# **2022 International Conference of Advanced Technology in Electronic and Electrical Engineering (ICATEEE 2022)**

M'sila, Algeria 26-27 November 2022



**IEEE Catalog Number: CFP22DM3-POD ISBN**:

979-8-3503-4675-6

## Copyright © 2022 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:
 CFP22DM3-POD

 ISBN (Print-On-Demand):
 979-8-3503-4675-6

 ISBN (Online):
 979-8-3503-4674-9

#### **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



### **Table of Contents**

#### **Session 1: Telecommunications**

Baghdad Hadji, Abdeldjalil Aïssa-El-Bey, Lamya Fergani and Mustapha Djeddou, "Alternating Hybrid Beamforming Design using GMD decomposition for mmWave MIMO-OFDM Systems"	1
Taha Hocine Kerbaa, Amar Mezache and Houcine Oudira, "Improved Distributed GO-CFAR and SO-CFAR Detectors using Moth Flame Algorithm"	6
Boualem Hammache, Idris Messaoudene, Abderraouf Messai, Youcef Braham Chaouche, Rabia Rebbah and Tayeb Ahmed Denidni, "Compact Reconfigurable Slot antenna for UWB, Wide band and Narrow band applications"	11
Hicham Madjidi, Toufik Laroussi and Faiçal Farah, "CFAR Ship Detection in SAR Images Based on the Generalized Rayleigh Mixture Models"	16
Mohammed Abdessamad Goumidi, Ehlem Zigh, Naima Hadj-Said and Adda Belkacem Ali-Pacha, "Detection of malicious nodes in WBAN using a Feed Forward Back Propagation Neural Network"	21
Rabia Rebbah, Idris Messaoudene, Mustapha Khelifi, Kheir Benderradji, Yacine Boussaadia, Massinissa Belazzoug and Boualem Hammache, "MIMO Cavity Slot Antenna Based on substrate integrated waveguide Technique"	27
Session 2: Microelectronics & Nano-materials	
Daoud Kouzrit, Nacerdine Bourouba, Abdelhalim Brahimi and Nacerdine Bouzit, "Characterization of binary composite made of epoxy resin and barium titanate in high frequency range"	33
Maroua Chahmi, Mounir Bouras and Moufdi Hadjab, "Improve efficiency and reduce cost of perovskite based solar cell"	39
Inas Bouzateur, Hamza Bennacer, Mohammed Assam Ouali, Mohamed Ladjal, Mohamed Issam Ziane and Moufdi Hadjab, "Lattice Constant Prediction of Complex Cubic Peroveskite A2BCO6 using Extreme Learning Machine"	43
Zakaria Zoubiri, Ahmed Kahlouche and Mounir Bouras, "New Liquid Sensor Based on One-Dimensional Phononic Crystal"	49
Session 3: Control Systems, automation and Robotics	
Mohamed Imed Khelil, Mohamed Ladjal, Mohammed Assam Ouali and Hamza Bennacer, "Sensor Anomaly Detection using Self Features Organizing Maps and Hierarchical-Clustring for Water Quality Assessment"	53
Badis Ouahab, Mohamed Amine Alouane and Fares Boudjema, "Robust sliding mode control design for a 3-DOF hover system"	59
Nacereddine Djelal, Abdelhak Ouanane, Isma Boudouane and Abdelhak Rezoug, "Measuring ground reaction forces of Quadruped robot"	65
Khalil Louassaa, Aissa Chouder, Mahdi Boukerdja, Abdelhafid Cherifi and Ali Aillane, "Sliding Mode Control for a DC-DC Buck Converter Feeding a Constant Power Load: A Practical Implementation"	68
Guichi Amar, Ismail Ghadbane and Riad Bouzidi, "Suitability of Electric Motors and Conventional Control Techniques for Electric Vehicle Applications"	73

#### Session 4: Renewable Energy and electrical engineering

Mounia Hendel, Djoumana Karawane Belahcen and Amel Baaziz, "Modeling of Real Algerian High Voltage Line with PV Energy Source for Short Circuit Simulation"	79
End War. V Energy Source for Short endurt Simulation	
Farid Hadjrioua, Nasreddine Belhaouas, Azeddine Aissaoui, Fateh Mehareb and Khaled Bakria, "Outdoor PV module characterization and Sandia model calibration in local climate"	85
Sabri Sekhri, Ali Benachour, Houssam Eddine Guessar, Mohamed Lamine Badaoui, El Majid Berkouk and Mohand Oulhadj Mahmoudi, "A real time Implementation of Four Vectors-Space Vector Modulation for Five Phase Indirect Matrix Converter using a low-cost microcontroller"	91
Soundous Remache, Seif El Islam Remache and Kamel Barra, "Predictive Power Control and Power Management for Islanded PV Microgrid with Battery-Supercapacitor Hybrid Energy Storage System"	97
Boutouta Fatima, Kouzou Abdellah, Beladl Abdelkader and Teta Ali, "Space vector control technique for grid-tied three-level NPC inverter fed by a photovoltaic system"	103
Yasser Damine, Salim Sbaa, Noureddine Bessous and Ahmed Chaouki Megherbi, "Comparative study between EEMD-MED and VMD-MED Techniques dedicated to bearing fault detection in induction motors"	109
Session 5: Signal processing, Al and Computer vision	
Kahina Amara, Hoceine Kennouche, Ali Aouf, Oussama Kerdjidj, Nadia Zenati, Oualid Djekoune and Mohamed Amine Guerroudji, "Augmented Reality for medical practice: a comparative study of Deep learning models for Ct-scan segmentation"	115
Feriel Fass, Djemel Ziou and Nassima Kadri, "Route planning for a tractor in an agriculture field with obstacles"	121
Mohamed Amine Rezki and Amina Serir, "Blind Video Inpainting Quality Assessment"	127
Hanane Meriem Toaba, Mouad Addad and Ali Djebbari, "An Analysis of SISO Channel Estimation based on DDST"	133
Hadjer Bounazou, Nassim Asbai and Sihem Zitouni, "GMM evaluation for Speaker identification"	137
Belkis Asma Semcheddine and Abdelhamid Daamouche, "CNN and M-SLIC Superpixels Feature Fusion for VHR Image Classification"	142
Session 6: Telecommunications	
Khaled Zebiri and Amar Mezache, "Censored Maximum Likelihood CFAR Detector in Heterogeneous Gamma-distributed Radar Clutter"	146
Hassiba Louazene, Mouloud Challal and M'Hamed Boulakroune, "An UWB Bandpass Filter with large upper stop band Suppression"	151
Benmeddour Fadila, Brik Fatima and Herizi Radhia, "Analysis and design of dual-band frequency high gain FSS microstrip antenna"	157
Damou Mehdi, Chetioui Mohammed, Gouni Slimane, Boudkhil Abdelhakim, Bouhmidi Rachid and Bouras Bouhafs, "Optimization of Multi-Ports Combline Filter Using Admittance Extraction Technique"	161
Haddi Bakhti, Miloud Bentoumi, Messaoud Mayouf and Aimad-Eddine Debbi, "Design of a miniature biband patch antenna with asymmetrical feedline for 5G applications"	166
Brik Fatima, Benmeddour Fadila and Fares Abderraouf, "Study and performance optimization of an integrated Mach-Zehnder modulator for optical telecommunications"	172
Anes Belkacem and Ahmed Riad Borsali, "A new bidirectional analog radio over fiber transmission for 5G millimeter wave communication systems"	177

#### Session 7: Control Systems, automation and Robotics

Session 7. Control systems, automation and Robotics	
Badreddine Ladjal, Fouad Berrabah and Samir Zeghlache, "Modelling and Control of double star inducti machine used Active fault tolerant control based on backstepping controller and nonlinear adapti observer"	
Daia Eddine Oussama Mohamed Cherif, Ali Chebabhi, Abdelhalim Kessal, Mohamed Fouad Benkhoris a Mabrouk Defdaf, "Super-Twisting Sliding Mode Control of Interleaved Boost Converter Based Photovolta Applications"	
Khaled Benzaoui, Abderrahmen Bouguerra, Samir Zeghlache, Mohammed Boukhari and Ayyo Zeghlache, "Field Oriented Control Technique of a Wind System based on a Dual Stator Inducti Generator"	
Nadia Tadrist and Hocine Zeroug, "Sensorless control with back EMF integration method for E-bike"	199
Ourahmoun Abbes, Mezache Zinelabidine and Bouderah Brahim, "Study of a fractal antenna for detecti the dimensions of objects"	ng 205
Issame Mahdjoubi and Abdelhafid Benyounes, "Real Time Object Detection with Drone Using De Learning Algorithm"	ep 209
Keltoum Loukal, Abderrahmen Bouguerra and Samir Zeghlache, "Fuzzy Adaptive Gains Fault Tolera Control Based on Feedback Linearization of the Two Tanks System"	ant 215
Abderrahmane Aboura, Abdelhak Abdou, Tarek Bouchaala, Abdeslam Aoukili, Merwane Khebal, "Scanni by multi-sensors to detect surface and internal defects"	ng 221
Session 8: Renewable Energy and electrical engineering	
Bilal Boudjellal and Tarak Benslimane, "Fault Detection Algorithm for Three-Level DC-DC Converters in Photovoltaic System"	n a 226
Zemouri Nahed, Bouzgou Hassen, Chouder Aissa and Douak Mohamed, "Solar Power Nowcasting on Mulstep Using Deep Learning Methods"	lti- 232
Boudia Assam, Abderrahim Zemmit, Sabir Messalti, Harrag Abdelghani and Boukhnifer Moussa, "Modeli and Control Of Grid-PV-SMES System"	ng 237
Abdelghani Chahmi and Mouhoub Birane, "Contribution to the analysis of the electromagnetic field radiated by lightning taking into account the conductivity of the ground"	eld 241
Anwar Guessabi, Ahmed Gherbi and Ali Chebabhi, "Stability Analysis of Voltage Source Converter Cont Based HVDC System"	rol 246
Session 9: Signal processing, AI and Computer vision 1	
Lahouaoui Lalaoui and Abd Elhak Djaalab, "Medical Image Segmentation Used Unsupervised Convolution Neural Network"	nal 252
Radhouane Hammachi, Noureddine Messaoudi and Samia Belkacem, "ECG Beats Classification wi Interpretability"	ith 257
Oussama Bouguerra, Bilal Attallah and Youcef Brik, "Brain Tumor Classification Based Deep Transf Learning Approaches"	fer 262
Mohamed Imed Khelil, Mohammed Assam Ouali, Mohamed Ladjal and Hamza Bennacer, "Soft Sensi Modeling Based on Support Vector Machine and Self-Organizing Maps Model Selection for Water Qual Monitoring"	_
Bentoumi Miloud, Bakhti Haddi, Chabira Chaima and Meftah Sabir, "S.G Filter and Speed of Pressure Wa Applied to Locate Leak in Water Pipe Networks"	ve 272

#### Session 10: Signal processing, AI and Computer vision 2

	Ishaq Aiche, Youcef Brik and Bilal Attallah, "Transfer Learning for Diabetic Retinopathy Detection"	277
	Meftah Sabir, Bentoumi Miloud, Bakhti Haddi and Chabira Chaima, "Parameterization and Validation of the Physical Coefficients of a WDNs by BBO"	282
	Nabil Boukhennoufa, Lotfi Djouane and Rima Bouzidi, "Compression of Medical Images Using Progressive Coders"	287
	Meryem Ketfi, Mebarka Belahcene and Salah Bourennane, "Efficient Transfer Learning for COVID-19 Diagnosis using X-Ray and Computed Tomography Images"	293
	Radja Kheddam, Ahmed Tahraoui and Aichouche Belhadj-Aissa, "Classification of Satellite Images: From Statistical Approach to Metaheuristic Approach"	298
	Chaima Chabira, Haddi Bakhti, Miloud Bentoumi and Sabir Meftah, "RNL used for the verification of the efficiency of a localization model in a real WDNs"	304
:	Session 11: Nanomaterials & Microelectronics	
	Debih Ali and Bouchelouche Fatima, "Impact of the artificial ageing time on the strength and electrical resistivity responses of the 6082 aluminum alloy"	308
	Warda Darenfad, Noubeil Guermat and Kamel Mirouh, "Investigating the effect of Mo doping on properties of n-type ZnO films"	313
	Souad Benkherbache, "Heat transfer in annular enclosure filled with nanofluid"	318
	Noureddine Hamouda, Badreddine Babes, Amar Boutaghane, Albrecht Gensior and Rädel Uwe, "Enhancing the Width of Molten Pool and the Tracking of Welding Current in Gas Metal Arc Welding Processes Using a Robust ΡΙλΟμ Regulator"	323
	Imane Chergui, Faiza Bounaas and Amel Labbani, "Novel design of four-channel wavelength division demultiplexer based on two-dimensional photonic crystal ring resonators"	329
	Yasmine Belkahla, Abdelhalim Taieb-Brahimi and Said Moussaoui, "Eddy Current Nondestructive Testing using Surface Impedance Boundary Condition and Global Optimization"	333
:	Session 12: Renewable Energy & Electrical Engineering	
	Soltana Guesmi, Wasma Hanini and Moez Ghariani, "Improved of electrical performance of floating output interleaved converter applied in photovoltaic converter"	337
	Ala Addin Mohammed Al-Dwa, Ali Chebabhi, Adel Choudar, Said Barkat and Mohammed Karim Fellah, "Modified Carrier-Based SPWM Technique for Zero Sequence Circulating Current Elimination in Parallel Four-Leg Inverters"	343
	Abdelouadoud Loukriz, Mahmoud Drif, Ahmed Bouchelaghem, Saigaa Djamel, Ahmed Bendib and Moadh Kichene, "Current Balancing and PSO Methods-Based PV Array Output Power Optimization: A Comparative Study"	349
	Ahmed Faris Amiri, Houcine Oudira and Aissa Chouder, "Faults Detection of PV Systems Based on Extracted Parameters Using Modified Grey Wolf Algorithm"	355
	Baghdadi Hamidouche, Kamel Guesmi and Najib Essounbouli, "Lyapunov exponent-based PI optimization for the delayed feedback control of chaos"	361
	Abdelhafid Cherifi, Aissa Chouder, Abdelhalim Kessal, Abdelhak Hadjkaddour, Ali Aillane and Khalil Louassaa, "Control of a Stand-Alone Inverter Using Virtual Synchronous Generator"	366

#### **Session 13: Signal and Image Processing**

occording to the state of the s	
Haider Makki Hammed, Maha Abbas Hutaihit and Wasan Masoody, "Iterative Association of Isolated Homogeneous Image Regions Using the Minimum Distance between Them"	372
Walaa Jumiawi and Ali El-Zaart, "Otsu Thresholding Model Using Heterogeneous Mean Filters for Precise Images Segmentation"	376
Sahib Khouloud, Melouah Ahlem, Toure Fadel and Slim Amel, "Improved Residual U-Net for COVID-19 Lung Infection Multi-Class Segmentation in CT Image"	382
Zahia Nabi, Mohammed Assam Ouali, Mohamed Ladjal and Hamza Bennacer, "EMD Based Average Wavelet Coefficient Method for ECG Signal Denoising"	388
Tawfiq Beghriche, Mohamed Djerioui and Youcef Brik, "Performance Analysis of Twin-Support Vector Machine in Breast Cancer Prediction"	393
Faical Khennoufa, Abdellatif Khelil and Elhadi Kenane, "BER and Outage Performance for Multi-hop User-Relays NOMA with Imperfect SIC and CSI"	398
Salah Khennouf, Abderrzak Laib and Halim Sayoud, "Performances Evaluation of Automatic Authorship Attribution on Ancient Arabic Documents"	404
Session 14: Computer Vision	
Mohamed Abderaouf Moustari, Youcef Brik, Bilal Attallah, Rafik Bouaouina and Mohamed Djerioui, "Enhancement of Diabetic Retinopathy Classification using Attention Guided Convolutional Neural Network"	408
Hezil Nabil, Amrouche Aissa and Bentrcia Youssouf, "Vehicle license plate detection using morphological operations and deep learning"	414
Abdelwahhab Boudjelal, Abderrahim Elmoataz and Youssef Chahir, "Mitosis Detection in Breast Cancer with Deep Learning: A New Approach"	420
Ahmed Rafik Zouaoui, Youcef Brik, Bilal Attallah, Mohamed Djerioui and Mourad Belkhelfa, "Transfer learning approach for Alzheimer's disease diagnosis using MRI images"	424
Sif Eddine Boudjellal, Naceur Eddine Boukezzoula and Abdelwahhab Boudjelal, "Deep learning model based on inceptionResnet-v2 for Finger vein recognition"	430
Heythem Bentahar, Mohamed Djerioui and Nesrine Bouaziz, "An Efficient Classification System for Brain Tumor Based on Convolutional Neural Network"	435
Cheyma Nadir, Bilal Attallah and Youcef Brik, "Finger Vein based CNN algorithms for human recognition"	440
Session 15: Electrical networks, control systems & Machines	
Ghermoul Oussama, Benguesmia Hani and Benyettou Loutfi, "Electric potential and field distributions simulation on a barrier separating two electrodes under different constraints"	446
Dahmane Saida, Berrabah Fouad and Defdaf Mabrouk, "An Automatic Diagnosis of Bearing Faults of an Induction Motor Based on FFT-ANN"	451
El Hadi Belhiteche, Sébastien Rondot, Philippe Dony, Mustapha Moudoud and Omar Jbara, "Effect of aging time on the hydrophobicity of polymers subjected to corona discharge"	456
Ghermoul Oussama, Benguesmia Hani and Benyettou Loutfi, "3D Simulation of the Electric Field of Cap and Pin Insulator using COMSOL Multiphysics"	461
Mohamed Razi Morakchi, Zine Ghemari, Mabrouk Defdaf and Selman Djeffal, "Prototype of an affordable continuum robot-based IoT accelerometer and its kinematic modeling"	465

Khadidja Saoudi, El Khansa Bdirina and Kamel Guesmi, "Model Predictive Sliding Mode Control for a Class of Affine Nonlinear Systems"	471
Ayyoub Zeghlache, Hemza Mekki, Ali Djerioui, Mohamed Fouad Benkhoris, Khaled Benzaoui, "Fault Tolerant Control of PMSM based on Improved Exponential ESO"	477
Author index	483