

2020 IEEE 6th International Conference on Optimization and Applications (ICOA 2020)

**Beni Mellal, Morocco
20 – 21 April 2020**



**IEEE Catalog Number: CFP20DBA-POD
ISBN: 978-1-7281-6655-1**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20DBA-POD
ISBN (Print-On-Demand):	978-1-7281-6655-1
ISBN (Online):	978-1-7281-6654-4

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of contents

Human and Organizational Factors Maturity Model Development and Implementation in Construction Industry Using Fuzzy Comprehensive Evaluation Method	8
<i>Karim Yousra and Cherkaoui Abdelghani</i>	
Robust trajectory tracking control based on sliding mode of Differential Driving Four-Wheeled Mobile Robot	14
<i>Brahim Moudoud, Hicham Aissaoui and Mohammed Diany</i>	
An Inexact Solution Approach for the Mathematical Program with Complementarity Constraints	19
<i>Hicham Azizi and Abdeslam Kadrani</i>	
Multi-Agent System Based on Machine Learning for Early Diagnosis of Diabetes	25
<i>Imane Chakour, Yousef El Mourabit, Cherki Daoui and Mohamed Baslam</i>	
Numerical simulation of dye-sensitized solar cells performance for local natural dyes	31
<i>Abdelkhalik Aboulouard, Sara Rbihi, Youssef Najih, Mustapha Adar, Mohammed Anas El Abbassi, Ahmed Jouaiti and Benachir Elhadadi</i>	
Impact of Sol aging time on structural, morphological, optical and electrical properties of ZnO coatings	35
<i>Tariq Jannane, Mohamed Manoua, Ahmed Liba, Nejma Fazouan, Mustapha Mabrouki, Abdelmajid Almagoussi, Ahmed El Hichou and Ghizlan El Hallani</i>	
Optimization of ZnO thickness for high efficiency of n-ZnO/p-Si heterojunction solar cells by 2D numerical simulation	40
<i>Mohamed Manoua, Tariq Jannane, Otmane Abouelala, Mohammed Sajieddine, Mustapha Mabrouki, Abdelmajid Almagoussi and Ahmed Liba</i>	
Dose optimization of high dose rate brachytherapy for skin cancer treatment using Harrison-Anderson-Mick applicator	45
<i>Hamza Badry, Lhoucine Oufni, Hmad Ouabi, Rabi Rabi and Hiroshi Iwase</i>	
Optimization of Harvester System in embedded vehicle systems via Bond Graph modeling algorithm	50
<i>Souad Touairi and Mustapha Mabrouki</i>	
Fast Markovian Images Segmentation	56
<i>Meryem Ameer, Cherki Daoui and Najlae Idrissi</i>	
Optimization of Aircraft Operations on Airport Surface	62
<i>Yassine Dabachine, Hamza Taheri, Mohamed Biniz, Belaid Bouikhalene and Abdessamad Balouki</i>	
Static Route Optimization For Waste Collection In Mecca City	67
<i>Abdullah Alwabli, Ivica Kostanic and Saeed Malky</i>	

Upgraded sensorless direct torque control using MRAS-sliding mode observer for asynchronous motor	74
<i>Soukaina El Daoudi, Loubna Lazrak and Mustapha Ait Lafkih</i>	
Optimization by genetic algorithm of an ice crystallization for a new hybrid desalination process	79
<i>Ibtissam Baayyad and Naoual Semlali Aouragh Hassani</i>	
Mechatronic modeling and control of energy recovery in motorcycle tires	83
<i>Souad Touairi and Mustapha Mabrouki</i>	
Reengineering ILE: towards a model for adapting the learning path	88
<i>Yassine Ouali and Ilham Oumaira</i>	
Analysis of Profile Shift Factor's Effect on Bending Stress of Spur gears Using The Finite Element Method	94
<i>Samyia Belarhzal, El Mostapha Boudi, Aziz Bachir and Yassine Amadane</i>	
Image Optimization using Improved Gray-Scale Quantization for Content-Based Image Retrieval	100
<i>Mahmoud Artemi and Haiming Liu</i>	
Dissimilarity measure for community discovery in dynamic networks	106
<i>Khawla Asmi, Dounia Lotfi and Mohamed El Marraki</i>	
Micromechanical modeling of non-ageing fractional viscoelastic reinforced composites	112
<i>Nada Tassi, Mohamed El Kouri, Abderrahmane Bakkali and Lahcen Azrar</i>	
Adaptive algorithm for solving the four index fuzzy transportation problem	118
<i>Manal Hedid, Rachid Zitouni and Sami Labdai</i>	
Detection of anomaly in socio-economic databases, by Benford probability law	123
<i>Mohammed Kaicer and Said Timjerdine</i>	
Optimal Substation Location Of A Wind Farm Using Different Metaheuristic Algorithms	127
<i>Chakib El Mokhi and Adnane Addaim</i>	
Segmentation and Classification of Cervical cancer	133
<i>Ichrak Khoulqi and Najlae Idrissi</i>	
Comparing the Legendre Wavelet filter and the Gabor Wavelet filter For Feature Extraction based on Iris Recognition System	140
<i>Muktar Danlami, Sapiee Jamel, Sofia Najwa Ramli and Siti Radhiah Megat Azahari</i>	
Geometric Tolerancing using the Jacobean torsor	146
<i>Mustapha Elmouden, Mouhssine Chahbouni, Driss Amegouz and Said Boutahari</i>	
Metaheuristic for optimizing targeted offers in Direct Marketing	151

Moulay Youssef Smaili and Hanaa Hachimi

Dual intuitionistic fuzzy linear systems 156
Hafida Atti, Said Melliani, Mohamed Oukessou and Lalla Saadia Chadli

Approximation of a fuzzy number by a fuzzy element of fuzzy algebra 161
Idris Bakhadach, M'Hamed Elomari, Said Melliani, Lalla Saadia Chadli and Hamid Sadiki

An Enhanced Approach in Detecting Object Applied to Automotive Traffic Roads Signs. 166
Anass Barodi, Abderrahim Bajit and Mohammed Benbrahim

A mathematical fuzzy model to giving up smoking 172
Abdelati El Allaoui, Said Melliani and Lalla Saadia Chadli

A Numerical Study Of Indoor Air Quality In A Ventilated Room 178
Rabi Rabi, Oufni Lhoucine and Badry Hamza

New Approach to Face Recognition Using Co-occurrence Matrix and Bayesian Neural Networks 187
El Houssaine Hssayni and Mohamed Ettaouil

Identification And Assessment Of Risks Affecting Sociotechnical Systems Resilience 192
Saloua Said, Hafida Bouloiz and Maryam Gallab

LandS-inspired algorithm for MPPT purpose 202
Mostapha Oulcaid, Hassan El Fadil and Zakariae El Idrissi

The Integrated Production-Inventory-Routing Problem with remanufacturing under carbon cap-and-trade 208
Zakaria Chekoubi, Wajdi Trabelsi, Nathalie Sauer and Ilias Majdoutline

Theoretical evaluation of ibuprofen and paracetamol by Fukui and Parr functions descriptors : DFT Study 215
Hayat El Ouafy, Latifa Amini, Said Zouitina, Anas Chraka, Amin Moubarik, Khalifa El Harfi, Mohamed Mbarki and Mohammed El Idrissi

Intuitionistic Fuzzy Partial Functional Differential Equations with Integral Boundary Conditions 220
Bouchra Ben Amma, Said Melliani and Lalla Saadia Chadli

Digital agriculture in Morocco, opportunities and challenges 225
Brahim Jabir and Noureddine Falih

Solving Generalized Heat Equation By Mean Generalized Fixed Point 230
Abdellah Taqbibt, Said Melliani, Lalla Saadia Chadli, Mohamed Chaib and M'Hamed Elomari

Stability analysis and H_∞ performance for nonlinear T-S fuzzy systems with time-varying delay 237
Idrissi Said

On the Computation of the Correlation Matrix Implied by a Recursive Path Model	241
<i>M'Barek Iaousse, Amal Hmimou, Zouhair El Hadri and Yousfi El Kettani</i>	
Fuzzy fractional neutral equation	246
<i>M'Hamed Elomari, Idris Bakhadach, Said Melliani and Lalla Saadia Chadli</i>	
Application of deep learning for the detection of default in fabric texture	255
<i>Aafaf Beljadid, Adil Tannouche and Abdessamad Balouki</i>	
Solving pencil problem generalized using Cholesky like-decomposition for skew-Hamiltonian matrix	260
<i>Bassour Mustapha</i>	
Coupling Mid Infrared Spectroscopy to mathematical and statistical tools for automatic classification, qualification and quantification of Argan oil adulteration	266
<i>Aimen El Orche, Mustapha Bouatia, Amine Cheikh, Houda Labjar, Mohamed Maaouni and Mohamed Mbarki</i>	
Electronic and photoelectronic properties of N-(5-indazolyl)-arylsulfonamides molecules: DFT / TD-DFT study	270
<i>Siham Lakrih, Bouchra Mekkaoui, Latifa Laallam and Ahmed Jouaiti</i>	
Annealing effect on cobalt-iron oxide : structural and hyperfine investigations	276
<i>Mohamed Ounacer, Mohammed Sajjeddine and Abdellatif Essoumhi</i>	
Adaptation of various explicit formulas for calculating Darcy-Weisbach friction factor to optimize the modeling of pressure drops during turbulent flow of phosphate slurry through the pipeline	282
<i>Hamza Belbsir and Khalil El Hami</i>	
Optimization by the Response Surface Methodology of Turbidity, Box-Behnken Plan	288
<i>Ghariba Bouazza, Mohamed Assou, El Houssine Chatri and Salah Souabi</i>	
Artificial vision and embedded systems as alternative tools for evaluating beef meat freshness	293
<i>Assia Arsalane, Abdessamad Klilou, Nouredine El Barbri and Abdelmoumen Tabyaoui</i>	
Coupling PCM-based Heat Sinks finite elements model for mechatronic devices with Design Optimization procedure	299
<i>Bessem Debich, Ahmed Yaich, Abdelkhalak Elhami, Wajih Gafsi, Lassaad Walha and Mohamed Haddar</i>	
Network Traffic Analysis using Big Data and Deep Learning Techniques	303
<i>Alaeddine Boukhalifa, Abderrahim Abdellaoui, Hmina Nabil and Habiba Chaoui</i>	
Blood collection supply chain management: A critical review and future perspective	307
<i>Chaimae Mouncif</i>	

Impact of Lean on the optimization of the professional insertion process of newly recruited engineers	314
<i>Amine Hadek, Hind Chaibate, Soumia Bakkali and Souad Ajana</i>	
Application of theoretical prediction to prevent the biocontamination of medical materials	319
<i>Hajar Koubali, Hassan Latrache, Hafida Zahir, Soukaina Soufiani and Mostafa El Louali</i>	
Mobile Devices: A Pricing Approach to Optimize Transmission Strategies	324
<i>Mohamed El Amrani, Hamid Garmani, Driss Ait Omar, Mohamed Baslam and Brahim Minaoui</i>	
Energy quality optimization in smart grids: Faults monitoring by the space vector signature analysis method	330
<i>Youssef Ait El Kadi, Baghli Fatima Zahra and Yassine Lakhel</i>	
Mechatronic Control Model of a Novel Variable Speed Wind Turbine Concept with Power Splitting Drive Train: A Bond Graph Approach	338
<i>Youssef Najih, Mustapha Adar, Abdelkhalk Aboulouard, Zakaria Khaouch, Jamaa Bengourram, Mustapha Zekraoui and Mustapha Mabrouki</i>	
Prediction of magnetocaloric and thermomagnetic properties of amorphous alloy Fe₆₈Cr₁₂Si₈B₁₂	343
<i>Abdelhamid El Boubekri, Sara Tillaoui, Mohammed Sajieddine, Mohammed Sahlaoui, Hassan Lassri and El Hocine Agouriane</i>	
Control of PV-Battery Based Hybrid Water Pumping System Under Sudden Irradiance and Speed Changes	348
<i>Zakaria Massaqa, Abdelouahed Abounada, Abdenabi Brahmi and Mohamed Ramzi</i>	
Evaluation of Radiometric Performances for SMD LEDs under different injection powers supply	354
<i>Malika Ouhadou, Aumeur El Amrani and Choukri Messaoudi</i>	
Optimization of the Process of Parameter Adjustment: Image Processing as a Case Study	359
<i>Issam Qaffou</i>	
Local versus Global Optimization of Electron Lens System Design	363
<i>Neda Hesam Mahmoudi Nezhad, Mohamad Ghaffarian Niasar, Cornelis Wouter Hagen and Pieter Kruit</i>	
Ab-initio Study of Electronic, Optical and Electrical properties of TiO₂ using GGA and mBJ approximations	369
<i>Mohamed Aazi, El Houssine Atmani, Najma Fazouan and Ibrahim Bziz</i>	
Mathematical study on the relation of energy density and other parameters in the selective laser sintering of polyamide12 and their influences on the quality of the final produced part	374

Hanane Yaagoubi, Hamid Abouchadi and Mourad Taha Janan

A Proposal Of A Multi-agent Modeling Based On A Parallel Model Of The PSO Algorithm	381
<i>Maria Zemzami, Norelislam Elhami, Nabil Hmina and Mhamed Itmi</i>	
Numerical Simulation of a Micro Heat Pipe : Desing Optimization	387
<i>Zakariae Maatallah, Rachid El Amraoui and Hicham El Mghari</i>	
A Discrete Bat Algorithm for the Multi-Compartment Vehicle Routing Problem	391
<i>Nouhaila Adil and Halima Lakhbab</i>	
Automatic Analysis of Brain Tumor from Magnetic Resonance Images based on Geometric Median Shift	396
<i>Mohamed Gouskir, Mohammed Boutalline and Mohammed Amine Ziad</i>	
Feature selection: a multi-objective stochastic optimization approach	403
<i>Stefano Rovetta</i>	
Chemotherapy for Tumors: a Study of Linear Optimal Control	408
<i>Nadia Raissi</i>	
Viability Analysis for a Stock-Capital Fishery Model	412
<i>Nadia Raissi</i>	