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

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

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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