

2020 8th International Conference in Software Engineering Research and Innovation (CONISOFT 2020)

**Chetumal, Mexico
4-6 November 2020**



**IEEE Catalog Number: CFP20B19-POD
ISBN: 978-1-7281-8451-7**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20B19-POD
ISBN (Print-On-Demand):	978-1-7281-8451-7
ISBN (Online):	978-1-7281-8450-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2020 8th International Conference in Software Engineering Research and Innovation (CONISOFT) **CONISOFT 2020**

Table of Contents

Preface	x
Organizing Committee	xiii
Local Organizing Committee	xiv
Program Committee	xv
Technical Committee	xvi
Reviewers	xvii
Sponsors	xix

Software Requirements

Helping Organizations Manage the Innovation Process to Join the Cognitive Era	1
<i>Karla Olmos-Sánchez (Autonomous University of Ciudad Juarez) and Jorge Rodas-Osollo (Autonomous University of Ciudad Juarez)</i>	
Requirements Prioritization Techniques in the Last Decade: A Systematic Literature Review	11
<i>Juan Carlos B. Somohano-Murrieta (Universidad Veracruzana, Mexico), Jorge Octavio Ocharán-Hernández (Universidad Veracruzana, Mexico), Angel J. Sánchez-García (Universidad Veracruzana, Mexico), and Maria de los Angeles Arenas-Valdés (Universidad Veracruzana, Mexico)</i>	
A Systematic Literature Review on Machine Learning for Automated Requirements Classification	21
<i>J. Manuel Pérez-Verdejo (Universidad Veracruzana, Mexico), Angel J. Sánchez-García (Universidad Veracruzana, Mexico), and Jorge Octavio Ocharán-Hernández (Universidad Veracruzana, Mexico)</i>	
Analysis and Perspectives of Requirements for Detector Control Systems in High-Energy Physics Experiments	29
<i>Juan Carlos Cabanillas-Noris (National Technological of Mexico), Mario Iván Martínez-Hernández (Autonomous University of Puebla, Mexico), Ildefonso León-Monzón (Autonomous University of Sinaloa, Mexico), Juan Manuel Mejía-Camacho (Autonomous University of Sinaloa, Mexico), and Solangel Rojas-Torres (CINVESTAV, Mexico)</i>	
Context-Based Model of the Progression of Information Capture in Software Requirements Elicitation	38
<i>Dante Carrizo (Universidad de Atacama) and Cristian Ortiz (Universidad de Atacama)</i>	

Modeling and Processes

MOSCAF – Specifying Data Quality Requirements According Web Functionalities	46
<i>César Guerra-García (Autonomous University of San Luis Potosí), Hector G. Perez-Gonzalez (Autonomous University of San Luis Potosí), Marco Ramírez-Torres (Autonomous University of San Luis Potosí), Reyes Juárez-Ramírez (Autonomous University of Baja California), and Hugo González (Polytechnic University of San Luis Potosí)</i>	
A Software Tool to Generate a Model-View-Controller Architecture Based on the Entity-Relationship Model	57
<i>Alan Ramírez-Noriega (Universidad Autónoma de Sinaloa, México), Yobani Martínez-Ramírez (Universidad Autónoma de Sinaloa, México), Jesús Chávez Lizárraga (Universidad Autónoma de Sinaloa, México), Kevin Vázquez Niebla (Universidad Autónoma de Sinaloa, México), and Jesús Soto (Universidad Autónoma Indígena de México, México)</i>	
A Tool for Reducing Implementation Defects for Requirements Based on Large Decision Tables	64
<i>Ricardo Tlamatini Olvera Ochoa (Computer Science Department, ITESM, Zapopan Mexico) and Gerardo Padilla Zarate (Computer Science Department, ITESM, Zapopan Mexico)</i>	
Success Factors in the Adoption of CMMI-DEV Maturity Levels in Software Development Organizations in Baja California, Mexico	71
<i>Brenda L. Flores-Rios (Universidad Autónoma de Baja California), María Angélica Astorga-Vargas (Universidad Autónoma de Baja California), Jorge E. Ibarra-Esquer (Universidad Autónoma de Baja California), Juan Pablo García-Vázquez (Universidad Autónoma de Baja California), Reyes Juárez-Ramírez (Universidad Autónoma de Baja California), and Raúl A. Aguilar Vera (Universidad Autónoma de Yucatán)</i>	
Model of Best Practice Representation for any Knowledge Area by Using Pre-Conceptual Schemas	78
<i>Camilo Villota Ibarra (Universidad Nacional de Colombia, Colombia), Carlos Mario Zapata Jaramillo (Universidad Nacional de Colombia, Colombia), Alexander Barón Salazar (Universidad de Nariño, Colombia), and Héctor Hernández Reinoza (Universidad Nacional de Colombia, Colombia)</i>	
Towards the Use of a Framework to Make Technical Debt Visible	86
<i>María de León-Sigg (Universidad Autónoma de Zacatecas), Sodel Vázquez-Reyes (Universidad Autónoma de Zacatecas), and Daniel Rodríguez-Ávila (Universidad Autónoma de Zacatecas)</i>	

Estimation, Testing and Formal Methods

An Algorithm for Implementing a Minimal Stream X-Machine Model to Test the Correctness of a System	93
<i>Khoa Phung (University of the West of England (UWE), United Kingdom) and Emmanuel Ogunshile (University of the West of England (UWE), United Kingdom)</i>	

Formal Verification of a Database Management System .102.....	
	<i>Diego Medina-Martínez (National Autonomous University of Mexico, Mexico), Everardo Bárcenas (National Autonomous University of Mexico, Mexico), Guillermo Molero-Castillo (National Autonomous University of Mexico, Mexico), Alejandro Velázquez-Mena (National Autonomous University of Mexico, Mexico), and Rocío Aldeco-Pérez (National Autonomous University of Mexico, Mexico)</i>
Analysis of Automated Estimation Models Using Machine Learning .110.....	
	<i>Jesús Iván Saavedra Martínez (Science Faculty, National Autonomous University of Mexico (UNAM)), Francisco Valdés Souto (Science Faculty, National Autonomous University of Mexico (UNAM)), and Moisés Rodríguez Monje (Alarcos Research Group, University of Castilla-La Mancha)</i>
Metamodels and Category Theory in the Transformation of Semi-Structured Data .117.....	
	<i>Rosa-María Cantón-Croda (UPAEP-University) and Damián-Emilio Gibaja-Romero (UPAEP-University)</i>

Software Systems Construction

Covid-19 Care – a Mobile Application to Help Connect Volunteers and Vulnerable People in the Community during the Covid-19 Lockdown .124.....	
	<i>Khoa Phung (University of the West of England (UWE), United Kingdom), Silas Odongo (Mind Garden Technology Ltd., United Kingdom), and Emmanuel Ogunshile (University of the West of England (UWE), United Kingdom)</i>
An Approach to Automatic Recognition of Web Advertising Focused on Different Languages .134	
	<i>Donovan Riaño Enriquez (National Autonomous University of Mexico, Engineering Faculty), Rodrigo Piñon Ayala (National Autonomous University of Mexico, Engineering Faculty), Guillermo Molero-Castillo (National Autonomous University of Mexico, Engineering Faculty), and Everardo Bárcenas (National Autonomous University of Mexico, Engineering Faculty)</i>
An Application Programming Interface for a Brain-Computer Interface Using Two NeuroSky MindWave Devices .140.....	
	<i>Alan Ramírez-Noriega (Universidad Autónoma de Sinaloa, México), Yobani Martínez-Ramírez (Universidad Autónoma de Sinaloa, México), Samantha Jiménez (Instituto Tecnológico de Tijuana, México), Elizabeth Gaxiola Carrillo (Universidad Autónoma de Sinaloa, México), and José Emilio Sánchez García (Universidad Autónoma Indígena de México, México)</i>
Customized Diagnostic Tool for the Security Maturity Level of the Enterprise Information Based on ISO/IEC 27001 .147.....	
	<i>Josue A. Lopez-Leyva (CETyS Universidad), Christopher A. Kanter-Ramirez (Framework Science), and Jose P. Morales- Martinez (Framework Science)</i>

A Focus on Codemixing and Codeswitching in Tamil Speech to Text .154.....	
<i>Dheenesh Pubadi (University of West of England, Bristol, United Kingdom), Ayush Basandrai (University of West of England, Bristol, United Kingdom), Ahmed Mashat (University of West of England, Bristol, United Kingdom), Zvikomborero Chiurunga (University of West of England, Bristol, United Kingdom), Ishan Gandhi (University of West of England, Bristol, United Kingdom), William Ofei (University of West of England, Bristol, United Kingdom), Logesh Navaladi (University of West of England, Bristol, United Kingdom), Raj Ramachandran (University of West of England, Bristol, United Kingdom), and Emmanuel Ogunshile (University of West of England, Bristol, United Kingdom)</i>	

Distributed Ledger Technology

Consensus Mechanisms in Distributed Ledgers for the Protection of Confidential Data: A Multivocal Literature Review .166.....	
<i>Renato Vargas-Gomez (Universidad Veracruzana), Juan Carlos Pérez-Arriaga (Universidad Veracruzana), Jorge Octavio Ocharán-Hernández (Universidad Veracruzana), and Angel J. Sánchez-García (Universidad Veracruzana)</i>	
Blockchain Software System Proposal Applied to Electric Self-Driving Cars Charging Stations: A TSP Academic Project .174.....	
<i>Jorge R. Aguilar Cisneros (UPAEP), Carlos Alberto Fernández-y-Fernández (Universidad Tecnológica de la Mixteca), and Jesús Juárez Vázquez (CEDIG)</i>	

Software Technology for Learning Systems

Quality of Service Evaluation of a Learning Management System Using ISO/IEC 25011: A Prioritization Strategy .180.....	
<i>Jaime Medina (Pontificia Universidad Católica del Perú, Peru) and Abraham Dávila (Pontificia Universidad Católica del Perú)</i>	
Literature Based Modeling Learning: An Imaginative Assignment to Learn Software Modeling .187	
<i>Hector G. Perez-Gonzalez (Universidad Autonoma De San Luis Potosi, México), Alberto S. Nunez-Varela (Universidad Autonoma De San Luis Potosi, México), Francisco E. Martinez-Perez (Universidad Autonoma De San Luis Potosi, México), Sandra E. Nava Muñoz (Universidad Autonoma De San Luis Potosi, México), César Guerra-García (Universidad Autonoma De San Luis Potosi, México), and Reyes Juárez-Ramírez (Universidad Autonoma de Baja California, México)</i>	
Proposed Framework for Employing Cognitive Process for Resolving Programming Problems for Novice Programmers .193.....	
<i>Carlos Enriquez (Universidad Politécnica de Tulancingo), Mariza Raluy-Herrero (Universidad Politécnica de Tulancingo), and Luz María Vega-Sosa (Universidad Politécnica de Tulancingo)</i>	

Human-Computer Interaction and Information Visualization

Visualization to Support Decision-Making in Cities: Advances, Technology, Challenges, and Opportunities .198.....	
<i>M. Teresa Cepero (Universidad Veracruzana, México) and Luis G. Montané-Jiménez (Universidad Veracruzana)</i>	
A Metadata Application Profile to Structure a Scientific Database for Social Network Analysis (SNA) .208.....	
<i>Araceli López-Acosta (Autonomous University of Zacatecas (UAZ)), Alejandra García-Hernández (Autonomous University of Zacatecas (UAZ)), Sodel Vázquez-Reyes (Autonomous University of Zacatecas (UAZ)), and Alejandro Mauricio-González (Autonomous University of Zacatecas (UAZ))</i>	
Automatic Code Generation of User-Centered Serious Games: A Systematic Literature Review .216	
<i>Pedro Omar Silva-Vásquez (Universidad Veracruzana, México), Viviana Yarel Rosales-Morales (Cátedras CONACyT - Universidad Veracruzana, México), and Edgard Benítez-Guerrero (Universidad Veracruzana, México)</i>	
Extracting Information Objects from Handwriting Laboratory Notes: An Interaction Design Approach .226.....	
<i>Erick Franco Gaona (Universidad de Guanajuato) and Maria Susana Avila-Garcia (Universidad de Guanajuato)</i>	

Datamining and Artificial Intelligence

Towards the Implementation of an Attention-Based Neural Machine Translation with Artificial Pronunciation for Nahuatl as a Mobile Application .235.....	
<i>Sergio Khalil Bello García (Tecnológico Nacional de México (TecNM) campus Apizaco), Eduardo Sánchez Lucero (Tecnológico Nacional de México (TecNM) campus Apizaco), Blanca Estela Pedroza Méndez (Tecnológico Nacional de México (TecNM) campus Apizaco), José Crispín Hernández Hernández (Tecnológico Nacional de México (TecNM) campus Apizaco), Edmundo Bonilla Huerta (Tecnológico Nacional de México (TecNM) campus Apizaco), and José Federico Ramírez Cruz (Tecnológico Nacional de México (TecNM) campus Apizaco)</i>	
Systematic Mapping Study on Techniques Used in Stages of a Data Mining Process Focused to Weather Data Analysis .245.....	
<i>Wilson Castillo-Rojas (University of Atacama) and César Hernández Hernández (University of Atacama)</i>	
Sentiment Analysis in Jira Software Repositories .254.....	
<i>Andric Valdez (Universidad Nacional Autónoma de México), Hanna Oktaba (Universidad Nacional Autónoma de México), Helena Gómez (Universidad Nacional Autónoma de México), and Aurora Vizcaíno (Universidad de Castilla - La Mancha)</i>	
Author Index 261.....	