



# CURRICULUM VITAE

## PERSONAL DATA

**Name:** Luis Carlos Carneiro Gonçalves

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## Summary

I have knowledge in multidisciplinary domains including Telecommunications, Parallel Computing, Image Processing and Mathematics. I got scientific knowledge in Telecommunications during the years I done my PhD. Before I done so, I worked in companies like Texas Instruments and Blaupunkt in which I obtained very good technical skills. Despite the fact I done my degree some time ago (1991) I gave lectures in three Universities in several disciplines which allowed me to actualize my theoretical knowledge, more, at teaching level. I done a PostDoc in Cognitive Radio, with support from the Portuguese Foundation for Science and Technology (FCT) and an European Project, in which I co-supervised a Master's degree dissertation. I also had an idea, that, with the collaboration of other authors, it was conceded as a patent in November 2015. I done a PostDoc in Radio propagation, Wireless Signal Measurement and Baseband Signal Impairment Compensation in CITI/INSA, Lyon, France. Recently, I finished a PostDoc in Parallel Computing applied to Telecommunications (with an implementation of the defended PhD algorithm) at University of Aveiro. I completed a PostDoc of one year at INESC TEC (Vila Real, Portugal) in Image Processing.

## Core Competencies

- Knowledge of Image Processing in a PostDoc at INESC TEC
- Good knowledge of Parallel Computing in a PostDoc at University of Aveiro and at INESC TEC.
- Excellent Knowledge in Telecommunications with emphasis on Multiuser Detection for DS-CDMA Systems, 5G and 4G.
- Very Good Knowledge in Telecommunications with emphasis on Cognitive Radio, Wireless Signal Measurement and Baseband Signal Impairment Compensation.
- General Knowledge in Electronics got in the degree, University teaching and in working in several companies.
- Knowledge of Programming Languages as tools for supporting my scientific work and former teaching.

## Professional Career

- Ported program of Motorola DSP board (16 bits) to Texas Instruments LAUNCHXL-F28069M for Allied Motion, Vila do Conde, Portugal.
- Realization of two Software Projects for Globe Motors (now Allied Motion), Vila do Conde, Portugal involving C programming of a DSP and LabView. Done a third project which includes beyond DSP programming and LabView, a hardware circuit design. The drive of the Motors were with PWM (from DC to Three Phase). Them all were for a test production place. The achievements were more reliability in the tests and less time of the tests. The all production chain time was shortened.
- Maintenance and Development Engineer from March 1998 to February 1999 at MARTONIC. The maintenance work was done mainly on glass working machines and saw machines on electronic circuits.
- Maintenance Engineer from October 1997 to March 1998 at BLAUPUNKT. Mainly the work was the data treatment of a database (DBase).
- Computer Engineer from April 1996 to October of 1997 at BLAUPUNKT.
- Process Engineer at BLAUPUNKT, Audio and Video Company in Braga, Portugal from April of 1992 to April of 1996.
- Equipment Engineer at TEXAS INSTRUMENTS, Maia, Portugal in October of 1991 to April of 1992.

## Academic Career

- From 16th January 2020, PostDoc Researcher at ESAN/University of Aveiro in Medical Image Processing. Project ARTHUR. 3D Image Registration. Packages SimpleITK, PyCuda.
- From 1st June 2018 to December 31, 2019, Researcher from Institute of Telecommunications at Aveiro in 5G Telecommunications. Projects Mobilizador 5G and ORCIP. Subjects: OpenAirInterface, 5G.
- Post-Doc Researcher at INESC TEC (Vila Real, Portugal) in Image Processing from 1<sup>st</sup> March 2017 to 28<sup>th</sup> February 2018. Knowledge, Mantiuk'08 TMO, IOIndustries Flare Camera + BitFlow Frame Grabber, Debevec Photo Merge, Photo Debayer, OpenCV, PFStools, HDRtools
  - Successfully reimplemented a widely used and highly regarded tone mapping algorithm for integrated High Dynamic Range video processing pipeline for object detection and tracking
  - Developed a solution to capture and merge in HDR images using Low Dynamic Range Flare image camera
- Post-Doc Researcher at University of Aveiro with grant from Fundação para a Ciência e Tecnologia (FCT) from 1<sup>st</sup> March 2014 to 28<sup>th</sup> February 2017.
- Post-Doc Researcher at Institute of Telecommunications at Aveiro with grant from Fundação para a Ciência e Tecnologia (FCT) from 1<sup>st</sup> June 2013 to 28<sup>th</sup> February 2014.
- Post-Doc Researcher at Centre of Innovation in Telecommunications and Integration of Services (CITI) of Institut National des Sciences Appliquées (INSA) de Lyon from 1<sup>st</sup> June 2012 to 31<sup>st</sup> May 2013.
- Post-Doc Researcher at Institute of Telecommunications at Aveiro with grant from Fundação para a Ciência e Tecnologia (FCT) from 1<sup>st</sup> March 2010 to 31<sup>st</sup> May 2012.

- Assistant Professor at Lusófona University at Lisbon from September 2009 to February 2010.
- Invited Lecturer at University of Madeira from September 2004 to August 2008.
- PhD Grant of FCT from December 1999 to December 2003.
- Previous Experiences in Companies - See Section "Career in Companies" below.

## Education

- PhD in Electrotechnical Engineering (Telecommunications), Unanimous, in University of Aveiro at 18 September 2009. The title was *Detecção Multiutilizador no Domínio da Frequência para Sistemas DS-CDMA (Multiuser Detection in Frequency Domain for DS-CDMA Systems)*. It is the reference (plus the article *European Transactions on Telecommunications*) to the theoretical application of *Fresh Filters* in frequency domain to DS-CDMA systems.  
<http://ria.ua.pt/bitstream/10773/2225/3/2010000093.pdf>
- Degree (5 years) in Electronics and Telecommunications Engineering, at Aveiro University on 1991, with average/grade of 15 on a maximum of 20.
- High School at Maia. Admission at University with an average/grade of 18.7 (Grade to apply to University, Admission Exams Included).

## Patents

- Luís Gonçalves (50% share), Diogo Cunha, Atilio Gameiro, *Method to Determine the Delay between Measurements in two or more Spectrum Analyzers or Power Meters*. Conceded at 24<sup>th</sup> November of 2015 by Instituto Nacional da Propriedade Industrial (INPI). Number 107293B.

[Conceded Patent Link](#)

[Bulletin](#)

## Published Papers

<http://www.researcherid.com/rid/F-7121-2011>

<http://orcid.org/0000-0001-7358-4113>

\* - Attended Conference

- Luis Gonçalves, Rui Martins, António Ferrari, *Realtime Parallel Software Implementation of a DS-CDMA Multiuser Detector*, 13 pages, submitted to a Journal
- Luís Gonçalves, Diogo Cunha, *Method to Determine the Delay between Measurements in two or more Spectrum Analyzers or Power Meters*, Recent Advances in Communications and Networking Technology, Bentham Science Publishers, Volume 5, Issue 2, August 2016  
<http://dx.doi.org/10.2174/2215081105666161128142559>
- Luis Gonçalves, Rui Martins, António Ferrari, *Software Parallel Implementation of a DS-CDMA Multiuser Detector*, presented at The 23rd International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2015), Split-Bol (Island of Brac), Croatia, 16-18 September 2015. [Realtime Implementation of the Multiuser Detector studied in the Phd\\*](#)  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7314124>
- G. Villemaud, L. Gonçalves, M. Luo, J. Weng, P. Wang, *Measurement Campaigns and Model Calibration*, D1.4 Progress Report, iPlan project, March 2013  
[http://iplan.project.citi-lab.fr/files/D1\\_4.pdf](http://iplan.project.citi-lab.fr/files/D1_4.pdf)

- Deepaknath Tandur, Jonathan Duplicy, Kamran Arshad, David Depierre, Janne Lehtomäki, Keith Briggs, Luis Gonçalves, Atilio Gameiro, *MME Approach for Cognitive Radio Systems Evaluation: Measurement, Modeling and Emulation* in IEEE Vehicular Technology Magazine (special issue on applications of cognitive radio networks), Volume 7, Issue 2, pages 77-84, June 2012. 6 citations (ISI), Impact Factor - 4.429  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6182685>
- L. Mendes, L. Gonçalves, A. Gameiro, *GSM Downlink Spectrum Occupancy Modeling* in IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'11), Toronto, Canada, 10-14 September 2011 [Interesting Analysis of the Measurement Setup. Modeling of GSM Spectrum Occupancy](#). 4 citations (ISI) \*  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6140021>
- L. Gonçalves, A. Gameiro, *Erratum: Multi-Sensor Frequency Domain Multiple Access Interference Canceller for DS-CDMA Systems* in European Transactions on Telecommunications, Wiley & Sons, Volume 19, Issue 4, Page 495, June 2008, [Erratum of the article below](#), Impact Factor - 1.535  
<http://doi.wiley.com/10.1002/ett.1297>
- L. Gonçalves, A. Gameiro, *Multi-Sensor Frequency Domain Multiple Access Interference Canceller for DS-CDMA Systems* in European Transactions on Telecommunications, Wiley & Sons, Volume 18, Issue 3, Pages 263-273, April 2007, 1 citation (ISI), [Article of Reference of the use of Fresh Filters in Frequency Domain in Multiuser Detection in DS-CDMA Systems](#). This detector has advantages in relation to MMSE detector in an implementation in WCDMA-TDD or TD-CDMA (Popular Republic of China). A *chip* implementation can have [energy savings in mobile phones](#). , 2 citations (ISI), Impact Factor - 1.535  
<http://doi.wiley.com/10.1002/ett.1146>
- L. Gonçalves, A. Gameiro, *Multi-Sensor Frequency Domain Multiple Access Interference Canceller for DS-CDMA Systems* in IEEE International Symposium on Spread Spectrum Techniques and Applications (ISSSTA 2004), Sofitel Wentworth Hotel, Sydney, Australia, 30 August - 2 September 2004, \*
- L. Gonçalves, A. Gameiro, *Multiuser Frequency Domain Equalizer for Multirate UMTS-TDD Systems* in The 6<sup>th</sup> International Symposium on Wireless Personal Multimedia Communications (WPMC' 03), Yokosuka, Kanagawa, Japan, 19 to 22 October of 2003. \*
- F.Alves, A. Morgado, L.Gonçalves, A. Silva, A. Gameiro, *Implementation of a Simulation Module for a SISO Broadband Propagation Channel Model* presented 4<sup>th</sup> Conference on Telecommunications (Conftele 2003), Aveiro, Portugal, 18 to 20 June 2003.
- L. Gonçalves, A. Gameiro, *Frequency Domain Equalizer for Multirate UMTS-TDD Systems* presented IEEE 2003 International Conference on Communications (ICC'03), Anchorage, Alaska, USA, 11 to 15 May of 2003, [Complexity Analysis - Advantage over MMSE Detector](#). \*  
<http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1204036>
- L. Gonçalves, A. Gameiro, *Frequency Shift based Multiple Access Interference Canceller for Multirate UMTS-TDD Systems* presented The 13<sup>th</sup> IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'02) Pavilhão Atlântico, Lisboa, Portugal, 15 to 18 September 2002, \*
- L. Gonçalves, A. Silva, A. Gameiro *Frequency Shift based Multiple Access Interference Canceller for DS-CDMA Systems* presented Vehicular Technology Conference 2001 Fall (VTC'01 Fall), Atlantic City-USA, 7 to 11 October 2001, \*
- L. Gonçalves, A. Gameiro, *Frequency Shift based Multiuser Canceller for DS-CDMA Systems* in Sixth International Symposium on Communications Theory & Applications (ISCTA'01) Ambleside-Lancaster England, 15 to 20 July 2001, \*
- P. Pinho, A. Morgado, L. Gonçalves, J. Fernandes and A. Gameiro, *Link Level Evaluation Platform with Space-time Processing for UMTS TDD* in Confetele 2001, Figueira da Foz, 23, 24 April of 2001.

- A. Morgado, L. Gonçalves, P. Pinho, J. Fernandes and A. Gameiro, *Advanced Space-Time Multiuser Receiver for Uplink TDD Mode of UMTS* in IST Mobile Communications Summit 2000, Galway, Ireland, 1 to 4 October 2000.

## Projects Participation

- Projects Mobilizador 5G (Components and Services for 5G Networks) and ORCIP (Optical Radio Convergence Infrastructure for Communications and Power delivering)
- HDR4RTT (Real Time Tracking and Display of Multiple Objects in Extreme Lighting Conditions)
- iPlan. The iPlan Project is a Marie Curie IAPP from FP7-PEOPLE-2007-3-1-IAPP. The goal of this project is to establish a strategic partnership between Ranplan, INSA and the University of Bedfordshire to develop the competencies which are needed for indoor radio network Planning and Optimization (P&O).

<http://iplan.project.citi-lab.fr/index.php>

- QoS MOS (Quality of Service and MObility driven cognitive radio Systems) of FP7 - The primary objective of QoS MOS is to develop a framework for Cognitive Radio systems and to develop and prove critical technologies using a test-bed.

<http://www.ict-qosmos.eu/>

- MATRICE (MC-CDMA Transmission Techniques for Integrated Broadband Cellular Systems) of FP5 - The main objective of the project is to define and validate access and transmission concepts based on MC-CDMA technology for provision of the broadband component of future mobile cellular systems.
- ASILUM (Advanced Signal Processing Schemes for Link Capacity increase in UMTS) of FP5 - The objective of the ASILUM project is to validate new transceivers concepts, for both base station and mobile terminal, to increase the capacity of the future generation of UMTS through new and efficient interference mitigation schemes.
- VISEF (Video Coding and Transmission on Wireless Networks) FCT (PRAXIS XXI) - The aim of the project consisted on the development of video coding algorithms and transmission techniques to attain high quality video services over third generation networks.

## Teaching

- Teaching at University of Aveiro from September of 2014 to January of 2015 on Introduction to Communication and Information Technology to Management Degree (Microsoft Office: Excel, Word, Outlook and PowerPoint).
- Assistant at Lusófona University at Lisbon from September 2009 to February 2010 . Lectures and ruled Signals and Systems (Theoretics and Practice). It was done 13 exercises sheets for teaching support.
- Invited Lecturer at University of Madeira from September 2004 to August 2008. Lectures on
  - Electronics I (Theoretics and Practice) - It was prepared 450 slides to support the lectures
  - Electronics II (Theoretics and Practice) - It was prepared 450 slides to support the lectures
  - Telecommunications Fundamentals (Theoretics and Practice)
  - Telecommunications Fundamentals II (Practice)
  - Telecommunications Systems (Theoretics and Practice)

- Digital Systems (Practice)
- Circuits Analysis (Practice).

## Student Guidance

- Co-oriented a Master Degree named "Measurements and Analysis of Spectrum Activity" at 14 of July 2011 by Luís Vinhas Mendes with a grade of 17 (in 20).  
<http://ria.ua.pt/bitstream/10773/7725/1/244742.pdf>  
This gave rise to a conference article that I attended.
- Orientation of student of University of Kassel (Germany) in university project (done at Blaupunkt).

## Frequented Tutorials in Conferences, Summer Schools and WorkShops

- Automotive Testing Solutions Forum 2018 (ATS'2018), 4th December 2018, AEP - Portuguese Business Association
- International Summer School on Parallel High Performance Computing Using Accelerators, June 25-27, 2014, University of Minho, Braga, Portugal.
- Opportunistic Spectrum Access: White Space Databases and Spectrum Sensing, Dr. Claudio R. C. M. da Silva (Virginia Tech, EUA) Dr. Marina Petrova (Aachen University, Alemanha), IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'11), Toronto, Canada, 10-14 Setembro 2011.
- MIMO Systems - Prof. Helmut Bölcskei, Swiss Federal Institute of Technology (ETH) Zurich, Switzerland, 2004 IEEE International Symposium on Spread Spectrum Techniques and Applications (ISSSTA 2004), 30 August - 2 September, Sydney, Australia.
- Adaptation Techniques and Enabling Parameter Estimation Algorithms for the Evolution of Wireless Mobile Radio Systems - Huseyin Arslan, University of South Florida, USA - WPMC'03.
- High Altitude Platform Stations and Related Technologies - Theirs Role in 3G and Beyond - Rahim Tafazolli, University of Surrey, UK - IST-Mobile & Wireless Communications Summit 2003, 15-18 June, Aveiro, Portugal.
- Orthogonal Frequency-Division Multiplexing for Wireless - Leonard Cimini Jr., University of Delaware; Ye (Geoffrey) Li, Georgia Institute of Technology - ICC'03.
- Interference modeling and its mitigation in Wireless Communications Systems -Asrar Sheikh -King Fahd University of Petroleum and Minerals - PIMRC'02.

## Paper Revision

- Paper Revision for **European Transactions on Telecommunications, Wiley & Sons**
- Paper Revision for **IEEE Wireless Communications and Networking Conference: WCNC2020, 6-9 April 2020, Seoul, South Korea.**
- Paper Revision for **IEEE 77th Vehicular Technology Conference: VTC2013-Spring 2-5 June 2013, Dresden, Germany.**
- Paper Revision for **IEEE 73rd Vehicular Technology Conference: VTC2011-Spring 15-18 May 2011, Budapest, Hungary.**

- Paper Revision for **IEEE 69th Vehicular Technology Conference: VTC2009-Spring 26–29 April 2009, Barcelona, Spain.**
- Paper Revision for **IEEE 18th Annual International Symposium on Personal, Indoor and Mobile Radio Communications September 3-7, 2007, Athens, Greece.**
- Paper Revision for **IEEE Semiannual Vehicular Technology Conference, May 17-19, 2004, Milan, Italy.**

## Experience with Software

- Experience in CUDA and OpenMP in Visual C and Gcc (Eclipse).
- Experience in Python.
- Experience on LabView of National Instruments (Post-Doc) and Agilent ADS.
- Experience in Visual C++ Microsoft Foundation Classes.
- During the PhD acquired experience in simulation software of telecommunications systems, System Studio of Synopsys (before named Cocentric and COSSAP) in SUN and LINUX ( C, C++, Fortran).
- All my papers and PhD thesis were written in *Latex*.
- Experience in SystemC Programming in MATRICE project.
- The algorithms of the PhD Thesis were first tested with Matlab. Also the PostDocs involved programming in Matlab. Coding, Interface to Matlab and run of MEX compiled files.
- Experience in Electronic Simulation Program Pspice and MultiSim (Lectures of Electronic I and Electronic II at University of Madeira). Pspice was introduced in the Lectures by me.
- Code Composer Studio (Texas Instruments).
- Maintenance of a Linux Virtual Server (IPv6 Compliant) with Web Server e Email Server at <http://www.luisgo.pro>. Also not as public domain a webside with Drupal.

## Languages

Native in Portuguese, Fluent in English, Professional knowledge of French and Basic knowledge German.

- English – 5 years at High School, one year in University, 4 terms at British Institute (now British Council) at Porto.
- French – 5 years at High School.
- German – 1 1/2 years at Blaupunkt.

## Study Grants/Contracts

- From 16th January 2020, PostDoc Researcher bursary at ESAN/University of Aveiro in Medical Image Processing.
- From 1st June 2018 to 31st December 2019 with bursary from Institute of Telecommunications at Aveiro in 5G Telecommunications
- A PostDoctoral Bursary by the Technology and Science Foundation from 1<sup>st</sup> March 2014 to 28<sup>th</sup> February 2017 in Parallel Computing at University of Aveiro

- A PostDoctoral Bursary by the Technology and Science Foundation from 1<sup>st</sup> June 2013 to 28<sup>th</sup> February 2014 in Cognitive Radio. This work was done at Institute of Telecommunications at Aveiro.
- A PostDoctoral Contract from FP7 European Commission at Institut National des Sciences Appliquées (INSA) de Lyon from 1<sup>st</sup> June 2012 to 31<sup>st</sup> May 2013.
- A PostDoctoral Bursary by the Technology and Science Foundation from March 1<sup>st</sup> 2010 to May 31<sup>st</sup> 2012 in Cognitive Radio. This work was done at Institute of Telecommunications at Aveiro.
- A Bursary for the PhD Graduation by the Technology and Science Foundation (FCT) from Dec. 1999 to Dec. 2003.
- Grant of Merit from TEXAS INSTRUMENTS, multinational company in the area of semiconductors in the year 1990/1991.

## Professional Experience

### • Project Participation

- Implementation of a data gathering program in *Handlers* (Chip transportation machines coupled to test machines) in Texas Instruments.
- Study for the installation of line filters and varistors in Test Machines and Handlers at Texas Instruments.
- Knowledge of conception of Car Radios (Blaupunkt End Product). Alignment (Radio Frequency) of Grundig High End Car Radio.
- In two projects of data gathering of Car Radios by the various stages of production with name Computer Integration Production (CIP). It permitted the gathering of production data of AutoRadios for routing the radio through production and future statical treatment.
- Segmentation of Blaupunkt production computer network (Bus Network) for reliability increase. Before there was much more production stopping due to cable discontinuity. It was initiative of mine.
- Installation of Structured Cable (Category 5) in production lines at Blaupunkt. It was a initiative of mine and at first it was against the Informatics Department and Administration will. Migration from a bus network to star network with reliability improvement at Physical Layer.

### • Other Activities (Blaupunkt)

- Administration of the Network of the Production.
- Printers Management with integration de Windows NT, Netware e Mainframe IBM.
- Web Page Construction (now at <http://www.luisgo.pro>)
- C, Pascal, Basic, DBase and Btrieve programming. Installation of Netware servers and bridges.
- Studying of the following subjects:
  - \* GSM Mobile Communications
  - \* TCP/IP - IV e VI Version
  - \* CDMA, WLL



- **Attended Course in:**

- Seminar on Total Productivity Management (TPM) at Texas Instruments
- Obtained formation in the following subjects by Blaupunkt
  - \* Administration of Novell Networks by Beremiz.
  - \* Btrieve Databases by Beremiz.
  - \* Personnel Management and Supervision by "Homens e Sistemas".
  - \* Radio Frequency at Blaupunkt (Braga).
  - \* Alignment Systems (two) of Car Radios, Blaupunkt, Germany.
- Seminars on Computer Networks and Software on Decada, Lusocresa, Beremiz, Microsoft and Novell.
- Teacher of Electronic Technology at the Professional School at Maia, Portugal, 1992/1993.