

### Last Job Positions

**Web Design and Developer**, International Institute for Applied Systems Analysis (IIASA). FABLE project, 2019.

**Professor** at University “Technological Institute Superior of Cajeme” 2009-2017

**Associate Professor** at University “Technological Institute Superior of Cajeme”: 2006-2009.

**Associate Professor (Tenure Track)** at University “Technological Institute Superior of Cajeme”: 2004-2006.

**Associate Professor (Tenure Track)** at University “Technological Institute of Hermosillo”: 2002-2004.

### Publications List

2019

-Javalera Rincón V, Cayuela VP, Seix BM, & Orduña-Cabrera F (2019). Cooperative Linker for the Distributed Control of the Barcelona Drinking Water Network. In: Proceedings of the 11th International Conference on Agents and Artificial Intelligence (ICAART 2019). pp. 560-567 Porto, Portugal: ICAART. ISBN 978-989-758-350-610.5220/0007349105600567.

-Javalera Rincón V, Cayuela VP, Seix BM, & Orduña-Cabrera F (2019). Reinforcement Learning Approach for Cooperative Control of Multi-Agent Systems. In: Proceedings of the 11th International Conference on Agents and Artificial Intelligence (ICAART 2019). pp. 80-91 Porto, Portugal: ICAART. ISBN 978-989-758-350-610.5220/0007349000800091.

2018

"Environmental data stream mining through a case-based stochastic learning approach" Journal: Environmental Modelling and Software, Feb. 2018. DOI: 10.1016/j.envsoft.2018.01.017.

2017

Embedding k-d Trees and Exploration Techniques within a Multiple Case Library to Improve Case Retrieval, Fernando Orduña Cabrera and Miquel Sánchez-Marré Journal, Knowledge-Based Systems, Draft in evaluation.

2016

-The Aggregative K-means Clustering Algorithm. ISBN: 978-607-9424-94-7, Fernando Orduña Cabrera, Valeria Javalera Rincon, Alberto Ramirez Treviño, Encuentro Nacional de Computación 2016, Vol.1, Pag.28-29.,

-Statistics and Lexical-Syntactic Study of the Yaqui Language Speech for the Development of IT Tools. ISBN: 978-607-9424-94-7, Fernando Orduña Cabrera, Valeria Javalera Rincon, J. Manuel Barba Soto, ENC16, Vol.1, Pag.15-17.

-Dynamic Learning of Cases from Data Stream, Fernando Orduña Cabrera, Miquel Sánchez-Marre, Real Academia de Ingenieria, España, Vol., Pag.101-106.

2014

ALDRO Robot Inteligente ISSN:1870-5316, Fernando Orduña Cabrera, Luis Armando Jara Lugo, Luz Aurora Florez, Entorno Académico, Vol. 2014, Pag.52-57.

2013

-Using NIAR k-d Trees to Improve the Case-Based Reasoning Retrieval Step (2013). ISSN: 0302-9743, Fernando Orduña Cabrera, Miquel Sánchez-Marré, Lecture Notes in Computer Science, Vol.8266, Pag.314-325.

-SMED y el Mapeo de Procesos para el Control de Cambios de una Línea de Producción. ISSN: 1946-5351, index:ebsco, , Bernice Luna Ponce, Fernando Orduña Cabrera, Yoana Elizeth Tautimes Delgado, academiajournals, Vol.1, Pag.1974-1978.

2012

ALDRO Learning and Mixed Decision Support Method for Mobile Robot, Fernando Orduña, Alma Valle, Alán Dennis, Javier Rojas, Flavio Muñoz,

- 2011                    Alberto Ramírez, Iván Luna, Guadalupe Vásquez, Karina Hinojosa:, Intelligent Environments, Vol.12, Pag.113-121.
- 2009                    Desarrollo de un Simulador para Prototipo de Vehículo Evasor de Obstáculos Usando Lógica Borrosa, Madrid Amarillas Germán, Luna Acosta Noé, Jiménez López Eusebio , Reyes Ávila Luis, Eduardo Núñez Perez y Fernando Orduña Cabrera, , Vol.10, Pag.299-304.
- 2009                    Dynamic Adaptive Case Library for Continuous Domains, Fernando Orduña Cabrera, Miquel Sàncchez-Marrè, Dynamic Adaptive Case Library for Continuous Domains, Vol.202, Pag.157-166.

2008

- Desarrollo de una Interfaz para la Comunicación entre un Sistema Experto y un Sistema Multi-agente en Tiempo Real no Crítico (2008). ISSN: 1870-4069, Fernando Orduña Cabrera, Valeria Javalera Rincon, Luis M. Pellegrin, Zazueta, Ariadna J. Magallanes Lugo, and Samuel Gonzalez Lopez, Research in Computing Science, Vol.36, Pag.525-534.,
- Ergonomic advice through Case-Based Reasoning to Avoid Dangerous Positions Adopted Using the Computer, Fernando Orduña Cabrera, Miquel Sàncchez-Marrè, Jesús Miguel García Gorrostieta, Samuel González López, Frontiers in Artificial Intelligence and Application, Vol.184, Pag.186-194.
- An Approach for an Embodied Procedural Reasoning Architecture, Fernando Orduña Cabrera, Miquel Sàncchez-Marrè, Valeria Javalera Rincón, Entorno Academico, Vol. 5, ISSN 1870-5316.

2007

- System of scheduling for mixed assembly lines in a just in time environment (2007). ISSN: 2405-8963, Samuel Gonzalez Lopez, Fernando Orduña Cabrera, Elsevier IFAC PaperOnline <http://dx.doi.org/10.3182/20071002-MX-4-3906.00001>, Vol.40, Pag.249-254.
- An Approach for an Embodied Procedural Reasoning Architecture ISSN: 1870-5316, Fernando Orduña Cabrera, Miguel Sánchez-Marré, Valeria Javalera Rincón., Entorno Academico, Vol.5, Pag.14-18.
- Related Topics for an Embodied Procedural Reasoning Architecture, Samuel Gonzalez Lopez, Fernando Orduña Cabrera, Conference on Industrial, Mechatronics and Manufacturing Engineering CIIMM07.ISBN: 978 -968-9305-08-8.

2006

- Agente Inteligente para el control de clima en invernaderos. Orduña Cabrera Fernando, Javalera Rincón Valeria, Alexandres García Ma. Guadalupe. Entorno Académico, Vol. 6 ISSN: 1870-5316

2005

- Sistema Multiagente Para el Control de Clima. ISSN: 1405-2172, Fernando Orduña Cabrera, Valeria Javalera Rincon, Ma. Gpe. Alexandres, Cesar E. Rose Gomez, ELECTRO2005.
- Aplicación de la Ingeniería Para el Diseño de Un Sistema Multiagente En Tiempo Real. ISSN: 1405-2172, Fernando Orduña Cabrera, Valeria Javalera Rincon, ELECTRO2005.

## Books

2016

- A dynamic adaptive framework for improving case-based reasoning system performance, upc <https://upcommons.upc.edu>.
- A dynamic adaptive framework for Case-Based Reasoning: Dynamic Learning and indexing the new knowledge in a Dynamic Adaptive Case Library, for static and dynamic domains, Fernando Orduña Cabrera, lap lambert academic publishin, ISBN3659897876.

## Book Chapters

2014

- Ergonomic Advice through Case-Based Reasoning to Avoid Dangerous Positions Adopted Using the Computer(2012)., Artificial Intelligence Research and Development: Proceedings of the 11th International Conference of the Catalan Association for Artificial Intelligence teresa alsinet, josep puyol-gruart, carme torras, ios press, Vol. 184, Pags. 15, Fernando Orduña Cabrera, Miquel Sàncchez-Marrè, Jesús Miguel García Gorrostieta, Samuel González López.
- ALDRO Learning and Mixed Decision Support Method for Mobile Robot(2009), Ambient intelligence and smart environments juan a. botia, hedda schmidtke, tatsuo nakashima, mohammad r, ios press, Vol. 13, Pags. 15, ernando Orduña Cabrera, Alma Valle, Alán Dennis, Javier Rojas, Flavio Muñoz, Alberto Ramírez, Iván Luna, Guadalupe Vásquez.
- Dynamic Adaptive Case Library for Continuous Domains(2008), Artificial Intelligence Research and Development sandra sandri, miquel sanchez,ulises cortes, iospress, Vol. 202, Pags. 440, Fernando Orduña Cabrera, Miquel Sanchez.

2009

- Aplicación del Método Evolutivo Incremental para el Desarrollo de un Simulador Didáctico Mecatrónico,book: Ingenieria Mecanica, Tecnología y Desarrollo. Rosalina Longorio Vélez, Eusebio Jiménez López, Liliana Rodríguez Corrales, Fernando Orduña Cabrera, Luis Reyes Ávila, Jesús López Morales, Francisco Javier Ochoa Estrella. Ed.13, ISBN:978-607-95309-1-4.

## Technical Reports

2015

- Método de seguimiento de Silla de ruedas inteligente y autónoma, solutions by expert knowledge and artificial intel, Fernando Orduña Cabrera, Luis Armando Jara, Valeria Javalera Rincon.
- Bioinformatics: a promising field for case-based reasoning, politecnica de cataluña, Fernando Orduña Cabrera, Miquel Sàncchez-Marrè. <http://hdl.handle.net/2117/86813>.
- Case base maintenance: terms and directions, UPC, , Fernando Orduña Cabrera, Miquel Sàncchez-Marrè. <http://hdl.handle.net/2117/86814>
- An approach for an architecture to embodied procedural reasoning, UPC , Fernando Orduña Cabrera, Miquel Sàncchez-Marrè. <http://hdl.handle.net/2117/86458>

## Conferences participation

2016

- Dynamic Learning of Cases form data stream, Extranjero, Advances and application of data science and Engineering,Spain.
- Estadística y estudio lexico sintáctico del habla de la lengua yaqui para el desarrollo de herramientas de TI, Nacional, Encuentro Nacional de Computación, México.
- Silla inteligente y autónoma que avanza a lado del acompañante, Nacional, Encuentro Nacional de Computación, México.
- The aggregative K-means clustering algorithm, Nacional, Encuentro Nacional de Computación, México

2010

- Inteligencia Artificial, Nacional, 7ma Jornada de Tecnologías de la Información y Comunicación, México.
- Robots Inteligentes, Nacional, Semana Nacional de ciencia y tecnología, México.

2007

Related topics for an embodied procedural reasoning architecture, Extranjero, First International Conference on industrial, mechatronics and manufacturing engineering, México.

## Projects “Software Applications”

2018	Android App Development “Blood cell counter by voice recognition”.
2018	Application Development: Finding similar sounds for its classification.
2017	Framework Development: Classification and distance measures evaluation.
2017	Game Development: Reinforcement Learning for autonomous navigation.
2017	Application Development: Distributed Clustering and Index Evaluation techniques for Big Data.
2016	Distributed Image Analysis and Classification aiming to find an Exit of a Building.
2015-2017	Translator Yaqui-Spanish-Yaqui and Interactive Tools for Teaching. Academic Institution: Instituto Tecnológico Superior de Cajeme <i>Enterprises:</i> Solutions by expert knowledge and artificial intelligence. <i>Government Entities:</i> National Institute of Indigenous Languages INALI, Direction of Indigenous Education and Center Indigenous Developoument in Sonora State. <i>Team:</i> Fernando Orduña Cabrera, Valeria Javalera Rincon
2011- 2012	Objectives evaluation in research projects using Case Based-Reasoning. Institution: instituto tecnológico superior de cajeme.
2005- 2006	System development "Management of research projects"
2004- 2006	System development "Communication interface between an Expert system and a crop care Multi-agent System".

## Webpage developed

2011	APIDI AC. <a href="http://www.apidi.org">www.apidi.org</a>
2012	<a href="http://www.micompu.sekai.mx">www.micompu.sekai.mx</a>
2014-17	<a href="http://www.sekai.mx">www.sekai.mx</a>
2019	<a href="http://www.scenathon.org">www.scenathon.org</a>

## Mechatronics Projects

Smart and Autonomous Wheelchair. the main function is based on a Reinforcement Learning Algorithm for learning from the environment and action controlling, and a novelty architecture of sensors to capture the environment.

Team: Fernando Orduña Cabrera, Alberto Ramírez Treviño  
Master Student: Luis Armando Jara Lugo

ALDRO Project, A line follower robot combining line follower techniques and Reinforcement Learning Technique, aiming to improve the decision making and achieve the goal.

Team: Fernando Orduña Cabrera.

HHO Cell production Project. Building HHO cell, power source at 12v and variable ampere between 2 and 35 amps. Installed and tested successfully in 2 trucks.

Automatic incubator for 200 eggs. Controlling temperature, humidity, movement of eggs, ventilation.

SCAIZA architecture Project. Intelligent and automatic greenhouse. Distributed microcontroller architecture for controlling environmental condition inside the greenhouse. Controlling actuators such as windows, fans, irrigation, foggers. A software-based in Intelligent Agents.

**Member in Research groups**

- 08/1986 ; **Knowledge Engineering and Machine Learning Group. KEMLG**  
- **UPC**, Dr. Ulises Cortes, Dr. Javier Bejar Alonso , Dr. Javier Vázquez-Salceda , Dr. Ramón Sangüesa , Dra. Karina Gilbert Oliveras , Dr. Miquel Sanchez-Marre.
- 02/2008 ; **Red Iberoamericana De Investigación En Inteligencia Artificial (RIIA)**, Instituto Tecnológico Superior De Cajeme / Subdirección / División De Investigación Y Posgrado ,**Fernando Orduña Cabrera**, Alberto Ramirez Treviño Itesca-Obregon, Cesar E. Rose Gómez Ith-Hermosillo, Francisco Alberto Cofré Gajardo Utem-Chile, Maria Guadalupe Alexandres Garcia, Maria Trinidad Serna Ith-Hermosillo, Mauro Castillo Valdés Utem-Chile, René Francisco Navarro Hernández Unison-Hermosillo, Samuel González López Utn-Nogales, Valeria Javalera Rincón Itesca-Obregon, Yuri Ivan Cáceres Hernandez Utem-Chile,Gobierno Federal Centralizado
- 08/2010 ; **Cuerpo Académico Líneas De Investigación Ergonomía Y La Minería De Datos**, Instituto tecnológico Superior De Cajeme / Subdirección / División De Investigación Y Posgrado ,Berenice Luna Ponce, **Fernando Orduña Cabrera**, Hinojosa Taomoroki Karina Alejandra, Tautimes Delgado Yoana Elizeth, Gobierno Federal Centralizado

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06/11/2014 **SCAIZA "LA TECNOLOGIA QUE DA FRUTO"**,  
; 03200611061429590001 , **Autor** , SEKAI , **Privada**

### Teaching

Algorithms and Programming Languages	Systems Programming 1
Computer Architecture 2	Systems Programming 2
Software Architecture	Object-Oriented Programming
Distributed Database	Professional Residence
Mobile Computing	Professional Residences 2
Data structure	Quality Seminar
Fundamentals of Software Engineering	Simulation
Computing 2	Distributed systems
Requirements Engineering	Distributed Systems 2
Software Engineering	Operating systems
Artificial Intelligence	Network Operating Systems
Computer Interfaces	Databases Laboratory
Laboratory "Analysis and Design of Objects"	Informatic Seminar
Computer Architecture Laboratory 1	Research Seminar
Languages Interfaces	Theory of Computing
Languages and Automata	Thesis
Optional 1	Selected Programming Topics
Programming	

## Distinctions

2016	<p>Member Postgraduate council of Master of mechatronic, Instituto Tecnológico Superior de Cajeme.</p> <p>Coordinator advance research center, Instituto Tecnológico Superior de Cajeme.</p> <p>Instructor of Research Normative of Instituto Tecnológico Superior de Cajeme.</p> <p>Taller de Mejora continua del sistema de Posgrado e Investigación Dirección General México, Instituto Tecnológico Superior de Cajeme</p> <p>Member of the institutional council of postgraduate and research of Instituto Tecnológico Superior de Cajeme.</p> <p>Organization of the workshop Artificial Intelligence at ENC'16 México.</p>
2015	Desired profile of research by Prodep México.
2014	Acknowledgment for 10 years of work, Instituto Tecnológico Superior de Cajeme
2013	<p>Recognition arrangement of resources for projects, Instituto Tecnológico Superior de Cajeme.</p> <p>Strategic planning of teaching, Instituto Tecnológico Superior de Cajeme.</p> <p>Tutoring Dirección General México, Instituto Tecnológico Superior de Cajeme</p>
2012	Scientific Committee, MICAI Mexican International Conference Artificial Intelligence
2010	Miembro del Colegio Académico de Investigación y Posgrado Dirección General México, Tecnológico Superior de Cajeme.

## Some Conferences

2016	<p>Lexicon predictive analyzer for yaqui-Spanish-Yaqui translator, at Hermosillo Technological Institute.</p> <p>Distributed Trees and retrieval evaluation in parallel domain, Hermosillo Technological Institute..</p>
2014	Project progress Translator Yaqui-Castellano-Yaqui, Engineering Institute at UABC, National.
2012	ALDRO Learning and Mixed Decision Support Method for Mobile Robot, Intelligent Environments.
2010	Artificial Intelligence, South of Sonora University
2009	Artificial intelligence, learning techniques (learning by reinforcement and

	reasoning based on cases), Cajeme technical institute. Artificial intelligence, University of the Sierra.
2006	Automation Control and Robotics, the Computer as a control System, Universidad de la sierra. Automatic control system for greenhouses in arid zones, hardware development, ITESCA.
2005	Automated Control System for Greenhouses in arid zones, Higher Cajeme Technological Institute. Automated control system of greenhouses, ITESCA, national. Intelligent agent for climate control, Pozarica Technical Institute. Electronic web printing market, Pozarica Technical Institute.
2004	The Role of Programming of systems in the automation, Conacyt- ITESCA, National, Scientific and Technological Fairs. Applications of the programming of systems in automation, Higher Technological Institute of Cajeme.

**Languages:**

English: Fluent.

Spanish: Mother Language.

German: I am currently study A2, for next Jun I will present B1 exam.

**Fernando Orduña Cabrera**

Ph.D. in Artificial Intelligence.

Master in Computer Science.

BSc. in Computer Science.

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