

1ST INTERNATIONAL CONFERENCE ON APPLIED TECHNOLOGIES



Program – Tuesday, December 3rd 2019

08:00 – 09:00	Session 1: Opening Session – Salon 2000
08:00 – 08:30	Registration
08:30 – 09:00	Welcome to ICAT 2019 – Opening Session
09:00 – 09:45	Keynote by Francisco J. Perez TECHNOLOGY TRENDS ON H2020 EUROPEAN PROJECTS
09:45 – 10:30	Keynote by TCRN. Cesar Tamayo Herrera Technology Management and Transfer System in the Defense sector
10:30 – 11:00	Coffee Break
11:00 – 12:30	Session 2: Communications - Room 1 (Edificio Central)
11:00 – 11:15	On the Asymptotic BER of MMSE Detector in Massive MIMO Systems - Carlos Altamirano, Juan Minango, Celso de Almeida and Nathaly Orozco
11:15 – 11:30	Design of a non-deterministic model for a propagation of VHF radio signal in the Ecuadorian jungle - Federico Rodas, Diego Garzon, Emilia Ayala and Manolo Paredes
11:30 – 11:45	Propagation Features of Visible Light Communication in Underground Mining Environments - Pablo Palacios, Milton Román-Cañizares, Carlos Saavedra and David Zabala
11:45 – 12:00	Wireless teleoperated mobile robot prototype for inspection in high risk places - Alexander Ibarra, Edgar Tipan and Luis Orozco
12:00 – 12:15	Methodology for the efficiency and cybersecurity improvement of the SCADA Communication Network in EmelNorte Substations - Erick Pozo, Edison Eche and Silvana Gamboa
12:15 – 12:30	Implementation of DeviceNet communication driver prototypes and electronic data sheets (EDS) for analog and discrete industrial sensors - María Gabriela Gamboa Chiriboga, Silvana Del Pilar Gamboa Benítez, María Fernanda Trujillo Guerrero and Ana Verónica Rodas Benalcázar
11:00 – 12:30	Session 2: Computing - Room 2 (Biblioteca)
11:00 – 11:15	Algorithmic Efficiency of Stroke Gesture Recognizers: a Comparative Analysis - Ana Belén Erazo, Jorge-Luis Pérez-Medina and Jean Vanderdonckt

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11:15 – 11:30	The geoportal a tool for diffusion of alterations in soils due to natural phenomena: Case of Cotopaxi-Ecuador volcano - Omar Vaca, Dario Bolaños, Elena Mafla, Paulina Guevara, Izar Sinde and Felipe Macías Vázquez
11:30 – 11:45	Open Source Cloud Platform for Academic Systems Monitoring Software - Ruben Nogales, Paul Tandazo, Javier Vargas, Franklin Mayorga and David Guevara
11:45 – 12:00	Virtual Desktop Deployment (VDI) using OpenNebula as a private cloud - Paúl E. Calle-Romero, Pablo L. Gallegos-Segovia, Paúl E. Vintimilla-Tapia, Jack F. Bravo-Torres, Pablo A. Lema-Sarmiento and Gabriel A. León-Paredes
12:00 – 12:15	Forecasting Consumer Price Index (CPI) of Ecuador: A comparative study of predictive models - Juan Riofrio and Diego Peluffo
12:15 – 12:30	Using subject-specific reference cyclograms on the gait evaluation of a cerebral palsy patient - Pedro Cunha, João Ferreira, António Coimbra and Manuel Crisóstomo

12:30 – 14:00 Lunch

14:00 – 16:00 Session 3: Intelligent Systems - Room 1 (Edificio Central)

14:00 – 14:15	Prediction of standard times in assembly lines using least squares in multivariable linear models - Jhon Ramirez, Rodrigo Guaman, Eliezer Colina Morles and Lorena Siguenza-Guzman
14:15 – 14:30	A methodology for entity recognition. Case study: Ecu 911 - Andrea Trujillo, Marcos Orellana, Juan Fernando Lima, María Inés Acosta and Mario Peña
14:30 – 14:45	Prediction of the Incrustating Trend in Oil Extraction Pipelines: An Approach based on Neural Decision Trees - Bryan Peralta, Marcelo Salvador, Oscar Camacho, Freddy Escobar and Cristian Goyes
14:45 – 15:00	Deep Learning Approaches for Natural Language Processing - Alexis Alulema
15:00 – 15:15	Generating Individual Gait Kinetic Patterns using Machine Learning - César Bouças, João Ferreira, António Coimbra and Manuel Crisóstomo
15:15 – 15:30	Machine learning for optimizing technological properties of wood composite filament-timberfill fabricated by fused deposition modeling - Germán Omar Barrionuevo and Jorge Ramos-Grez
15:30 – 15:45	Wind Energy Forecasting with Artificial Intelligence Techniques: A Review - Jorge Luis Maldonado Correa
15:45 – 16:00	ICT AS PART OF THE TRAINING PROCESS IN PROFESSIONAL PRACTICE - Camilo Jose Peña Lapeira and Liliana Vargas Puentes

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14:00 – 16:00 Session 3: Computing - Room 2 (Biblioteca)

14:00 – 14:15	Designing an Accessible Website for Palliative Care Services - Patricia Acosta-Vargas, Paula Hidalgo, Gloria Acosta-Vargas, Belén Salvador-Acosta and Luis Salvador-Ullauri
14:15 – 14:30	Quality Assessment Approaches for Ambient Assisted Living Systems: A Systematic Review - Lenin Erazo, Jean Erraez-J, Priscila Cedillo and Lourdes Illescas
14:30 – 14:45	Analysis of Essentially Non-Oscillatory Numerical Techniques for the Computation of the Level Set Method - Israel Pineda, Daniela Arellano and Roberth Chachalo
14:45 – 15:00	Multiband broadband modulator Implementation on Field-Programmable Gate Array - Cristhian Castro, Carlos Gordon, Patricio Encalada and Myriam Cumbajin
15:00 – 15:15	Smart Battery charge: A Fiware Open Source Platform and microcontroller based IOT application - Geovanny Raura, Efraín Fonseca and Sang Guun Yoo
15:15 – 15:30	Optimization of Assembly Processes based on Lean Manufacturing tools. Case Studies: Television and Electronic Card Assemblers - Silvana Cuesta, Lorena Siguenza and Juan Llivisaca
15:30 – 15:45	A framework to assess resilience of critical infrastructure from big data - Daouda Kamissoko, Blazho Nastov, Vincent Chapurlat, Hélène Dolidon, Aurélia Bony, Bruno Barroca, Mickael Marechal, Jérôme Tixier, Matthieu Allon, Frédérick Bénaben, Nicolas Daclin, Alexis Muller, Nicolas Salatge and Valerie November
15:45 – 16:00	Learning Analytics as a tool to support teaching - Ma. Carmen Cabrera-Loayza, Irma Elizabeth Cadme Samaniego, René Rolando Elizalde Solano and Nelson Piedra

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Program – Wednesday, December 4th 2019

09:00 – 10:30	Session 4: Academic Keynote – Salon 2000
09:00 – 09:45	Keynote by Santiago Vidal <i>Prioritizing and ranking critical code smells</i>
09:45 – 10:30	Keynote by Israel Pineda <i>Scientific Computing: Shaping the Future One Bit at a Time</i>
10:30 – 11:00	Coffee Break
11:00 – 12:30	Session 5: Technology Trends - Room 1 (Edificio Principal)
11:00 – 11:15	Quality Models: An experience in the Software industry - Adela Sofia Gallardo Cueva, Humberto Gustavo Guaigua Albarracin and Rolando P. Reyes Ch.
11:15 – 11:30	Software components of an IoT monitoring platform in Google Cloud Platform: a descriptive research and an architectural proposal - Billy Grados and Hector Bedon
11:30 – 11:45	Fog Harvesting and IoT based Environment Monitoring System at the Ilalo volcano in Ecuador - David Carrera-Villacrés, Jose Luis Carrera, Torsten Braun, Zhongliang Zhao, Javier Gomez and Joffre Quinteros
11:45 – 12:00	Development of a mobile application for the Comprehensive Care and Attention of the Elderly Person - Paúl E. Vintimilla-Tapia, Jack F. Bravo-Torres, Pablo E. Tamariz-Ordóñez, Yulissa R. Abad-Salinas, Karina De L. Serrano-Paredes, Jenny A. Pacheco-Sarmiento and Sandra C. Salazar-Mostesdeoca
12:00 – 12:15	SAFER-VIM: A platform for assistance, care and social integration for the elderly - Pablo A. Lema-Sarmiento, Paúl E. Vintimilla-Tapia, Jack F. Bravo-Torres, Esteban F. Ordóñez-Morales, Pablo L. Gallegos-Segovia and Paúl E. Calle-Romero
12:15 – 12:30	Portable device and mobile application for the detection of ultraviolet radiation in real time with a low-cost sensor in Arduino - Joe Llerena Izquierdo, Nebel Viera Sanchez and Bladimir Rodriguez Moreira
11:00 – 12:30	Session 5: Intelligent Systems - Room 2 (Biblioteca)
11:00 – 11:15	Sorting algorithm applied in geographical regions using residential electricity consumption indicators - L. M. Alonso Águila, Julio Barzola-Monteses, Yomar González-Cañizalez, José Hidalgo-Crespo and Silvia Coello-Pisco

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11:15 – 11:30	Algorithms for the Management of Electrical Demand Using a Domotic System with Classification of Electrical Loads - Kevin Andres Suaza Cano and Javier Ferney Castillo Garcia
11:30 – 11:45	DRIVING MODE ESTIMATION MODEL BASED IN MACHINE LEARNING TROUGH PID'S SIGNALS ANALYSIS OBTAINED FROM OBD II - Juan Molina Campoverde
11:45 – 12:00	Enterprise architecture an approach to the development of IoT services oriented to building management - Maria Alejandra Camargo Vila, German Alfonso Osma Pinto and Homero Ortega Boada
12:00 – 12:15	Characterization of functions using Takagi Sugeno Kang order 2 to reproduce cardiac PQRST complex - Jesus Rodriguez Flores, Victor Herrera Perez and Mayra Pacheco Cunduri
12:15 – 12:30	Snake hunting system supplied with solar energy in the Ecuadorial Forest for strictly curative purposes, promot-ing ancestral knowledge, natural medicine and indigenous cultural products from rural areas - Daniel Icaza, Carlos Flores-Vázquez and Santiago Pulla Galindo

12:30 – 14:00 Lunch

14:00 – 16:00 Session 6: Technology Trends - Room 1 (Edificio Principal)

14:00 – 14:15	Comparative study of RDF and OWL ontology languages as support for the Semantic Web - Marlon Altamirano and Neilys González
14:15 – 14:30	Control panel for the automation of irrigation of banana cultivation based on the Internet of things - Jorge Berrú-Ayala, Dixys Hernandez-Rojas, Patricia Morocho-Díaz, Johnny Novillo-Vicuña, Bertha Mazon-Olivo and Alberto Pan
14:30 – 14:45	DEVELOPING A SOCIALLY-AWARE ROBOT ASSISTANT FOR DELIVERY TASKS - Carlos Flores-Vazquez, Cecilio Angulo Bahón, Juan-Carlos Cobos-Torres and Daniel Icaza
14:45 – 15:00	Human Activity Recognition Using an Accelerometer Module Value - Jhon Ivan Pilataxi Pilataxi, María Fernanda Trujillo Gurerro and Vanessa Carolina Benavides Laguapillo
15:00 – 15:15	Magnetorheological Pseudoplastic Fluid Flow Over Moving Horizontal Flat Plate - Roberto Gonzalo Silva Zea, Romel Angel Erazo-Bone, Fidel Vladimir Chuchuca-Aguilar, Kenny Fernando Escobar-Segovia and Ricardo Gallegos Orta
15:15 – 15:30	Organic Constructions and Airplane Type Hostels in Isolated Places Supplied With Solar Energy - Daniel Icaza, Carlos Flores-Vázquez, Juan-Carlos Cobos-Torres and Santiago Pulla Galindo

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15:30 – 15:45	Proposal for the implementation of MLP neural networks on Arduino platform - Kevin Andres Suaza Cano, Javier Ferney Castillo Garcia and Jhon Moofarry
15:45 – 16:00	Software to determine the readability of written documents by implementing a variation of the Gunning Fog Index using the Google Linguistic Corpus - Luis Carlos Rodríguez Timaná, Diego Fernando Saavedra Lozano and Javier Ferney Castillo García

14:00 – 16:00 Session 6: Intelligent Systems - Room 2 (Biblioteca)

14:00 – 14:15	Prediction of Fraud in Smart Supply Chains using Machine Learning Techniques - Fabián Constante and Jorge-Luis Pérez-Medina
14:15 – 14:30	Validation of an algorithm for the detection of the image of a person using different cameras - Washington Garcia-Quilachamin, Richard Jose Salazar, Jorge Herrera-Tapia, Saúl Toala-Mero and Luzmila Elisa Pro Concepción
14:30 – 14:45	Automated systems for detecting volcano-seismic events using different labeling techniques - Enrique Carrera, Alexandra Perez and Roman Lara
14:45 – 15:00	Knee Injured Recovery Analysis using Extreme Learning Machine - João Ferreira, Bernardete Ribeiro, Alexandra Vieira, A. Paulo Coimbra, Manuel Crisóstomo, Tao Liu and João Pinheiro
15:00 – 15:15	Automatic and remote monitoring of the pain experience: an Internet of Things (IoT) approach - Juan Rodríguez, Javier Castillo and Erick Arguello
15:15 – 15:30	A survey on Hand Gesture Recognition Using Machine Learning and Infrared Information - Ruben Nogales and Marco Benalcázar
15:30 – 15:45	Comparison of Attenuation Coefficient Estimation in High Intensity Focused Ultrasound Therapy for Cancer Treatment by Levenberg Marquardt and Gauss Newton Methods - Laura de Los Rios, Leonardo A. Bermeo Varon and Wagner Coelho de Alburquerque Pereira
15:45 – 16:00	Selection of mental tasks for brain-computer interfaces using NASA-TLX Index - Jhon Moofarry, Kevin Suaza Cano, Diego Saavedra and Javier Ferney Castillo Garcia

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Program – Thursday, December 5th 2019

09:00 – 10:30 Session 7: Academic Keynote – Salon 2000	
09:00 – 09:45	Keynote by Carina Gonzalez <i>Human-Robot Interaction: Intimate Relations</i>
09:45 – 10:30	Keynote by Daniel Burgos <i>The attrition factor: Student engagement and teacher commitment in online, intercultural Higher Education setting</i>
10:30 – 11:00 Coffee Break	
11:00 – 12:30 Session 8: Machine Vision - Room 1 (Edificio Principal)	
11:00 – 11:15	Design of a hand orthosis for people with deficiency of the medial, radial and ulnar nerves - Jhon A. Morales, William A. Rodriguez Criales, Leonardo A. Bermeo Varon, Diana M. Quiguanas, Edgar F. Arcos and John Jairo Villarejo
11:15 – 11:30	Automation of the Generation of Accessible Digital Educational Material for Students with Visual Disabilities - Boris Cabrera and Miguel Angel Zúñiga Prieto
11:30 – 11:45	Semantic Segmentation of Weeds and Crops in Multispectral Images by using a Convolutional Neural Networks based on U-Net - Miguel Angel Chicchón Apaza, Héctor Manuel Bedón Monzón and Ramón Alcarria
11:45 – 12:00	Crowdsensing and image processing as a method for analysis and population count based on the classification and validation of multimedia - Alexander Mejía, Angelo Ialla, Bryan Oscullo, Freddy Tapia and Luis Tello-Oquendo
12:00 – 12:15	Aerial Power Lines measurement using computer vision through an Unmanned Aerial Vehicle - Luis Gonzalo Lozano Guambaña, Juan Carlos Ortega Castro, Diego Javier Morales Jadán, Javier Trajano Gonzalez Redrovan and Juan-Carlos Cobos-Torres
12:15 – 12:30	Unmanned aerial vehicle for rescue and triage - Darwin Armando Mora Arias, Juan Carlos Ortega Castro, Carlos Alberto Flores Vazquez, Daniel Orlando Icaza Alvarez and Juan-Carlos Cobos-Torres
11:00 – 12:30 Session 8: Electronics - Room 2 (Biblioteca)	
11:00 – 11:15	Fault detection of an internal combustion engine through vibration analysis by Wavelets transform - Gina P Novillo, Nestor Diego Rivera

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	Campoverde, Hector Adrian Auquilla Veintimilla and Cesar Daniel Beltrán Orellana
11:15 – 11:30	Non Linear Control of a DC Microgrid for Electric Vehicle Charging Stations - Abdelkarim Benamar, Pierre Travaillé, Jean-Michel Clairand and Guillermo Escrivá-Escrivá
11:30 – 11:45	Estimation of Non-Physiological Parameter for Electric Power Generation Using a Conventional Bicycle - Daniel Salazar Muñoz, Aura María Millán Castro and Javier Ferney Castillo García
11:45 – 12:00	Retrofit to IEC-61850 of a line bay in transmission substation. Case study: INGA1/SE Pomasqui - Ana Mosquera, Rommel Proaño, Carlos Vallejo, Silvana Gamboa and Ana Rodas
12:00 – 12:15	Robohyp: Robotic platform for hypotherapy in children - Luis Carlos Murillo Penagos, Aura María Millán Castro and Javier Ferney Castillo García
12:15 – 12:30	Electrical bioimpedance for the Study of People with Type II Diabetes - Luis Carlos Rodríguez Timaná and Javier Ferney Castillo García

12:30 – 14:00 Lunch

14:00 – 16:00 Session 9: Machine Vision - Room 1 (Edificio Principal)

14:00 – 14:15	Hand Exercise Using an Haptic Device - Paulo A. S. Mendes, João P. Ferreira, A. Paulo Coimbra and Manuel M. Crisóstomo
14:15 – 14:30	Photogrammetry and augmented reality to promote the religious cultural heritage of San Pedro Cathedral in Guayaquil, Ecuador - Joe Llerena and Luigi Cedeño
14:30 – 14:45	Optimal-Robust Controller Applied to an Inverted Pendulum-Cart System: A Graphic Performance Analysis - Marco Herrera, Xavier Aguas, Oscar Gonzales and Oscar Camacho
14:45 – 15:00	Identification of chlorophyll content in corn leaves through multispectral images and their correlation with standard laboratory methods - Allan Alarcon, Joe Saverio, Jonathan Paillacho, Maria Fernanda Calderon and Miguel Realpe
15:00 – 15:15	Mechatronic prosthesis for transfemoral amputation with intelligent control based on neural networks - Danni De la Cruz, Johanna Tobar, Alexander Benalcazar and Mayra Comina
15:15 – 15:30	Ar-Math: Augmented reality technology applied for education - Mateo-Fernando Cordova-Proaño, María-Elizabeth Ortega-Camacho, Alejandra González-Castro, Mayra-Socorro Gutiérrez-López, Anahí-Montserrat Torres-Tinoco and Jorge-Luis Pérez-Medina
15:30 – 15:45	Mechanical pain assessment through parameters derived from photoplethysmographic signals: a pilot study - Andrés Ramírez, Leonardo A. Bermeo Varon, Rodolfo Molano and Erick Arguello

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15:45 – 16:00	Is it possible to improve the learning of children with ASD through augmented reality mobile applications? - Monica Del Rocio Romero Pazmiño, Estela Macas and Ivanna Harari
14:00 – 16:00	Session 9: Electronics - Room 2 (Biblioteca)
14:00 – 14:15	Platform for Adaptation of Myoelectric Prostheses in People with Upper Limb Amputation - Edgar Arcos, Andrés Ortégón, Javier Castillo, Maria Millán and Juberth Rentería
14:15 – 14:30	Estimation of Electrical Conductivity from Radiofrequency Hyperthermia Therapy for Cancer Treatment by Levenberg Marquardt Method - Jorge I. Lopez Perez, Rafael D. Serna Maldonado, Leonardo A. Bermeo Varon and Javier F. Castillo Garcia
14:30 – 14:45	Technical feasibility for mobile measurement of noise pollution using a drone - Luis Carlos Rodriguez Timana, Diego Saavedra, Javier Ferney Castillo Garcia and Maria Fernanda Diaz Velasquez
14:45 – 15:00	Towards the Information Security Governance for Institutions of Higher Education: Harmonization of Standards - Hugo Heredia and Vicente Merchán
15:00 – 15:15	Development of a prototype solution for hearing problems in noise in people with disabilities, using an acoustic Beamforming system with a FPGA card - Fabian Saenz, Paul Bernal, Carlos Romero and Marcelo Zambrano
15:15 – 15:30	Acquisition protocol and comparison of myoelectric signals of the muscles innervated by the ulnar, radial and medial nerves for a hand orthoses - Leonardo A. Bermeo Varon, John Jairo Villarejo, Andrea A. Bravo, Vanessa Perez, Diana M. Quiguanas and Edgar Francisco Arcos
15:30 – 15:45	Michell-Banki a Promise Turbine for Pico-Hydro in Water Irrigation Channel - Michell-Banki a Promise Turbine for Pico-Hydro in Water Irrigation Channel
15:45 – 16:00	Implementation of DeviceNet communication driver prototypes and electronic data sheets (EDS) for analog and discrete industrial sensors - María Gabriela Gamboa Chiriboga, Silvana Del Pilar Gamboa Benítez, María Fernanda Trujillo Guerrero and Ana Verónica Rodas Benalcázar

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