

GMEPE/PAHCE 2022 - (dual mode - virtual and/or in person conference/participant choice)

Conference platform accessible only to registered participants (individual persons who directly received an automated verification of registration).
Note: If a registered person is a co-author of a paper then he/she can directly replace his/her name with one of the co-authors of the same paper on one to one based replacement– to process please email at least 48hours before the conference with all details to including the paper ID# as applicable.
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All registered participants will receive an email, when virtual platform is activated, including a link with individual access password which can be used only with participant's email on a single device.



(Tentative schedule - **check for details before and at the time of conference**)

Pre-conference independent programs (1-4 or more days) and/or specialized independent individual visits

Reference time used: Panama 11 AM, México City 10 AM AM, PST 8 AM, Brasil 1 PM, Central Europe 17 PM, Asia + 13-14 hours

(Program time = Panama time) – see above references

Virtual Platform: Wednesday, Thursday, Friday starting 11:00 AM (Panama Time) (other days – registered participants should check their email as applicable)

Technical Tour/visits and other as indicated for in-person participants

03/21/22 Monday

Independent prearranged working groups meetings using separate platforms

03/22/22 Tuesday

9:00 -12:00 Independent prearranged working groups meetings using separate platforms

13:00 – 15:30 TV1. Technical Tour - Miraflores Locks: Panama Canal To reserve contact: [fernando.merchan\[AT\]utp.ac.pa](mailto:fernando.merchan@utp.ac.pa)

03/23/22 Wednesday

Workshop W1(e) 11:00 -14:00

Use of mHealth technologies to record respiratory activity

Coordinator and Presenter: Dr. Luis Estrada Petrocelli, Institute for Bioengineering of Catalonia (IBEC) | Barcelona, Spain

W 1.1e (25 min): Use of mHealth technologies for respiratory activity recording.

W1.2e (25 min): Acquisition of respiratory signals using a smartphone.

Break 10 min

W1.3e (25 min): Analysis, visualization, and discussion of respiratory recordings obtained with a smartphone.

W1.4e(25 min): Study of respiratory muscle activity using surface electromyography signals.

Break 10 min

W1.5e (25 min): Use of a wireless wearable device for the recording of surface electromyographic respiratory activity.

W1.6e (25 min): Analysis, visualization, and discussion of respiratory electromyographic recordings obtained with a wireless wearable device.

14:00 -14:15 Virtual Coffee Break(e) – networking “Cafe Panama” hosted by Fernando Merchan

14:30- 15:30 Panel(e) : Research and Education in Biomedicine, Biosciences and Biotechnology in Panama. Mairim Solis (Instituto Conmemorativo Gorgas de Estudios de la Salud); Jay Molino (Universidad Especializada de las Americas); Marisin Pecchio (Instituto de Investigaciones Científicas y Servicios de Alta Tecnología de Panamá (INDICASAT)); Javier Sanchez-Galan (Universidad Tecnológica de Panamá); Ernesto Ibarra (IEEE EMB Panama)

Session S1-in person (e/s)

15:30 – 17.00 Signal and Image Processing

IDs: 119EAep, 109EBsp, 132EAsp, 121SBsp, 122EBsp, 125EBsp

Session Co-chairs: Fernando Merchan and Mauricio Hernandez

15:30 – 15:45 (119EAep) Control of a Simulated Terrestrial Vehicle Through the Real-Time Processing and Classification of Electroencephalogram Data

Guerra-Adames, A.; Cáceres, D.; Merchán, F.

15:45 – 16:00 (109EBsp) Real-Time Estimation of Alternative Stress Index for Low-Cost, Mechanical Ventilators for Emergency Use

Caballero, R.; Gutiérrez, R.; Jaramillo, A.; Martínez, A.; von Chong, A.

16:00 – 16:15 (132EAsp) Machine learning-based approaches to predict adherence to continuous positive airway pressure (CPAP) in patients with obstructive sleep apnea (OSA)

Villanueva, J.; Lemus, M.; de los Ríos, E.; Escorcía, J.; Borja, G.
16:15 – 16:30 (121SBsp) MovGis: Plataforma web para la gestión de historias clínicas en fisioterapia
Alarcón-Aldana, A.; Callejas-Cuervo, M.; Bastos-Filho, T.; Martinez-Bautista, L. E.; Rubio-Barreto, C. M.
16:30 – 16:45 (122EBsp) Application of model predictive control and moving horizon estimation for the development of closed-loop inhaled anesthetics administration
Sánchez R., F.; Hernández V., A. M.
16:45 – 17:00 (125EBsp) Protocol Proposal for the Mechanical Evaluation of a Soft Robotic Exoskeleton Using an Optical Motion Capture System
Velez-Guerrero, M. A.; Callejas-Cuervo, M.; Álvarez, J. C.; Mazzoleni, S.; López R., A. M.

03/24/24 Thursday

8:00 -10:30 Technical Visit; TV2 Automatized Pharmacy and Medicine Storage Facilities of Hospital National Oncological Institute (Instituto Oncológico Nacional) To reserve contact: fernando.merchan[AT]utp.ac.pa

11:10 – 11:30 AM. Opening (e) Dr. Fernando Merchan; Ing. **Hector Montemayor, Rector**; Dr. Chris Druzgalski, Dr. Héctor Poveda, Dr. Javier Sánchez-Galán, Dr. Lorenzo Leija Salas, Dr. Ron Leder, Dr. Fabiano Peruzzo Schwartz, Dr. Ivonne Bazan-Trujillo, Dr. Vesna Zeljkovic, Dr. Raquel Martínez-Valdez, Rubén Pérez Valladares, Dr. Citlalli Trujillo-Romero,

11:30 – 12:10 KP1e Keynote Presentation METAVERSE: Perspectives in Health Care

Dr. **Fabiano Schwartz**, Professor and Director of the Master's Program in Legislative Power, Chamber of Deputies, Brasilia, Brazil

12:10 -12:30 Discussions – networking (e) “Café Brazil” hosted by Fabiano Schwartz

12:30 – 12:45 Virtual Coffee Break (e) – networking “Café Panama” hosted by Fernando Merchan

Session S2-e

12:45 – 13:45 Clinical Applications and Image Processing

IDs: 101EBe, 117EBe, 118EBe, 130EBe

Session Co-chairs: Vesna Zeljkovic and Percy Nohama

12:45 – 13:00 (101EBe) Streamlined Quantitative Evaluation of Brain Structural Anomalies in MRI Images

Zeljkovic, V.; Abad Q., Nilia; Druzgalski, C.; Mayorga, P.

13:00 – 13:15 (117EBe) A LabVIEW™-developed Biphasic Functional Multichannel Electrical Stimulator

Dambiski G. de C., I.; Ribeiro K., R.; Nogueira, N. G.; Nohama, P.

13:15 – 13:30 (118EBe) Medical Infrared Thermography of Patients with Temporomandibular Disorders and Masseter Muscle Pain after TENS Stimulation – Case Study

auf der Strasse, W.; Pais C., M.; Faria, C.; Brito M., S; Amarante, J. M.

13:30 – 13:45 (130EBe) Copper nanoparticles impregnation in anti- Coronavirus COVID'19 disposable protective masks

Margraf, G.; Fernandes, B. L.; Nohama, P.

13:45 - 14:15 Virtual Coffee Break(e) – networking “Café Pennsylvania” hosted by Vesna Zeljkovic

14:15-14:55 KP2e Keynote Presentation
Microwaves that kill malaria parasites: A cure for malaria without drugs
Carmenza Spadafora

Instituto de Investigaciones Científicas y Servicios de Alta Tecnología de Panamá (INDICASAT), Panamá (<https://indicasat.org.pa/>)

14:55 – 15:15 Discussions – networking “Café Panama 2” hosted by Carmenza Spadafora

Session S3-s

15:15 – 16:15 Selected Specialized Topics in BME

IDs: 104EBs, 107EBs, 111SBs, 120SBs

Session Chair: Lorenzo Leija

15:15 -15:30 (104EBs) Effects of Conditioned Media from Cell Cultures Stimulated with LIPUS on the Viability of Retinal Neurons and Müller Glia

Poblete-Naredo, I.; Leija, L.; Vera, A.; Gutierrez-Martinez, J.; Gutierrez, M. I.

15:30 – 15:45 (107EBs) 3D virtual reconstruction of RF applicators positions in a bone hyperthermia therapy; towards a hyperthermia treatment planning

Serrano D., D. G.; Trujillo R.; C. J.; Leija S., L.; Vera H., A.

15:45 – 16:00 (111SBs) Binaural sound stimulation at pink noise frequencies to reduce sleep consolidation time and its effects on bispectral index (BIS)

Medellín S., A. E.; Moutadi, F.

16:00 – 16:15 (120SBs) Genome-wide association of Diabetes Mellitus Type 2 in mitochondrion genome

Valdez, J. A.; Mayorga, P.; Villa, C.; Villa, R.

16:15 – 16:30 Virtual Coffee Break(s) – networking “Café Mexico” hosted by Lorenzo Leija

03/25/22 Friday

8:00 – 10:30 Technical Visit; TV3. National Teleradiology Project of Caja del Seguro Social To reserve contact: fernando.merchan[AT]utp.ac.pa

Session S4-s

11:00 -12:00 New Proposals for Clinical Applications

IDs: 102EBs, 126EBs, 131EAs, 133EAs

Session Chair: Raquel Martinez

11:00 -11:15 (102EBs) MASI ventilator: Implementing peruvian technology in regions at high altitude

Zumaeta, K.; Urdiales, L.; Huaman, E.; López, A.; Hinojosa, K.

11:15 – 11:30 (126EBs) Energy expenditure in lower limb amputees with prosthesis

Bermudez J., D. A.; Lopez A., R.; Reyna C., M. A.; Camarillo; M. A.; Bravo Z., M. E.

11:30 – 11:45 (131EAs) Development of a prototype system to monitor motor symptoms in people with Parkinson's disease

Peña, L.; Sáez, Y.; Collado, E.

11:45 – 12:00 (133EAs) Design of a Multifunctional Low-Cost Hand Prosthesis

Borja, G.; de los Ríos, E.; Dominguez, M.; Fabregas, J.; Barrios, D.

12:00 - 12:15 Virtual Coffee Break(e/s) – networking “Café Chiapas” hosted by Raquel Martinez

12:15 – 12:55 KP3e Keynote Presentation

Magnetic stimulation of the facial nerve as an emergency treatment for stroke

Dr. **Emilio Sacristan**, Professor of Biomedical Engineering and Director of the National Center for Medical Instrumentation and Imaging Research, CI3M, at the UAM-Iztapalapa, Mexico.

12:55 – 13:15 Discussions – networking “Café Mexico” hosted by Emilio Sacristan

Session S5-s

13:15 – 14:30 Artificial Intelligence and Signal Processing

IDs 103SBs, 123EBs, 127SBs, 112EBs, 124EBs

Session Chair: Ivonne Bazan

13:15 – 13:30 (103SBs) CNN Networks to Classify Cardiopulmonary Signals
Mayorga-Ortiz, P.; Valdez-Gonzalez, J. A.; Druzgalski, C.; Zeljkovic, V.; Quintero-Lopez, L. A

13:30 – 13:45 (123EBs) Experience of Use of an Artificial Neural Network as an Auxiliary in the Physical Fitness Classification of Taekwondo Athletes from Mexico City
Vega-Martinez, G.; Mirabent-Amor, D.; Figueroa-Cavero, F.; Pegueros-Pérez, A.; Franco-Sánchez, J. G.

13:45 – 14:00 (127SBs) Estimation of reference values for the evaluation of respiratory function in infants and adults from Mexicali, Baja California, Mexico
Barreras C., O. E.; Reyna C., M. A.; Lopez A., R.

14:00 – 14:15 (112EBs) Computer System for the Analysis of Cardiac Contraction Synchrony

León H, M. P.; Jiménez A., L.; Vallejo, E.; Valdés-Cristerna, R.; Bojorges V., E

14:15 – 14:30 (124EBs) A Mechanical Power Calculation for Different Kicks in Taekwondo Elite Athletes from Mexico City

Mc.Manus, K. C.; Quiñones-Urióstegui, I.; Bueyes-Roiz, V.; Anaya-Campos, L. E.; Velasco-Acosta, P. J.

14:30 - 14:45 Virtual Coffee Break (e/s) – networking “Café Aguascalientes” hosted by Ivonne Bazan

14:45 -15:25 KP4e Keynote Presentation

Medical Engineering: a merger and re-foundation

Prof. **Franco Simini**, Universidad de la República, Uruguay

15:25 -15:35 Discussions – networking “Café Uruguay ” hosted by Franco Simini

Session S6-s

15:35 – 16:35 Computational simulation and modeling

IDs 106EBs, 108EBs, 128EBs, 129EBs

Session Chair: Citlalli Trujillo

15:35 – 15:50 (106EBs) FEM modeling to evaluate the effect of plaque formation over the temperature and blood flow

Avila C., D.; Gutiérrez M., J.; Leija S., L.; Vera H., A.; Gutiérrez V., M. I.

15:50 – 16:05 (108EBs) Modelling and Cross-Correlation Analysis of Two Sets of

Ideal Ultrasonic Signals for Non-invasive Temperature Estimation in Ablation Temperatures

Cortes, F.; Vera H., A.; Leija S., L.; Ortega P., R.; Ramos F., A.

16:05 – 16:20 (128EBs) Computational Modeling of an Elastography Technique Based on Measurements of the Multilayer Wave Propagation Shear Velocity: Preliminary Results

Rodriguez M., Z.; Leija S., L.; Vera H., A.; Gutierrez V., M.; Negreira, C.

16:20 – 16:35 (129EBs) Simulation proposal of a transcranial focused magnetic stimulation system

Medellin S., A. E.; Vera H., A.; Leija S., L.; Gutierrez V., M. I.; Trujillo R., C. J.

16:35– 16:50 Virtual Coffee Break (e/s) – networking “Café Mexico ” hosted by Citlalli Trujillo

16:50 – 17:10 Closing (e) Discussions – networking “Café Global ” hosted by Dr. Fernando Merchán, Dr. Héctor Poveda, Dr. Javier Sánchez-Galán, Dr. Lorenzo Leija Salas, Dr. Ron Leder, Dr. Fabiano Peruzzo Schwartz, Dr. Ivonne Bazan-Trujillo, Dr. Vesna Zeljkovic, Dr. Raquel Martínez-Valdez, Rubén Pérez Valladares, Dr. Citlalli Trujillo-Romero, Dr. Chris Druzgalski

03/26/26 Saturday

9:00 -10:30 Technical Visit; TV4 RadioFarmacia Centroamerica S.A.

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Starting 11:00 AM Independent prearranged working groups meetings using separate platforms

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