Expotecnologia 2018

Research, Innovation and Development in Engineering

IOP Conference Series: Materials Science and Engineering Volume 519

Cartagena, Colombia 31 October - 2 November 2018

Editor:

John R. Castro Suarez

ISBN: 978-1-5108-8718-3

ISSN: 1757-8981

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed by Curran Associates, Inc. (2019)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

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

Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

Volume 519

Expotecnología 2018 Research, Innovation and Development in Engineering

31 October to 2 November 2018, Cartagena, Colombia

Accepted papers received: 21 March 2019

Preface

Expotecnología 2018 "Research, Innovation and Development in Engineering"

Peer review statement

Papers

<u>Design and implementation of a level control at the bottom of the first column of a continuous binary distillation tower</u>

M M Fitatá-Bojacá and O García-Bedoya.....1

<u>Preparation and characterization of composite materials polylactic acid (PLA) and Oxide</u> Reduced Graphitic (RGO), for use in 3D printing small scale

A C Cordero, A P De la Cruz, J B Restrepo and O A Vargas.....18

Computer aided environmental analysis of a large-scale production of chitosan microbeads modified with thiourea and magnetite

F Bertel, G Cogollo, S Meramo-Hurtado and A González-Delgado....24

Element Free Galerkin (EFG) sensitivity study in structural analysis

J A Martinez T and E W Arrieta O.....31

BPM analysis and security case study: dining rooms Cartagena military, Colombia.

E Polo-Carrillo, Y Cabarcas-Ariza and C A Marrugo-Arnedo....41

Vibrational analysis of acetaminophen from commercial tablets

J R Castro-Suarez, M Vásquez-Osorio, S P Hernandez-Rivera and A A Pájaro-Payares.....49

Enhanced RDX Detection Studies on Various Types of Substrates via Tunable Quantum Cascade Laser Spectrometer Coupled with Grazing Angle Probe

J L Ruiz-Caballero, L A Blanco-Riveiro, I A Ramirez-Marrero, L A Perez-Almodovar, A M Colon-Mercado, J R Castro-Suarez, L C Pacheco-Londoño and S P Hernandez-Rivera.....57

Computational analysis of the thermal behavior on a silica (SiO₂) aerogel coating for applications in the construction industry

A Ángel, G Suárez and J Niño.....69

Modeling of dynamic mass coupled system with Runge-Kutta fourth order

L Rojas, M Molina-Cardenas, E Caballero, C Rojas and A Patiño-Vanegas.....74

Identification of EMG activity with machine learning in patients with amputation of upper limbs for the development of mechanical prostheses

J N Zuleta, M Ferro, C Murillo and R A Franco-Luna.....93

Development of a prototype of an electronic module that allows to calculate the frequency of spawning in laying hens

S A Sanchez, A A Aguilar, H J Romero and A D Morales.....100

Analysis of adaptability estimation algorithms in dynamic systems

J N Zuleta and R A L. Franco.....110

Software-Defined Optical Network (SDON), new generation networks

G V Leytón....118

Model for the interoperability between health service providers (IPS), based on the electronic clinical information standard (HL7) and architecture to design and develop distributed systems (SOA)

J G Arévalo, A Gonzales and L Arévalo....126

Design of a WSN to determine the levels of CO and noise emitted in the parking of the CORPORACIÓN UNIVERSITARIA ANTONIO JOSÉ DE SUCRE of the city of Sincelejo-Sucre

A Barrios-Ulloa, E Martinez-Diaz, A Medina Medina, D Sánchez Hernández, C Mercado Montes, A Arrieta Hernadez, J Julio Jiménez and J Serpa Serpa.....134

Position control module of myoelectric prostheses for people with upper limb loss at forearm level

C A Arenas, R E Monterroza, A J Marrugo and L Rojas.....146

<u>Determination of Cross layer interference in Heterogeneous network using stochastic geometry</u>

Y Tarriba-Lezama.....153

Low-cost automatic device for obtaining the coefficient of static friction

H A Rodriguez-Arias.....162

SafeWalk App, mobile application in health for people living in motor disabilities

E A Osorio, J D Osorio and D A García.....175

Architecture for the management of a remote practical learning platform for engineering education

D A Segura-Torres and E F Forero-García....182

A D Morales, S A Sanchez, C M Pineda and H J Romero.....192

Stimulation program for selective and sustained attention in preschool based on ICT

T L Paternina, D A Rodríguez, D Sibaja and A D Morales.....201

Overview of Data Governance in Business Contexts

L M Jimenez, J A Polo and N A Duarte.....210

Information Systems as Support for Competency-Based Assessment Process

M S Contreras.....223

Design of a web application for the registration and control of the research projects at CORPOSUCRE

C M Pineda-Pertuz, C A Mercado-Montes and A D Morales-Acosta....230

Evaluation of the learning strategies of the 10th-grade students in a private school of Bucaramanga

E P Carvajal Valero, D M Pabon Gelves, N T Castillo and A Tello Rios.....238

Development of prototype educational software for children with hearing disabilities for kids

L J Polo-Amador, A Tello-Rios, N Tavera-Castillo, J D Castrillon-Gomez and W Gomez-Sanchez....253

Prototype for identification of vehicle plates and character recognition implemented in Raspberry pi

E Arrieta-Rodríguez, L F Murillo, M Arnedo, A Caicedo and M A Fuentes.....263

Architecture of a Technology	Platform for	sustainable	tourism	managemen	t under	the
NTS-TS 002 standard				-		

F García Ramírez and J Puello Beltrán....268

Integration of learning objects for adaptative learning

M Rojas-Contreras and O Portilla-Jaimes.....275

Use of ICT Tools using the PBL Methodology as a Student Learning Strategy

S A Sanchez, C A Mercado, J F Serpa, J S Julio and A J Almanza....281

Development of a web application for consultation and online payments of technological services in higher education institutions

C J Gómez-Sierra and B J López-Bustamante.....291

System of information for the management in the optics of the city of Riohacha la Guajira

J Quintero and S Romero.....299

Application of the Wilcoxon Test to correlate the results of the Saber 11 and Saber T&T Test

L K Ahumada and I D Sanchez.....312

Design and Simulation of a Slot Waveguide Array Antenna (SWAA) for Satellite Communications

L Ripoll and L Valdez.....319

Zinc adsorption capacity with humic acids extracted from bituminous coal

M Vásquez-Osorio, F Colpas-Castillo, J R Castro-Suarez and Y Vásquez-Osorio.....332