Octavio Castillo Reyes | Curriculum Vitae

Computer Applications in Science & Engineering (CASE)
Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS)
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Resume

Octavio Castillo Reyes (Xalapa, Veracruz, 1985), obtained his Computer Systems Engineering Degree from the Xalapa Institute of Technology (2007, Mexico), his Networks and Telecommunications Master Degree from the Atenas University (2011, Mexico) and his PhD in Computer Architecture from the Polytechnic University of Catalonia (2017, Spain).

His professional career has developed at the University of Veracruz: Webmaster of Lecture Program of the University (2007–2008), Coordinator of Information Analysis and Integration of Information Systems (2008–2011), member of the Academic group "Information Technologies and Intelligent Organizations in the Knowledge Society" (2010–2013), lecturer in the Master in Telematic Engineering (2011-2013) and in the Program of Administrative Computer Systems (2010–2013), and Operations Coordinator of the Master Degree in Telematic (2011–2013).

He has given national and international conferences (Cuba, Peru, Argentina, Spain, France, Germany, Ireland, Canada, Czech Republic, Greece, South Korea, United States, Switzerland, United Kingdom). His research work focus on methods and mathematical models to evaluate the performance of wireless sensor networks (WSN), numerical simulation, parallel algorithms, finite elements and finite differences and High-performance Computing (HPC). In 2015, he won the JCC2015-BSC prize of "Your Thesis in Three Minutes" as part of the 2nd. CONACyT-Catalonia Cooperation Days.

Doctoral fellowship from CONACyT (2013–2017) in Computer Architecture at the Technical University of Catalonia (UPC, Barcelona, Spain). He developed his research work in the Department of Computer Applications in Science and Engineering (CASE) at the Barcelona Supercomputing Center – National Supercomputing Center (BSC-CNS), under the direction of professor José María Cela Espín and researcher Josep de la Puente from the research group Repsol-BSC. His doctoral thesis, supported by European Project "Geophysical Exploration using Advanced Galerkin Methods" (GEAGAM), was about Edge-based finite element method for the solution of electromagnetic problems in geophysics and it's coupling on HPC architectures.

Since 2017 is member of the Mexican Supercomputing Network. Currently, he is postdoctoral researcher in the CASE department of the BSC-CNS and part-time associate professor at Department of Computer Architecture (DAC) of the UPC. His research focuses on numerical methods applied to electromagnetic modelling and their parallel programming in supercomputing architectures.

Academic background

Polytechnic University of Catalonia — **Barcelona, Spain**
Doctor of Philosophy in Computer Architecture — *2013–2017*

Atenas Veracruzana University — **Xalapa, Veracruz, Mexico**
Master in networks and telecommunications — *2008–2011*

Xalapa Institute of Technology <div align="right">**Xalapa, Veracruz, Mexico**</div>
Bachelor degree in computational systems engineer <div align="right">*2003–2007*</div>

Doctoral thesis...

Title: *Edge–elements formulation of 3D CSEM in geophysics: a parallel approach*

Advisors: José María Cela Espín and Josep de la Puente

Distinction: Cum Laude – Internacional mention

Master thesis...

Title: *Performance evaluation of AODV & DSDV routing protocols in a wireless sensor network for structural health monitoring*

Advisors: Rubén Alvaro González Benítez and Mónica Karel Huerta

Distinction: Honorable mention research

Bachelor degree...

Title: *Análisis de factibilidad para la migración de servicios de red utilizados en USBI Xalapa*

Advisor: Manuel Prisciliano Ralero de la Mora

Teaching

Bachelor degree in informatics engineering: Barcelona school of informatics. Polytechnic University of Catalonia:

- Introduction to computers
- Computer architecture

Bachelor degree in informatics engineering: Polytechnic School. Pompeu Fabra University:

- Introduction to parallel and distributed programming

Degree in Administrative Computer Systems: School of Accounting and Management. University of Veracruz – Xalapa:

- Analysis of algorithms
- Algebra fundamentals
- Distributed systems
- Information technology management
- Network security
- Computational organization
- Information and communications technology
- Networks and telecommunications
- Applied mathematics

Master in telematic: School of Accounting and Management. University of Veracruz – Xalapa:

- Tools for evaluating networks
- Research project I

Thesis directed

- **2018**: Liendo, A., *Implementación de un sistema de alerta de tsunami para Venezuela*. Co-advisor of doctoral thesis. Faculty of Sciences at University Central of Venezuela. Caracas, Venezuela.
- **2012**: Del Carmen, C. Z., *Estudio del protocolo ALOHA bajo un ambiente simulado*. Thesis. University of Veracruz. Xalapa, Veracruz.

- **2012**: Ramírez, C. A., *Simulación de un modelo de colas FIFO de un servidor*. Thesis. University of Veracruz. Xalapa, Veracruz.
- **2012**: Herrera, G. R., *Aspectos energéticos en redes de sensores inalámbricas*. Monografía. University of Veracruz. Xalapa, Veracruz.
- **2012**: Medina, S. M., *Neutralidad de la red. Aspectos técnicos, económicos y legales*. Monograph. University of Veracruz. Xalapa, Veracruz.
- **2012**: Martínez, M. X., *México digital. Logros y pendientes*. Monograph. University of Veracruz. Xalapa, Veracruz.
- **2012**: Cruz, R. C., *Sistema Telemático para la gestión documental. Enfoque teórico y práctico*. Thesis. University of Veracruz. Xalapa, Veracruz.
- **2012**: Vega, F. A., *Sistema telemático basado en software libre como apoyo al trabajo colaborativo*. Thesis. University of Veracruz. Xalapa, Veracruz.
- **2012**: Solano, P. O., *Tecnologías verdes en la UV. Una encuesta*. University of Veracruz. Xalapa, Veracruz.
- **2012**: Flores, T. G., *WebSA como metamodelo para el desarrollo web. Teoría e implementación*. Thesis. University of Veracruz. Xalapa, Veracruz.
- **2011**: Perez, K., *Técnicas de enrutamiento en redes de sensores inalámbricas*. Monograph. University of Veracruz. Xalapa, Veracruz.
- **2011**: Chimal, C. J., *Cluster virtual en software libre como solución al balance de cargas de trabajo en servidores*. Monografía. University of Veracruz. Xalapa, Veracruz.
- **2011**: Ortiz, M. A., *Internet, tráfico web y monitoreo de red con software libre*. Monograph. University of Veracruz. Xalapa, Veracruz.
- **2011**: Alarcón, J. O., *Live–DVD: una propuesta para el desarrollo lógico–matemático en los estudiantes de la Licenciatura en Sistemas Computacionales Administrativos*. Thesis. University of Veracruz. Xalapa, Veracruz.

Publications

- **2019**: Castillo-Reyes, O., de la Puente, García-Castillo, L. E., Cela, J. M., *Parallel 3D marine controlled-source electromagnetic modeling using high-order tetrahedral Nédélec elements*. Geophysical Journal International, ggz285, vol(219): 39-65. ISSN 0956-540X.
- **2019**: Lorenzo, J.,Castillo-Reyes, O., Granados, X., Mantsinen, M., Sáenz, X., Soba, A. *Development of HPC multiphysics framework for HTS magnets in fusion*. BSC doctoral symposium (6th: 2019). Barcelona, Spain.
- **2019**: Castillo-Reyes, O., Cervantes Pérez, J., Welsh Rodríguez, C. M. *Supercómputo y riesgos naturales*. La Ciencia y el Hombre. XXXI (1): 50–53. ISSN 0187–8786.
- **2018**: Castillo-Reyes, O., de la Puente, Cela, J. M., *PETGEM: A parallel code for 3D CSEM forward modeling using edge finite elements*. Computers & Geosciences, vol(119): vol 119: 123-136. ISSN 0098-3004. Elsevier.
- **2018**: Monterrubio-Velasco, M., Carrasco-Jiménez, J.C., Castillo-Reyes, O., Cucchietti, F., de la Puente, J. *A machine learning approach for parameter screening in earthquake simulation*. High Performance Machine Learning Workshop - HPML. Lyon, France.
- **2018**: Monterrubio-Velasco, M., Carrasco-Jiménez, J.C., Aguilar-Meléndez, A., Castillo-Reyes, O., de la Puente, J., *Earthquake simulation by Fiber Bundle Model and machine Learning techniques*.

BSC doctoral symposium (5th: 2018). Barcelona, Spain.

- **2017**: Castillo-Reyes, O., de la Puente, Cela, J. M., *Three–Dimensional CSEM modelling on unstructured tetrahedral meshes using edge finite elements*. In: Barrios Hernández C., Gitler I., Klapp J. (eds) High Performance Computing. CARLA 2016. Communications in Computer and Information Science, vol 697: 247-256. ISBN 978-3-319-57971-9. Springer, Cham.

- **2016**: Castillo-Reyes, O., de la Puente, J., Cela, J.M., *Improving edge finite element assembly for geophysical electromagnetic modelling on shared-memory architectures*. 7th Annual Uniquitous Computing, Electronics & Mobile Communication Conference – UEMCON 2016. IEEE – 978-1-5090-1496-5. Columbia University. New York.

- **2016**: Castillo-Reyes, O., de la Puente, J., Barucq, H., Diaz, J., Cela, J.M., *Parallel and vectorized code for CSEM surveys in geophysics: An edge–based approach*. European Congress on Computational Methods in Applied Sciences and Engineering - ECCOMAS. Crete, Greece.

- **2016**: Castillo-Reyes, O., de la Puente, J., Cela, J. M., *Towards an HPC tool for simulation of 3D CSEM surveys: an edge-based approach*. PRACE Scientific and Industrial Conference 2016 – PRACEDays16. Prague, Republic Czech.

- **2016**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *Edge-based parallel framework for the simulation of 3D CSEM surveys*. ICE Barcelona – AAPG/SEG International Conference & Exhibition. ISSN-ISSN: 2159-6832. Society of Exploration Geophysicists. Barcelona, Spain.

- **2016**: Castillo-Reyes, O., de la Puente, J., Modesto, D., Puzyrev, V., Cela, J. M., *Parallel tool for numerical approximation of 3D electromagnetic surveys in geophysics*. Computación y Sistemas, Número especial: Tendencias en cómputo en Cataluña. Vol. 20, No. 1, pp. 29-39. ISSN – 2007-9737. Instituto Politécnico Nacional. Mexico, D.F.

- **2015**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *Edge–based electric field formulation in 3D CSEM simulations: a parallel approach*. 6th International Conference and Workshop on Computing and Communication. IEEE – 978-1-4799-6908-1. University of British Columbia. Vancouver, Canada.

- **2015**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *Parallel and numerical issues of the edge finite element method for 3D controlled-source electromagnetic surveys*. IEEE International Conference on Computing Systems and Telematics. IEEE – 978-1-4799-7639-3. University of Veracruz. Xalapa, Veracruz, Mexico.

- **2015**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *Edge–elements for geophysical electromagnetic problems: a new implementation challenge*. PRACE Scientific and Industrial Conference 2015 – PRACEDays15. Partnership for Advanced Computing in Europe. Dublin, Irlanda.

- **2015**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *HPC and edge elements for geophysical electromagnetic problems: an overview*. BSC doctoral symposium (2nd: 2015). Barcelona, Spain.

- **2015**: Castillo-Reyes, O., de la Puente, J., Puzyrev, V., Cela, J. M., *Assessment of edge–based finite element technique for geophysical electromagnetic problems: efficiency, accuracy and reliability*. PANACM 2015: 1st Pan-American Congress on Computational Mechanics. Buenos Aires, Argentina. International Center for Numerical Methods in Engineering (CIMNE). ISBN 978-84-943928-2-5.

- **2014**: Castillo-Reyes, O., Morales, M., *Indicadores de presencia y visibilidad Web: El caso de las universidades públicas en México*. ALCI 2010: Coloquio Administración y Liderazgo en el Campo

Informativo. Boca del Río, Veracruz. Primera edición. ISBN 978-607-725-087-6.

- **2013**: Castillo-Reyes, O., Morales, M., *Midiendo la WWW académica*. La Ciencia y el Hombre. XXV (2): 19–21. ISSN 0187–8786.
- **2012**: Castillo-Reyes, O., Morales, M., *Un mundo profuso e intoxicado*. La Ciencia y el Hombre. XXV (2): 69–72. ISSN 0187–8786.
- **2012**: Castillo-Reyes, O., *Internet en blanco y negro*. La Ciencia y el Hombre. XXV (1): 61–64. ISSN 0187–8786.
- **2011**: Cruz, C., Flores, G., Vega, A., Castillo, O., *Software libre para bibliotecas: el caso de la Facultad de Contaduría y Administración – Xalapa de la University of Veracruz*. E-book with the memories of the International Conference on Administrative Computer Systems, with the main topic: "Sistemas compiutacionales, telemática y sustentabilidad en las organizaciones de la sociedad del conocimiento. Ed. FESI. Xalapa, Veracruz, Mexico
- **2011**: Castillo-Reyes, O., Rivas, D., González, R., Huerta, M., Otero, A., González, R., *Performance Evaluation of DSDV & AODV Routing Protocol in a Wireless Sensor Network for Structural Health Monitoring*. CONATEL 2011: II National Conference on Telecommunications "Bridging Iberoamerica through Telecommunications", Proceedings. Arequipa, Peru.
- **2011**: Castillo-Reyes, O., *El dualismo de las tecnologías de la información en el cambio climático*. La ciencia y el Hombre. XXIV (2): 53–54.
- **2010**: Castillo-Reyes, O., *Tecnologías de la información y cambio climático*. La Ciencia y el Hombre. XXIII (3): 49–50. ISSN 0187–8786.
- **2010**: Castillo-Reyes, O., *Sociedad, medios de información y lectura*. INFO 2010: Congreso Internacional de Información "La Sociedad del Conocimiento y sus Aspectos Críticos", Proceedings, Ed. IDICT. Habana, Cuba.
- **2010**: Castillo-Reyes, O., Otero, A. D., González, R. A., *Live-DVD para la simulación de redes de sensores*. Ebook with the memories of IV Simposio Internacional en Sistemas Telemáticos y Organizaciones Inteligentes. Ed. FESI. Xalapa, Veracruz. ISBN 978-607-95043-2-8.

Research stays

CSC-IT   **Helsinki, Finland**
CSC-IT Center for Science   *January 2019*
Research topic: Python for HPC: prototyping and debugging of engineering applications.
This research-stay has received funding from the 10th call Severo Ochoa Mobility Program.

Magique 3D   **Pau, France**
Institut National de Recherche en Informatique et en Automatique (INRIA)   *March 2017*
Research topic: Iterative solvers for electromagnetic modelling applications using HPC architectures.
This research-stay has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 644202.

Petroleum and Geosystems Engineering   **Austin, Texas, USA**
University of Texas (UT)   *October-November 2016*
Research topic: CSEM modelLing, numerical simulations, performance improvements of finite difference code (well-testing pressure transient analysis) and High-performance Computing using Python on shared/distributed-memory platforms.
This research-stay has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 644202.

Magique 3D **Pau, France**

Institut National de Recherche en Informatique et en Automatique (INRIA) *November 2015*

Research topic: Mathematical modeling and recent advances in scientific computing applied to 3D electromagnetic problems in geophysics.

Conferences

- **May 2019**: Speaker with the topic: *HPC with python for numerical modeling in geophysics*. Workshop on mathematical and computational modelling on the Earth. LaCaN, Polytechnic University of Catalonia. Barcelona, Spain.

- **May 2019**: Speaker with the topic: *HPC for numerical simulation in geophysics*. 7th Congreso metropolitano de modelado y simulación numérica. National Autonomous University of Mexico – UNAM. CDMX, Mexico.

- **November 2018**: Speaker with the topic: *Electromagnetic modeling using Nédélec elements of high-order and HPC*. XXXIX Ibero-Latin American Congress on Computational Methods in Engineering – CILAMCE. Sorbonne Universités. Paris / Compiègne, France.

- **October 2018**: Speaker with the topic: *HPC code development using Python*. Mexican supercomputing network annual meeting - RedMexSu. University of Guadalajara. Guadalajara, Mexico.

- **May 2018**: Speaker with the topic: *HPC geophysical electromagnetic modeling*. Fifth International Congress on Multiphysics, Multiscale, and Optimization problems. University of the Basque Country. Bilbao, Spain.

- **March 2018**: Speaker with the topic: *Supercómputo al servicio de la ciencia y la ingeniería*. Programa de difusión permanente de investigación, ciencia y tecnología. Instituto Tecnológico Superior de Xalapa. Xalapa, Veracruz, Mexico.

- **March 2018**: Speaker with the topic: *Supercómputo como motor de la ciencia*. II Seminario Internacional "Retos del cómputo en 3 áreas estratégicas" y 1er Seminario Interno de Tecnologías de la Información. University of Veracruz. Xalapa, Veracruz, Mexico.

- **March 2018**: Speaker with the topic: *Python performance for HPC geophysical applications*. 9th International Supercomputing Conference in Mexico – ISUM 2018. Red Mexicana de Supercómputo. Mérida, Yucatán, Mexico.

- **September 2017**: Speaker with the topic: *Overview of numerical techniques and applications for CSEM/MT geophysical surveys*. SIAM Conference on Mathematical and Computational Issues in the Geosciences. University Erlangen-Nürnberg. Erlangen, Germany.

- **July 2017**: Speaker with the topic: *PETGEM: Parallel Edge-based Tool for Geophysical Electromagnetic Modelling*. Congress on Numerical Methods in Engineering. Technical University of Valencia. Valencia, Spain.

- **June 2017**: Speaker with the topic: *PETGEM: potential of 3D CSEM modelling using a new HPC tool for exploration geophysics*. 10th International Marine Electromagnetics conference – MARELEC. University of Liverpool. Liverpool, United Kingdom.

- **June 2017**: Speaker with the topic: *High performance computing using python: advances in geophysical electromagnetic modelling*. Computing and Electromagnetics International Workshop. Polytechnic University of Catalonia. Barcelona, Spain.

- **May 2017**: Speaker with the topic: *Python code for CSEM modelling in geophysics and HPC architectures: advances and challenges.* 2do Foro Internacional de Talento Mexicano – Innovation Match MX 2016-2017. Mexico, D.F.
- **May 2017**: Speaker with the topic: *Python for HPC geophysical applications.* GeoPython 2017. University of Applied Sciences and Arts Northwestern Switzerland. Basel, Switzerland.
- **May 2017**: Speaker with the topic: *Python for HPC geophysical electromagnetic applications: experiences and perspectives.* 4th BSC International Doctoral Symposium. Barcelona, Spain.
- **February 2017**: Speaker with the topic: *See underneath. High Performance Computing, geophysics and electromagnetic methods.* Interdisciplinary Meeting of Predoctoral Researchers – JIPI 2017. University of Barcelona. Barcelona, Spain.
- **December 2016**: Speaker with the topic: *Supercomputing and electromagnetic modelling in geophysics: advances and challenges.* Centro de Ciencias de la tierra. University of Veracruz. Xalapa, Veracruz, Mexico.
- **October 2016**: Speaker with the topic: *Improving edge finite element assembly for geophysical electromagnetic modelling on shared-memory architectures.* 7th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference –UEMCON 2016. New York, USA.
- **August 2016**: Speaker with the topic: *Three-dimensional CSEM modelling on unstructured tetrahedral meshes using edge finite elements.* Latin American High Performance Computing Conference – CARLA 2016. Mexico, D.F.
- **July 2016**: Speaker with the topic: *Edge-based parallel code for CSEM surveys in geophysics: performance and accuracy improvements.* 12th World Congress on Computational Mechanics – WCCM XII. Seoul, Korea.
- **June 2016**: Speaker with the topic: *Parallel and vectorized code for CSEM surveys in geophysics: An edge-based approach.* European Congress on Computational Methods in Applied Sciences and Engineering – ECCOMAS . Crete island, Greece.
- **May 2016**: Speaker with the topic: *Towards an HPC tool for 3D CSEM forward modelling in geophysics.* Fourth International Congress on Multiphysics, Multiscale, and Optimization problems. University of the Basque Country. Bilbao, Spain.
- **May 2016**: Speaker with the poster: *Towards an HPC tool for simulation of 3D CSEM surveys: an edge-based approach.* PRACE Scientific and Industrial Conference 2016 – PRACEDays16. Prague, Czech Republic.
- **April 2016**: Speaker with the topic: *Scientific computing on massively parallel computers.* Master in Telematic. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz, Mexico.
- **April 2016**: Speaker with the topic: *Edge-based parallel framework for the simulation of 3D CSEM surveys.* ICE Barcelona. AAPG – SEG International Conference & Exhibition 2016. Barcelona, Spain.
- **April 2016**: Speaker with the topic: *High performance computing, geophysics and numerical methods: a symbiotic relation.* 1er Foro Internacional de Talento Mexicano – Innovation Match MX 2015-2016. Guadalajara, Jalisco, Mexico.
- **October 2015**: Speaker with the topic: *Edge-based electric field formulation in 3D CSEM simulations: a parallel approach.* 6th International Conference and Workshop on Computing and Communication – IEMCON – 2015. University of British Columbia. Vancouver, Canada.

- **October 2015**: Speaker with the topic: *High Performance Computing and electromagnetic modeling in geophysics: from concepts to application.* Research Center in Computing. National Polytechnic Institute. Mexico, D.F.

- **October 2015**: Speaker with the topic: *Parallel and numerical issues of the edge finite element method for 3D controlled-source electromagnetic surveys.* IEEE International Conference on Computing Systems and Telematics. University of Veracruz. Xalapa, Veracruz, Mexico.

- **June 2015**: Speaker and winner of JCCC2015-BSC in the contest "Your Thesis in 3 Minutes" (3TM) with the topic: *Edge-elements formulation of CSEM in geophysics: a parallel approach.* Jornadas de Cooperación CONACyT – Cataluña 2015. Polytechnic University of Catalonia – National Council of Science and Technology of Mexico. Barcelona, Spain.

- **April 2015**: Speaker with the poster: *Edge-elements for geophysical electromagnetic problems: A new implementation challenge.* PRACE Scientific and Industrial Conference 2015 – PRACEDays15. Dublin, Ireland.

- **April 2015**: Speaker with the topic: *HPC and edge elements for geophysical electromagnetic problems: an overview.* 2nd BSC International Doctoral Symposium. Barcelona, Spain.

- **April 2015**: Speaker with the topic: *Assessment of edge-based finite element technique for geophysical electromagnetic problems: efficiency, accuracy and reliability.* 1st. Pan-American Congress on Computational Mechanics – PANACM 2015. IACM. Buenos Aires, Argentina.

- **December 2014**: Speaker with the topic: *HPC solutions for oil industry: trends and challenges.* Centro de Ciencias de la tierra. University of Veracruz. Xalapa, Veracruz, Mexico.

- **December 2014**: Speaker with the topic: *High Performance Computing, Science and Engineering.* Master in Telematic. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz, Mexico.

- **November 2014**: Speaker with the topic: *HPC solutions for oil industry: trends and challenges.* IV Simposio de Becarios CONACyT en Europa. Strasbourg, France.

- **November 2012**: Participation in 1er. Coloquio de Investigación en Ciencias Administrativas y Gestión para el Desarrollo: Nuevos Paradigmas de Gestión y Organización desde la Perspectiva Latinoamericana. University of Veracruz. Xalapa, Veracruz, Mexico.

- **May 2012**: Speaker with the topic: *La función de las redes sociales y su acción cultural.* Universidad Filadelfia de Mexico. Xalapa, Veracruz, Mexico.

- **March 2012**: Speaker with the topic: *Redes móviles, CMS y bibliotecas. Una visión al 2020.* Noveno Coloquio Administración y Liderazgo en el Campo Informativo ALCI 2012, which had as main theme: ¿Qué contenidos y cómo se administrará la biblioteca 2020?. University of Veracruz. Boca del Río, Veracruz, Mexico.

- **March 2012**: Participation in the 3rd International Supercomputing Conference in Mexico: Where Supercomputing, Science and Technologies meet. CIMAT – CINVESTAV – University of Guanajuato, Guanajuato, Mexico.

- **November 2011**: Participation in 1er. Coloquio de Investigación de Cuerpos Académicos. ANFECA. Coatzacoalcos, Veracruz, Mexico.

- **September 2011**: Participation in the Foro Financiero: Tendencias mundiales y sistema financiero Mexicano. Xalapa, Veracruz, Mexico.

- **June 2011**: Participation in the LII Asamblea Nacional ANFECA: "Hacia un espacio común de Educación Superior en las Escuelas de Negocios en México". Boca del Río, Veracruz, Mexico.

- **May 2011**: Speaker with the topic: *Performance Evaluation of DSDV & AODV Routing Protocol in a Wireless Sensor Network for Structural Health Monitoring.* II National Conference on Telecommunications CONATEL 2011, wich had as main theme: Bridging Iberoamerica through. Arequipa, Peru.
- **September 2010**: Participation in the presentation of recent titles of Biblioteca del Universitario, under the Feria Internacional del Libro Universitario 2010. Xalapa, Veracruz, Mexico.
- **September 2010**: Speaker with the topic: *Indicadores de presencia y visibilidad Web: El caso de las universidades públicas en Mexico.* Octavo Coloquio Administración y Liderazgo en el Campo Informativo ALCI 2010, which has as main theme: indicadores estratégicos para bibliotecas y otros sistemas de información. Boca del río, Veracruz, Mexico.
- **April 2010**: Speaker with the topic: *Simuladores de Software Libre para Redes de Sensores Inalámbricas.* Congreso Internacional de Software Libre 2010. Boca del río, Veracruz, Mexico.
- **April 2010**: Speaker with the topic: *Sociedad, medios de información y lectura.* Congreso Internacional de Información INFO 2010, which had as main theme: La sociedad del conocimiento y sus aspectos críticos. Habana, Cuba.
- **November 2009**: Speaker with the topic: *Live-DVD para la simulación de redes de sensores inalámbricas* IV Simposio Internacional en Sistemas Telemáticos y Organizaciones Inteligentes, which had as main theme: Innovación y Desarrollo Tecnológico con Responsabilidad Social. Xalapa, Veracruz, Mexico.
- **November 2009**: Participation in the round table: *La palabra, los jóvenes y la lectura*, organized by Editorial de la Universidad Veracruzana. Xalapa, Veracruz, Mexico.
- **October 2009**: Meeting attendance Fall CUDI. Ixtapan de la sal, Estado de Mexico, Mexico.
- **July 2009**: Speaker of the seminar: *Redes de sensores para la agricultura de precisión*, in the permanent seminars of the Red Iberoamericana para el Desarrollo Sustentable. Xalapa, Veracruz, Mexico.
- **July 2009**: Participation in the Feria del Libro Infantil y Juvenil. Xalapa, Veracruz, Mexico.
- **April 2009**: Meeting attendance Spring CUDI. Cholula, Puebla, Mexico.
- **April 2008**: Participation in the IX Congreso Internacional de Ingeniería Industrial y Tecnologías de Información. Boca del río, Veracruz, Mexico.
- **April 2007**: Participation in the Segundo Congreso de Desarrollo de Software y Redes Aplicadas. Boca del río, Veracruz, Mexico.
- **November 2005**: Participation in the Segundo Congreso Nacional de Ingenierías. Xalapa, Veracruz, Mexico.

Positions held

- **2013–2017**: PhD resident student at Computer Applications for Science and Engineering (CASE). Barcelona Supercomputing Center – Centro Nacional de Supercomputación.
- **2011–2013**: Operating responsible for the Master in Telematics. School of Accounting and Administration. University of Veracruz.
- **2010–2013**: Collaborator of the academic group: "Tecnologías de la Información y Organizaciones Inteligentes en la Sociedad del Conocimiento". University of Veracruz.
- **2008–2011**: Coordinator of Análisis e Integración de Información en Sistemas de Información y Portales, University of Veracruz.

- **2007–2008**: Coordinator of Web portal of Programa Universitario de Formación de Lectores, University of Veracruz.

Distinctions

- **2017**: Cum Laude recognition for the PhD thesis Edge-elements formulation of 3D CSEM in geophysics: a parallel approach. Polythecnic University of Catalonia.
- **2017–current date**: Member of the Mexican Supercomputing Network (RedMexSu).
- **2015**: JCC2015-BSC prize of "Your Thesis in Three Minutes" (3TM) with the topic Edge-elements formulation of CSEM in geophysics: a parallel approach. 2nd. CONACyT-Catalonia Cooperation Days. Polythecnic University of Catalonia – CONACyT.
- **2015–current date**: Associate member of Red de Talentos Mexicanos en el Exterior. Chapter Barcelona.
- **2013–2017**: Fellow CONACyT for PhD studies in computer architecture at Polythecnic University of Catalonia. National Council for Science and Technology (CONACyT). Mexico.

Event management

- **September 2018–January 2019**: International reviewer of research projects. Red Nacional de Investigación y Educación del Ecuador (REDCEDIA). Cuenca, Ecuador.
- **August 2018–January 2019**: Paper reviewer in Computación y Sistemas Journal in its special issue "Topic trends in computing research". National Polytechnic Institute. CDMX, Mexico.
- **June 2018**: Member of the scientific committee of the conference on Cooperation CONACyT-Catalunya. Barcelona, Spain.
- **May 2018**: Member of the scientific committee of the Third Ecuador Technical Chapters Meeting IEEE. Salinas, Ecuador.
- **September 2017**: Member of the scientific committee of the Second Ecuador Technical Chapters Meeting IEEE. Salinas, Ecuador.
- **June 2016**: Member of the scientific committee of the conference on Cooperation CONACyT-Catalunya. Barcelona, Spain.
- **October 2016**: Member of the technical program committee of the 7th IEEE Annual Information Technology, Electronics and Mobile Communication Conference. Vancouver, Canada.
- **October 2016**: Member of the technical program committee of the 7th IEEE Annual Ubiquitous Computing, Electronics & Mobile Communication Conference. New York, USA.
- **June 2015**: Member of the scientific committee of the conference on Cooperation CONACyT-Catalunya. Barcelona, Spain.
- **May 2014**: Member of the scientific committee of the conference on Cooperation CONACyT-Catalunya. Barcelona, Spain.
- **October 2012**: Advisory team at "Maratón National de Conocimientos ANFECA". Computer area. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. Ibero-American University of Puebla. Puebla.
- **August 2012**: Organizing committee member of the Maratón Regional de Conocimientos. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. School of Accounting and Management, University of Veracruz. Xalapa, Veracruz.
- **May 2012**: Advisory team at Maratón Regional de Conocimientos ANFECA. Área informática

administrativa. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz.

- **April 2012**: Paper reviewer: "Las tecnologías de la Información y el cambio climático en países en desarrollo". Revista Ensayos de Economía (ISSN 0121-117X). Facultad de Ciencias Humanas y Económicas. Nacional University of Colombia. Medellin, Colombia.
- **March 2012**: Advisory team at "Maratón Interno de Conocimientos ANFECA". Computer area. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. School of Accounting and Management, University of Veracruz. Xalapa, Veracruz.
- **March 2012**: Conference moderator "HPC". 3rd International Supercomputing Conference in Mexico. CIMAT, Guanajuato University, CINVESTAV. Guanajuato, Guanajuato.
- **March 2012**: Academic committee member of the 3rd International Supercomputing Conference in Mexico. CIMAT, Guanajuato University, CINVESTAV. Guanajuato, Guanajuato.
- **November 2011**: Scientific committee member of the Congreso Internacional en Sistemas Computacionales Administrativos, CONSCA 2011: "Sistemas computacionales, telemática y sustentabilidad en las organizaciones de la sociedad del conocimiento". School of Accounting and Management. University Veracruz.
- **November 2011**: Organizing committee member of the Congreso Internacional en Sistemas Computacionales Administrativos, CONSCA 2011: "Sistemas computacionales, telemática y sustentabilidad en las organizaciones de la sociedad del conocimiento". School of Accounting and Management. University of Veracruz.
- **September 2011**: Organizing committee member of the Foro Financiero 2011: "Tendencias Mundiales y Sistema Financiero Mexicano". School of Accounting and Management. University of Veracruz.
- **May 2011**: Advisory team at "Maratón National de Conocimientos ANFECA". Computer area. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. Meritorious Autonomous University of Puebla. Puebla.
- **April 2011**: Advisory team at "Maratón Regional de Conocimientos ANFECA". Computer area. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. Autonomous University of Campeche. Campeche, Campeche.
- **March 2011**: Advisory team at "Maratón Interno de Conocimientos ANFECA". Computer area. Asociación Nacional de Facultades y Escuelas de Contaduría y Administración. School of Accounting and Management, University of Veracruz. Xalapa, Veracruz.

Continuous training

- **January 2019**: Course: Python in High-performance computing. CSC–IT – Partnership for Advanced Computing in Europe. Helsinki, Finland.
- **July 2018**: Course: Programming and Tuning Massively Parallel Systems + Artificial Intelligence summer school (PUMPS+AI). Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC) and University of Illinois at Urbana-Champaign. Barcelona, Spain.
- **June 2018**: Workshop: 6th International Workshop on Numerical Modelling of HTS. New University of Lisbon. Caparica, Portugal.
- **May 2018**: Course: Impact public speaking. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC). Barcelona, Spain.

- **April 2018**: Tutorial: Troubleshooting session: Key challenges for early-career researchers. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC). Barcelona, Spain.
- **February 2018**: Jornada d'Investigadors Predoctorals interdisciplinària - JIPI 2018. Barcelona, Spain.
- **December 2017**: Parallel and GPU programming in Python. SURFsara. Amsterdam, Netherlands.
- **September 2017**: Programming Marenostrum IV. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **May 2017**: 4th. BSC International Doctoral Symposium. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **May 2016**: 3rd. BSC International Doctoral Symposium. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **February 2016**: Course: Petaflop system administration: Marenostrum III. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS) – Partnership for Advanced Computing in Europe. Barcelona, Spain.
- **September 2015**: Conference: 9th RES user's conference & 4th HPC Advisory Council Spain Conference. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **September 2015**: Severo Ochoa Research Seminar: Exploring emerging technologies for extreme scale HPC architectures . Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **March 2015**: Course: Fortran for scientific computing @HLRS. High Performance Computing Center Stuttgart. Stuttgart, Germany.
- **October 2014**: Severo Ochoa Research Seminar: Spatial computing + temporal computing = a better computer?. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **October 2014**: Talk: Computer Systems Research at the University of North Texas. High Performance Computing Research Group. Barcelona Tech. Barcelona, Spain.
- **October 2014**: Engineering Scientific Seminar. Red Española de Supercomputación – Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **May 2014**: 1st Doctoral Symposium. Barcelona Supercomputing Center – Centro Nacional de Supercomputación (BSC-CNS). Barcelona, Spain.
- **May 2014**: Course: HPC-based simulations for the Industrial Realm. Barcelona Supercomputing Center – Nacional de Supercomputación (BSC-CNS) – Partnership for Advanced Computing in Europe. Barcelona, Spain.
- **May 2014**: Course: Programming ARM based prototypes. Barcelona Supercomputing Center – Nacional de Supercomputación (BSC-CNS) – Partnership for Advanced Computing in Europe. Barcelona, Spain.
- **April 2014**: Course: Programming MareNostrum III. Barcelona Supercomputing Center – Nacional de Supercomputación (BSC-CNS) – Partnership for Advanced Computing in Europe. Barcelona, Spain.
- **February 2014**: Course: HPC-based simulations, Engineering and Environment. Barcelona

Supercomputing Center – Centro Nacional de Supercomptuación (BSC-CNS). Barcelona, Spain.

- **February 2013**: Workshop: planeación. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz.
- **November 2012**: Course-Workshop: Formación de investigadores. Programa de Formación de Académicos. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz.
- **November 2012**: Primer Coloquio de Investigación en Ciencias Administrativas y Gestión para el Desarrollo: Nuevos Paradigmas de Gestión y Organización desde la Perspectiva Latinoamericana. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz.
- **October 2012**: Course: Preparation for the TOEFL Test. School of Accounting and Management. University of Veracruz. Xalapa, Veracruz.
- **October 2012**: Workshop: Sesión de trabajo orientada al fortalecimiento de la actividad tutorial de los docentes adscritos a la Facultad de Contaduría y Administración. Xalapa, Veracruz.
- **September 2012**: Workshop: Technology Roadmap. Faculty of engineering Veracruz and Research Center for Micro and Nanotechnology University of Veracruz. Boca del Río, Veracruz.
- **June 2012**: Workshop: Formación de investigadores. University of Veracruz. Xalapa, Veracruz.
- **May 2012**: Workshop: Estrategias de vinculación para el desarrollo y fortalecimiento de los Programas de Posgrado. Consejo Mexicano de Estudios de Posgrado – University of Veracruz.
- **March 2012**: Workshop: Parallel Computing with OpenMp. 3rd International Supercomputing Conference in Mexico. CIMAT – CINVESTAV- University of Guanajuato.
- **November 2011**: Course – workshop: Elaboración de reactivos. En el marco del Coloquio de Investigación de Cuerpos Académicos ANFECA hacia la sustentabilidad en la investigación. ANFECA and University of Veracruz. Coatzacoalcos, Veracruz.
- **June 2011**: Course: D-Link Basic Certification. D-Link Technology Institute. D-link.
- **September – October 2010**: Course – workshop: Integración de equipos de trabajo. University of Veracruz. Xalapa, Veracruz.
- **July 2010**: Course: Estadística para la investigación cuantitativa. University of Veracruz. Xalapa, Veracruz.
- **April 2010**: Course: Brecha digital: Introducción a las políticas sobre marginación y desarrollo en la sociedad de la información. Virtual University of Guadalajara. Xalapa, Veracruz.
- **December 2007**: Course: Asterisk. University of Veracruz. Xalapa, Veracruz.
- **April 2007**: Conference: Segundo Congreso de Desarrollo de Software y Redes Aplicadas. Boca del río, Veracruz.
- **November 2005**: Conference: Segundo Congreso Nacional de Ingenierías. Xalapa, Veracruz.
- **November 2004**: Workshop: Diseño de paginas Web. University of Veracruz. Xalapa, Veracruz.
- **2004 – 2006**: Course: Inglés conversación. Languaje Centre. University of Veracruz. Xalapa, Veracruz.
- **2002 – 2004**: Course: Inglés en comprensión de textos. Languaje Centre. University of Veracruz. Xalapa, Veracruz.