



CCE 2023

**2023 20th International
Conference on Electrical
Engineering, Computing
Science and Automatic
Control
(CCE)**

Schedule

Mexico City. Mexico

OCTOBER

25-27, 2023

Part Number USB: **CFP23827-USB**

ISBN USB: **979-8-3503-0675-0**

Part Number Xplore Compliant: **CFP23827-ART**

ISBN Xplore Compliant: **979-8-3503-0676-7**

Online ISSN: **2642-3766**



www.cce.cinvestav.mx

Keynote Speakers



Professor Branislav Rehak, PhD

Researcher, Control Theory Department, Institute of Information Theory and Automation, Czech Academy of Sciences, Prague, Czech Republic.
<https://www.utia.cas.cz/people/rehak>

Title: "Stabilization of nonlinear large scale systems and synchronization of nonlinear multi-agent systems: a comparison of both problems"

Wednesday October 25th, 2023 - 10:00-11:30 - Mexico City Time Zone
(Opening Ceremony and Plenary)

ROOM 4

Session Chair Dr. José Javier Ruiz León



Professor Margarita Sordo, MSc, PhD, FAMIA

Senior Medical Informatics Researcher and Instructor of Medicine at the Brigham & Women's Hospital, Harvard Medical School.
Boston MA, USA

<https://connects.catalyst.harvard.edu/Profiles/display/Person/57818>
<https://www.linkedin.com/in/margaritasordo/>

Title: "Artificial Intelligence and the Practice of Medicine"

Thursday October 26th, 2023 – 16:00-17:00, Mexico City Time Zone
ROOM 4

Session Chair: Dra. Blanca Tovar Corona



Professor Michela Meo, PhD

Professor Department of Electronics and Telecommunications (DET)
Politecnico di Torino
Italy

<https://www.telematica.polito.it/member/michela-meo/>

Title: "About sustainability of radio access networks"

Friday October 27th, 2023 - 10:00-11:00, Mexico City Time Zone
ROOM 4

Session Chair: Dr. Mauricio Lara Barrón

R & D Conferences

Wednesday October 25th, 2023



Conference

Brian Rounds

OMEGA -NEWARK Companies, USA

Title: "How to choose the right sensor for your application"

Hour: 15:00-16:00

ROOM 4

33 years with Omega Engineering as Sr. Applications Engineer, mainly supporting Newark.

<https://www.newark.com/b/omega?ost=omega&rd=omega>

Conference

Chris Boross

RASPBERRY – NEWARK Companies - United Kingdom

Title: "Raspberry Pi's Commercial Products, including RP2040, CM4 and the new Pi 5."

Hour: 16:30-17:30

ROOM 3 - TUTORIALS

Chris is in the Commercial Team at Raspberry Pi, helping other companies build amazing products using Raspberry Pi's microprocessors and compute modules.

Before Raspberry Pi, Chris worked in Product, IoT and Semiconductor companies such as Nest, Google, Broadcom and The Thread Group.

<https://www.newark.com/c/raspberry-pi>



Thursday October 26th, 2023

Conference

Chris Boross

RASPBERRY – NEWARK Companies - United Kingdom

Title: "Raspberry Pi's Commercial Products, including RP2040, CM4 and the new Pi 5."

Hour: 10:00-11:00

ROOM 4



Tutorial

Jesús Rodríguez

TEKTRONIX/ NEWARK Companies, USA

Title: "Fundamentals of Oscilloscopes and signal decoding"

(MSO46: <https://www.tek.com/en/products/oscilloscopes/4-series-mso>)

Hour: 11:30-12:30

ROOM 3 - TUTORIALS

Telecommunications engineer format at UNAM. Currently a specialist in high performance equipment at Tektronix. Responsible for Latin America.

Session Chair:

Tutorial

Jesús Rodríguez

TEKTRONIX/ NEWARK Companies, USA

Title: "Fundamentals of Spectrum Analyzers and Digital Modulation Analysis"

(RSA507A <https://www.tek.com/en/products/spectrum-analyzers/rsa500>)

Hour: 14:30-15:30

ROOM 3 - TUTORIALS

Telecommunications engineer format at UNAM. Currently a specialist in high performance equipment at Tektronix. Responsible for Latin America.

Session Chair:

Conference

Jesús Rodríguez

TEKTRONIX/ NEWARK Companies, USA

Title: "In-Vehicle Networks: Trends on measurements requirements"

Hour: 17:30-18:30

ROOM 4

Telecommunications engineer format at UNAM. Currently a specialist in high performance equipment at Tektronix. Responsible for Latin America.

Friday October 27th, 2023



Tutorial

Jonathan Meza

WELLER-NEWARK Companies, Mexico

Title: "Extending Soldering Tip Life"

Hour: 9:00-10:00

ROOM 2

Outside Account Manager at Newark element14 in Mexico City, Mechatronics Engineer, 11 years' experience on SCADA and automations Systems.

<https://www.newark.com/b/weller?ost=weller&rd=weller>

Tutorial

Genaro Ellian Herrera Bandin

NATIONAL INSTRUMENTS Company

Title: " Virtual Instrumentation with LabVIEW: From the idea to the deployment"

Hour: 11:30-12:30

ROOM 4



NOTE: For this tutorial, prior registration is required (at least confirm the number of participants a week in advance) and have the trial version of Labview downloaded and installed. Since you will interact with it:

<https://www.ni.com/es/support/downloads/software-products/download.labview.html>

I have a strong technical background in mechatronics engineering, with a degree from the Universidad Autónoma de Ciudad Juárez in Mexico. I also studied abroad at the Institut National des Sciences Appliquées in Toulouse, France and in the Universidade de Sao Paulo in Brazil, where I worked on my thesis project related to a guidance system for autonomous vehicles, which resulted in a publication on the VIII Congresso Nacional de Engenharia Mecânica - CONEM2014

I was part of the Technical Support team at NI and an instructor of NI tools for our customers.

I'm currently the Territory Sales Channel Manager for Latin America and Canada.

I also have an MBA from TecMilenio in Mexico, specializing in marketing and finance. I leverage my skills in sales strategy, oral communication, and Spanish, French, and Portuguese languages to build relationships with customers and partners across different regions and industries. I am passionate about helping them achieve their business goals and providing them with the resources to go beyond.

<https://www.newark.com/b/ni?ost=ni&rd=ni>

Schedule CCE 2023

AC: AUTOMATIC CONTROL, **BIO:** BIOMEDICAL ENGINEERING/ BIOMIMETICS, **COMM:** COMMUNICATIONS SYSTEMS, **CS:** COMPUTER SCIENCE AND COMPUTER ENGINEERING, **MEC:** MECHATRONICS, **NANO:** NANOTECHNOLOGY, **POW:** POWER ELECTRONICS, **SSM:** SOLID-STATE MATERIALS, ELECTRON DEVICES AND INTEGRATED CIRCUITS, **AE:** AERONAUTICS AND AEROSPACE ENGINEERING/ AUTONOMOUS NAVIGATION

Wednesday October 25th, 2023				
CINVESTAV				
<i>Hour</i>	<i>Room 1</i>	<i>Room 2</i>	<i>Room 3-Tutorials</i>	<i>Room 4</i>
10:00-11:30				<p style="text-align: center;">Opening Ceremony and Plenary Prof. Branislav Reháč, PhD <i>Researcher, Control Theory Department, Institute of Information Theory and Automation, Czech Academy of Sciences, Prague, Czech Republic.</i> Title: "Stabilization of nonlinear large scale systems and synchronization of nonlinear multi-agent systems: a comparison of both problems" <i>Session Chair: Dr. José Javier Ruiz León</i></p>
11:30-12:00	Break			
12:00-14:00	BIO 1	CS 1		AC 1
14:00-15:00	Break			
15:00-16:00				<p style="text-align: center;">Conference Brian Rounds <i>OMEGA -NEWARK Companies, USA</i> Title: "How to choose the right sensor for your application"</p>
16:00-16:30	Break			
16:30-18:30	SSM 1	MEC/AE	<p style="text-align: center;">Conference Chris Boross <i>RASPBERRY – NEWARK Companies - United Kingdom</i> Title: "Raspberry Pi's Commercial Products, including RP2040, CM4 and the new Pi 5." Hour: 16:30-17:30</p>	AC 2

AC: AUTOMATIC CONTROL, **BIO:** BIOMEDICAL ENGINEERING/ BIOMIMETICS, **COMM:** COMMUNICATIONS SYSTEMS, **CS:** COMPUTER SCIENCE AND COMPUTER ENGINEERING, **MEC:** MECHATRONICS, **NANO:** NANOTECHNOLOGY, **POW:** POWER ELECTRONICS, **SSM:** SOLID-STATE MATERIALS, ELECTRON DEVICES AND INTEGRATED CIRCUITS, **AE:** AERONAUTICS AND AEROSPACE ENGINEERING/ AUTONOMOUS NAVIGATION

Thursday October 26th, 2023				
CINVESTAV				
<i>Hour</i>	<i>Room 1</i>	<i>Room 2</i>	<i>Room 3-Tutorials</i>	<i>Room 4</i>
9:00-10:00	SSM 2	CS 2		BIO 2
10:00-11:00				Conference Chris Boross RASPBERRY – NEWARK Companies - United Kingdom <i>Title: "Raspberry Pi's Commercial Products, including RP2040, CM4 and the new Pi 5."</i>
11:00-11:30	Break			
11:30-13:30	SSM 3	AC 3	Tutorial Jesús Rodríguez NEWARK /TEKTRONIX Companies, USA <i>Title: "Fundamentals of Oscilloscopes and signal decoding"</i> <i>Hour: 11:30-12:30</i>	BIO 3
13:30-14:30	Break			
14:30-15:50	NANO 1	AC 4	Tutorial Jesús Rodríguez NEWARK /TEKTRONIX Companies, USA <i>Title: "Fundamentals of Spectrum Analyzers and Digital Modulation Analysis"</i> <i>Hour: 14:30-15:30</i>	BIO 4
15:50-16:00	Break			
16:00-17:00				Plenary Prof. Margarita Sordo, MSc, PhD, FAMIA. Brigham & Women's Hospital, Harvard Medical School, USA <i>Title: "Artificial Intelligence and the Practice of Medicine"</i> <i>Session Chair: Dra. Blanca Tovar Corona</i>
17:00-17:30	Break			
17:30-18:30	SSM 4	CS 3		Conference Jesús Rodríguez NEWARK /TEKTRONIX Companies, USA <i>Title: "In-Vehicle Networks: Trends on measurements requirements"</i>

AC: AUTOMATIC CONTROL, **BIO:** BIOMEDICAL ENGINEERING/ BIOMIMETICS, **COMM:** COMMUNICATIONS SYSTEMS, **CS:** COMPUTER SCIENCE AND COMPUTER ENGINEERING, **MEC:** MECHATRONICS, **NANO:** NANOTECHNOLOGY, **POW:** POWER ELECTRONICS, **SSM:** SOLID-STATE MATERIALS, ELECTRON DEVICES AND INTEGRATED CIRCUITS, **AE:** AERONAUTICS AND AEROSPACE ENGINEERING/ AUTONOMOUS NAVIGATION

Friday October 27th, 2023 CINVESTAV			
Hour	Room 1	Room 2	Room 4
9:00-10:00	SSM 5	Tutorial Jonathan Meza WELLER-NEWARK Companies, MX <i>Title: "Extending Soldering Tip Life"</i>	COMM 1
10:00-11:00			Plenary Prof. Michela Meo, PhD. Professor Politecnico di Torino, Italy. <i>Title: " About sustainability of radio access networks "</i> <i>Session Chair : Dr. Mauricio Lara Barrón</i>
11:00-11:30	Break		
11:30-12:30			Tutorial Genaro Ellian Herrera Bandin NATIONAL INSTRUMENTS <i>Title: " Virtual Instrumentation with LabVIEW: From the idea to the deployment"</i>
12:30-13:00	Break		
13:00-14:40	NANO 2	POW	COMM 2
15:00-15:20			Closing ceremony

From October 25 to 27, exhibition of products from the following companies:



TECHNICAL PROGRAM

Automatic Control (AC)

ID	Hour	Session AC 1 - Automatic Control Wednesday October 25th, 2023 12:00-14:00 Room 4 Session Chair: Dr. Antonio Ramírez Treviño
ID 44	12:00-12:20	Luis Antonio Pantoja García, Vicente Parra Vega and Rodolfo García Rodríguez. Stability Guaranteed Actor-Critic Learning for Robots in Continuous Time
ID 51	12:20-12:40	L. Enrique Ruiz-Fernandez, Javier Ruiz-Leon, David Gomez-Gutierrez and J. Ignacio Parra-Vilchis. Tracking in Multi-Robot Systems with Non-Holonomic Constraints and Obstacle Avoidance
ID 67	12:40-13:00	Alejandro Martínez-González and Adrián Ramírez. Simplified Design Approach for Fast Consensus in a Double-Integrator Multi-Agent System using a Proportional-Retarded Controller
ID 92	13:00-13:20	Alejandro Tevera-Ruiz, Sergio Edgardo Urzúa-Correa, Vicente Parra-Vega, Anand Sanchez-Orta and Rodolfo Garcia-Rodriguez. Actor-Critic Learning of Variable Damping Injection for Quadrotor Attitude Robust Control
ID 112	13:20-13:40	Maria Aracelia Alcorta García, Jose Armando Sáenz Esqueda, Efrain Alcorta García, Gerardo Maximiliano Méndez, Angel Salvador Perez Blanco and Hiram Asahel Partida Villarreal. Optimal Risk Sensitive Controller Design Applied to a Stochastic Dynamics of a Simple Pendulum Robot
ID 114	13:40-14:00	Alejandro Esaú Meléndez-Hernández, Mario Andrés Aguilar-Orduña, Brian Camilo Gómez-León and Hebertt José Sira-Ramírez. Trajectory tracking of a single-link manipulator driven from a double-bridge Buck converter: A cascade ADRC approach.
ID	Hour	Session AC 2 - Automatic Control Wednesday October 25th, 2023 16:30-18:30 Room 4 Session Chair: Dr. Salvador Carlos Hernández.
ID 2	16:30-16:50	Juan Alejandro Flores Campos and Adolfo Perrusquía. Robust Control of Linear Systems: A Min-Max Reinforcement learning formulation

ID 21	16:50-17:10	Arturo Govea-Vargas and Rafael Martínez-Guerra. <i>Fractional Observers for the Estimation of Faults in Fractional Nonlinear Systems</i>
ID 36	17:10-17:30	Lorenz Josue Oliva Gonzalez and Rafael Martínez Guerra. <i>A Novel Fractional Order Differentiator</i>
ID 53	17:30-17:50	Pablo De Villeros, Juan Diego Sánchez-Torres, Michael Defoort and Alexander Loukianov. <i>Distributed Predefined-time Optimization for Basic Source Estimation</i>
ID 65	17:50-18:10	Felipe Ramírez-Rasgado, Mondher Farza, Omar Hernández-González, Carlos-Manuel Astorga-Zaragoza, Guillermo Valencia-Palomo and Maria-Eusebia Guerrero-Sánchez. <i>New Cascade Observer for a Class of Nonlinear Systems with Time-delayed Outputs</i>
ID 110	18:10-18:30	Andrei Markov and Sergey Drakunov. <i>Quaternion Kinematic Observer Using Multiplicative Error</i>
ID	Hour	Session AC 3 - Automatic Control Thursday October 26th, 2023 11:30-13:30 Room 2 Session Chair: Dra. Ofelia Begovich Mendoza.
ID 58	11:30-11:50	Miguel Ramirez-Barrios and Fadi Dohnal. <i>Settling Time Reduction by Open-Loop Control Based on Parametric Anti-Resonance</i>
ID 87	11:50-12:10	Abraham Rivera, Olga Jiménez Morales and Rubén Garrido. <i>Parameter Identification of a DC servomechanism using a Robust Least Squares Algorithm with Variable Forgetting Factor</i>
ID 52	12:10-12:30	Jesus Alejandro Diaz-Hernandez, Juan Carlos Bello-Robles, Rita Q. Fuentes-Aguilar and Jose Javier Ruiz-Leon. <i>Control System for Vibration Attenuation in a Flexible Beam</i>
ID 106	12:30-12:50	Omar Alejandro García Alcántara, Diego Said Chávez Arana, Eduardo Steed Espinoza Quesada, Luis Rodolfo García Carrillo, Antonio Osorio Cordero and Andrew T. Sornborger. <i>Spiking Neural Network-based Control Applied to an Underactuated System</i>
ID 120	12:50-13:10	Leopoldo Vite. <i>Stabilization of a DC-DC buck converter for photovoltaic MPPT applications</i>
ID 125	13:10-13:30	Mario Andrés Aguilar-Orduña, Hebertt José Sira-Ramírez, Brian Camilo Gomez-Leon and Rubén Alejandro Garrido-Moctezuma. <i>Two-stage Active Disturbance Rejection Control in aerospace applications: The case of an orbit transfer for a point mass satellite</i>

ID	Hour	<p>Session AC 4 - Automatic Control Thursday October 26th, 2023 14:30-15:50 Room 2 Session Chair: Dr. Héctor Manuel Becerra Fermín.</p>
ID 1	14:30-14:50	Zhengmao Ye. <i>Analysis and Synthesis of Vehicle Routing Problems Using Heuristic and Exact Algorithms for Transportation Combinatorial Optimization</i>
ID 11	14:50-15:10	Víctor Reza, Jorge Torres and Jesus Guerrero. <i>An extended generalized super-twisting algorithm for estimating key biochemical variables in bioprocesses</i>
ID 101	15:10-15:30	Raziel Cesar Campos-Sanchez, Luis Hernandez-Martinez and Claudia Feregrino-Uribe. <i>IoT architecture and security mechanisms for an Energy Management System in a smart microgrid</i>
ID 117	15:30-15:50	Efrain Alcorta Garcia, Miguel Angel Platas Garza and David Alejandro Diaz Romero. <i>Identification and control design for an experimental setup to take home</i>

Biomedical Engineering/ Biomimetics (BIO)

ID	Hour	<p>Session BIO 1- Biomedical Engineering/ Biomimetics Biomedical Prototypes Wednesday October 25th, 2023 12:00-14:00 Room 1 Session Chair: Dra. Blanca Tovar Corona</p>
ID 48	12:00-12:20	Alfonso Toriz-Vázquez, Luis Alberto Medina-Ramos, Rafael Bayareh Mancilla, Yazmín Mariela Hernández-Rodríguez and Oscar Eduardo Cigarroa-Mayorga. <i>Detection of Asymmetric Anomalies in Mammograms using Dynamic Time Warping for Early Breast Cancer Identification</i>
ID 66	12:20-12:40	Mónica Vázquez Hernández, Katya Rodriguez Vázquez and Melissa Melgar Gallardo. <i>Estimation of variations in progesterone in a woman across the menstrual cycle</i>
ID 84	12:40-13:00	Alejandro Rodríguez, Arturo Vera, Lorenzo Leija and Mario Ibrahín Gutiérrez. <i>Detection and Characterization of Focused Ultrasonic Field using Schlieren Effect and Continuous Laser</i>
ID 99	13:00-13:20	Fausto David Cortes Rojas, Edna Citlali Hernández Gaspar, Esaul Trujillo Islas, Arturo Vera Hernández, Lorenzo Leija and Rocío Ortega Palacios. <i>Characterization of a Temperature Gradient System for Phantom Studies in Hyperthermia Therapy</i>

ID 104 13:20-13:40 Perla Martínez, Jesus Garduno, Marcos Mendoza, Lorenzo Leija, Arturo Vera and Rafael Bayareh.
Knee Brace Prototype with Electrostimulation System as an Auxiliary for Postoperative Treatment for Anterior Cruciate Ligament Injuries

ID 136 13:40-14:00 Bernardo Flores Ramírez and Ernesto Suaste-Gómez.
Polyvinylidene Fluoride Membranes as Force Detectors for Bruxism Behavior

ID **Hour** **Session BIO 2 - Biomedical Engineering/ Biomimetics - Physiological Signal Processing**
Thursday October 26th, 2023
9:00-10:00
Room 4
Session Chair: **Dra. Blanca Tovar Corona**

ID 64 9:00-9:20 Amaury Santiago-Horta, José Desiderio Torres-Rodríguez, María Alexandra Blanco-Soriano, Blanca Tovar-Corona, Amadeo José Argüelles-Cruz and Laura Ivoone Garay-Jiménez.
Stress Detection Protocol in Vehicular Driving using Virtual Reality

ID 90 9:20-9:40 Sonal Santosh Baberwal, Luz Alejandra Magre, K. R. Sanjaya D. Gunawardhana, Tomas Ward and Shirley Coyle.
Protocol design and testing to investigate Motor Imagery training using cues in different mediums: A pilot study

ID 107 9:40-10:00 Mohammad Sakib and Syeda Shanaz Pervez.
Automated Stress Level Detection for Hospital Nurses: A Single Triaxial Wearable Accelerometer Sensor System Approach

ID **Hour** **Session BIO 3 - Biomedical Engineering/ Biomimetics Artificial Intelligence in health applications**
Thursday October 26th, 2023
11:30-13:30
Room 4
Session Chair: **Dr. Carlos Alvarado Serrano**

ID 38 11:30-11:50 Alan Pozos González, Ana Isabel López Aguado, René Luna García and Blanca Tovar Corona.
Detection and Classification of Heart Arrhythmias by Convolutional Neural Network

ID 46 11:50-12:10 Fernanda Perez-Barcena, Rafael Bayareh-Mancilla, Yazmín Mariela Hernández-Rodríguez, Blanca Murillo-Ortiz and Oscar Eduardo Cigarroa-Mayorga.
Building an Extensive Database for Training Predictive Models in Image Classification of Mammography Views and Projections using Support Vector Machines

ID 62 12:10-12:30 Juan Abdiel Sáenz-Sánchez and Wilfrido Gómez-Flores.
Classification of breast ultrasound images in BI-RADS categories using binary decomposition strategies with convolutional neural networks

ID 91	12:30-12:50	Daniel Gerardo Serrano Díaz, Wilfrido Gómez Flores, Arturo Vera Hernández and Lorenzo Leija Salas. <i>Towards Breast Cancer Treatment Planning by Microwave Ablation Via Tumor Characterization Using Medoid-based Eigenvectors</i>
ID 100	12:50-13:10	Gerardo Ames-Lastra, Alberto Concu, Oscar Real-Moreno, Rodrigo Kataishi and Antonio Dell'Osa. <i>Evaluation of Machine Learning algorithms applied to differentiate upper extremities from bioimpedance measurements</i>
ID	Hour	Session BIO 4 - Biomedical Engineering/ Biomimetics - Physiological Signal Processing Thursday October 26th, 2023 14:30-15:30 Room 4 Session Chair: Dr. Arturo Vera Hernández
ID 29	14:30-14:50	Jennifer Ruan Limas, Laura I. Garay-Jimenez and Elena-Fabiola Ruiz-Ledesma. <i>Characterization Of Physiological Signals Under Cognitive Stress</i>
ID 59	14:50-15:10	Yeritza Gomez Martinez, Diana Bueno Hernandez, Blanca Tovar Corona and Laura Ivoone Garay Jimenez. <i>Physiological changes associated to the use of N95 mask</i>
ID 131	15:10-15:30	Karina I. Espinosa-Espejel, Laura-Ivoone Garay-Jiménez, Nancy E. Martinez Hernández and Blanca Tovar Corona. <i>Mechanical Activity Associated with Gastric Pacemaker</i>

Communications systems (COMM)

ID	Hour	Session COMM 1 - Communications systems Friday October 27th, 2023 9:00-10:00 Room 4 Session Chair: Dr. Fernando Ramos-Alarcon
ID 76	9:00-9:20	Aleksey Gvozdarov. <i>Outage performance of the α-Beaulieu-Xie Shadowed Fading Channel Model</i>
ID 82	9:20-9:40	Aleksey Gvozdarov and Tatiana Artemova. <i>Tight BER Bounds of MPSK Signals for the Shadowed Second Order Scattering Fading</i>
ID 109	9:40-10:00	Jesús Ángel Sánchez-Rodríguez, Ana M. Martinez-Enriquez and Mauricio Lara. <i>A Fully Connected Neural Network For Polar Channel Decoding</i>

ID	Hour	Session COMM 2 - Communications systems Friday October 27th, 2023 13:00-14:20 Room 4 Session Chair: Dr. Ricardo Gomez-Villanueva
ID 34	13:00-13:20	Fernando López-Marcos, Marco Antonio Vásquez-Agustín and Richard Torrealba-Meléndez. <i>Design and simulation of a MIMO octagonal-shape hybrid transparent-metallic film antenna for Ultra-Wideband systems</i>
ID 41	13:20-13:40	Sistla V Sudheer Kumar, Dwarapu Lakshmi Narayana, Kuna Dhilli, Tumkur Nirmala and Ramakrishna V. <i>Orthogonal quad-port wearable MIMO antenna for sub-6GHz 5G and WLAN/Wi-Max/Wi-Fi applications</i>
ID 13	13:40-14:00	Rodrigo Cuevas-Terrones, Blaise Tshibangu-Mbuebue, Itzel Sináí Castillo-García, Josefina Castañeda-Camacho and Ignacio Enrique Zaldívar-Huerta. <i>Digital Signal Transmission through a Short-Reach Optical Link using an FPGA Card</i>
ID 96	14:00-14:20	Jorge Aguilar Torrentera and Dalia Medoza Figueroa. <i>Proposal of Encoding Method for Spectral CDMA Flicker-Free Visible Light Communications</i>

Computer Science and Computer Engineering (CS)

ID	Hour	Session CS 1 - Computer Science and Computer Engineering – AI and computer engineering Wednesday October 25th, 2023 12:00-14:00 Room 2 Session Chair: Dr. Wilfrido Gómez Flores
ID 17	12:00-12:20	Erick Axel Martinez Ríos, David Barrientos-Torres and Rogelio Bustamante-Bello. <i>Pavement Transverse Cracking Detection Based on the Vehicle's Vertical Acceleration Performed Via Transfer Learning and Wavelet Scattering Transform</i>
ID 18	12:20-12:40	Zhengmao Ye and Hang Yin. <i>Decision Tree Learning Enhancement for Dynamic Data with Disturbances and Uncertainties via Integration of DWT and Nonlinear SVM</i>
ID 27	12:40-13:00	Armando Gaytan, Ofelia Begovich and Nancy Arana-Daniel. <i>Node-Decoupled Extended Kalman Filter versus Adam optimizer in approximation of functions with multilayer neural networks</i>
ID 49	13:00-13:20	Cristian Garcia-Uribe and Ernesto Lopez-Mellado. <i>Building Hierarchical Workflow Nets for Discrete-Event Processes Discovery</i>

- ID 121** 13:20-13:40 Víctor Rodríguez, Luis Pizano-Escalante and Omar Longoria-Gandara.
Application of Machine Learning Techniques to Characterize Floating Point Benchmarks using Hardware Events
- ID 128** 13:40-14:00 Ruben Hernandez, Ramon Garcia Hernandez and Francisco Jurado.
Control of an Underactuated Mechanical System with Reinforcement Learning Compensation

ID **Hour** **Session CS 2 - Computer Science and Computer Engineering – Classification**
Thursday October 26th, 2023
9:00-10:00
Room 2
Session Chair: **Dr. Wilfrido Gómez Flores**

- ID 10** 9:00-9:20 Hafsa Binte Kibria and Md. Ali Hossain.
Lightweight Parallel CNN To Classify COVID-19 Associated Pneumonia From Chest X-Ray

- ID 43** 9:20-9:40 Roberto Williams Escorcía Varela, Rocio Ortega Palacios and Liliam Rodríguez Guerrero.
Classification of EEG signals from Imagined Hand Movements based on a Model of Executed Movements

- ID 103** 9:40-10:00 Tahsin Tasnia Khan, Abid Hassan, Md Faysal Ahamed and Samiul Islam.
Multi-label Bengali Abusive Comments Classification using Problem Transformation Method

ID **Hour** **Session CS 3 - Computer Science and Computer Engineering – Image and vision**
Thursday October 26th, 2023
17:30-18:30
Room 2
Session Chair: **Dr. Wilfrido Gómez Flores**

- ID 12** 17:30-17:50 Miguel Gutierrez-Velazquez and Mario Chacon-Murguía.
Parasite Detection in Copro Images with a modified Faster R-CNN

- ID 20** 17:50-18:10 Carlos Osorio Quero, José Antonio Cisneros Martínez and Ruben Ramos-García.
Res-U2Net: Augmenting 2D/3D Image Reconstruction through Untrained Deep Learning Models for Phase Retrieval Enhancement

- ID 140** 18:10-18:30 Timon Hoebert, David Neubauer, Munir Merdan, Wilfried Lepuschitz, Stefan Thalhammer and Markus Vincze.
ROS-driven Disassembly Planning Framework incorporating Screw Detection

Mechatronics (MEC) / Aeronautics and Aerospace Engineering -Autonomous Navigation (AE)

ID	Hour	Session MEC/AE – Mechatronics-Aeronautics and Aerospace Engineering Wednesday October 25th, 2023 16:30-18:30 Room 2 Session Chair: Dr. Juan Fernando Peza Solís /Dr. Oscar Alejandro García Pérez
ID 31	16:30-16:50	Alejandro Tevera-Ruiz, Rodolfo Garcia-Rodriguez and Vicente Parra-Vega. <i>Damping Injection Learning for Robots with Actor-Critic Driven by Integral Sliding Manifolds</i>
ID 78	16:50-17:10	Gerardo Diaz-Arango, Hector Vazquez-Leal, Zabdiel Ortiz-Viveros, Luis Hernandez-Martinez, Andres Jaramillo-Alvarado, Yohan Preciado-Quintero, Eglis Duran-Toyo and David Sanchez-Casarrubias. <i>A Software Tool for Teaching the Homotopy-Based Path Planning Method for Mobile Robot Applications</i>
ID 105	17:10-17:30	Claudia Victoria Olivar-Jiménez, Mario Andrés Aguilar-Orduña and Hebertt José Sira-Ramírez. <i>Semi-automatic grafting machine prototype for tomato seedlings</i>
ID 130	17:30-17:50	Benjamin Rios Montero, Jesus Lopez Gomez, Reymundo Ramirez Betancour, Fermin Martinez Solis and Salvador Juarez Zirate. <i>An FPGA-based Automatic Voltage Regulator for a Synchronous Electric Generator</i>
ID 32	17:50-18:10	Sergio E. Urzúa-Correa, Vicente Parra-Vega and Anand Sanchez-Orta. <i>3D Force Control of a Quadrotor subject to 2D Non-holonomic Contact with an Spherical Tip</i>

Nanotechnology (Materials and Applications) (NANO)

ID	Hour	Session NANO 1 - Nanomaterials and Applications Thursday October 26th, 2023 14:30-15:50 Room 1 Session Chair: Dr. Arturo Maldonado Álvarez
ID 85	14:30-14:50	Juan Jesús Rocha Cuervo, Venkata Krishna Karthik Tangirala and Anaid Cano Quiroz. <i>Study and analysis of pH, conductivity, absorbance and chemical oxygen demand of drinking, dye contaminated and treated domestic wastewater</i>
ID 89	14:50-15:10	Alicia Sanchez, Karthik T.V.K., M. de La L. Olvera and Heberto Gómez. <i>Synthesis of undoped and indium-doped titanium oxide thin films via ultrasonic spray pyrolysis for methylene blue degradation by photocatalysis</i>

- ID 119** 15:10-15:30 Luz Margarita Balcazar Villatoro, José Josué Rodríguez Pizano, Gabriela Bobadilla Barrón, Arturo Maldonado Álvarez and María de La Luz Olvera Amador.
Physical properties of IZO thin films deposited by ultrasonic spray pyrolysis. Effect of In concentration and precursor milling process
- ID 124** 15:30-15:50 Gabriela Bobadilla Barrón, Arturo Maldonado Alvarez, María de La Luz Olvera Amador and Luz Margarita Balcazar Villatoro.
Study of the properties of FZO thin films deposited by USP using a milled Zn precursor.
- ID** **Hour** **Session NANO 2 - Nanomaterials and Applications**
Friday October 27th, 2023
13:00-14:40
Room 1
Session Chair: **Dr. Ramón Peña Sierra**
- ID 54** 13:00-13:20 José Juan Avilés Bravo, Alfredo Morales Sánchez, Liliana Palacios Huerta, Juan Federico Ramirez Rios and Mario Moreno Moreno.
Improved Photoluminescence Intensity of Silicon Rich Oxide Film by Surface Etching
- ID 71** 13:20-13:40 Karen A. Neri-Espinoza, Miguel A. Domínguez-Crespo, José A. Andraca-Adame and Ramón Peña-Sierra.
Evaluation of the Electrical Properties in MnO/ZnO:Zn Thin-Films for Potential Applications in Solid-State Supercapacitors
- ID 118** 13:40-14:00 Francisco Javier Cano, Oleksandr Korolevych, Małgorzata Makowska Janusik, Sandrine Coste, Ashok Adhikari, Velumani Subramaniam and Abdelhadi Kassiba.
G and GO interaction into TiO₂ (010) anatase and its influence on the bandgap: DFT Study
- ID 129** 14:00-14:20 Juan Carlos Perez, Marco Antonio Vasquez Agustín, Godofredo García, Roman Romano Trujillo, Fernando López Marcos, Heber Vilchis, Enrique Rosendo Andres, Jose Juan Gervacio Arciniega, Orlando Cortazar Martinez and Antonio Coyopol Solis.
Effect of thermal annealing in H₂ atmosphere of SiC_xO_y films obtained by HFCVD technique

Power Electronics

- ID** **Hour** **Session POW- Power Electronics**
Friday October 27th, 2023
13:00-14:40
Room 2
Session Chair: **Dr. Víctor Manuel Cárdenas Galindo**
- ID 9** 13:00-13:20 B. Zerroumda, Hichem Ferhati, Fayçal Djeflal and A Bendjerad.
A New Gate-Trench Junctionless SiC Power MOSFET: Performance Assessment and Circuit Level Investigation

- ID 77** 13:20-13:40 Roberto Morales Caporal, Edmundo Bonilla Huerta, Haydee P. Martínez Hernández, Rafael Ordoñez-Flores and Omar Sandre-Hernández.
Artificial Neural Network-Based Control and FCS-MPC for DC/DC and CHB Multilevel Converters for PV Water Pumping Systems
- ID 79** 13:40-14:00 Roberto Morales Caporal.
Finite-Control-Set Model Predictive Control for a Single-Phase Cascaded H-Bridge Multilevel Converter Operating as a Shunt Active Power Filter
- ID 86** 14:00-14:20 Juan Gonzalez-Rivera, Victor Cardenas, Ricardo Alvarez-Salas, Fernando Quiroz-Vazquez and Ana Rivera-Rivera.
Electrical Resilience For The End-User: Strategies Based on Power Electronics Converters
- ID 88** 14:20-14:40 Israel Cuevas, Victor Cardenas, Homero Miranda-Vidales and Janeth Alcala.
Analysis and Evaluation of Phase-Sequence Separators for Sag Detection in Power Electronics Converter Applications

Solid-state materials, Electron Devices and Integrated Circuits (SSM)

- | | | |
|--------------|-------------|--|
| ID | Hour | <p style="color: orange;">Session SSM 1 - Solid-state materials, Electron Devices and Integrated Circuits - VLSI/Simulation</p> <p style="color: blue;">Wednesday October 25th, 2023</p> <p style="color: blue;">16:30-18:30</p> <p style="color: blue;">Room 1</p> <p style="color: green;">Session Chair: Dr. Felipe Gómez Castañeda</p> |
| ID 4 | 16:30-16:50 | <p>Luis Elias Salgado Solano, Oliverio Arellano Cárdenas, Luis Martín Flores Nava, Felipe Gómez Castañeda and José Antonio Moreno Cadenas.</p> <p><i>Bearing Vibrations Classification for Failure Detection with Machine Learning Tools</i></p> |
| ID 7 | 16:50-17:10 | <p>Gerardo Marcos Tornez Xavier, Luis Martín Flores Nava, Felipe Gómez Castañeda and José Antonio Moreno Cadenas.</p> <p><i>FPGA Simulation for Computing Pseudoinverse Matrices</i></p> |
| ID 8 | 17:10-17:30 | <p>Felipe Gómez Castañeda, Luis Martín Flores Nava, Alvaro Anzueto Ríos and José Antonio Moreno Cadenas.</p> <p><i>Computing Pseudoinverse Matrices with Single-Layer Neural Networks</i></p> |
| ID 16 | 17:30-17:50 | <p>Arvi Naranjo, Arturo Sarmiento-Reyes and Wilfrido Calleja-Arriaga.</p> <p><i>CMOS Design of a Memristor Emulator: Model, Simulation, and Results</i></p> |
| ID 23 | 17:50-18:10 | <p>Juan Manuel Torres Arce, Arturo Sarmiento Reyes and Jose de Jesus Rangel Magdaleno.</p> <p><i>Methodology for the implementation of Memristor models in FPGA</i></p> |

- ID 26** 18:10-18:30 Alvaro Anzueto-Rios, Felipe Gómez-Castañeda, Luis Martín Flores-Nava and José Antonio Moreno-Cadenas.
Autoencoder with Orthogonal Variant
- ID** **Hour** **Session SSM 2 - Solid-state materials, Electron Devices and Integrated Circuits - CS**
Thursday October 26th, 2023
9:00-10:00
Room 1
Session Chair: **Dr. Mario Alfredo Reyes Barranca**
- ID 5** 9:00-9:20 A. Maoucha, F. Djeflal and Hichem Ferhati.
Numerical Investigation of a New Double-Absorber Lead-free Perovskite Solar Cell via SCAPS-1D
- ID 50** 9:20-9:40 Diego Alberto Andrés Chavarría, Francisco Javier de Moure Flores, Nicolás Enrique Vázquez Barragán, Sandra Andrea Mayén Hernández, José Santos Cruz and Claudia Elena Pérez García.
Effect of the CdTe absorber layer's thickness synthesized by the RF sputtering on the performance of CdTe photovoltaic windows
- ID 115** 9:40-10:00 Ashok Adhikari, Francisco Javier Cano, Odin Reyes Vallejo, Yazmin Mariela Hernandez Rodriguez, Oscar Eduardo Cigarroa Mayorga, Jaime Vega Perez, Jorge Evaristo Conde Diaz, María de La Luz Olvera Amador and Velumani Subramaniam.
SCAPS Simulation on CIGSe Thin Film Solar Cells: Effect of the Defects
- ID** **Hour** **Session SSM 3 - Solid-state materials, Electron Devices and Integrated Circuits - Materials**
Thursday October 26th, 2023
11:30-13:30
Room 1
Session Chair: **Dr. Arturo Escobosa Echavarría**
- ID 30** 11:30-11:50 Nicolás Enrique Vázquez Barragán, José Santos Cruz, Claudia Elena Pérez García, Sandra Andrea Mayén Hernández, Miguel Meléndez Lira and Francisco Javier de Moure Flores.
Significance of the substrate temperature on the physical properties of RF sputtered Sb₂Te₃ thin films
- ID 56** 11:50-12:10 Analuisa Pérez Calvillo, Karen Rodríguez Rosales, Miguel Meléndez Lira, Sandra Mayen Hernández, José Santos Cruz and Francisco de Moure Flores.
Study on the optoelectronic properties of the heterostructure ZnO/CdS/CdTe for its applications in CdTe solar cells.
- ID 61** 12:10-12:30 Carlos Alfredo Pelcastre Ortega and Mónico Linares Aranda.
Hourglass and Semi-Hourglass layout techniques to improve radiation hardening of NMOS devices.

ID 74	12:30-12:50	Goban Kumar Panneer Selvam, María de La Luz Olvera Amador and Arturo Maldonado Alvarez. <i>Copper-Doped Tin Oxide Thin Films Prepared by Sol-Gel Dip Coating Technique for CO Gas Sensing</i>
ID 80	12:50-13:10	Odin Reyes Vallejo, Rocío Magdalena Sánchez Albores, Ashok Adhikari, Arturo Fernández Madrigal, José Juan Díaz, E.F. Vázquez-Vázquez, Salvador Escobar and Sebastian P.J.. <i>Cuprous oxide thin films deposited by microwave-assisted chemical bath deposition.</i>
ID 94	13:10-13:30	Odin Reyes Vallejo, Rocío Magdalena Sánchez Albores, Ashok Adhikari, Arturo Fernández Madrigal, José Juan Díaz, Wilber Montejó-López, Salvador Escobar and Sebastian P.J.. <i>Cuprous oxide thin films deposited by Chemical Bath Deposition: Effect of temperature and TEA.</i>
ID	Hour	Session SSM 4 - Solid-state materials, Electron Devices and Integrated Circuits - Characterization Thursday October 26th, 2023 17:30-18:30 Room 1 Session Chair: Dr. Arturo Escobosa Echavarría
ID 25	17:30-17:50	Juan Ramon Ramos-Serrano, Maricela Meneses, Mario Moreno, Alfredo Morales, Victor Aca and Ignacio Juárez. <i>Luminescent and electrical properties of PIN diodes based on a-Si1-xCx:H thin films</i>
ID 113	17:50-18:10	Ashok Adhikari, Dwight Roberto Acosta Najarro, Odin Reyes Vallejo, Yazmin Mariela Hernandez Rodriguez, Oscar Eduardo Cigarroa Mayorga, Francisco Javier Cano, Miguel Angel Luna Arias, María de La Luz Olvera Amador and Velumani Subramaniam. <i>Study the properties of Ball-Milled Vanadium Oxide Powders for Gas Sensor Applications</i>
ID 126	18:10-18:30	Jose Josue Rodriguez Pizano, Luz Margarita Balcázar Villatoro and María de La Luz Olvera Amador. <i>Synthesis and characterization of ZnS films deposited by spray pyrolysis</i>

ID	Hour	Session SSM 5 - Solid-state materials, Electron Devices and Integrated Circuits Friday October 27th, 2023 9:00-10:00 Room 1 Session Chair: Dr. Mario Alfredo Reyes Barranca
ID 6	9:00-9:20	Hichem Ferhati, K. Kacha, A. Bendjerad, Fayçal Djéffal and A. Benhaya. <i>Optical and Electrical Properties of Annealed AZO/Ag/AZO Multilayer Deposited Using RF Sputtering Technique</i>
ID 33	9:20-9:40	Hichem Ferhati, K. Kacha, R. Labchek, K. Dibi and Fayçal Djéffal. <i>Performance assessment of a new optimized Junctionless SiSn MOSFET</i>
ID 37	9:40-10:00	Victor Hugo Arzate Palma and Federico Sandoval-Ibarra. <i>Slew-rate Comparison of single-ended amplifiers-the Folded Cascode and the Recycling Folded Cascode</i>