PROGRAM

16th International Conference

on

Operations Research

Havana (Cuba), March 5-8, 2024

Organized by

Universidad de La Habana
Université Paris 1, Panthéon-Sorbonne

Co-sponsors

Sociedad Cubana de Matemática y Computación-

Asociación Cubana de Investigación Operacional

Asociación Latinoamericana de Investigación Operativa

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Plenary speakers

Jean-Marc Bardet (SAMM, University Paris 1 Panthéon-Sorbonne, France).
Dagmar García Rivera (Cuba)
Jérôme Lacaille (Safran Aircraft Engines, France)
Alice Le Brigant (SAMM, University Paris 1 Panthéon-Sorbonne, France).
Eva Löcherbach (SAMM, University Paris 1 Panthéon-Sorbonne, France).
Juan Tejada (Universidad Complutense de Madrid, Spain)
Begoña Vitoriano (Presidente de la sociedad española de IO, Universidad Complutense, Madrid, Spain)

16th ICOR's Tutorials

	Tutorial: Applications in statistics with R By Bernhard Fiedler, Hannelore Liero and Toni Luhdo (Postdam University)	**Contraparte: Yanetsi Rodriguez**
29 February 14:00-15.30	Session 1 Introducer: Yanet García Serrano	Sala Francofonía .(Building Poey, Havana University)
4 March 14:00-15.30	Session 2	Sala Francofonía .(Edificio Poey, Havana University
11 March 14:00-15.30	Session 3	Sala Francofonía .(Edificio Poey, Havana University

	Tutorial: **Non Parametic Methods in Biostatistics**. By Faniaha Dimby Solohaja Tanantsoa (SAMM, Université Paris 1).	**Counterpart: Yanetsi Rodriguez**
4 March 9:00-10:30	Session 1 Introducer: Yanet García Serrano	Sala Francofonía .(Building Poey, Havana University)
10:30-11:00	**Coffee Break**	
11:00-12:30	Session 2	Sala Francofonía .(Edificio Poey, Havana University)
6 March 14:00-15.30	Session 3	Sala Francofonía .(Edificio Poey, Havana University)

	Tutorial: New methods based on Large Language Models vs Statistical Methods for NLP: a comparison on topic modeling task. By Jean Ch. Lamirel, (University of Strasbourg).	**Contraparte: Alberto Fernández**
5 March 14:00-15.30	Session 1 Introducer: Alberto Fernández	Room Post grade. Building Poey, Havana University)
15:30-16:00	**Coffee Break**	
16.00-17:30	Session 2	Room Post grade. Building Poey, Havana University)
6 March 16.00-17:30	Session 3	Room Post grade. Building Poey, Havana University)
7 March 14:00-15:30	Session 4	Room Post grade. Building Poey, Havana University)
15:30-16:00	**Coffee Break**	
16.00-17:30	Session 5	Room Post grade. Building Poey, Havana University)

Workshop Pre-16th ICOR-:
Diálogo con la Empresa en Apoyo a la Toma de Decisiones
(Official language: Spanish)

8:15 – 9:00 am: Registro

9:00 am Apertura:

Palabras de Bienvenida del Decano de la Facultad de Matemática y Computación y presidente del Comité Organizador de la 16ta Conferencia Internacional de Investigación Operacional, Prof. Wilfredo Morales Lezca.

Palabras de la presidenta del Comité Internacional de Programa de la 16ta Conferencia Internacional de Investigación Operacional Prof. Sira María Allende Alonso

9:30 – 11am De la Universidad a la Empresa: Iniciativas y Experiencias

 Sobre el proyecto del Programa Nacional de Ciencias Básicas *Modelos y Métodos Matemáticos para la Toma de Decisiones*, (Facultad de Matemática y Computación, Universidad de la Habana)

Prof. Dr. Antonio Alonso Ayuso (Universidad Rey Juan Carlos, España). *Aplicaciones de la IO y la Ciencia de los Datos en la Industria. Experiencias del DSLAB de la Universidad Rey Juan Carlos en la aplicación de los modelos y métodos matemáticos en la toma de decisiones.*

10:00- 10:15: Pausa para Café

Prof. Dr. Didier Aussel (Universidad Perpignan, Francia): *De cómo la Teoría de Juegos puede ayudar a las empresas en el manejo de la energía y los recursos naturales*

Prof. Dr. Emilio Carrazosa (Universidad de Sevilla, España). *La red MATH-IN un puente entre las matemáticas de la universidad y la empresa*

11.00am -1: 00pm: **De la Empresa a la universidad: apoyo para el análisis y solución de problemas**.

Un espacio para que los actores económicos participantes pueden presentar problemas que desean resolver o aspectos de su gestión a mejorar tomando adecuadas decisiones. Discusión en colectivo

1 pm-2pm: Almuerzo

2pm-3:00pm: Trabajo en comisiones según temáticas identificadas. Objetivo: planear posibles acciones de colaboración

3:00pm Relatoría de las actividades del taller. Temas discutidos. Posibles acciones a acometer.

 Pincelada musical y Café de despedida

9:00-10:00: **Opening Address of 16th ICOR**.
Room: *Salón 290 Aniversario* **Building Enrique José Varona**

10:00-11:00 **Plenary Lecture***: Statistical analysis and mathematical models in the clinic development of the Cuban vaccines Soberana againt the SARS COV 2 virus* (**Dagmar Garcia Rivera, Cuba**)
Room*: Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Marie Cottrell

11:00-11:30 Coffee Break

11.30-12:30 **Plenary Lecture**. *A criterion for estimating the largest linear homoscedastic zone in Gaussian data* (**Jean Marc Bardet, France**)
Room*: Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Vivian Sistachs

Lunch Break: *Casa de la Federación Estudiantil Universitaria.* (Avenida Universidad Street)

Session: Recent and forthcoming PhD
Room: Sala Francofonía Building Felipe Poey
Chair: Gemayqzel Bouza Allende

Time	Name	Title
14:00-14:30	PhD. D. Valdés	Numerical strategy for the construction of wavelets adapted to one- and two-dimensional patterns
14:30-15:00	C. Chavez	Ridge regularization for spatial autoregressive models with multicollinearity issues
15:00-15:30	**Coffee Break**	
15.30-16:00-	P. Juarez	New proposals for randomized response techniques for scrambling the response to sensitive questions in sample surveys
16.00 16:30	J. Estrada	Analysis of combined SIT-SIR mosquito population and human population epidemiology model
16.30-17:00	F.S. Naranjo	High order local linearization methods for the numerical integration of large systems of ordinary differential equations: an overview
17:00-17:30	PhD J. P Consuegra	Bias Mitigation for Fair Automation of Classification Tasks

Session: IA &applications on Life Sciences
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Chair: Lucia Fernández

Time	Speaker	Talk
14:00-14:20	N. Chávez	Artificial intelligence techniques apply to livestock in the farm "El Guayabal", Cuba
14:20-14:40	D. Pineda	A mobile app for detecting potato crop diseases
14:40-15:00	M. E. Ruiz	Application of drones in international and Cuban agriculture. A review
15:00-15:20	**Coffee Break**	
15:20-15:40	L. Fernández	Mathematical models and smart agriculture tools in the description of agricultural processes. UNAH-Guayabal farm integration
15:40-16:00	R. Sánchez	Zero-shot approaches for knowledge extraction from natural language
16:00-16:20	L. Zerquera	Meta-Learning for homogenous AutoML

Session: Bio Mathematical models
Room 1
Chair: Wilfredo Morales

Time	Speaker	Title
14:00-14:20	R. Guinovart	Mathematical models for the study and tracking of infectious diseases, exploring the quantitative and qualitative aspects

14:20-15:00 **Session Electronic Posters on Bio Mathematical models**
Room 1
Chair Raul Guinovart

Speaker	Title
C. Gonzalez	Hopf bifurcation in an epidemic model with cubic incidence rate
W. Morales	Mathematical models in the cuban public health system, policies to stand up against COVID-19
M Sabater	Model of tumor growth in Gliomas. Survival analysis in virtual patients
A. Pérez	Model of the angiogenesis process induced by a breast tumor
E. Alfonso	Computer simulation for dynamics of pathogens transmitted by vectors

15:00-15:20 **Coffee Break**

15:30-16:20: **Session Electronic Poster on Softwares development.**
Room 1
Chair: Alberto Fernández

Speaker	Poster
A. Garcia	Extension on NGAT and Visualngat: Prohibited turns, import and export
P. A. Monteagudo	Methodology and quantitative model for the design and improvement of production systems
K. Talavera	Assessment of cognitive abilities of various LLMs
D. Montalvo	Simulating rumor diffusion in social networks
K. Villalobos	Implementation of robust distances on the framework NGAT.

17:30 Welcome Reception: *Casa de la Federación Estudiantil Universitaria.* (Avenida Universidad Street)

9:30-10:30: **Plenary Lecture:** *Aeronautic Data Analysis Use Case in Safran Airjercraft Engines.Application of doctoral research for new turbofan programs* (**Jérôme Lacaille**)
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Alberto Fernández

10:30-10:50: **Coffee Break**

10:50-11:50: **Plenary Lecture:** *Clustering probability distributions using the Fisher-Rao metric* (**Alice Le Brigant**)
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Carmen Viada

11:50-12:30 **Session On software use**
Room 1
Chair: Berhard Fielder

Time	Speaker	Title
11:50-12:10	J. L. Rueda	Methods for non-probability estimation in R software
12:10-12:30	B. Cobo	Increasing adherence to smoking cessation treatment and increase physical exercise by an app

Lunch Break: *Casa de la Federación Estudiantil Universitaria.* (Avenida Universidad Street)

Session: Biostatistics
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Chair: Carlo Bouza

Time	Speaker	Talk
14:00-14:20	A. Seuc Ho	Consistency of Diabetes Epidemiologic Indicators
14:20-14:40	Y. Garcia	Estimates of consistent epidemiological indicators and burden of hypertension disease in Cuba, 2019
14:40-15:00	C. Viada	Predictive probability software and its application in clinical trials
15:00-15:20	**Coffee Break**	
15:20-15:40	R. Uranga	Fitting Nested Models with application to clinical trials
15:40-16:20	L. Sanchez	Predictive biomarkers of the effect of CIMAVAXEGF: Are they related with long -term survival in advanced lung cancer?
16:20-16:40	C. Viada	Software to find the cutoff point that best separates survival curves
16:40-17:00	Y. Tejeda	Restricted cur matrix decomposition in cancer DANN microarray data classification

Session Numerical Analysis
Room 1
Chair: Ángela León

Time	Speaker	Talk
14:00-14:20	V. Hernandez	Numerical solution of the equations modelling the heating induced by ultrasound in biological tissues
14:20-14:40	L. E.Fernández	Quasi-loop structure for a new similarity index between images. An application to Mean Shift Iterative Algorithm.
14:40-15:00	L. D. González	Metapopulation model of Covid-19 in Havana considering workers movility
15:00	**Coffee Break**	

19:00 Conference Dinner (Hotel Capri)

<div align="center">**Thursday March 7th**</div>

9:30-10:30: **Plenary Lecture.** *Optimisation and competition in information diffusion* (**Juan Tejeda**)
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Gemayqzel Bouza

10:30-10:50**: Coffee Break**

10:50-11:50: **Plenary Lecture** *Metastability for large systems of interacting neurons* (**Eva Löcherbach joint work with Pierre Monmarché**)
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Carmen Viada

Session Applications in Social and Economic Studies.
Room 1
Chair J.F. Garcia

Time	Speaker	Title
11:50-12:10	J. Gámez	Banca Comercial: distribución de activos entre la especulación bursátil y los créditos productivos
12:10-12:30	I. Caamal	Behavior of average rural price of rice in Mexico

Lunch Break: *Casa de la Federación Estudiantil Universitaria.* (Avenida Universidad Street)

Session Applications in Social and Economic Studies
Room 1
Chair: B.A. Wickstroem

Time	Speaker	Title
14:00-14:40	B. A. Wickstroem	Determining the size of jurisdictions for implementing language rights
14:40-15:00	L. R. Cupil	Influence of anthropogenic activities on land use changes in the Puxcatán river sub-basin, Tacotalpa Tabasco.
15:00-15:20	**Coffee Break**	
15:20-15:40	Ma. A. Pérez	Expressions of regional development: relationship of labor flexibility and social progress from Tabasco
15:40-16:00	J.F. Garcia	Personal Characteristics of Rural Women Entrepreneurs
16:00-16:20	A. J. Pérez	Situational Diagnosis of Social Responsibility In Tabasco's Higher Secondary Education Institutions
16:20-16:40	E. Rosas	Determinantes de los diferenciales de bonos soberanos en países seleccionados de América Latina. Un estudio con datos de panel

Session Optimization.
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Chair C. Tammer

Time	Speaker	Talk
14:00-14:40	C. Tammer	Duality assertions in vector optimization w.r.t. relatively solid convex cones in real linear spaces
14:40-15:00	G. Bouza	Locating a new facility with a rectangular prohibited zone
15:00-15:20	**Coffee Break**	
15:20-15:40	D. Sackmann	Waste collection routes identified by an ant colony algorithm
15:40-16:00	A. Monzón	Automatic validation system for VRP models
16:00-16:20	R. García	Automatic evaluation of Vehicle Routing Problem solutions using Automatic Differentiation techniques

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Friday March 8th

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9:00-10:00: **Plenary Lecture:** *Decision aid models for the social good: humanitarian logistic* (Begonna Vitoriano)
Room: *Salón 290 Aniversario* **Building Enrique José Varona**
Introducer: Sira Allende

10:00-10:20: **Coffee Break**

Session Environment Problems & Human Welfare
Room *Salón 290 Aniversario* **Building Enrique José Varona**
Chair B. Vitoriano

Title	Speaker	Talk
10:20-10:40	B. Fiedler	Change-Point detection for parametric models with applications in nature
10:40-11:00	Y. Vasquez	Environmental and tourist evaluation of the natural and cultural resources of the Batabano municipality
11:00-11:20	T. M. Gómez	Stadistical downscaling of the ECMWF model over Cuba for substational precipitation forecasting using the GAN neural network
11:20-11:40	P. Roura	Homogeneity analysis on climatological data of the provincial weather stations on the period of 1951 to 2022.
11:40-12:00	Y. Fernández	Modelo estocástico en dos etapas para la evacuación de personal ante emergencia meteorológica severa
12:00-12:20	R. S. Borges	Machine learning-based model for the prognosis of postoperative gastric cancer. A vision from the Cuban population
12:20-12:40	R. S. Borges	Model based on machine learning for the prediction of axillary infiltration in patients with breast cancer

Session Mathematical Statistics & Probability
Room 1
 Chair: Marie Cottrell

	Speaker	Talk
10:20-10:40	C. Bouza	RSS Ratio type estimation for Yadav-Baghel´S redefined class
10:40-11:00	S. T. F. Dimby	On the comparison of mean and median
11:00-11:20	R. Fernández	Statistical analysis of hypercomplex stochastic proce methods for non-probability estimation in R software
11:20-11:40	J.J. Diaz	Stochastic Resetting in the Two-State Diffusion Model
11:40-12:00	A. Mesa	Cancer segmentation by entropic analysis of ordered gene expression profiles
12:00-12:20	J. Fortunè	A study of student achievement behavior
12:20-12:40	J.-C. Lamirel	Are new methods based on Large Language Models vs Statistical Methods for topic modeling? A comparison on topic modeling task

12:40-: Closing Session of the Conference.

Social activity: *Casa de la Federación Estudiantil Universitaria.* (Avenida Universidad Street).