Dick Carrillo Melgarejo

LUT School of Energy Systems

⊚ Lappeenranta, Finland ✉ dick.carrillo.melgarejo@lut.fi

Dick Carrillo is a senior wireless system engineer. He participated in many projects on planning and designing internet of things (IoT) solutions that best fit in specific niche markets, such as agribusiness and energy systems.

In the agribusiness market, these IoT solutions were deployed in rural areas to support intelligent irrigation systems for eucalyptus based on accurate GPS positioning information and cane tracking using radio-frequency identification (RFID). In energy systems industry, currently he is participating on an IoT based project that involve Machine-Type Communication (MTC) and ultra-reliable low-latency communication (URLLC) solutions to support applications that demand low latency and high reliability.

It is important to mention that during recent years, Dick Carrillo has conducted an extensive research and development on wireless cellular networks, on wireless local area networks, and cognitive networks, transferring these research results to industry.

As an academic researcher, Dick was involved in projects focused on physical layer for wireless. These projects were mostly related to Non-linear systems, orthogonal frequency division multiplexing (OFDM), and pre-distortion techniques. Currently, he is researching on analytical models of signal-to-interference-and-noise ratio (SINR) for generalized frequency division multiplexing (GFDM) systems considering Rayleight, Rician, and Nakagami channels with circulant matrix characteristics.

He is also working in the design of combiners in scenarios that consider orthogonal multiple access (OMA) and non-orthogonal multiple access (NOMA), energy harvesting, and reconfigurable intelligent surface (RIS). Finally, he is also involved in wireless communication models that consider artificial intelligence to improve the system efficiency of wireless networks at physical layer.

His current research topics are focused on fifth Generation (5G) beyond technologies as URLLC applied to MTC, 5G wireless architectures, OFDM and GFDM waveforms, non-linear systems as power amplifiers, multiple access techniques as OMA and NOMA, energy harvesting, RIS, cell-free Massive MIMO, and artificial intelligence tools applied on wireless communication.

Nowadays, Dick is a PhD. candidate at LUT University in Finland. He also holds a M.Sc. degree in electrical engineer from PUC-Rio, Rio de Janeiro, and a Bachelor degree in electronics engineer from San Marcos National University, Peru. He has lived/worked in four countries and speaks English, Spanish, Portuguese, Finnish(basic).

Awards

Nokia Foundation Scholarship, 5000 EUR grant to complement research activities   2019
Research topic: "Improving the Design of Wireless Communication Systems for Energy Systems and Industrial Automation"
CPqD Innovation Recognition, Recognition Plate and Grant Prize   2015
Recognition for patents submissions between years 2011-2015

Education

Doctor of Philosophy (Ph.D.), LUT School of Energy Systems, LUT University, Finland   Expected 2022
Supervisor: Nardelli, Pedro, Subject of the doctoral dissertation: Improving the design of wireless communication systems for energy systems and industrial automation.
Master of Science (M.Sc.), Dep. of Electrical Engineer, PUC-Rio, Brazil   2008
Supervisor: Fortes, Jose Mauro Pedro, Subject of the Master dissertation: Reduction of nonlinear channels effects on OFDM Signals.
Bachelor of Science (B.Sc.), Dep. of Electrical and Electronics Engineering, UNMSM, Perú   2004
Supervisor: Flavio Carrillo Gomero.

Reviewed Publications

Journal publications

[1]   Understanding UAV-Based WPCN-Aided Capabilities for Offshore Monitoring Applications
      D. Carrillo, K. Mikhaylov, P. J. Nardelli, S. Andreev, D. B. da Costa
      IEEE Wireless Communications (2021) pp. 1−7. 2021. DOI: 10.1109/MWC.001.2000218

[2]   Containing Future Epidemics with Trustworthy Federated Systems for Ubiquitous Warning and Response
      Dick Carrillo, Lam Duc Nguyen, Pedro H. J. Nardelli, Evangelos Pournaras, Plinio Morita, Demóstenes Z. Rodríguez,
      Merim Dzaferagic, Harun Siljak, Alexander Jung, Laurent Hébert-Dufresne, Irene Macaluso, Mehar Ullah, Gustavo Fraiden-
      raich, Petar Popovski
      Frontiers in Communications and Networks 2 (2021) p. 11. 2021. DOI: 10.3389/frcmn.2021.621264

[3]   Bit Error Probability for MMSE Receiver in GFDM Systems
      D. Carrillo Melgarejo, S. Kumar, G. Fraidenraich, L. L. Mendes
      IEEE Communications Letters PP.99 (2018) pp. 1−1. 2018. DOI: 10.1109/LCOMM.2018.2808475

[4]   Incorporating Wireless Communication Parameters into the E-Model Algorithm
      D. Zegarrarodriguez, D. Carrillo, M. A. Ramirez, P. N. Nar, S. Moller
      IEEE/ACM Transactions on Audio, Speech, and Language Processing (2021) pp. 1−1. 2021. DOI: 10.1109/TASLP.2021.
      3057955

[5]   What Role Do Intelligent Reflecting Surfaces Play in Multi-Antenna Non-Orthogonal Multiple Access?
      A. S. Sena, D. Carrillo, F. Fang, P. H. J. Nardelli, D. B. Costa, U. S. Dias, Z. Ding, C. B. Papadias, W. Saad
      IEEE Wireless Communications 27.5 (2020) pp. 24−31. 2020. DOI: 10.1109/MWC.001.2000061

[6]   Performance of LoRaWAN for Handling Telemetry and Alarm Messages in Industrial Applications
      F.H.C Santos Filho, P.S. Dester, E.M.G. Stancanelli, P. Cardieri, D. Carrillo P.H.J. Nardelli, H. Alves
      Sensors 20.3061 (2020). 2020. DOI: 10.3390/s20113061

[7]   Event Detection System Based on User Behavior Changes in Online Social Networks: Case of the COVID-19
      Pandemic
      R. L. Rosa, M. J. De Silva, D. H. Silva, M. S. Ayub, D. Carrillo, P. H. J. Nardelli, D. Z. Rodríguez
      IEEE Access 8 (2020) pp. 158806−158825. 2020. DOI: 10.1109/ACCESS.2020.3020391

[8]   Energy Internet via Packetized Management: Enabling Technologies and Deployment Challenges
      P. H. J. Nardelli, H. Alves, A. Pinomaa, S. Wahid, M. D. C. Tomé, A. Kosonen, F. Kühnlenz, A. Pouttu, D. Carrillo
      IEEE Access 7 (2019) pp. 16909−16924. 2019. DOI: 10.1109/ACCESS.2019.2896281

[9]   Speech Quality Classifier Model based on DBN that Considers Atmospheric Phenomena
      Marielle Jordane Silva, Dick Carrillo Melgarejo, Renata Lopes Rosa, Demóstenes Zegarra Rodríguez
      Journal of Communications Software and Systems 16.1 (2020). 2020

[10] Key Advances in Pervasive Edge Computing for Industrial Internet of Things in 5G and Beyond
      A. Narayanan, A. S. D. Sena, D. Gutierrez-Rojas, D. Carrillo, H. M. Hussain, M. Ullah, S. Bayhan, P. H. J. Nardelli
      IEEE Access 8 (2020) pp. 206734−206754. 2020. DOI: 10.1109/ACCESS.2020.3037717

Peer-reviewed conferences and workshops

[1]   Achievable Sum Rate and Outage Capacity of GFDM Systems with MMSE Receivers
      D. Carrillo, S. Kumar, G. Fraidenraich, P. H. J. Nardelli, D. B. Costa
      ICC 2020 - 2020 IEEE International Conference on Communications (ICC), 2020. DOI: 10.1109/ICC40277.2020.9149450

[2]   Reconfigurable Intelligent Surface-Aided Grant-Free Access for Uplink URLLC
      D. C. Melgarejo, C. Kalalas, A. S. de Sena, P. H. J. Nardelli, G. Fraidenraich
      2020 2nd 6G Wireless Summit (6G SUMMIT), 2020. DOI: 10.1109/6GSUMMIT49458.2020.9083788

[3]   GFDM-Based Cooperative Relaying Networks with Wireless Energy Harvesting
      D. C. Melgarejo, J. M. Moualeu, P. Nardelli, G. Fraidenraich, D. B. da Costa
      2019 16th International Symposium on Wireless Communication Systems (ISWCS), 2019. DOI: 10.1109/ISWCS.2019.
      8877135

[4]   Energy Management Methodology for Fusion Grid
      A. Lana, I. Demidov, A. Pinomaa, D. Carrillo, O. Pyrhönen
      2019 IEEE PES Innovative Smart Grid Technologies Europe (ISGT-Europe), 2019. DOI: 10.1109/ISGTEurope.2019.
      8905555

[5]   Performance of Multi-carrier Technology over VHF Channels for Rural Area Applications
      D. C. Melgarejo, G. Fraidenraich, L. Quirino, A. Medeiros, P. Nardelli
      2019 IEEE Wireless Communications and Networking Conference Workshop (WCNCW), 2019. DOI: 10.1109/WCNCW.
      2019.8902782

[6] Demonstrating the Impact of LTE Communication Latency for Industrial Applications
F. Polunin, D. C. Melgarejo, T. Lindh, A. Pinömaa, P. H. J. Nardelli, O. Pyrhonen
2019 IEEE 17th International Conference on Industrial Informatics (INDIN), 2019. DOI: 10.1109/INDIN41052.2019.8972105

[7] Application of LTE 450 MHz in the electric energy sector
R. T. Caldeira, D. C. Melgarejo, R. Coutinho
2017 European Conference on Networks and Communications (EuCNC), 2017. DOI: 10.1109/EuCNC.2017.7980770

[8] LoRaWAN Practical Tests: Indoor and Underground Applications
J. Seki, J. Bazzo, I. Junqueira, F. Penteado, D. Carrillo
2017 9th IEEE Latin-American Conference on Communications (LATINCOM), 2017

[9] Rural area deployment of internet of things connectivity: LTE and LoRaWAN case study
D. Carrillo, J. Seki
2017 IEEE XXIV International Conference on Electronics, Electrical Engineering and Computing (INTERCON), 2017. DOI: 10.1109/INTERCON.2017.8079711

[10] Framework for automated tests of LTE physical layers
F. A. P. Figueiredo, F. Mathilde, L. R. Pizzini, F. Figueiredo, D. Carrillo, I. Moerman
2017 IEEE XXIV International Conference on Electronics, Electrical Engineering and Computing (INTERCON), 2017. DOI: 10.1109/INTERCON.2017.8079693

[11] Evolution of long term narrowband-IoT
S. Barros, J. Bazzo, O. Reis Pereira, D. Carrillo, J. Seki
2017 IEEE XXIV International Conference on Electronics, Electrical Engineering and Computing (INTERCON), 2017. DOI: 10.1109/INTERCON.2017.8079717

[12] LTE jamming mitigation based on frequency hopping strategies
S. Barros, J. Bazzo, R. Takaki, D. Carrillo, J. Seki
2016 8th IEEE Latin-American Conference on Communications (LATINCOM), 2016. DOI: 10.1109/LATINCOM.2016.7811609

[13] A low-cost test platform to estimate the LTE timing advance procedure
D. Carrillo, G. G. Neto, S. M. Sakai, W. L. Souza, R. T. Caldeira, J. J. Bazzo
2016 8th IEEE Latin-American Conference on Communications (LATINCOM), 2016. DOI: 10.1109/LATINCOM.2016.7811608

[14] LTE Privado para Defesa e Seguranca Publica no Brasil
J. Seki, J. Bazzo, S. Barros, R. Takaki, D. Carrillo
XXXIV SIMPOSIO BRASILEIRO DE TELECOMUNICACOES- SBrT2016, 2016. DOI: 10.1109/LATINCOM.2016.7811608

[15] Cognitive wireless mesh network without common control channel evaluated in NS-3
D. Carrillo
2015 17th Conference of Open Innovations Association (FRUCT), 2015. DOI: 10.1109/FRUCT.2015.7117966

[16] Cognitive network validation using NS-3
D. Carrillo
IEEE Colombian Conference on Communication and Computing (IEEE COLCOM 2015), 2015. DOI: 10.1109/ColComCon.2015.7152103

[17] Narrowband interference suppression in Long Term Evolution systems
J. P. Miranda, D. Melgarejo, F. Mathilde, R. Yoshimura, F. A. Figueiredo, J. J. Bazzo
2014 IEEE 25th Annual International Symposium on Personal, Indoor, and Mobile Radio Communication (PIMRC), 2014. DOI: 10.1109/PIMRC.2014.7136241

[18] A USRP based scheme for cooperative sensing networks
Ricardo Seiti Yoshimura, Fabiano S. Mathilde, João Pedro Dantas, José Cruz, Juliano J. Bazzo, Dick Melgarejo
, 2014

[19] Red experimental cognitiva: Algoritmos y resultados
D. Carrillo, F. Mathilde, R. Yoshimura, J. Bazzo
2013 IEEE Colombian Conference on Communications and Computing (COLCOM), 2013. DOI: 10.1109/ColComCon.2013.6564839

[20] RF Channel occupation tool using GNU Radio
D. Carrillo
GNU-Radio Conference 2013, 2013

[21] Estrategias de Sensoriamento de Espectro Cooperativo Baseado em Autovalores
Jose H. Cruz Jr. Joao P. M. Dantas, Mario G. F. Figueredo, Vicente A. Sousa Jr. Juliano J. Bazzo, Dick C. Melgarejo, Ricardo S. Yoshimura
, 2014

[22] Building an efficient energy detector with SDR and GNU Radio
D. Carrillo
GNU-Radio Conference 2012, 2012

[23] Reduction of intermodulation products of superior order generated by Nonlinear systems over OFDM signals using a pre-distortion technique
D. Carrillo
2010 7th International Symposium on Wireless Communication Systems, 2010. DOI: 10.1109/ISWCS.2010.5624381

Books and edited proceedings

[1] D. Carrillo. 'Cognitive Radio Networks'. In: *Cognitive Technologies*. Ed. by Alberto Paradisi, Alan Godoy Souza Mello, Fabrício Lira Figueiredo and Rafael Carvalho Figueiredo. Cham: Springer International Publishing, 2017, pp. 95–109. ISBN: 978-3-319-53753-5. DOI: 10.1007/978-3-319-53753-5_8. URL: https://doi.org/10.1007/978-3-319-53753-5_8.

[2] D. Carrillo, R. Takaki, F. Lira Figueiredo, F. Mathilde. '5G Cognitive Wireless Mesh Network Without Common Control Channel'. In: *Cognitive Technologies*. Ed. by Alberto Paradisi, Alan Godoy Souza Mello, Fabrício Lira Figueiredo and Rafael Carvalho Figueiredo. Cham: Springer International Publishing, 2017, pp. 65–75. ISBN: 978-3-319-53753-5. DOI: 10.1007/978-3-319-53753-5_6. URL: https://doi.org/10.1007/978-3-319-53753-5_6.

[3] J. J. Bazzo, S. Barros, R. Takaki, D. Carrillo, J. Seki. '4G/LTE Networks for Mission-Critical Operations: A Cognitive Radio Approach'. In: *Cognitive Technologies*. Ed. by Alberto Paradisi, Alan Godoy Souza Mello, Fabrício Lira Figueiredo and Rafael Carvalho Figueiredo. Cham: Springer International Publishing, 2017, pp. 51–64. ISBN: 978-3-319-53753-5. DOI: 10.1007/978-3-319-53753-5_5. URL: https://doi.org/10.1007/978-3-319-53753-5_5.

[4] Dick Carrillo, Felipe A. P. Figueiredo, Fabrício Lira Figueiredo, João Paulo Miranda. 'LTE and Beyond'. In: *Long Term Evolution: 4G and Beyond*. Ed. by Alberto Paradisi, Michel Daoud Yacoub, Fabrício Lira Figueiredo and Tania Tronco. Cham: Springer International Publishing, 2016, pp. 1–25. ISBN: 978-3-319-23823-4. DOI: 10.1007/978-3-319-23823-4_1. URL: https://doi.org/10.1007/978-3-319-23823-4_1.

[5] João Paulo Miranda, Dick Carrillo, Fabiano Mathilde, Felipe A. P. Figueiredo, Juliano João Bazzo. 'Wavelet-Based Narrowband Interference Suppression in Long Term Evolution Physical Channels'. In: *Long Term Evolution: 4G and Beyond*. Ed. by Alberto Paradisi, Michel Daoud Yacoub, Fabrício Lira Figueiredo and Tania Tronco. Cham: Springer International Publishing, 2016, pp. 79–101. ISBN: 978-3-319-23823-4. DOI: 10.1007/978-3-319-23823-4_5. URL: https://doi.org/10.1007/978-3-319-23823-4_5.

Submitted Patents

[1] S. M. Sakai, D. Carrillo, C. Lorena. 'Sistema e Método para Reduzir os Efeitos de Interferência Inter-células em um Sistema Móvel Operando em Reúso 1 e Cenário Rural'. BR 10 2017 025838 6. Nov. 2017.

[2] D. Carrillo. 'Método e Arquitetura Flexível Baseada em M2M e M2O para Suportar Aplicações do Agronegócio'. BR 10 2017 023602 1. Nov. 2017.

[3] D. Carrillo. 'Método e Sistema para Garantir a Integridade de Dados em uma Solução IoT Utilizando uma Rede de Área Local sem Fio'. BR 10 2017 023373 1. Oct. 2017.

[4] D. Carrillo. 'Método de Desenvolvimento de Aplicações Voltadas à Internet das Coisas'. BR 10 2016 031043-1. Dec. 2016.

[5] D. Carrillo. 'Método e Aparato Receptor para Otimização da Capacidade de Usuários Simultâneos da Estação Base de um Sistema Baseado em Espalhamento Espectral'. BR 10 2016 030403 2. Dec. 2016.

[6] D. Carrillo, F. S. Mathilde, F L. Figueiredo, R. Takaki. 'Rede sem Fio Mesh-Cognitivo sem Canal de Controle Comum'. BR 10 2016 030415 6. Dec. 2016.

[7] D. Carrillo, J. Seki, J. J. Bazzo, R. Takaki, S. Barros. 'Método de Mitigação de Jamming em Sistemas LTE'. BR 10 2016 028282 9. Dec. 2016.

[8] D. Carrillo. 'Método e Sistema para Reduzir os Efeitos das Potências de Intermodulação de Terceira Ordem em Sistemas Baseados em OFDM'. BR 10 2015 024415 0. Sept. 2015.

[9] R. Caldeira, E. B. Arruda, D. Carrillo, W. L. Souza. 'Método e Aparato para Teste e Validação do Canal de Acesso Aleatório ao Meio para Sistemas de Comunicação Banda Larga sem Fio Utilizando a Tecnologia de Rádio Sobre Fibra Óptica (Rof)'. BR 10 2015 008115-4. Apr. 2015.

[10] D. Carrillo, F. S. Mathilde, F. L. Figueiredo, F. A. P. Figueiredo, J. P. C. L. Miranda, J. J. Bazzo. 'Método de Cancelamento de Interferência Faixa Estreita Utilizando Wavelets para Sistemas de Comunicação sem Fio'. BR 10 2014 029561-5. Nov. 2014.

[11] D. Carrillo. 'Arquitetura Baseada em UPNP para Testes de Campo de Redes sem Fio de Banda Larga'. BR 10 2014 028150-9. Nov. 2014.

[12] R. S. Yoshimura, J. J. Bazzo, F. L. Figueiredo, D. Carrillo, F. S. Mathilde. 'Dispositivo roteador ad-hoc mesh cognitivo'. BR 10 2014 000006 2. Jan. 2014.

[13] D. Carrillo, F. S. Mathilde, R. S. Yoshimura, J. J. Bazzo, A. P. T. R. Silva. 'Sistema automático de estimação de ocupação de canais de radiofrequência'. BR 10 2013 030160 4. Nov. 2013.

[14] F. S. Mathilde, F. A. C. Machado, D. Carrillo, R. S. Yoshimura, J. J. Bazzo, F. L. Figueiredo. 'Método de sensoriamento de espectro para detecção eficaz de usuários licenciados em redes de acesso sem fios cognitivasMétodo de sensoriamento de espectro para detecção eficaz de usuários licenciados em redes de acesso sem fios cognitivas'. BR 10 2013 030080 2. Nov. 2013.

[15] F. S. Mathilde, A. P. T. R. Silva, D. Carrillo, R. S. Yoshimura, J. J. Bazzo. 'Método de Gerenciamento de Nós para Redes Ad Hoc Cognitivas'. BR 10 2013 022212 7. Aug. 2013.

Job Experience

Researcher, LUT University, Lappeenranta, Finland   2018–current
- Consultant of wireless industrial networks used in power System applications.
- Ultra reliable low latency communication to support Energy Internet scenarios.
- Radio defined software for wireless communication systems applied to prototyping projects.
- Deep learning applications on wireless physical layer scenarios.
- wireless communication architectures to support energy systems and control applications.

Senior Wireless System Engineer, CPqD, Campinas, Brazil   2010–2018
- Defining/planning/executing/integrating IoT full stack system for agribusiness applications.
- Defining IoT architectures with emphasis in transport layer technologies. Using LoRa, SigFox, and LTE/WiFi Gateways.
- Simulating real LTE systems scenarios using NS-3 in order to evaluate inter-cell interference in cellular networks.
- Supporting to LTE protocol stack software developers (MAC, RLC, PDCP, RRC).
- Optimizing LTE RAN (Radio Access Network) in scenarios with high user density and radio coverage requirements.
- Following 3GPP standards with emphasis on topics related to RAN and EPC (Evolved Packet Core).
- Deploying a Wi-Fi Mesh cognitive network using spectrum sensing in order to evaluate Cognitive Network algorithms in sub-1GHz bands using Software-defined radio concepts.
- Emulating LTE-TDD network using Open Air Interface and USRPs B210.
- Evaluating and analyzing drive test results of cellular networks deployed in the project.
- Integrating sensor information with applications through a custom middle-ware software.

Wireless communication system researcher, Nokia Institute of Technology, INDT, Manaus, Brazil   2008–2010
- Supporting Nokia Next Generation and Standards team to design new proposals for 802.16e/m Standard Meetings using a Worldwide interoperability for microwave access (WiMAX) System Simulator based on Matlab.
- Developing system features for a WiMAX (802.16e/m) simulator based on Matlab.
- Developing and testing an indoor location-based systems (LBS) using wireless fidelity (Wi-Fi) Networks.

Broadcast System Engineer, Peruvian Institute of Radio and Television, LUT University, Peru   2003–2006
- Configuring and operating a Satellite Decoder in KU Band.
- Supporting analog radio frequency (RF) circuit technical team.

System Engineer, Remote Sensing Laboratory LABTEL, Universidad Nacional Mayor de San Marcos, Peru   2000–2003

- Developing of a systems that performed digital Processing of satellite images in order to obtain sea temperature level.
- Developing a computational vision technique to quantify the Normalized Difference Vegetation Index (NDVI).

Projects

FIREMAN, 5G architectures to support detection and analyses of rare events in Industrial applications.   2019−current
Funded by Finnish academy
IoT System architecture to support rare events industrial applications.

EE-IoT, MTC and URLLC applications that support Energy Internet applications   2018−current
Funded by Finnish Academy
IoT System architecture definition to support Energy Internet applications based on MTC and URLLC.

AGROTICS, Development of Radio communication and Sensing Technologies for Sugarcane Production operating in Sub-1GHz bands   2016−2017
Funded by FUNTTEL (Fund for the Technological Development of Telecommunications)
IoT System architecture definition for sensors, transport technologies, middle-ware and application layer. IoT Architecture definition focused in Agribusiness applications. Network planning of Wireless cellular network using propagation simulator tools and NS3.

LTE-450MHz, Development of a cellular network based on the standard 3GPP Rel.8 in band 31.   2014−2015
Funded by FUNTTEL (Fund for the Technological Development of Telecommunications)
LTE system support for network performance evaluation and troubleshooting issues considering the complete protocol stack of the network.

Advanced Wireless Access Network - RASFA, Development of a cellular network based on the standard 3GPP Rel.8 for terrestrial and satellite connectivity. It also considered developing a WiFi Mesh cognitive network.   2010−2013
Funded by FUNTTEL (Fund for the Technological Development of Telecommunications)
LTE system support of all features related to physical and MAC layer. Cognitive network project coordinator. System simulation support to Satellite model based on OFDMA using Matlab and C++.

WISI, System Level Simulation for WiMax (802.16e/m)   2008−2010
Funded by Brazilian Informatics Law
Code Developer of simulator features using Matlab.

Management

Leader of the Technical wireless communication group, strategic leadership to define technical roadmap in the field of wireless communication (CPqD)   2015-2018

Technical coordinator, development of a WiFi Mesh Cognitive Network (CPqD)   2013

Project Management, Development of an early warning system project (UNMSM)   2010

Courses

Machine Learning with Python, Department of Computer Science - Aalto University   2019

Advanced Data Analysis and Machine Learning , Department of Mathematics - LUT University   2019

Electrical Energy Storages and Electric Vehicles , Laboratory of Electrical Energy Engineering, Tampere University   2018

Self-Driving Car Engineer, Udacity's Nanodegree Program   2017

Internet of Things: Roadmap to a connected world, MIT, Boston, United States   2016

LTE RF Optimization, CPqD, Brazil	2015
Radio Planning and Optimization with Atoll, Forsk, Chicago, United States	2013
Radio Planning software with CelPlan, CelPlan, Brazil	2012
LTE-EPC Networks and Signals, Award Solutions, United States	2010
LTE Protocols and Signaling, Award Solutions, United States	2010
Mastering LTE air Interface, Award Solutions, United States	2010

Computer and laboratory skills

Software engineering: C++, Python, Matlab

System administration: GNU/Linux, Subversion, Git

Embedded systems and micro-controllers: Panda-board, Arduino, Arduino-mini, Atmel SAMA5D36.

RDS tools: **USRP210**, GNU-Radio, **OpenAirInterface**

Laboratory tools: Vector generator, spectrum analyzer, Wireshark, Iperf.

System level simulation: ns3 (Lena Module)

Operative Systems: ArchLinux, Ubuntu.

Languages

Mother tongue **Spanish**

Other languages[1]

English[2]
Portuguese (Brazil)[3]
Finnish[4]

Understanding				Speaking				Writing	
Listening		Reading		Interaction		Production			
C1	Fluent	C1	Fluent	C2	Fluent	B2	Independent	C1	Fluent
C2	Fluent	C2	Fluent	C2	Fluent	C2	Fluent	C1	Fluent
A1	Basic	A1	Basic	A1	Basic	A1	Basic	A1	Basic

[1] *Common European Framework of Reference for Languages (CEFR)*
[2] *Course in Academic English at the US Cultural Institute*
[3] *Portugues para Estrangeiros da PUC-Rio.*
[4] *SUOMI 1 - Etelä-Karjalan kansalaisopisto.*

Personal interests

Science, Technology, Languages, Traveling, Bicycling, playing Tennis, and after my arrival to Finland, I am enjoying to fish.