

Curriculum Vitae

Marco Aurelio Cárdenas Juárez

Associate Professor

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<https://www.researchgate.net/profile/Marco-Cardenas-Juarez>



Profile

I hold a B.Sc. in Electronic Engineering (Communications) from the Autonomous University of San Luis Potosí (UASLP), an M.Sc. in Electronic Engineering (Telecommunications) from the Monterrey Institute of Technology and Higher Education (ITESM), and a Ph.D. in Signal Processing for Communications from the University of Leeds, UK. With over 20 years of teaching experience, I have taught telecommunications at undergraduate and postgraduate levels. During my Ph.D., I focused on designing detection algorithms for spectrum sensing and analyzing techniques to maximize throughput in cognitive radio networks. As a Postdoctoral Research Associate at the Centre for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN) in Mexico City, I conducted research on wireless communications for unmanned aerial vehicles (UAVs) within the French Mexican Laboratory for Informatics and Automation (LAFMIA).

Nowadays, I am an Associate Professor for the B.Sc. in Telecommunications Engineering at the Faculty of Sciences, UASLP. I was the Coordinator of the B.Sc. degree in Telecommunications Engineering from August 2016 to August 2023 and have been the Chief of the ITC Department since August 2020. Additionally, I coordinate the ITC Working Group of the System for Science, Technology, and Innovation of the State Government of San Luis Potosí. As a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), I am affiliated with the Signal Processing Society and Communications Society. In 2021, I was elected to the Evaluation Commission of the System of Researchers of San Luis Potosí in the Engineering Area. Since January 2015, I have been a member of the National System of Researchers (SNI) of the Mexican National Council for Humanities, Science and Technology (CONAHCYT). From 2020 to 2023, I served as an Associate Section Editor for the Journal of Applied Research and Technology of the National Autonomous University of Mexico (UNAM).

Research Interests

The topics covered are statistical signal processing, wireless communications, sensor network applications, the Internet of Things, artificial intelligence for wireless communications, smart antenna techniques, and transversal applications of radio frequencies and microwaves.

Education and Professional Development

Formal Education

- 2012. **Doctor of Philosophy (Signal Processing for Communications)**. School of Electronic and Electrical Engineering, University of Leeds, UK.
- 2004. **Master of Science in Electronic Engineering (major in Telecommunications)**. Monterrey Institute of Technology and Higher Education, Monterrey campus, Mexico.
- 2001. **Electronic Engineer (major in Communications)**. Autonomous University of San Luis Potosí, Mexico.

Diplomas, Training courses, and professional Certifications

- July 2024 **Diploma in Effective Technology Transfer and Commercialization of Technology Packages**. Autonomous University of San Luis Potosi (UASLP).
- November 2023. **Diploma in Technologies for the Internet of Things**. Monterrey Institute of Technology and Higher Education (ITESM).
- July 2023. **Diploma in Applied Artificial Intelligence**. Institute for Scientific and Technological Research of San Luis Potosi (IPICYT)
- July 2023. **Training Course: Fundamentals of the Internet of Things**. ITC Cluster Puebla.

Professional Experience

Current Position

- January 2014 – Present. **Associate Professor** at the Faculty of Sciences of the UASLP, San Luis Potosí, México.
 - **Chief of the Department for Information Technologies and Telecommunications**
June 2020 – Present.
Ensuring all IT and telecommunications systems are functional, directing maintenance and support, implementing new technologies, and providing strategic guidance and training to enhance technological efficiency for students, faculty, and staff.
 - **Coordinator of the BSc in Telecommunications Engineering**
August 2016 – August 2023

- Led the program's curriculum development, accreditation processes, and student advising, ensuring high academic standards and fostering industry partnerships.
- **Member of the Evaluation Commission (Engineering Area) of the System of Researchers of the State Government of San Luis Potosi.**
October 2021 – Present.
Participate in the evaluation and selection of candidates, research projects and proposals, providing expert guidance to support state-wide scientific advancements.
- **Coordinator of the Working Group for Information Technologies and Communications of the System for Science, Technology, and Innovation of the State Government of San Luis Potosi.**
December 2020 – Present
Lead initiatives to integrate information technologies and telecommunications in state projects, promoting innovation and technological growth.

Previous Positions

- August 2013 – January 2014. **Postdoctoral Research Associate** at the Centre for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV-IPN). Mexico City.
- January 2013 – July 2013. **Part-time lecturer** at Monterrey Institute of Technology and Higher Education (ITESM). San Luis Potosi campus. Mexico
- February 2008 – June 2012. **Postgraduate Researcher** at Signal Processing for Communications Group. School of Electronic and Electrical Eng., **University of Leeds**, UK.
- September 2007 – December 2007. **Science and technology consultant**. San Luis Potosí, S.L.P., México.
- August 2006 – December 2007. **Part-time lecturer** at Inter-American University for Development (UNID). San Luis Potosi. Mexico.
- January 2004 – July 2007. **Full-Time Academic Advisor (lecturer)** at Polytechnic University of San Luis Potosí (UPSLP), SLP, Mexico.
- August 2003 – December 2003. **Part-time lecturer** at Polytechnic University of San Luis Potosí (UPSLP), SLP, México.

Awards and Honours

- 2022 – 2025 Acknowledgment of **Required Teachers Profile** of the “Program for the Development of the Teaching Faculty” (PRODEP) granted by the Mexican Secretariat for Public Education (SEP).
- 2021 – 2025 Member **Level I** of the **National System of Researchers** of the Mexican National Council for Science and Technology (CONACYT).
- 2020 - 2023 **Associate Section Editor** of the Electronics Section for the **Journal of Applied Research and Technology**. National Autonomous University of México.

- 2019 – 2022 Acknowledgment of **Required Teachers Profile** of the “Program for the Development of the Teaching Faculty” (PRODEP) granted by the Mexican Secretariat for Public Education (SEP).
- 2019 **Best Paper Award**. 2nd IEEE Middle East & North Africa Communications Conference. University of Bahrain, 19 – 21 November 2019.
- 2018 – 2020 Member **Level I** of the **National System of Researchers** of the Mexican National Council for Science and Technology (CONACYT).
- 2017 Member of the Technical Committee in Matter of Radioelectric Spectrum of the (Mexican) Federal Telecommunications Institute.
- 2016 **IEEE Senior Member Elevation**.
- 2016 – 2019 Received the acknowledgment of **Required Teachers Profile** of the “Program for the Development of the Teaching Faculty” (PRODEP) granted by the Mexican Secretariat for Public Education (SEP).
- 2015 – 2017 Member of the **National System of Researchers Level C** of the Mexican National Council for Science and Technology (CONACYT).
- 2014 Funding **Support for the incorporation of new Full-time Teachers** of PRODEP granted by SEP.
- August 2013 – July 2014. **Scholarship for postdoctoral research staying at CINVESTAV-IPN** granted by CONACYT.
- February 2008 - January 2012. **Scholarship for Ph.D. studies** in the United Kingdom granted by CONACYT.
- 2009-2010. **Complementary scholarship for Ph.D. studies** in the United Kingdom granted by the Mexican Secretariat for Public Education (SEP).
- Since 2004. Acknowledgment of **Required Teachers Profile** of the “Program for the Improvement of the Teaching Faculty” (PROMEP) granted by SEP.
- 2001 - 2002. ITESM grants the Scholarship of Excellence for Master of Science Studies to students with high academic performance.
- 2001. **Acknowledgment to the best students** granted by UASLP.

Publications and Research Activities

Journal articles (JCR)

- Juvenal Villanueva Maldonado, José Luis Alvarez Flores, **Marco Cardenas-Juarez**, Jorge Flores Troncoso, and Jorge Simón Rodríguez, “An IoT Ground Station: Mechanics, Control, Antenna, and Reception from a LoRa Satellite Network,” *IEEE Latin America Transactions*, Vol. 21, Issue 12, pp. 1337-1347, Dec. 2023 DOI: 10.1109/TLA.2023.10305241

- Jose L. Alvarez-Flores, Gustavo Vera-Reveles, Francisco R. Castillo Soria, L. Soriano-Equigua, F.M. Maciel Barboza, Pablo A. Alcaraz Valencia, **Marco Cardenas-Juarez**, E.S. Hernandez-Gomez, and Jorge Simon, “Cylindrical cavity resonator for complex permittivity estimation at 1.2853 GHz: Coir and skins of rice, banana, lemon, watermelon, pineapple, and papaya”, *International Journal of Applied Electromagnetics and Mechanics*, vol. 73, Issue 3, pp- 1 – 11, Nov. 2023. DOI: 10.3233/JAE-230027
- Rafael Aguilar-González, **Marco Cárdenas-Juárez**, Juan Carlos Rodríguez-Ortiz, and Mauricio Jesús Romero-Méndez, “Monitoring of Temperature Through a Sensor Network to Improve the Water Usage in Agriculture,” *Revista Terra Latinoamericana*, Vol. 41, pp. 1 – 11, Oct. 2023 DOI: <https://doi.org/10.28940/terra.v41i0.1626>
- Sarai Zarate-Galvez, Abel Garcia-Barrientos, Luis Felipe Lastras-Martinez, **Marco Cardenas-Juarez**, Sharon Macias-Velasquez, Lado Filipovic, and Armando Arce-Casas, “Optimization of Doping Concentration to Obtain High Internal Quantum Efficiency and Wavelength Stability in An InGaN/GaN Blue Light-Emitting Diode,” *ECS Journal of Solid-State Science and Technology*, vol. 12, No. 076014, Jul. 2023. DOI: 10.1149/2162-8777/ace7c4
- Carlos A Gutiérrez, Willie Harrison, Michael Rice, Benjamin Jensen, Kalin Norman, Bryan Redd, Autumn Twitchell, and **Marco Cardenas-Juarez**, “Envelope Distribution and Doppler Spectrum of V2V Channels at 5.9 GHz in Mountainous Roads”, *Vehicular Communications*, vol. 39, Feb. 2023. DOI: 10.1016/j.vehcom.2022.100570
- Carlos A. Gómez-Vega, Jorge Cardenas, Juan C. Ornelas-Lizcano, Carlos A. Gutiérrez, **Marco Cardenas-Juarez**, José M. Luna-Rivera, Ruth M. Aguilar-Ponce, “Doppler Spectrum Measurement Platform for Narrowband V2V Channels,” *IEEE Access*, vol. 10, pp. 27162 – 27184, Mar. 2022. DOI: 10.1109/ACCESS.2022.3157285
- Jorge Simon, Hugo Perez-Guerrero, Jorge Sosa-Pedroza, Fabiola Martínez-Zúñiga, Juvenal Villanueva-Maldonado, Jorge Flores-Troncoso, and **Marco Cardenas-Juarez**, “Design of an Ultrawideband Circularly Polarized Printed Crossed-Dipole Antenna Based on Genetic Algorithms for S-Band CubeSat Applications,” *International Journal of Antennas and Propagation*, Hindawi, Sep. 2021.
- Armando Arce, Enrique Stevens-Navarro, Ulises Pineda-Rico, **Marco Cardenas-Juarez**, Francisco R Castillo-Soria, David H Covarrubias, “Optimization of a Coherent Dual-Beam Array Feed Network for Aperiodic Concentric Ring Antennas,” *Applied Sciences*, MDPI, vol. 11, no. 3, Jan. 2021.
- Jorge Simon, Jorge Flores-Troncoso, Jose Luis Alvarez-Flores, Leonel Soriano-Equigua, **Marco Cardenas-Juarez**, Armando Arce, Edgar Briones, Jorge Sosa-Pedroza, “A Second-Iteration Square Koch Fractal Slot Antenna for UHF Downlink Telemetry Applications in CubeSat Small Satellites,” *International Journal of Antennas and Propagation*, Hindawi, Oct. 2020.
- F.R. Castillo-Soria, E. Bassar, J. Cortéz, and **M. Cardenas-Juarez**, “Quadrature Spatial Modulation based Multituser MIMO Transmisión System,” *IET Communications*, vol. 14, no. 7, pp. 1147 – 1154, Mar. 2020.

- J.U. Avalos Gomez, E. Stevens-Navarro, U. Pineda-Rico, **M. Cardenas-Juarez**, A. Arce, S. Gonzalez, “Dynamic Adaptation of Delayed Time of Diffusion of Emergency Messages in Cognitive Vehicular Networks,” *Revista Iberoamericana de Automática e Informática Industrial*, Comité Español Automática (CEA), vol. 17, no. 3, pp. 276 – 284, Mar. 2020
- L. Lopez-Lopez, **M. Cardenas-Juarez**, E. Stevens-Navarro, U. Pineda-Rico, A. Arce, A. G. Orozco-Lugo, “Superimposed Training Combined Approach for a Reduced Phase of Spectrum Sensing in Cognitive Radio,” *Sensors*, MDPI, vol. 19, no. 11, May 2019.
- A. Arce, E. Stevens-Navarro, **M. Cardenas-Juarez**, U. Pineda-Rico, J. Simon, and M. A. Panduro, “Design and Optimization of a Coherent Beamforming Network for an Aperiodic Concentric Ring Array,” *International Journal of Antennas and Propagation*, Hindawi, May 2019.
- J. Simón, J. Villanueva-Maldonado, F. R. Castillo-Soria, **M. Cardenas-Juarez**, E. Briones, R. Sandoval-Arechiga, L. Soriano-Equigua, J. L. Alvarez-Flores, “Comparison of the Microwave Absorption Properties of Opuntia ficus-indica, Agave atrovirens, and Cocos nucifera L. Husk,” *International Journal of Antennas and Propagation*, Hindawi, May 2019.
- A. Arce, E. Stevens-Navarro, **M. Cardenas-Juarez**, U. Pineda-Rico, D.H. Covarrubias-Rosales, “A Coherent Multiple Beamforming Network for a Non-Uniform Circular Antenna Array,” *Radioengineering*, vol. 28, no. 1, Apr. 2019.
- A. García-Barrientos, F.R. Castillo-Soria, **M. A. Cardenas-Juarez**, V.I. Rodríguez-Abdala, F.J. Gonzalez, J.E. Sánchez, “Numerical Analysis Receiving/Transmitting Mechanisms of ZnO/Ag Nanoantennas,” *Microscopy and Microanalysis*, Vol. 24, Issue S1, pp. 1788 – 1789, Aug. 2018.
- J. F. Castillo-Leon, **M. Cardenas-Juarez**, U. Pineda-Rico, and E. Stevens-Navarro, “Reduced Complexity K-Best Decoder via Adaptive Symbol Constellation for Uncoded MIMO Wireless Systems,” *IEICE Transactions on Communications*, Feb. 2017.
- R. Aguilar-Gonzalez, **M. Cardenas-Juarez**, U. Pineda-Rico, A. Arce, M. Latva-aho, E. Stevens-Navarro, “Reducing Spectrum Handoffs and Energy Switching Consumption of MADM-based Decisions in Cognitive Radio Networks,” *Mobile Information Systems*, Hindawi, Nov. 2016.
- **M. Cardenas-Juarez**, M. Ghogho, U. Pineda Rico and E. Stevens-Navarro, “Improved Semi-blind Spectrum Sensing for Cognitive Radio with Locally Optimum Detection,” *IET Signal Processing*, vol. 10, no. 5, pp. 524 – 531, Jun. 2016.
- A. Arce, **M. Cardenas-Juarez**, U. Pineda-Rico, D.H. Covarrubias and E. Stevens-Navarro, “A multiple beamforming network for unequally spaced linear array based on CORPS,” *International Journal of Antennas and Propagation*, vol. 2015, article ID 757989, 7 pages, 2015.
- J. F. Castillo-Leon, **M. Cardenas-Juarez**, U. Pineda-Rico, and E. Stevens-Navarro, “A semifixed complexity sphere decoder for uncoded symbols for wireless communications,” *IEICE Transactions on Communications*, Vol. E97-B, no. 12, pp. 2776 – 2783. Dec. 2014.

- **M. Cardenas-Juarez** and M. Ghogho, “Spectrum sensing and throughput tradeoff for cognitive radio under outage constraints over Nakahama fading,” *IEEE Communications Letters*, vol. 15, no. 10, October 2011.
- **M. Cardenas-Juarez** and M. Ghogho, “Spectrum sensing and data transmission trade-off in cognitive radio under outage constraints,” *IET Electronics Letters*, vol. 47, no. 7, March 2011.

Book Chapters

- Rafael Aguilar-González, **Marco Cardenas-Juarez**, and Juan Carlos Rodríguez Ortiz, “Optimización del consumo de agua en la agricultura con dispositivos electrónicos,” in *Avances y Tendencias en Ingeniería para el Desarrollo Social*, L. A. López Martínez, C.A. Guerra García, M.A. Ortega Morales, L. J. Ontañón García Pimentel, Eds. 1st ed. San Luis Potosí, México: UASLP, 2022, pp. 123 – 131.

International Conference articles

- Roxana Mata-Hernandez, **Marco Cardenas-Juarez**, Jorge Simón, Enrique Stevens-Navarro, and Alessandra Rizzardi, “Exploring the Path Loss of a Hacking Tool for Security Matters in the Internet of Things,” in *Proc. 2023 IEEE Autumn Meeting on Power, Electronics and Computing (ROPEC 2023)*, Ixtapa, Mexico, Oct. 2023
- Victor Fernández-Mireles, Margarito Martínez-Cruz, **Marco Cardenas-Juarez**, Ángel Montalvo-Rodríguez, and Victor Alemán-Mendiola, “Design and Implementation of an Augmented Reality-based App for Assembly Lines in Industry 4.0,” in *Proc. 2023 IEEE Autumn Meeting on Power, Electronics and Computing (ROPEC 2023)*, Ixtapa, Mexico, Oct. 2023
- Lizeth Lopez-Lopez, **Marco Cardenas-Juarez**, Enrique Stevens-Navarro, Sami Aldalahmeh, Marcos Katz, “On the Leverage of Superimposed Training for Energy-Efficient Spectrum Sensing in Cognitive Radio,” in *Proc. 2020 IEEE 17th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE)*, Mexico City, Nov. 2020.
- Lizeth Lopez-Lopez, Marja Matinmikko-Blue, Marco Cardenas-Juarez, Enrique Stevens-Navarro, Rafael Aguilar-Gonzalez, Marcos Katz, “Spectrum Challenges for Beyond 5G: The case of Mexico,” in *Proc. 2020 IEEE 2nd 6G Wireless Summit (6G SUMMIT)*, Lapland, Finland, Mar. 2020
- E. Santos-Luna, A. Prieto, R. Aguilar-González, V. Ramos, M. López-Benítez, and **M. Cardenas-Juarez**, “A Spectrum Analyzer Based on a Low-Cost Hardware-Software Integration,” in *Proc. 2019 IEEE 10th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, Canada, Oct. 2019.
- S. Aldalahmeh, S. Al-Jaazar, D. McLernon, S.A.R. Zaidi, and **M. Cardenas-Juarez**, “Distributed Combining Techniques for Distributed Detection in Fading Wireless Sensor Networks,” in *Proc. 2nd IEEE Middle East and North Africa Communications Conference (MENACOMM)*, Sep. 2019.

- Jose Ulises Avalos-Gomez, Ulises Pineda-Rico, **Marco Cardenas-Juarez**, Abel Garcia-Barrientos, Armando Arce-Casas, Enrique Stevens-Navarro, “Broadcast Storm Mitigation of ESMs using Spectrum Sharing in Cognitive Radio VANETs,” in *Proc. IEEE 2018 International Conference on Mechatronics, Electronics and Automotive Engineering (ICMEAE)*, Cuernavaca, Morelos, Mexico, Nov. 2018.
- David Antonio Arista Ramirez, **Marco Cardenas-Juarez**, Ulises Pineda-Rico, Armando Arce, Enrique Stevens-Navarro, “Spectrum Occupancy Measurements in the Sub-6 GHz Band for Smart Spectrum Applications,” in *Proc. 2018 IEEE 10th Latin-American Conference on Communications (LATINCOM)*, Guadalajara, Jal., Mexico, Nov. 2018.
- Rafael Aguilar-Gonzalez, Victor Ramos, Alfonso Prieto-Guerrero, **Marco Cardenas-Juarez**, Ulises Pineda Rico, Enrique Stevens-Navarro, “A Low-Complexity Antenna Selection Algorithm for Cooperative Sensor Networks,” in *Proc. 2018 IEEE Canadian Conference on Electrical & Computer Engineering (CCECE)*, Quebec City, QC, Canada, May. 2018
- Lizeth Lopez-Lopez, **Marco Cardenas-Juarez**, Enrique Stevens-Navarro, Abel Garcia-Barrientos, Rafael Aguilar-Gonzalez, and Ramiro Samano-Robles “Performance Analysis of Superimposed-Training-Based Cooperative Spectrum Sensing,” in *Proc. IEEE CONIELECOMP 2018 Conference*, Cholula, Puebla, Mexico, Feb. 2018.
- Rafael Aguilar-Gonzalez, Victor Ramos, Alfonso Prieto-Guerrero, **Marco Cardenas-Juarez**, Ulises Pineda-Rico, and Enrique Stevens-Navarro “An analysis of spectrum occupancy upon the analog switch-off in the City of San Luis Potosi, Mexico,” in *Proc. 9th IEEE Latin-American Conference on Communications (LATINCOM 2016)*, Guatemala, Nov. 2017.
- A. Garcia-Barrientos, E. Stevens-Navarro, **M. Cardenas-Juarez** and U. Pineda-Rico “A Corrected Model for Non-Contact-Type RF MEMS Switches,” in *Proc. The 2016 IEEE International Conference on Antennas and Applications (2016 IEEE CAMA)*, Syracuse, New York, USA, Oct. 2016.
- Lizeth Lopez-Lopez, **Marco Cardenas-Juarez**, Enrique Stevens-Navarro, Ulises Pineda-Rico, and Aldo G. Orozco-Lugo “Superimposed Training-based Detector for Spectrum Sensing in Cognitive Radio,” in *Proc. 13th International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE 2016)*, Mexico City, Mexico, Sep. 2016.
- César Guerra-García, Ismael Caballero, **Marco Cardenas-Juarez** and Ramiro Samano-Robles “Adding Quality in the User Requirements Specification: A first approach,” in *Proc. 11th International Conference on Digital Information Management*, Porto, Portugal, Sep. 2016.
- **M. Cardenas-Juarez**, M. A. Diaz Ibarra, U. Pineda Rico A. Arce, and E. Stevens-Navarro “On spectrum occupancy measurements at 2.4 GHz ISM band for cognitive radio applications,” in *Proc. IEEE CONIELECOMP 2016 Conference*, Cholula, Puebla, Mexico, Feb. 2016.
- **M. Cardenas-Juarez**, M. Ghogho, U. Pineda Rico and E. Stevens-Navarro “Sensing-throughput optimization for cognitive radio networks under outage constraints and hard

decision fusion,” in *Proc. IEEE CONIELECOMP 2015 Conference*, Cholula, Puebla, Mexico, Feb. 2015.

- R. Aguilar-Gonzalez, **M. Cardenas-Juarez**, U. Pineda-Rico, and E. Stevens-Navarro, “Performance of MADM algorithms with real spectrum measurements for spectrum decision in cognitive radio networks,” in *Proc. IEEE CCE 2014 Conference*, Ciudad del Carmen, Campeche, Oct. 2014.
- R. Samano-Robles, **M. Cardenas-Juarez**, and Atilio Gameiro, “Broadcasting Internet and social network short messages over legacy TV and Radio AM/FM,” in *Proc. of the First International Conference on Semantic Web and Information Systems (SWEBIS)*, Mexico City, Nov. 2013.
- R. Aguilar-Gonzalez, **M. Cardenas-Juarez**, U. Pineda-Rico, and E. Stevens-Navarro, “Spectrum Occupancy Measurements below 1 GHz in the City of San Luis Potosi, Mexico,” in *Proc. of IEEE 78th Vehicular Technology Conference*, Las Vegas, USA, Sep. 2013.
- R. Samano-Robles and **M. Cardenas-Juarez**, “Energy efficient random transmission control for cognitive radio systems,” *Elsevier Procedia Technology*, vol. 7, May. 2013.
- R. Aguilar-Gonzalez, **M. Cardenas-Juarez**, U. Pineda-Rico, and E. Stevens-Navarro, “Power Spectrum Measurements from 30 MHz to 910 MHz in the City of San Luis Potosi, Mexico,” *Elsevier Procedia Technology*, vol. 7, May. 2013.
- **M. Cardenas-Juarez**, M. Ghogho, and A. Swami, “Semi-blind locally optimum detection for spectrum sensing in cognitive radio,” in *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing*. Dallas, Tx, U.S.A., Mar. 2010.
- M. Ghogho, **M. Cardenas-Juarez**, A. Swami, and T. Whitworth, “Locally optimum detection for spectrum sensing in cognitive radio,” in *Proc. of IEEE 4th International Conference for Cognitive Radio Oriented Wireless Networks and Communications*, Hannover, Germany, Jun. 2009.
- F. C. Ordaz-Salazar, S. González-Salas, and **M. A. Cárdenas-Juárez**, “Espectro expandido usando autómatas celulares,” in *Proc. of IEEE CIINDET 2007*. Cuernavaca, Morelos, México. Oct. 2007.

Scientific dissemination publications (in Spanish)

- Jorge Simon, José Ricardo Gómez-Rodríguez, **Marco Cardenas Juarez**, Viktor Ivan Rodriguez, Remberto Sandoval Arechiga, Salvador Ibarra Delgado, Juvenal Villanueva Maldonado, Jose Luis Alvarez Flores, Jorge Flores Troncoso, “A miniature IoT-based Ground Station at 433 MHz for reception of telemetry packets from LoRa satellites” *Difu100ci@*, *Revista de difusión científica, ingeniería y tecnologías*, vol. 17, Issue 02, pp. 1-6, Aug. 2023.
- **M. Cardenas-Juarez**, “Telecomunicaciones: ¿cómo mejorar la conectividad en México?, *Universitarios Potosinos*, no. 237, p. 11, julio 2019.

- **M. Cardenas-Juarez**, Ulises Pineda-Rico, and E. Stevens-Navarro, “Efficient utilization of the electromagnetic spectrum for intelligent wireless communications,” *Universitarios Potosinos*, vol. 12, no. 196, pp. 10 – 15, abril 2016.
- **M. Cardenas-Juarez**, “Challenges and Impact of the new information and communication technologies,” in *Gaceta interinstitucional ciencia@sanluis*, San Luis Potosí, S.L.P., Mexico, Jun. 2008.
- **M. A. Cárdenas-Juárez** and J. R. Rodríguez-Cruz, “Transmission of speech signals over an HDSL telephony channel using joint source/channel coding scheme,” in *Proc. of IEEE ROC&C*, Acapulco, México, Nov. 2004.

Research projects

- October 2020 – June 2021. Project Leader “**Sistemas de Radio Cognitivo para Navegación Terrestre, Aérea y Marítima**,” funded by Fondo de Apoyo a la Investigación de la Universidad Autónoma de San Luis Potosí (FAI - UASLP).
- September 2016 – August 2016. Project Leader “**Transectores RF Complementarios para la Plataforma Experimental para la Evaluación de Redes de Radio Cognoscitivo**,” funded by Fondo de Apoyo a la Investigación de la Universidad Autónoma de San Luis Potosí (FAI - UASLP).
- January 2015 – December 2016. Project Leader “**Cognitive Radio Experimental Evaluation Platform (CREEP)**” funded by the Program for the Professional Development of the Teaching Faculty (PRODEP) of the Mexican Secretariat for Public Education.
- April de 2014 – June 2016. Research collaborator of the project: “**Advanced Communications Platform for mini-UAV Network Applied to Preventions, Control and Reaction in Emergency Situations**,” funded by the Mexican National Council for Science and Technology (CONACYT) in the call for projects Scientific Development for Solving National Problems 2013.
- September 2012 – Abril 2013. Research collaborator of the Academic Group of Telecommunications (CATEL) of the Autonomous University of San Luis Potosi (UASLP) in the research project: “**Spectrum Decision in Cognitive Radio Networks**.”

Reviewer Experience

Editor

- Associate Editor for the Electronics Section, **Journal of Applied Research and Technology (JART), UNAM 2020 – 2023**

Reviewer for conference and journal papers

Year	Journals and Conferences
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2024	MDPI Applied Sciences Journal, IEEE URUCON Conference, IEEE PIMRC Conference, IEEE Honet Conference
2023	IEEE Access, MDPI Electronics Journal, MDPI Sensors Journal, IEEE PIMRC Conference, IEEE CCE Conference
2022	MDPI Sensors Journal, IEEE Latin American Transactions
2021	Elsevier Measurements Journal, MDPI Sensors Journal, MPDI Entropy Journal and JMOe, IEEE URUCON, IEEE CCE
2020	IEEE Access, IEEE Latin America Transactions, IET Communications, IET Electronics Letters, Journal of Applied Research and Technology (UNAM), MDPI Sensors Journal, IEEE CCE Conference, IEEE LatinCom Conference, IEEE PIMRC Conference
2019	IEEE Access, MDPI Sensors Journal, IET Communications Journal, IEEE CONCAPAN Conference, IEEE PIMRC Conference
2018	MDPI Sensors Journal, Hindawi Mobile Information Systems, IEEE LatinCom Conference, IEEE Concapan Conference
2017	IEEE Communications Letters Journal, IEEE Transactions on Vehicular Technology Journal, IET Communications Journal, IET Signal Processing Journal, MDPI Sensors Journal, Algorithms Journal
2016	MDPI Sensors Journal, IEEE Transactions on Cognitive Communications, Elsevier Physical Communications Journal, Hindawi Computer Networks and Communications Journal
2015	Communications Letters Journal, Elsevier Measurement Journal, IET Signal Processing Journal, IET Communications Journal
2014	IET Signal Processing Journal, IET Communications Journal, IEEE Communications Letters Journal
2013	IEEE Transactions on Vehicular Technology, IET Communications Journal, WiSEE (International Conference on Wireless for Space and Extreme Environments), PIMRC 2013 (24th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications), VTC 2013 (78th Vehicular Technology Conference)
2012	Wireless Communications and Mobile Computing, IEEE Transactions on Vehicular Technology, IEEE Communications Letters, IET Communications Journal, EURASIP Journal on Wireless Communications and Networking, IEEE Wireless Communications Letters Journal
2011	WCNC 2012 (IEEE Wireless Communications and Networking Conference)
2010	VTC 2011 (73rd Vehicular Technology Conference), Ide@s CONCYTEG (Magazine Ide@s of the Council on Science and Technology of Guanajuato, special issue on Innovation)

2009	VTC 2009 (70th IEEE Vehicular Technology Conference), CROWNCOM 2009 (4th International Conference on Cognitive Radio Oriented Wireless Networks and Communications)
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Thesis and Project Supervision

Supervision of Ph.D. Thesis

- **Lizeth Adriana López López**, “**Energy-Efficient Spectrum Sensing Techniques for Cognitive Radio**” Doctorate in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in November 2020.

Supervision of M.Sc. Thesis

- **Juan Rodrigo Flores González**, “**Simulación de Parámetros S de 1 y 2 puertos Mediante Software Libre**”, Master in Engineering for Technological Innovation. Autonomous University of Zacatecas. Thesis in progress.
- **Roxana Mata Hernández**, “**Análisis de Seguridad en Capa Física para el Internet de las Cosas**”, Master in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. Thesis in progress.
- **Hugo Andrés Pérez Guerrero**, “**Diseño, Construcción y Caracterización de Antenas para Comunicaciones Espaciales Usando el Estándar CubeSat**”, Master in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in September 2020.
- **Dulce Mayra Janet Martínez García**, “**Sistema de Comunicación Móvil para Situaciones de Emergencia**”, Master in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in December 2018.
- **David Antonio Arista Ramírez**, “**Estudio y Análisis de la Ocupación Espectral por debajo de 6 GHz**”, Master in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in October 2018.
- **Lizeth Adriana López López**, “**Evaluation of Spectrum Sensing Algorithms Using Superimposed Training Techniques for Detection Improvement in Cognitive Radio**,” master’s in electronic engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in July 2016.
- **Miguel Ángel Díaz Ibarra**, “**Estudio de Implementación de Técnicas de Radio Cognoscitivo en Vehículos Aéreos No Tripulados**”, Master in Electronic Engineering (major in Telecommunications). Autonomous University of San Luis Potosi. The thesis finished in October 2015.

Supervision of B.Sc. Thesis

- **Hiram Yael Chávez Pérez, “Sistema IoT para Monitoreo de Variables Climatológicas en Cámaras de Cultivos,”** B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in August 2023.
- **Alfredo Covarrubias Báez, “Renovación Tecnológica de Equipos de Ciberseguridad para Empresas Aseguradoras,”** B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in May 2022.
- **Héctor Adrián Badillo Castro, “IoT para monitoreo de cultivos protegidos,”** B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in April 2022.
- **Alejandro Morales Vázquez, “Análisis General de la Industria 4.0 en San Luis Potosí,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in September 2021.
- **César Gutiérrez Maya, “Diseño de Sistema Multipunto a Punto de Comunicación Remota de Video,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in January 2021.
- **Víctor Guerrero Olvera, “Análisis del Sistema Cardiorrespiratorio en Situaciones de Susto y Vértigo,”** B.Sc. in Biomedical Engineering, Autonomous University of San Luis Potosi. The thesis finished in September 2020.
- **José Joel López Banda, “Suministro e Instalación de Cableado Estructurado de Voz y Datos para la Delegación Estatal del Programa de Desarrollo Humano Oportunidades en el Estado de San Luis Potosí,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in May 2019.
- **Julio César Rivera García, “Análisis de Espectro de Frecuencias y Plan de Acción para Optimización de Enlace Inalámbrico Backhaul en Banda de 5 GHz,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in May 2019.
- **Miguel Ángel Hernández Colunga, “Análisis del Desempeño de la Red Inalámbrica de la Facultad de Contaduría y Administración de la UASLP,”** B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in December 2018.
- **Yael Armando Posadas Herrera, “Sistema de Monitoreo para Detección Oportuna de Alarmas en Centrales Telefónicas de Telmex,”** B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in December 2018.
- **Hugolino Morán Salvador, “Sistema de Estabilización de Vehículos Aéreos No Tripulados,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in December 2017.
- **Fernando Aguilar Serment, “Desarrollo de Experimentos para Visualización de Espectro Electromagnético utilizando el Receptor Realtek RTL2832U,”** B.Sc. in Electronic Engineering. Autonomous University of San Luis Potosi. The thesis finished in June 2016.

- **Dulce Mayra Janet Martínez García**, “Plataforma de Comunicación Inalámbrica COTS para Vehículos Terrestres No Tripulados en Tareas de Protección Civil”, B.Sc. in Telecommunications Engineering. Autonomous University of San Luis Potosi. The thesis finished in June 2016.
- **Daniel López Velarde Flores**, “Software de Calidad”, B.Sc. in Electronic Engineering, Autonomous University of San Luis Potosi. The thesis finished in May 2015.
- **Miguel Ángel Meléndez Ramírez**, “Reconstrucción Tridimensional de Interiores Utilizando Vehículos Aéreos No Tripulados”, B.Sc. in Information Technologies, Polytechnic University of San Luis Potosi. Thesis Finished in April 2015.

Teaching Experience

Course	Institution	Level	Dates
Introduction to Artificial Intelligence	UASLP	Undergraduate	Aug. – Dec. 2024 Aug. – Dec. 2023
Wireless Communications	UASLP	Undergraduate	Aug. – Dec. 2024 Aug. – Dec. 2023 Jan. – May 2019 Aug. – Dec. 2016
Applied Statistics	UASLP	Undergraduate	Jan. – May 2024 Jan. – May 2023
Digital Communications	UASLP	Undergraduate	January – May 2024 Jan. – May 2023 Aug. – Dec. 2022, Jan. – Jun. 2022 Jan. – Jun. 2021 Aug. – Dec. 2020 Jan. – May 2020 Jan. – May 2019 Aug. – Dec. 2016 Jan. – May 2016 Aug. – Dec. 2015 Jan. – May 2014
Signal Processing for Communications	UASLP	Undergraduate	Aug. – Dec. 2022
Stochastic Processes	UASLP	Undergraduate	Aug. – Dec. 2021
Introduction to Probability	UASLP	Undergraduate	Jan. – Jun. 2021
Seminar of Telecommunications Engineering	UASLP	Undergraduate	Aug. – Dec. 2020 Aug. – Dec. 2019 Aug. – Dec. 2018 Aug. – Dec. 2017
Signals and Systems	UASLP	Undergraduate	Aug. – Dec. 2019

Personal Communications Systems	UASLP	Undergraduate	Jan. – Jun. 2022 Aug. – Dec. 2020 Aug. – Dec. 2014 Jan. – May 2015
Transmission Lines	UASLP	Undergraduate	Aug. – Dec. 2021 Jan. – May 2019 Aug. – Dec. 2017 Jan. – May 2016 Jan. – May 2014 Aug. – Dec. 2014 Jan. – May 2015
Selected Topics in Telecommunications (Internet of Things)	UASLP	Postgraduate	Aug. – Dec. 2023
Modelling and Simulation in Telecommunications	UASLP	Postgraduate	Jan. – May 2023
Seminar of Scientific and Technical Writing in English	UASLP	Postgraduate	Aug. – Dec. 2022 Aug. – Dec. 2021 Jan. – May 2020
Telemetry	UASLP	Postgraduate	Aug. – Dec. 2019
Stochastic Processes	UASLP	Postgraduate	Aug. – Dec. 2018
Wireless Communications	UASLP	Postgraduate	Aug. – Dec. 2017
Selected Topics in Communications	UASLP	Postgraduate	Aug. – Dec. 2014
Estimation and Detection	UASLP	Postgraduate	Aug. – Dec. 2015
Computational Mathematics	ITESM, San Luis Potosí Campus	Undergraduate	Jan. – May 2013
Numerical Methods in Engineering	ITESM, San Luis Potosí Campus	Undergraduate	Jan. – May 2013
Networking Fundamentals (CISCO-CCNA I)	ITESM, San Luis Potosí Campus	Undergraduate	Jan. – May 2013
Networking Fundamentals (CISCO-CCNA I)	UPSLP	Undergraduate	Jan. – May 2006
Laboratory Demonstrations for Communications Systems	University of Leeds, UK	Undergraduate	Sep. – Dec. 2008, Sep. – Dec. 2009
C++ Programming	UNID	Undergraduate	Aug. – Dec. 2007
Data Networks (Masters in Information Technologies)	UNID	Postgraduate	Aug. – Dec. 2006 Jan. – May 2007 Aug. – Dec. 2007
Introduction to Computing	UPSLP	Undergraduate	Aug. – Dec. 2003 Jan. – May 2006 Jan. – May 2007

Comprehensive and Integrating Project I: Computer Assembling	UPSLP	Undergraduate	Aug. – Dec. 2003
Statistics and Probability	UPSLP	Undergraduate	Jan. – May 2004
Electrical Circuits	UPSLP	Undergraduate	Jan. – May 2004
Discrete Mathematics	UPSLP	Undergraduate	Aug. – Dec. 2004
Communications I: Transmission Lines	UPSLP	Undergraduate	Aug. – Dec. 2004 Jan. – May 2005 Aug. – Dec. 2005
Communications II: Signals and Systems	UPSLP	Undergraduate	Jan. – May 2005 Jan. – May 2006 Jan. – May 2007
Telephony Systems	UPSLP	Undergraduate	Aug. – Dec. 2005 Aug. – Dec. 2006
Communications Systems	UPSLP	Undergraduate	Aug. – Dec. 2005
Personal Communications Networks	UPSLP	Undergraduate	Jan. – May 2006 Jan. – May 2007
Data Networks (CISCO-CCNA III: Intermediate Switching and Routing Fundamentals)	UPSLP	Undergraduate	Aug. – Dec. 2006

Seminars, Lectures, Talks, and Workshops

- June 2024: **Internet of Things and Artificial Intelligence**. Verano de la Ciencia. Universidad Autónoma de San Luis Potosí.
- July 2022: **Elaboration of Funding Proposals for Research Projects 2022**. Workshop with a duration of 20 hours. Facultad de Ciencias, UASLP.
- March 2022: **Ingeniería en Telecomunicaciones e Inteligencia Artificial**. Taller de Inteligencia Artificial. Instituto Potosino de Investigación Científica y Tecnológica (IPICYT).
- June 2021: **Redes y comunicaciones 5G en tiempos del COVID-19**. Verano de la Ciencia. Universidad Autónoma de San Luis Potosí.
- June 2021: **TIC para el desarrollo de proyectos de ciencia, tecnología e innovación de SLP**. Seminario de Ingenierías Electrónica, Biomédica y de Telecomunicaciones. Facultad de Ciencias, UASLP.
- November 2020: **Retos y Oportunidades de Ingeniería en Telecomunicaciones durante la Pandemia por COVID-19**. Congreso Internacional de Electrónica, Control y Telecomunicaciones CIECT XV, Bogotá Colombia, 26 y 27 de noviembre de 2020.
- February 2016: *On spectrum occupancy measurements at 2.4 GHz ISM band for cognitive radio applications*. IEEE CONIELECOMP 2016 Conference, Cholula, Mexico.
- August 2015: *Telecommunications Research and Studies at UASLP*. Pontifical Catholic University of Rio de Janeiro. Brazil.

- February 2015: *Sensing-throughput optimization for cognitive radio networks under outage constraints and hard decision fusion*. IEEE CONIELECOMP 2015 Conference, Cholula, Mexico.
- October 2014: *Performance of MADM algorithms with real spectrum measurements for spectrum decision in cognitive radio networks*. IEEE CCE 2014 Conference, Ciudad del Carmen, Campeche.
- November 2013: *Broadcasting Internet and social network short messages over legacy TV and Radio AM/FM*. 1st International Conference on Semantic Web and Information Systems (SWEBIS 2013). México D.F.
- April 2013: *Energy efficient random transmission control for cognitive radio systems*. Iberoamerican Conference on Electronic Engineering and Computer Science (CIECC 2013). San Luis Potosí, S.L.P., México.
- August 2012: *Overcoming the electromagnetic spectrum scarcity*. Centro de Investigación Científica y Educación Superior de Ensenada (CICESE), Ensenada, B.C., México.
- May 2012: *Analysis of throughput for centralised cognitive radio networks*. 10th Symposium of Mexican Students and Studies. Imperial College, London, UK.
- July 2011: *Energy detection-based spectrum sensing for cognitive radio networks*. 9th Symposium of Mexican Students and Studies. University of Essex, Colchester, UK.
- March 2010: *Semi-blind locally optimum detection for spectrum sensing in cognitive radio*. International Conference on Acoustics, Speech, and Signal Processing. Dallas, Texas, U.S.A.
- June 2009: *Locally optimum detection for spectrum sensing in cognitive radio*. 4th International Conference on Cognitive Radio Oriented Wireless Networks and Communications. Hannover, Germany.
- June 2008: *Spectrum sensing for cognitive radio*. 6th Symposium of Mexican Students and Studies. Imperial College, London, U.K.

Organization of Conferences and Symposiums

- April 2024. **LXI Week of Sciences**. UASLP. Organizing committee member
- March 2022 **LIX Week of Sciences**. UASLP. Organizing committee member.
- March 2016 **LIV Week of Sciences**. UASLP. Organizing committee member.
- April 2015 **LIII Week of Sciences**. UASLP. Organizing committee member.
- November 2014 **5th Meeting of Telecommunications and Signal Analysis**. Organizing committee member.

- September 2006. *7th International Conference on Computer Sciences (ENC 2006)*. Organizing committee member. UASLP.
- May 2005. *1st Symposium on Information Technologies and Telematics*. Organizing committee member. UPSLP.

Other Activities

CONAHCYT National Evaluator of research projects, scholarships applications and quality postgraduate programs.

Extracurricular activities

- October 2008 – June 2010 **Founder Member and Treasurer of the Leeds Mexican Student Society**. University of Leeds.

Languages

Spanish: native. **English:** fluent (TOEFL 643). **French:** A1

References

Available upon request. San Luis Potosi, Mexico, 08 of July 2024.