August 22nd, 2017. Link: `https://goo.gl/UsSR1g`

P3. C. C. Cavalcante, D. Hui and I. M. Guerreiro, "*Graph-Based Distributed Coordination Methods for Wireless Communication Networks*", United States Patent and Trademark Office (USPTO), Patent number: US8989050 B2, Granted on March 3rd, 2015. Link: `https://goo.gl/eGNzQG`

P2. C. C. Cavalcante, A. A. P. Guimarães, T. F. Maciel and L. M. C. Sousa, "*Statistical Joint Precoding in Multi-Cell, Multi-User MIMO*", United States Patent and Trademark Office (USPTO), Patent number: US8934557 B2, Granted on January 13th, 2015. Link: `https://goo.gl/ryhG2g`

P1. L. M. C. Sousa, T. F. Maciel. C. C. Cavalcante and A. A. P. Guimarães, "*Método em um Sistema de Comunicação Sem Fio para Pré-Codificar Conjuntamente Transmissões de Múltiplas Entradas e Múltiplas Saídas de Múltiplos, e, Nó de Rede*, Instituto Nacional da Propriedade Industrial, Brazil, Application number PI 1106088 A2.

Publications in Conference Proceedings (Refereed)

C87. Javad Rajabi, Sunday Okechukwu, Ahmad Mousavi, Roberto Corizzo, Charles C. Cavalcante and Zois Boukouvalas, "Event-Based Multi-Modal Fusion for Online Misinformation Detection in High-Impact Events", 2024 IEEE International Conference on Big Data (IEEE BigData 2024), Washington, DC, USA, December 15th-18th 2024.

C86. Nora Lewis, Charles C. Cavalcante, Zois Boukouvalas and Roberto Corizzo, "On the Effectiveness of Text and Image Embeddings in Multimodal Hate Speech Detection", 2024 IEEE International Conference on Big Data (IEEE BigData 2024), Washington, DC, USA, December 15th-18th 2024.

C85. Stephanie Han, Sebastian Leal-Arenas, Eftim Zdravevski, Charles C. Cavalcante, Zois Boukouvalas and Roberto Corizzo, "Multimodal Deep Learning for Online Meme Classification", 2024

IEEE International Conference on Big Data (IEEE BigData 2024), Washington, DC, USA, December 15th-18th 2024.

C84. Antonio Cézar B. V. Filho, Igor B. Palhano, Igor M. Guerreiro and Charles C. Cavalcante, "An energy efficiency analysis of user-centric cell-free networks", Proc. of XLII Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2024), Belém-PA, Brazil, October 1st-4th, 2024.

C83. Roberto Corizzo, Nora Lewis, Lucas P. Damasceno, Allison Shafer, Charles C. Cavalcante and Zois Boukouvalas, "Multimodal One-class Learning for Malicious Online Content Detection", 2023 IEEE International Conference on Big Data (IEEE BigData 2023), Workshop on Multimodal AI, Sorrento,Italy, December 15th-18th 2023.

C82. Lucas P. Damasceno, Egzona Rexhepi, Allison Shafer, Ian Whitehouse, Charles Casimiro Cavalcante, Roberto Corizzo and Zois Boukouvalas, "Independent Vector Analysis with Sparse Inverse Covariance Estimation: An Application to Misinformation Detection", 2023 IEEE 33rd International Workshop on Machine Learning for Signal Processing (MLSP), Rome, Italy, September 17th-20th, 2023.

C81. Rafael M. Albuquerque, Charles C. Cavalcante and Jorge H. S. de Lira, "Redução da Quantidade de Itens para Estimação de Proficiência em Teste Adaptativo Computadorizado com Filtro de Kalman", in Proc. of XXXIII Simpósio Brasileiro de Informática na Educação (SBIE), Manaus-AM, Brazil, November 16th-19th, 2022.

C80. Rafael Carvalho Bluhm and Charles Casimiro Cavalcante, "Wirtinger Calculus and Complex Natural Gradient Algorithm", in Proc. of XL Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2022), Santa Rita do Sapucaí, September 2022.

C79. Ezequias de Santana Jr, Igor M. Guerreiro, Yuri C. B. Silva and Charles Casimiro Cavalcante, "On the Robustness of Deep Learning Based Beamforming for MU-MISO Systems", in Proc of XXXIX Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2021), Fortaleza, October 2021.

C78. Antônio Alisson Pessoa Guimarães and Charles Casimiro Cavalcante, "The Shannon and Rényi Differential Entropies of the Weighted Sum Of Squared Nakagami-m Random Variables", in Proc of XXXIX Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2021), Fortaleza, October 2021.

C77. Lucas Damasceno, Charles Cavalcante, Tülay Adalı and Zois Boukouvalas, "Independent Vector Analysis Using Semi-Parametric Density Estimation Via Multivariate Entropy Maximization", 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2021), Toronto, Canada, June, 2021.

C76. Daniel C. Araújo, Guillaume Ferré, Charles Casimiro Cavalcante and Igor M. Guerreiro, "A Spectral Efficiency Enhancement for Chirp Spread Spectrum Downlink Communications", IEEE 12th Latin-American Conference on Communications (LATINCOM 2020), Santo Domingo, Dominican Republic, November, 2020.

C75. Fazal-E-Asim, André L. F. de Almeida, Martin Haardt, Charles C. Cavalcante and Josef A. Nossek, "Multi-linear Encoding and Decoding for MIMO Systems", 11th IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2020), Hangzhou, China, June, 2020.

C74. Darlan C. Moreira, Igor M. Guerreiro, Wanlu Sun, Charles C. Cavalcante and Diego A. Sousa, "QoS Predictability in V2X Communication with Machine Learning", IEEE 91st Vehicular Technology Conference: VTC2020-Spring, Antwerp, Belgium, 25th May-31st July, 2020, DOI: 10.1109/VTC2020-Spring48590.2020.9129490.

C73. Diego Sousa, Charles C. Cavalcante, Guilherme Barreto and Cláudio Medeiros, "Uma análise heurística baseada em protótipos para o monitoramento de estados de motores de indução", 14th Brazilian Computational Intelligence Meeting, Belém, Brazil, November 3rd-6th, 2019.

C72. Sara Akodad, Solene Vilfroy, Lionel Bombrun, Charles C. Cavalcante, Christian Germain and Yannick Berthoumieu, "An Ensemble Learning Approach for the Classification of Remote Sensing Scenes Based on Covariance Pooling of CNN Features", 27th European Signal Processing Conference (EUSIPCO 2019), La Coruña, Spain, September 2nd-6th, 2019.

C71. Fazal-E-Asim, Josef A. Nossek, Felix Antreich, Charles C. Cavalcante and André L. F. de Almeida, "Maximum Likelihood Channel Estimation for Millimeter-Wave MIMO Systems with Hybrid Beamforming", 23rd International ITG Workshop on Smart Antennas (WSA 2019), Vienna, Austria, April 24th-26th, 2019.

C70. Diego P. Sousa, Guilherme A. Barreto, Charles C. Cavalcante and Cláudio Medeiros, "LVQ-type Classifiers for Condition Monitoring of Induction Motors: A Performance Comparison", 13th International Workshop on Self-Organizing Maps and Learning Vector Quantization, Clustering and Data Visualization (WSOM+ 2019), Barcelona, Spain, June 26th-28th, 2019.

C69. Júlio Peixoto da Silva Jr, Guilherme de Alencar Barreto and Charles Casimiro Cavalcante, "Detecção de Crises Epiléticas Usando o Modelo ANFIS e Coeficientes LPC: Uma Visão Crítica", V Congresso Brasileiro de Sistemas Fuzzy (CBSF 2018), Fortaleza-CE, July 4th-6th, 2018.

C68. Paolo Zanini, Salem Said, Charles Casimiro Cavalcante and Yannick Berthoumieu, "Stochastic EM Algorithm for Mixture Estimation on Manifolds", in Proc. 2017 IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP 2017), December 10th-13th, Curaçao, Dutch Antilles, 2017.

C67. I. M. Guerreiro, D. Hui and C. C. Cavalcante, "A Factor Graph Approach to Nonuniform Power Distribution", in Proc of XXXV Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2017), São Pedro, 2017.

C66. R. F. Vigelis, B. K. S. Lima and C. C. Cavalcante, "On OFDM Systems under WSS-US Channels", in Proc of XXXV Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2017), São Pedro, 2017.

C65. I. M. Guerreiro, J. Axnäs, D. Hui and C. C. Cavalcante, "Graph-based power-efficient beam sweep for initial synchronization", in Proc. of IEEE 17th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Edinburgh, 2016.

C64. D. C. de Souza, C. C. Cavalcante and R. F. Vigelis, "Modified maximum likelihood estimator", in Proc. of IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2016), Rio de Janeiro, 2016.

C63. R. Mowakeaa, Z. Boukouvalas, C. C. Cavalcante and T. Adalı, "On the characterization, generation, and efficient estimation of the complex multivariate GGD", in Proc. of IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2016), Rio de Janeiro, 2016.

C62. I. M. Guerreiro, D. Hui and C. C. Cavalcante, "Adaptation with reduced-size message pass to precoder selection in multi-cell MIMO systems", in Proc. of IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2016), Rio de Janeiro, 2016.

C61. D. M. S. Santos, D. C. Araújo and C. C. Cavalcante, "Seleção de Pilotos em Sistemas de Múltiplas Antenas para Maximização da SNR Recebida", in Proc of XXXIV Simpósio Brasileiro de Telecomunicações e Processamento de Sinais (SBrT2016), Santarém, PA, v. 1. p. 423-427, 2016.

C60. I. M. Guerreiro, J. Axnäs, D. Hui and C. C. Cavalcante, "Power-Efficient Beam Sweeping for Initial Synchronization in mm-Wave Wireless Networks", in Proc. of IEEE 16th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC2015). Stockholm, Sweden, 2015.

C59. H. M. J. Zacarias, J. A. L. Marques, J. P. V. Madeiro, P. C. Cortez and C. C. Cavalcante, "Detrended Fluctuation Analysis como Ferramenta para Avaliação do Comportamento da Frequência Cardíaca Fetal em Exames Cardiotocográficos", in Proc. of XXIV Congresso Brasileiro de Engenharia Biomédica (CBEB2014), Uberlândia, v. 1. p. 2912-2915, 2014.

C58. A. A. P. Guimarães, M. Kountouris and C. C. Cavalcante, "A Lower Bound on the Ergodic Capacity of Jointly Correlated Rician Fading Channels", in Proc of IEEE 25th Annual International Symposium on Personal, Indoor, and Mobile Radio Commuinications, PIMRC 2014, Washington, DC, p. 528-532, 2014.

C57. I. M. Guerreiro, D. Hui and C. C. Cavalcante, "A Message-passing Approach to Precoder Selection in Wireless Communication Networks", in Proc. of XXXI Simpósio Brasileiro de Telecomunicações, SBrT 2013, Fortaleza, 2013.

C56. F. R. Guimarães, D. B; da Costa and C. C. Cavalcante, "Redes Cooperativas Cognitivas Multi-Usuário Com Compartilhamento Espectral", in Proc of XXXI Simpósio Brasileiro de Telecomunicações, SBrT 2013, Fortaleza, 2013.

C55. F. R. Guimarães, D. B; da Costa and C. C. Cavalcante, "Seleção De Relay Em Sistemas Cooperativos Cognitivos Com Múltiplos Usuários Primários", in Proc of XXXI Simpósio Brasileiro de Telecomunicações, SBrT 2013, Fortaleza, 2013.

C54. R. N. Sá Netto and C. C. Cavalcante, "Feedback Reduction of Spatially Multiplexed MIMO Systems Using Compressive Sensing", in Proc. of XXX Simpósio Brasileiro de Telecomunicações (SBrT2012), Brasília, 2012.

C53. A. A. P. Guimarães and C. C. Cavalcante, "An Upper-Bound on the Ergodic Capacity of Rayleigh-Fading MIMO Channels using Majorization Theory", in Proc. of XXX Simpósio Brasileiro de Telecomunicações (SBrT2012), Brasília, 2012.

C52. C. C. Cavalcante, R. N. Sá Netto and W. C. Freitas Jr., "Sistemas de Informação MIMO: Desempenho, Limitantes e Perspectivas", in Proc. of XXX Simpósio Brasileiro de Telecomunicações (SBrT2012), Brasília, 2012.

C51. R. N. Sá Netto and C. C. Cavalcante, "Quantization and noise impact over feedback reduction of MIMO systems using compressive sensing", in Proc. of International Symposium on Wireless Communication Systems (ISWCS), pp. 396-400, Paris, France, 2012.

C50. A. A. P. Guimarães and C. C. Cavalcante, "An analytical closed-form lower-bound on ergodic capacity of correlated Rayleigh-fading MIMO channels", in Proc. of International Symposium on Wireless Communication Systems (ISWCS), pp. 681-685, Paris, France, 2012.

C49. I. M. Guerreiro, D. Hui, G. Jiann-Ching and C. C. Cavalcante, "A graph-based approach for distributed parameter coordination in wireless communication networks", in Proc. of 2012 IEEE Globecom Workshops (GC Wkshps), Anaheim, 2012.

C48. R. T. S. Carvalho, C. C. Cavalcante and P. C. Cortez, "Detecção de Doenças da Laringe usando Transformada Wavelet e Redes Neurais Artificiais", in Proc. of X Congresso Brasileiro de Inteligência Computacional (CBIC 2011), Fortaleza, 2011.

C47. R. T. S. Carvalho, C. C. Cavalcante and P. C. Cortez, "Wavelet Transform and Artificial Neural Networks Applied to Voice Disorders Identification", in Proc. of Third World Congress on Nature and Biologically Inspired Computing (NaBIC2011), Salamanca, 2011.

C46. J. C. M. Mota, C. E. F. Fernandes, C. A. R. Fernandes, C. C. Cavalcante, A. L. F. de Almeida and W. C. Freitas Jr., "Processamento Tensorial de Sinais e Geometria da Informação: Novos Caminhos para os Sistemas de Comunicações Digitais", in Proc. of XXIX Simpósio Brasileiro de Telecomunicações (SBrT'11), Curitiba, 2011.

C45. I. M. Guerreiro and C. C. Cavalcante, "A Distributed Approach for Antenna Subset Selection in MIMO Systems", in Proc. of The Seventh International Symposium on Wireless Communication Systems (ISWCS2010), York, UK, 2010.

C44. L. C. M. Sousa, T. F. Maciel and C. C. Cavalcante, "Multiuser CoMP transmit processing with statistical channel state information at the transmitter", in Proc. of The Seventh International Symposium on Wireless Communication Systems (ISWCS2010), York, UK, 2010.

C43. C. A. de Araújo, W. C. Freitas Jr. and C. C. Cavalcante, "Average Throughput Link Adaptation using HARQ Information and MIMO Systems", in Proc of 7th International Telecommunications Symposium (ITS2010), Manaus, 2010.

C42. A. A. P. Guimarães, I. M. Guerreiro, L. M. C. Sousa, D. C. Moreira, T. F. Maciel and C. C. Cavalcante, "A (Very) Brief Survey on Optimization Methods for Wireless Communication Systems", in Proc of 7th International Telecommunications Symposium (ITS2010), Manaus, 2010.

C41. D. B. da Costa, S. Aïssa and C. C. Cavalcante, "Partial Relay Selection in Cooperative Spectrum Sharing Systems", in Proc of 13th International Symposium on Wireless Personal Multimedia Communications (WPMC2010), Recife, 2010.

C40. D. B. da Costa and C. C. Cavalcante, "Switching Rates of Dual Selection Diversity in Correlated Weibull Fading", in Proc of 13th International Symposium on Wireless Personal Multimedia Communications (WPMC2010), Recife, 2010.

C39. C. C. Cavalcante and J. M. T. Romano, "On the Relationships Between MMSE and Information-Theoretic-Based Blind Criterion for Minimum BER Filtering", in Proc. of 8th International Conference on Independent Component Analysis and Signal Separation (ICA 2009), Paraty-RJ, 2009, pp. 17-24.

C38. L. C. M. Sousa and C. C. Cavalcante, "Performance Analysis of Multicell Multiuser MIMO Precoding Using Partial Knowledge at the Transmitter", in Proc. of XXVII Simpósio Brasileiro de Telecomunicações (SBrT2009), Blumenau, 2009.

C37. R. F. Vigelis and C. C. Cavalcante, "Robust Pilot-Aided Channel Estimator for Time-Varying OFDM Channels", in Proc. of Ninth IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC2008), Recife, 2008, pp. 506-510.

C36. R. F. Vigelis and C. C. Cavalcante, "Geodesic Learning", in Proc. of XXVI Simpósio Brasileiro de Telecomunicações (SBrT2008), Rio de Janeiro, 2008.

C35. C. C. Cavalcante, D. Zanatta Filho and J. M. T. Romano, "Invited Paper : Multiuser Processing Using Blind Source Separation Methods", in Proc. of 13th European Wireless Conference (EW2007), Paris, 2007.

C34. R. F. Vigelis and C. C. Cavalcante, "A QR Factorization Based Algorithm for Pilot Assisted Channel Estimation in OFDM Systems", in Proc. of 32nd IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP2007), Honolulu, 2007, v. 3. p. III-305-III-308.

C33. C. A. de Araújo, C. C. Cavalcante and W. C. Freitas Jr., "Pre-Processing Effects in Limited Feedback for Scheduling Algorithms Using Cross-Layer Issues", in Proc. of XXV Simpósio Brasileiro de Telecomunicações (SBrT2007), Recife, 2007.

C32. I. M. Guerreiro, I. L. da Silva, W. C. Freitas Jr. and C. C. Cavalcante, "Transceiver Architectures in Multiuser MIMO Environments with Different Power Allocations",in Proc. of XXV Simpósio Brasileiro de Telecomunicações (SBrT2007), Recife, 2007.

C31. D. Zanatta Filho, C. C. Cavalcante, L. S. Resende and J. M. T. Romano, "On Adaptive LCMV Beamforming for Multiuser Processing in Wireless Systems", in Proc. of 2007 SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference, Salvador, 2007. p. 521-525.

C30. R. F. Vigelis, D. C. Moreira, J. C. M. Mota and C. C. Cavalcante, "Filtered Delay-Subspace Approach For Pilot Assisted Channel Estimation in OFDM Systems", in Proc. of VII IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC2006), Cannes, 2006.

C29. A. L. F. de Almeida, G. Favier, J. C. M. Mota and C. C. Cavalcante, "Tensor-Based Space-Time Spreading Codes for MIMO-OFDM Systems With Blind Detection", in Proc. of 17th Annual IEEE Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC2006), Helsinki, , 2006.

C28. D. Zanatta Filho and C. C. Cavalcante, "Power and Bit Allocation for Link Adaptation in MIMO-OFDM Wireless Systems", in Proc. of VI IEEE International Telecommunications Symposium (ITS2006), Fortaleza, 2006, p. 657-662.

C27. A. M. P. Lucena, J. C. M. Mota and C. C. Cavalcante, "Optimum Detector to Non-Orthogonal PAM Signals with Spectral Overlapping", in Proc. of VI IEEE International Telecommunications Symposium (ITS2006), Fortaleza, 2006, p. 678-681.

C26. D. C. Moreira and C. C. Cavalcante, "Channel Estimation in Link Adaptation Strategies for MIMO-OFDM Systems", in Proc. of 17th World Wireless Research Forum (WWWRF17), Heidelberg, 2006.

C25. A. M. P. Lucena, J. C. M. Mota and C. C. Cavalcante, "Detection of Non-Orthogonal PAM Signals with Spectral Overlapping", in Proc. of VI IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2005), New York, 2005. p. 425-429.

C24. R. R. de Araújo, G. Favier, J. C. M. Mota and C. C. Cavalcante, "The Use of Orthonormal Bases in Equalization Structures", in Proc. of VI IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2005), New York, 2005. p. 400-404.

C23. A. M. P. Lucena, J. C. M. Mota and C. C. Cavalcante, "Detecção de Sinais Não-Ortogonais com Superposição Espectral Usando o Critério MV", in Proc. of XXII Simpósio Brasileiro de Telecomunicações (SBrT05), Campinas, 2005. p. 794-799.

C22. A. L. F. de Almeida, G. Favier, J. C. M. Mota and C. C. Cavalcante, "PARAFAC Models for Hybrid MIMO Systems: Joint Channel Estimation and Detection", in Proc. of 15th World Wireless Research Forum Meeting (WWRF'15), Paris, 2005.

C21. C. C. Cavalcante and J. M. T. Romano, "Impact of Higher-Order Statistics on Adaptive Algorithms for Blind Source Separation", in Proc. of V IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC2004), Lisbon, 2004. p. 170-174.

C20. C. C. Cavalcante and J. M. T. Romano, "Relationship Between Supervised and Unsupervised Criteria for Minimum BER Filtering", in Proc. of XXI Simpósio Brasileiro de Telecomunicações (SBrT2004), Belém, 2004.

C19. C. C. Cavalcante, J. C. M. Mota and J. M. T. Romano, "Polynomial Expansion of the Probability Density Function About Gaussian Mixtures", in Proc of IEEE Workshop on Machine Learning for Signal Processing (MLSP2004), São Luiz, 2004. p. 163-172.

C18. C. C. Cavalcante, F. R. P. Cavalcanti, W. C. Freitas Jr. and J. C. M. Mota, "Collision Resolution In Slotted ALOHA Smart Antenna System Using Pdf Estimation-Based Blind Criterion", in Proc. of World Wireless Communications (WWC'2003), San Francisco, 2003.

C17. C. C. Cavalcante, F. R. P. Cavalcanti, J. C. M. Mota and J. M. T. Romano, "A Constrained Version of Fitting pdf Algorithm for Blind Source Separation", in Proc. of IV IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC2003), Rome, 2003, p. 452-456.

C16. R. Ferrari, C. M. Panazio, R. R. F. Attux, C. C. Cavalcante, L. N. de Castro, F. J. Von Zuben and J. M. T. Romano, "Unsupervised channel equalization using fuzzy prediction-error filters", in Proc. of IEEE 13th Workshop on Neural Networks for Signal Processing (NNSP'03), Toulouse, 2003, p. 869-878.

C15. C. C. Cavalcante, F. R. P. Cavalcanti, J. C. M. Mota and J. M. T. Romano, "On The Use of Higher Order Statistics for Blind Source Separation", in Proc. of XX Simpósio Brasileiro de Telecomunicações (SBrT2003), Rio de Janeiro, 2003.

C14. D. Zanatta Filho, C. C. Cavalcante, J. M. T. Romano and L. S. Resende, "An LCMV-Based Approach for Downlink Beamforming in FDD Systems in Presence of Angular Spread", in Proc of of European Conference on Signal Processing (EUSIPCO 2002), Toulouse, 2002, p. 133-138.

C13. W. C. Freitas Jr., F. R. P. Cavalcanti, C. C. Cavalcante, D. Zanatta Filho and A. L. F. de Almeida, "Link Performance Evaluation for EGPRS with Multiples Antennas Techniques", in Proc. of Simposium on Personal, Indoor, Mobile and Radio Communications (PIMRC2002), Lisbon, 2002. v. 5. p. 2092-2096.

C12. C. C. Cavalcante, F. R. P. Cavalcanti and J. C. M. Mota, "A PDF Estimation-Based Blind Criterion for Adaptive Equalization", in Proc. of V IEEE International Telecommunications Symposium (ITS2002), Natal, 2002. v. 1. p. 507-511.

C11. D. Zanatta Filho, C. C. Cavalcante and J. M. T. Romano, "Adaptive LCMV Beamforming Avoiding DOA Estimation for Packet-like Wireless Systems", in Proc. of V IEEE International Telecommunications Symposium (ITS2002), Natal, 2002, p. 302-307.

C10. C. C. Cavalcante, J. C. M. Mota, J. R. Montalvão Filho and B. Dorizzi, "Using the Constant Modulus and Kullback-Leibler Cost Functions on a Nonlinear Predictive Structure for Blind Equalization", in Proc. of XIX Simpósio Brasileiro de Telecomunicações (SBrT 2001), Fortaleza, 2001, p. 234-239.

C9. C. C. Cavalcante, J. C. M. Mota, J. R. Montalvão Filho and B. Dorizzi, "Égalisation par Prédiction Basée sur un Réseau des Neurones avec les Fonctions Objectives de Divergence de Kullback-Leibler et du Constant Modulus", in Proc. of Colloque GRETSI sur le traitement du signal et des images, Toulouse, 2001, v. 1, p. 573-576.

C8. C. C. Cavalcante, J. R. Montalvão Filho, B. Dorizzi and J. C. M. Mota, , "A Neural Predictor for Blind Equalization in Digital Communication", in Proc. of Adaptive Systems for Signal Processing, Communication and Control (AS-SPCC), Lake Louise, 2000, p. 347-351.

C7. C. C. Cavalcante, J. R. Montalvão Filho, B. Dorizzi and J. C. M. Mota, "A Neural Predictor for Blind Equalization in Digital Communication: Is It Plausible", in Proc. of Neural Networks for Signal Processing (NNSP'00) Sidney, 2000, p. 736-745.

C6. C. C. Cavalcante, J. C. M. Mota, J. R. Montalvão Filho and B. Dorizzi, "On The Nonlinear Prediction for Blind Equalization: Is That a Good Choice?", in Proc. of XVIII Simpósio Brasileiro de Telecomunicações (SBrT2000), Gramado, 2000.

C5. J. R. Montalvão Filho, C. C. Cavalcante, B. Dorizzi and J. C. M. Mota, "A Simple PDF Fitting Approach for Blind Equalization", in Proc. of XVIII Simpósio Brasileiro de Telecomunicações (SBrT2000), Gramado, 2000.

C4. C. C. Cavalcante, J. C. M. Mota, J. R. Montalvão Filho and B. Dorizzi, "Preliminary Results in Blind Equalization with Neural Network-Based Prediction", in Proc. of XVII Simpósio Brasileiro de Telecomunicações (SBrT 1999), Vila Velha, 1999, p. 5-9.

C3. C. C. Cavalcante, J. C. M. Mota, B. Dorizzi and J. R. Montalvão Filho, "Estrutura Não-Linear como Dispositivo de Predição: Uma Nova Maneira de Equalização Cega", in Proc. of V Simpósio Brasileiro de Redes Neurais (SBRN98), Belo Horizonte, 1998, p. 9-13.

C2. J. R. Montalvão Filho, J. C. M. Mota, B. Dorizzi and C. C. Cavalcante, "Reducing Bayes Equalizer Complexity: A New Approach for Clusters Determination", in Proc. of IV IEEE International Telecommunications Symposium (ITS98), São Paulo, 1998, p. 428-433.

C1. J. R. Montalvão Filho, J. C. M. Mota, B. Dorizzi and C. C. Cavalcante, "Bayesian Equalization Strategy: Performance versus Number of Clusters", in Proc. of International Conference on Signal Processing and Applications, (ICSPAT 1998), Toronto, 1998, p. 253-257.

Invited Talks and Short-Courses

T10. S. I. C. Costa and C. C. Cavalcante "Geometria da Informação", (Information Geometry), Short Course taught at XXXV Brazilian Telecommunications Symposium, São Pedro, 2017.

T9. W. C. Freitas Jr., Y. C. B. Silva and C. C. Cavalcante, "Alinhamento de Interferência em Sistemas de Comunicações Móveis", (Interference Alignment in Wireless Communication Systems), Short Course taught at Brazilian Telecommunications Symposium, Curitiba, 2011.

T8. C. C. Cavalcante, R. Suyama and L. T. Duarte, "Nonlinear Independent Component Analysis and Applications", Short course taught at Brazilian Conference on Artificial Intelligence, Fortaleza, 2011.

T7. F. R. P. Cavalcanti, W. C. Freitas Jr. and C. C. Cavalcante, "Multi-antenna and Multi-carrier Next Generation Mobile Communications Systems", Short course taught at International Wireless Telecommunication Workshop, São Paulo, 2009.

T6. C. C. Cavalcante, F. R. P. Cavalcanti and W. C. Freitas Jr., "Sistemas de Comunicações Móveis Multiportadoras e Multiantenas: Processamento de Sinais e Alocação de Recursos" (Multicarrier and Multiantenna Wireless Systems: Signal Processing and Resource Allocation), Short Course taught at Brazilian Telecommunications Symposium, Rio de Janeiro, 2008.

T5. R. Suyama, L. T. Duarte, A. O. Neves, R. Ferrari, R. R. F. Attux, C. C. Cavalcante, C. Junqueira and J. M. T. Romano, "Unsupervised Signal Processing: Concepts, Applications and Trends", Short course taught at IEEE International Telecommunications Symposium (ITS2006), Fortaleza, 2006.

T4. W. C. Freitas Jr., C. C. Cavalcante and F. R. P. Cavalcanti, "Estratégias MIMO-OFDM para Sistemas de Comunicações Móveis" (MIMO-OFDM Strategies for Wireless Communication Systems), Short course taught at Brazilian Telecommunications Symposium, Campinas, 2005.

T3. C. C. Cavalcante and F. R. P. Cavalcanti, "Signal Processing Strategies for Packet Collision Resolution", Short course taught at International Telecommunications Symposium (ICT), Fortaleza, 2004.

T2. C. C. Cavalcante and J. M. T. Romano, "Recuperação Cega de Sinais: Conceitos, Estratégias e Tendências" (Blind Signal Recovering: Concepts, Strategies and Trends), Short course taught at Brazilian Telecommunications Symposium, Belém, 2004.

T1. J. M. T. Romano and C. C. Cavalcante, "Equalização: Adaptativa, Cega, Turbo, Espaço-temporal e What's Next" (Equalization: Adaptive, Blind, Turbo, Space-Time and What's Next), Invited talk at Brazilian Telecommunications Symposium, Rio de Janeiro, 2003.

Organizer of Special Sessions

SS2. Special session on "Information Geometry for Signal Processing and Communications" at The Ninth IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM 2016), 10th-13th July 2016, Rio de Janeiro, Brazil. Organizers: Charles C. Cavalcante and Sueli I. R. Costa.

SS1. Special session on "Information Geometry Approaches for Signal Processing" at 2017 IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP 2017), December 10-13, 2017, Curaçao, Dutch Antilles. Organized by: Salem Said, Yannick Berthoumieu, Charles C. Cavalcante

Teaching

Undergraduate courses taught

Statistical Signal Processing
Probabilistic Models for Engineering
Statistics and Probability for Engineers
Stochastic Processes
Digital Signal Processing
Communication Networks
Telephonic Systems
Digital TV

Graduate courses taught

Adaptive Filtering
Blind Source Separation
Estimation and Detection Theory
Stochastic Processes
Information Theory
Multiuser Communication Systems
Cross-Layer Optimization for Wireless Systems

Service at UFC (highlights)

- Head of Ph.D. Graduation Program on Teleinformatics Engineering, December 2008 - December 2012
- Vice-Head of Ph.D. Graduation Program on Teleinformatics Engineering, December 2012 - April 2018
- Member of the Board for selection for Visiting Professors
- Member of the Board for Research Equipments Committee