



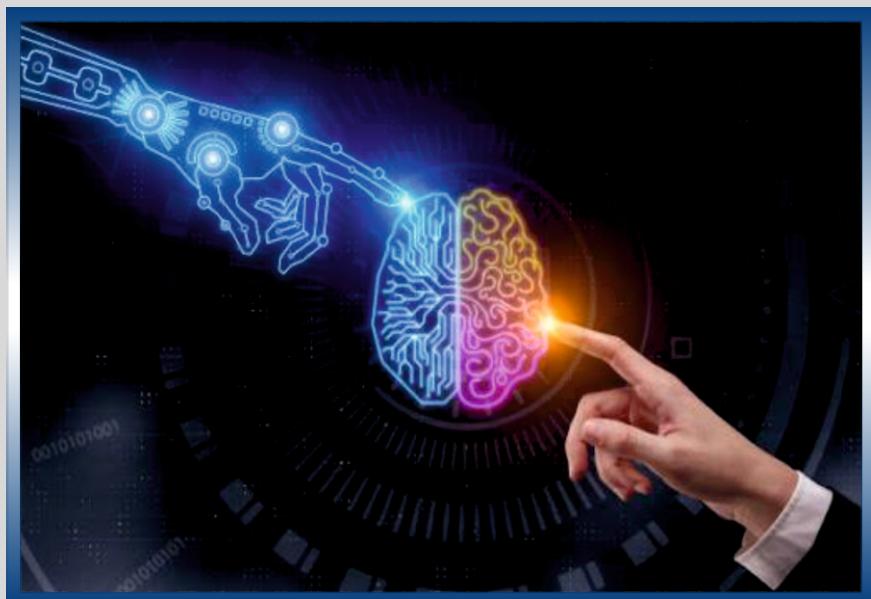
المدرسة الوطنية للمعلوم التكنولوجية - أكادير
Ecole Nationale des Sciences Appliquées - AGADIR

Laboratoire d'Ingénierie des Systèmes et Technologies de l'Information (LISTI)

Conference on Artificial Intelligence and Mathematics for Challenges in Applied Sciences and Engineering

CAIMCASE'2021

10–12 December 2021
ENSA Agadir





CAIMCASE2021



المدرسة الوطنية للعلوم التطبيقية - أكادير
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ÉCOLE NATIONALE DES SCIENCES APPLIQUÉES - AGADIR

Program Schedule

Plenary Conferences

Day 1: Friday, December 10th, 2021

8:30 am to 9:00 am	
<u>Registration: Mahdi Elmandjra Amphitheater</u>	
<u>Opening Session & Plenaries</u>	
9:00 am to 9:30 am	Opening Session : Mahdi Elmandjra Amphitheater Speakers : <ul style="list-style-type: none">• Prof. Abdelaziz Bendou, President of Ibn Zohr University• Prof. Mohamed Wakrim, Director of ENSA-Agadir• Prof. Hassane Bouzahir, Head of Laboratory LISTI at ENSA-Agadir
9:30 am to 10:15 am	Plenary Conference 1 : Theme : Natural Language Processing and Social Sciences Speaker : Dr. Meriem Benhaddi Chairs: Dr. Hamid Aksasse and Prof. Hassane Bouzahir
10:15 am to 11:00 am	Plenary Conference 2 : Theme : Big Data, AI and Robotics for Predictive Applications Speaker : Dr. Hiba Asri Chairs: Dr. Hamid Aksasse and Prof. Hassane Bouzahir
11:00 am to 11:30 am Welcome drinks	
11:30 am to 12:15 pm	Plenary Conference 3 : Theme : Periodic Solutions for Infinite Dimensional Dynamical Systems: Past and Present Speaker : Prof. Khalil Ezzinbi Chairs: Dr. Hamid Aksasse and Prof. Hassane Bouzahir
12:15 pm to 1:00 pm	Plenary Conference 4 : Theme: Stochastic Modelling and Statistics for Epidemic Models. Speaker : Dr. Mohamed El Fatini Chairs: Dr. Soukaina Hadiri and Prof. Hassane Bouzahir
Lunch and Jumu'ah Prayer Time 1:00 pm to 3:00 pm	

Oral Communications

Day 1: Friday, December 10th, 2021

Oral Communications Sessions	
Session 1.1/4: Computer Science, Mahdi Elmandjra Amphitheater Dr. El Mehdi Cherrat, Dr. Hiba Asri and Dr. Azzedine Dliou	
3:00 pm to 3:20 pm	-Système d'Identification en Cascade par Fusion MultiBiométriques et Apprentissage Approfondi. E. Cherrat
3:20 pm to 3:40 pm	-Green Smart Transportation Solutions for Combating Covid-19. N. Chbaik, A. Khiat, A. Bahnasse and H. Ouajji
3:40 pm to 4:00 pm	-Video-based Comparative Study of Activation Function for Action Recognition using 3D Convolution Neural Network. A. Boukdir, M. Benaddy and O. El Meslouhi
4:00 pm to 4:20 pm	-L'impact du Machine Learning sur l'Expérience Client – Exemple de Netflix. M. Loukili, R. El Youbi and F. Messaoudi
4:20 pm to 4:40 pm	-Artificial Intelligence in Digital Marketing. R. El Youbi, M. Loukili and F. Messaoudi
Session 1.2/4: Renewable Energies, Control and Systems, Room K02 Dr. Wissam Jenkal and Dr. Mustapha Laaboubi	
3:00 pm to 3:20 pm	-A Novel hybrid Meta-heuristic/Analytical Approach based on Artificial Intelligence for Photovoltaic Cells Parameter Estimation. D. Benhmamou et al.
3:20 pm to 3:40 pm	-Simulation Study of a Hybrid Photovoltaic Solar Thermal System with Simulink/Matlab. M. Bouzelmad et al.
3:40 pm to 4:00 pm	-Reliability and Performance Upgrading of the Wind Energy Conversion System: Wind Turbine. K. Dahmane, B. Bouachrine, M. Oubella , M. Ajaamoum and E. M. Boulaoutaq
4:00 pm to 4:20 pm	-Control of DC-DC Buck Converter using Sliding Mode Control and Super Twisting Sliding Mode Control: Comparative Study. A. Tighirt and F. El Guezar
4:20 pm to 4:40 pm	-Stochastic Stability Analysis and Power Control for a Standalone Photovoltaic Generator. M. Aatabe, F. El Guezar, A. N. Vargas and H. Bouzahir
4:40 pm to 5:00 pm	-Commande Flou de Type Takagi-Sugeno pour le Suivi du Point de Puissance Maximale d'un Générateur Photovoltaïque. R. Boumdouz et al.

Oral Communications Sessions	
Session 1.3/4: Stochastics and Statistics, Room K01 Chairs: Dr. Lahcen Boulanba and Dr. Imade Fakhouri	
3:00 pm to 3:20 pm	-General Partitioning Algorithm for Computing Markov Chain Steady State Probability. A. Zakrad
3:20 pm to 3:40 pm	-On the Conditional Model in the High Dimensional Data Analysis. M. Alahiane
3:40 pm to 4:00 pm	-On Shrinkage Estimation of Spherical Symmetry with Residual for the General Linear Model under Balanced Loss Functions. L. Hobbad
4:00 pm to 4:20 pm	-Analyse Mathématique Stochastique d'un Modèle de l'Interaction Ville-campagne. L. Boulaasair
4:20 pm to 4:40 pm	-General Decay Stability of Nonlinear Delayed Hybrid Stochastic Systems with Switched Noises. A. Zouine
Session 1.4/4: (Applied) Mathematics, Amphitheater Ibn Al Banna Chairs: Dr. Hicham El Boujaoui and Dr. Abderrazzak Boufala	
3:00 pm to 3:20 pm	-Stabilization of Beam Equation with a Delay Term. S. Boumasmoud and K. Ezzinbi
3:20 pm to 3:40 pm	-Bilinear Boundary Optimal Control of a Kirchhoff Plate Equation. A. Bouhamed, H. Bouzahir and A. Elkabouss
3:40 pm to 4:00 pm	-Radial Basis Functions for Solving Fractional Diffusion-wave Equation. A. Laghzal and H. El Boujaoui
4:00 pm to 4:20 pm	-Introduction to Matrix SIR Arino Models. R. Adenane, F. Avram and D. I. Ketcheson
4:20 pm to 4:40 pm	-AlmostAutomorphic Solutions for Some Nonautonomous Linear Partial FunctionalDifferential Equations. A. Afoukal, K. Ezzinbi and K. Hilal
4:40 pm to 5:00 pm	-Compact Almost Automorphic Weak Solutions of Some PHI-Strongly Monotone Partial Differential Inclusions with Stepanov Almost Automorphic Forcing Terms. M. Ziat, K. Ezzinbi and K. Hilal
5:00 pm to 5:20 pm	-Existence and Regularity of Solutions for Nondensely Defined Partial Neutral Functional Integrodifferential Equations with Infinite Delay J. El matloub, K. Ezzinbi and S. Ghnimi
5:20 pm to 5:40 pm	-Commutativity of Prime Banach Algebras and Differential Identities. M. Moumen and L. Taoufiq
5:40 pm to 6:00 pm	-A Note on Some Kind of Multipliers in Rings. S. Belkadi and L. Taoufiq

Plenary Conferences Day 2: Saturday, December 11th, 2021

Plenary Sessions	
9:00 am to 9:45 am	Plenary Conference 5 : Theme : The Local Time of the Brownian Motion as a Bridge from the Itô's Formula to the Tanaka's Formula and Application in Finance Speaker : Dr. Aissa Sghir Chairs: Prof. Hassane Bouzahir and Dr. Soukaina Hadiri
9:45 am to 10:30 am Online	Plenary Conference 6: Theme : Practical High-Throughput and Noise-Robust SARS-CoV-2 Testing (Online) Speaker : Dr. Bubacarr Bah Chairs: Prof. Hassane Bouzahir and Dr. Hamid Aksasse
10:30 am to 11:00 am Tea Break	
Oral Communications Sessions Day 2: Saturday, December 11 th , 2021	
Session 2.1/4: Finance, Mahdi Elmandjra Amphitheater, Saturday, Dec. 11th 2021 Chairs: Dr. Said Taarabi and Dr. Soukaina Hadiri	
11:00 am to 11:20 am	-An Artificial Neural Network Approach to Financial Market Volatility Forecasting. A. Tahiri, B. Benaid, H. Bouzahir, N. A. M. Khan
11:20 am to 11:40 am	-Impact of Cryptocurrency on the Moroccan Market. B. Touijrat
11:40 pm to 12:00 pm	-Design of an Application to Optimize the Process of Participatory Financing of Housing Sector in Morocco Using Blockchain Technology. R. Diyab and A. Chakir
12:00 pm to 12:20 pm	-Application de l'Intelligence Artificielle pour l'Inclusion Financière A. Laminou and A. Chakir
Session 2.2/4: Information Technologies & Embedded Systems, Room K01 Dr. Wissam Jenkal and Dr. Mustapha Laaboubi	
11:00 am to 11:20 am	-An Overview of AI Algorithms and Hardware Designs for ECG Signal Analysis. B. Bendahlane, W. Jenkal, M. Laaboubi and R. Latif
11:20 am to 11:40 am	-Prediction and Mapping of Meteorological Parameters Based on Nonlinear Spatial Interpolation Modeling for Agriculture Application. A. Yagour et al.
11:40 am to 12:00 pm	-Optimization Metrics for OpenCL Kernels. S. Agharass et al.
12:00 pm to 12:20 pm	-Ambient Ozone Concentrations Modeling in the City of Agadir (Morocco) Using Random Forests. A. Adnane et al.

Oral Communications Sessions	
Session 2.3/4 : Stochastics and Statistics, Room K02 Saturday, December 11th 2021 Chairs: Dr. Rachid Belfadli and Dr. Lahcen Boulanba	
11:00 am to 11:20 am	- On the Large Deviations Principle for some SPDEs. L. Boulanba
11:20 am to 11:40 am	- Statistical Analysis of the Non-ergodic Fractional Ornstein-Uhlenbeck Process with Periodic Mean. R. Belfadli
11:40 am to 12:00 am	- Multidimensional BSDEs with Mixed Reflections and Balance Sheet Optimal Switching Problem. I. Fakhouri
12:00 pm to 12:20 pm	- Infinite Horizon Multi-Dimensional BSDE with Oblique Reflection and Switching Problem. N. Ourkiya
12:20 pm to 12:40 pm	- Backward Stochastic Differential Equations and their Applications in Stochastic Zero-sum Differential Games. K. Oufdil
12:40 pm to 01:00 pm	- A stochastic Hepatitis B Epidemic Model Driven by Lévy Noise. B. Boukanjime and M. El Fatini
Session 2.4/4: Optimization and Graphs, Amphitheater Ibn Al Banna Chairs: Dr. Anouar Lahmdani and Dr. Mohamed Tifroute	
11:00 am to 11:20 am	- Conditional Subgradient Method for Solving Nonsmooth Multi-objective Optimization Problem. A. Lahmdani et al.
11:20 am to 11:40 am	- Problème de Tournées de Véhicules Hybrides Parallèles avec Satisfaction de Clients et Réduction des Emissions. M. Bechar and R. Abounacer
11:40 am to 12:00 pm	- On Labeling the Iterated Mycielski of Graphs with a Condition at Distance Two. K. Dliou, H. El Boujaoui and M. Kchikech
12:00 pm to 12:20 pm	- Almost Automorphic Solutions for Some Evolution Equations through an Optimization Problem. K. Ezzinbi and M. El attaouy
12:20 pm to 12:40 pm	- Solving Nonsmooth Bi-Objective Environmental and Economic Dispatch Problem using Smoothing Techniques. M. Tifroute et al.
12:40 pm to 01:00 pm	- Non-overlapping Domain Decomposition Method for the Solution of Topology Optimization Problem. (Online) O. Raibi, E. Essoufi and A. Makrizi

Plenary Online Conferences Day 3: Sunday, December 12th, 2021

Plenary Online Sessions	
9:00 am to 9:45 am	Plenary Online Conference 1: Theme: Re-analyzing the SARS-CoV-2 Series Using an Extended Integer-valued Time Series Models: Situational Assessment of the COVID-19 in Mauritius. Speaker : Dr. Mamode Khan Naushad Ali Chairs: Prof. Hassane Bouzahir et al.
9:45 am to 10:30 am	Plenary Online Conference 2: Theme: Existence Results for Some Stochastic Functional Integrodifferential Systems Driven by Rosenblatt Process. Speaker : Prof. Mamadou Abdoul Diop Chairs: Prof. Hassane Bouzahir et al.
10:30 am to 11:15 am	Plenary Online Conference 3: Theme: Introduction to Markov Jump Linear Systems with Applications in Engineering. Speaker : Prof. Alessandro N. Vargas Chairs: Prof. Hassane Bouzahir et al.
11:15 am to 11:30 am Tea Break	

Oral Communications Day 3: Sunday, December 12th, 2021

Oral Online Sessions	
3.1. First Online Session 11:30 am to 1:00 pm Chairs : Prof. Hassane Bouzahir et al.	
11:30 am to 11:40 am	-Stochastic Heat Equation with Piecewise Constants Coefficients. A. Zougar
11:40 am to 12:00 pm	-A Delay Mathematical Model for Cholera Transmission. S. Al Shanfari
12:00 pm to 12:20 pm	-The Impact of Predator-prey Speeds on their Dynamics. Q. J. A. Khan et al.
12:20 pm to 12:40 pm	-The Hidden Role of the Pre-Symptomatic Individuals in the Transmission Dynamics of COVID19. M. K. S. Yahyai
12:40 pm to 1:00 pm	-Mathematical Analysis of a Zika Model with Reservoirs and Human Movement K. Imuqrashi
Lunch and Prayer Time 1:00 pm to 2:30 pm	

3.2. Second Online Session 2:30 pm to 6:10 pm

Chairs : Prof. Hassane Bouzahir et al.

2:30 pm to 2:50 pm	-Approximate Controllability for Some Fractional Delay Integrodifferential Evolution Inclusions with Noncompact Resolvent Operator. K. Ezzinbi and M. Elghandouri
2:50 pm to 3:10 pm	-Mathematical Analysis of the Delay Differential Equation Model for the Farm Level Cocoa yield. B. Oluwatosin et al.
3:10 pm to 3:30 pm	-Cognitive Biases in Decision Making - Influences of Artificial Intelligence on Asset Management. R. Arbaoui et al.
3:30 pm to 3:50 pm	-Stability of Landau-Lifshitz-Bloch Equation. M. Moumni
3:50 pm to 4:10 pm	-Critical Current Density and Flux Pinning Force in High Temperature Superconductor. A. Abou El Hassan et al.
4:10 pm to 4:30 pm	-Second-Moment Stability of Markovian Jump Systems with Varying Delays. A. El Hamdi
4:30 pm to 4:50 pm	Break
4:50 pm to 5:10 pm	-Generating Survival Times to Simulate Hazard-based Regression Models with the Presence of Covariates. A. H. Muse, O. Ngesa and S. Mwalili
5:10 pm to 5:30 pm	-High Capacity Reversible Data Embedding Technique using Image Interpolation. A. Labsir et al.
5:30 pm to 5:50 pm	-Application of Machine Learning to Sentiment Analysis. O. Bellar et al.
5:50 pm to 6:10 pm	-Semantic Segmentation of Coastal Upwelling in Ocean Infrared Satellite Images with Deep Fully Convolutional Neural Networks. M. Snoussi, A. Tamim. S. El Fellah and M. El Ansari