

THE IEEE SEVENTH INTERNATIONAL CONFERENCE ON THE IMAGE AND SIGNAL PROCESSING AND THEIR APPLICATIONS



ISPA 2022

**Faculty of Sciences & Technology Site -1- Route Belhcel
Mostaganem, Algeria**



8th & 9th May 2022

Program

Sunday, May 8th

08:00-08:30 : Registration

08:30-08:45: Official opening

Honorary Chair, ISPA 2022: *Professor Belabbas Yagoubi*

Rector of Abdelhamid Ibn Badis University of Mostaganem, Algeria

Chairs: *Malika Mimi, Abdeldjalil Ouahabi and Abdelmalik Taleb-Ahmed*

Conference Room I

08:45-09:30 : Plenary conference I

Professor Habib Zaidi

Geneva University Hospital, Switzerland

The emerging role of deep learning in multimodality medical imaging

09:30-10:00 : *Coffee Break*

Sunday, May 8th

10h00-12h20: Oral Session

<p><u>Session: Image Processing</u> (Conference Room I) <u>Chairs:</u> Pr Ayache Bouakaz, Pr Madani Ouldmammar</p>	<p><u>Session: Telecommunication</u> (Conference Room II) <u>Chairs:</u> Pr Sbaa Salim, Pr Ouldali Abdelaziz</p>
<p><u>10:00 Amina Aarizou</u> and Mostefa Merah. <i>Transfer Learning for Plant Disease Detection on Complex Images.</i></p> <p><u>10:20 Abdelhakim Fares</u>, Abdallah Meraoumia and Abderrahim Fayçal Megri. <i>Contactless Palmprint Recognition System Using ICANet-Based Deep Features.</i></p> <p><u>10:40 Insaf Adjabi, Amir Benzaoui.</u> <i>Combining hand-crafted and deep-learning features for single sample face recognition</i></p> <p><u>11:00 Nassima Jamila Megaiz</u> and Abdelghani Djebbari. <i>Securing medical images: A crypto-watermarking and biometrics-based scheme.</i></p> <p><u>11:20 Billel Nebili</u>, Atmane Khellal, Abdelkrim Nemra, Ikbal Abdselam Bououden and Abdeldjalil Belhafsi. <i>Autoencoder-based Local Descriptor for Target Recognition in Infrared Images</i></p> <p><u>11:40 Sara Atek</u>, Imane Mehidi, Dalel Jabri and Djamel Eddine Chouaib Belkhiat. <i>SwinT-Unet: Hybrid architecture for Medical Image Segmentation Based on Swin transformer block and Dual-Scale Information</i></p> <p><u>12:00 Nadia Kermouni Serradj</u>, Messadi Mohammed and Lazzouni Sihem. <i>Classification of Fundus Images based on Multifractal Features</i></p>	<p><u>10:00 Turkiya Abes</u>, Keltouma Nouri, Amaria Saidi and Kada Becharef. <i>Design of Algeria Flag shape Antenna Based On A New Circular SIW-WUVM Topology</i></p> <p><u>10:20 Hakim Tayakout</u>, Fatima Zohra Bouchibane and Elhocine Boutellaa. <i>A New Distributed-STBC Scheme for Cooperative Relaying in Wireless Networks</i></p> <p><u>10:40 M'Hammed Achour</u> and Mohammed Mana. <i>Seasonal Adjustment for traffic modeling and analysis in IEEE 802.15.4 networks</i></p> <p><u>11:00 Amar Tou</u>, Benattou Fassi, Samia Driz and Iman Ouahab. <i>Investigation on different Rain Conditions over 40 Gbps DPSK-FSO Link: ALGERIA Climate</i></p> <p><u>11:20 Hadjer Abdi</u> and Boukli Hacene Ismail. <i>A Dual Image Watermarking Scheme Based on WPT And Chaotic Encryption for Medical Data Protection</i></p> <p><u>11:40 Abdennour Fellag Chebra</u>, Ahmed Riad Borsali and Mehdi Rouissat. <i>Bidirectional transmission over optical fiber with Intermediate frequency for 5G system</i></p> <p><u>12:00 Ahmed Moumena.</u> <i>Centralized Wideband Cooperative CRs Combined with PCA Anomaly Detector in the Presence of Jammer Attacks</i></p>

12:30-13:30 Lunch Break

13:30-15:10: Oral Session

<p>Session: Signal processing (Conference Room I) <u>Chairs:</u> Dr Ammar Mesloub, Dr Amir Benzaoui</p>	<p>Session: Biomedical engineering (Conference Room II) <u>Chairs:</u> Pr Fella Hachouf, Pr Nasreddine Berrached</p>
<p><u>13:30 Mohammed Amin Adoul</u>, Mansour Abed and Adel Belouchrani. <i>Enhancement of a compact support time-frequency distribution derived from a polynomial kernel using image processing</i></p> <p><u>13:50 Hamidou Ghilassi</u>, Nacerredine Lassami and Ammar Mesloub. <i>Non-contact estimation of breathing parameters based on CW radar</i></p> <p><u>14:10 Hamza Kheddar</u>, Ahmed Cherif Mazari and Gokhan Hakki Ilk. <i>Speech Steganography based on Double Approximation of LSFs Parameters in AMR Coding</i></p> <p><u>14:30 Khadidja El Maati</u>, Benoudnine Hadjira and Meche Abdelkrim. <i>The Effect of the Width of non-stationary Spikes on their Detection using the Kalman Filter</i></p> <p><u>14:50 Lyna Henaar Hasnaoui</u> and Abdelghani Djebbari. <i>Epileptic Activity Prediction Within Pre-ictal Epochs: Application on Selected Channels</i></p>	<p><u>13:30 Amaria Saidi</u>, Keltouma Nouri and Turkiya Abes. <i>Miniature Circular Implantable antenna for Wireless Biomedical Applications</i></p> <p><u>13:50 Asmae Mama Zair</u>, Assia Bouzouad-Cherfa, Yazid Cherfa and Nour Eddine Belkhamssa. <i>Heart Outer Surface Segmentation from Computed Tomography Images</i></p> <p><u>14:10 Abdelakram Hafid, Mehdi Medjek, Redouane Abd El Ghani Bediaf and Sabrina Difallah</u>. <i>Affordable Custom made Physiological Measurement Instrumentation Based on Raspberry PI</i></p> <p><u>14:30 Iman Ouahab</u>, Samia Driz and Benattou Fassi. <i>All Optical Biosensors for Glucose and Urea Detection Based on Photonic Crystal Nano Technology</i></p> <p><u>14:50 Sarah Arab</u>, Aissa Boudjella and Bachir Bellebna. <i>Validation of machine learning for Clinical Assessment of lumbar spine pathologies Using Graphic User Interface</i></p>

15:10-16:10: Poster Session I

Chairs: Pr Abdelmalik Taleb-Ahmed and Pr Salim Sbaa

PI.1: Aissa Boudjella, Manal Yasmine Boudjella and Bachir Bellebna.

Epileptic Disease Prediction Using Graphic User Interface –Machine Learning Algorithm.

PI.2: Hichem Mahgoun, Ali Taieb, Boussad Azmedroub and Boularbah Souissi.

Generalized Pareto distribution exploited for ship detection as a model for sea clutter in a Pol-SAR application

PI.3: Ihssane Houhou, Athmane Zitouni, Yassine Ruichek, Salah Eddine Bekhouche and Abdelmalik Taleb-Ahmed.

Improving ViBe-based Background Subtraction Techniques Using RGBD Information.

PI.4: Manel Labdi, Mohamed Bentoumi, Mohamed Daoud, Larbi Arezki and Mansour Abed.

On the framework of cardiac arrhythmia characterization using morphological and statistical features.

PI.5: Baya Lina Menai and Mohamed Chaouki Babahenini.

Recognizing the style of a fine-art painting with EfficientNet and Transfer learning.

PI.6: Rahmouna El Bouslemti and Salah-Belkhodja Faouzi.

New Type of Power Dividers of Microstrip Transmission Lines.

PI.7: Nour El Houda Yahi and Sid Ahmed Elahmar.

TH-UWB Cooperative Relaying Network with Filtering.

PI.8: Wahiba Belgacem, Belgacem Nassima and Rabah Mohammed Amin.

New Circular Polarization Flexible Ku Microstrip Antenna Design for Direct Broadcast Satellite Application.

PI.9: Kadda Djebbar, Malika Mimi, Khadidja Berradja and A. Taleb-Ahmed.

Deep convolutional neural networks for detection and classification of tumors in mammograms: A survey

PI.10: Aounallah Naceur and Khalfa Ali.

Direction-of-arrival estimation with new versions of Min-Norm algorithm based on Nyström method.

PI.11: Hakima Moulay, Ahmed Bouzidi Djebbar and Brahim Dehri.

Blind Digital Modulation Classification for Cooperative STBC-OFDM Systems based on Random Subspace and AdaBoost Classifiers.

PI.12: Abdesselam Ferdi, Said Benierbah and Youcef Ferdi.

U-Net-based COVID-19 CT Image Semantic Segmentation: A Transfer Learning Approach.

PI.13: Fayza Ghembaza and Abdelghani Djebbari.

A Robust dynamic EEG Channel selection using Time-frequency Extended Renyi Entropy.

PI.14: Hicham Megnafi, Khayra Haddouche and **Karaouzene Zoheir**.

Creation of an application under MapBasic for the drive test reports automation in cellular networks.

PI.15: Asmaa Hadjer Saboundji, Souhila Meziane, Mohammed Dahmani, Abdelkrim Meche and Mokhtar Keche.

Accurate visible light positioning system using neural network.

PI.16: Lysa Ait Messaoud and **Fatiha Merazka**.

PSO and CPSO Based Interference Alignment for K-User MIMO Interference Channel.

PI.17: Imed Amamra, Nadir Derouiche and Oulfa Laouar.

Non-Sliding Window Decoding of Braided Convolutional Codes.

PI.18: Abderrahim Annou, Souad Berhab and Fouad Chebbara.

Koch Snowflake Fractal Patch Antenna with ENG Metamaterial loads for WiMAX and Wi-Fi.

PI.19: Hamza Chekireb, Lamy Fergani and Rochedi Rouaibia.

Improving LTE network retainability KPI prediction performance using LSTM and Data Filtering technique.

PI.20: Aissa Boudjella, **Charaf Eddine Chenen**, Bachir Bellebna, Sarah Arab and Rabah Guerbouz.

Machine learning on the diagnosis of brain tumors.

PI.21: Yahia Hathat, Samai Djamel, Benlamoudi Azeddine, Bensid Khaled and Taleb-Ahmed Abdelmalik.

SNCF workers detection in the railway environment based on improved YOLO v5.

PI.22: Adel Boudiaf, Khaled Harrar, **Said Benlahmidi**, Rachid Zaghdoudi, Slimane Ziani and Samira Taleb.

Automatic surface defect recognition for hot-rolled steel strip using AlexNet convolutional neural network.

PI.23: Mohamed Amine Guerroudji, Kahina Amara, Djamel Aouam, Nadia Zenati, Oualid Djekoune and Mostefa Masmoudi.

Brain Tumor Segmentation on MRI using a GVF Snake Model.

PI.24: Samia Bougareche, **Soraya Zehani** and Malika Mimi.

Fashion Classification using Machines Learning, Deep Learning Models and Transfert Learning.

PI.25: Mohammed Belkheir, Mehdi Rouissat, **Mohamed Achraf Boukhobza**, Allel Mokaddem and Merahi Bouziani.

A New lightweight solution against the version number attack in RPL-based IoT networks.

16:10-16:30 : Coffee Break

Sunday, May 8th

16h20-18h00: Oral Session

<p><u>Session: Applications I</u> (<i>Conference Room I</i>) <u>Chairs:</u> Pr Abdeldjalil Ouahabi, Dr Merzak Ferroukhi</p>	<p><u>Session: Applications II</u> (<i>Conference Room II</i>) <u>Chairs:</u> Pr Habib Zaidi, Dr Soraya Zehani</p>
<p><u>16:20 Abdelmalik Mekaoussi</u> and Mohammed Titaouine. <i>Analysis of the U-shaped geometry of a frequency selective surface using the WCIP.</i></p> <p><u>16:40 Ahmed Krobba</u>, Mohamed Debyeche and Sid Ahmed Selouani. <i>Study of the Performance of Speaker Verification System based on Multi-resolution Cochleagram Features in Noisy Environment.</i></p> <p><u>17:00 Achraf Djerida</u>. <i>Assessment of drought conditions in Algeria using satellite images on the period (2000-2021).</i></p> <p><u>17:20 Lyes Abada</u>, Saliha Aouat, Roufaida Elfani and Yesma Hinane Zamoum. <i>Three-dimensional photometric reconstruction of a single view using machine learning techniques.</i></p> <p><u>17:40 Zhor Diffallah</u>, Hadjer Ykhlef and Hafida Abed. <i>Mean Teacher for Weakly Supervised Polyphonic Sound Event Detection: An Empirical Study.</i></p>	<p><u>16:20 Hamza Abadlia</u>, Ammar Mesloub and Ibrahim Kakouche. <i>Image reconstruction and enhancement for radar imaging using IR-UWB signals.</i></p> <p><u>16:40 Azeddine Bensaad</u>, Khaled Loukhaoukha and Said Sadoudi. <i>Keypoint-based copy-move forgery detection in digital images: a survey.</i></p> <p><u>17:00 Kahina Amara</u>, Ali Aouf, Oussama Kerdjijdj, Hoceine Kennouche, Oualid Djekoune, Mohamed Amine Guerroudji, Nadia Zenati and Djamel Aouam. <i>Augmented Reality for COVID-19 Aid Diagnosis: Ct-Scan segmentation based Deep Learning.</i></p> <p><u>17:20 Hichem Mahgoun</u>, Ali Taieb, Boussad Azmedroub and Mounira Ouarzeddine. <i>Combination of MUSIC inversion algorithm with SKP decomposition for forest height estimation in a Tomography SAR application.</i></p> <p><u>17:40 Isma Akli</u>, Kamel Abdous and Sebaa Abderahmane. <i>Hardware in The Loop Simulation for robot Navigation with RFID.</i></p>

Monday, November 25th

08:00-08:30: Registration

08:30-09:15: Plenary conference II

Professor Ayache Bouakaz.

Directeur de recherche Inserm, University of Tours, France

Ultrasound imaging

09:15-09:45: Coffee Break

Monday, November 25th

09h45-12h05: Oral Session

<p><u>Session: Image Processing</u> (Conference Room 1) <u>Chairs:</u> Pr Ayache Bouakaz, Pr Madani Ouldmmamar</p>	<p><u>Session: Telecommunication</u> (Conference Room 2) <u>Chairs:</u> Dr Chaker Essid, Dr Mustapha K. Abderrahmane Didiche</p>
<p><u>09:45 Merzak Ferroukhi.</u> <i>Automatic diagnosis of COVID-19 using deep learning</i></p> <p><u>10:05 Ismail Haddad,</u> Djamel Herbadji, Belmeguenai Aissa and Selma Boumerdassi. <i>Color image encryption based on Fractional-order logistic map</i></p> <p><u>10:25 Imane Nedjar,</u> Hicham Mohamed Sekkil, Mahmoud Mebrouki and Mokhtaria Bekkaoui. <i>A Comparison of Convolutional Neural Network Models for Driver Fatigue Detection</i></p> <p><u>10:45 Radja Kheddami</u> and Aichouche Belhadj Aissa. <i>Supervised Classification of Satellite Images: From Statistical Approach to Metaheuristic Approach</i></p> <p><u>11:05 Meriem Saim</u> and Amel Feroui. <i>Classification and Diagnosis of Alzheimer's Disease based on a combination of Deep Features and Machine Learning</i></p> <p><u>11:25 Zoubida Mahi,</u> Moussa Sofiane Karoui and Mokhtar Keche. <i>A new star detection algorithm based on the combination of thresholding and filtering technique</i></p> <p><u>11:45 Hossena Djouima,</u> Athmane Zitouni, A. Chaouki Megherbi and S. Sbaa. <i>Classification of Breast Cancer Histopathological Images using DensNet201</i></p>	<p><u>09:45 Amel Haouzi,</u> Samir Kameche and Haroun Errachid Adardour. <i>Overview: Application of Cognitive Radio Technology in Fifth-Generation Wireless Communications</i></p> <p><u>10:05 Billal Belmahdi</u> and Mazighi Khaled. <i>Implementation Efficiency of a Two-Stage EDFA Amplifier with an Inverted Trapezoidal Filter on Gain Flattening</i></p> <p><u>10:25 Fadila Berrahma,</u> Khalida Ghanem and Hicham Bousbia-Salah. <i>A New Multi-user Spatial Modulation Scheme Combining STBC-OFDM and CDMA</i></p> <p><u>10:45 Mehdi Damou,</u> M. Chetioui, A. Boudkhil, S. Gouni, R. Bouhmidi and Bohafs Bouras. <i>Coupled Rectangular Waveguide Resonator Filter Using 3D-HFSS Based Admittance Extraction</i></p> <p><u>11:05 Mohammed Chetioui,</u> Abdelhakim Boudkhil, Damou Mehdi, Mansouri Boualem, Fatima Bouasria and Nasreddine Benahmed. <i>A MEMS Cone-shaped Helix Antenna for THz Applications Using ANN</i></p> <p><u>11:25 Ahmed Zitouni.</u> <i>C-shaped UWB Dielectric Resonator Antenna With Dual Band-Notched Characteristics for WLAN and X-Band Applications</i></p>

12:10-13:15 Lunch Break

13:15-14:15: Poster Session II

Chairs: Pr Abdelmalik Taleb-Ahmed and Pr Abdelkrim Ouafi

PII.1: Aissa Boudjella, Manal Yasmine Boudjella and Bachir Bellebna.

Machine Learning KNN Classification An Approach on Detecting Abnormality in Brain Tissues MRI-Graphic User Interface.

PII.2: Aissa Boudjella, Manal Yasmine Boudjella and Bachir Bellebna.

Parkinson 's Disease Prediction Using Graphic User Interface-Machine Learning Algorithm.

PII.3: Mohamed Benaouali, Mohamed Bentoumi, Menad Touati, Abdelmalik Taleb Ahmed and Malika Mimi.

Segmentation and classification of benign and malignant breast tumors via texture characterization from ultrasound images.

PII.4: Farah Faical, Laroussi Toufik and Madjidi Hichem.

A Fast Ship Detection Algorithm based on Automatic Censoring for Multiple Target Situations in SAR Images.

PII.5: Atrouche Mabrouk, Ayad Soulef and Belattar Mounir.

Comparative Study of dynamic Fairness and Fixed Power allocation Algorithms In Non- Orthogonal Multiple Access system.

PII.6: Saida Sarra Boudouh and Mustapha Bouakkaz.

Breast Cancer: Using Deep Transfer Learning Techniques AlexNet Convolutional Neural Network For Breast Tumor Detection in Mammography Images.

PII.7: Aida Chefrour.

A modified Incremental Density Based Clustering Algorithm.

PII.8: Widad Belaoura, Khalida Ghanem, Hicham Bousbia Salah and Mourad Nedil.

On the Impact of Hardware Impairments on mm-Wave MIMO Underground Channel Estimation.

P11.9: Basma Beroual, Abir Betka and Salim Sbaa.

A review and Comparing different of the most commonly Criteria for human age estimation techniques.

P11.10: Madaoui Lotfi and Malika Kedir-Talha.

Classification of gait patterns in the time domain using accelerometer signal.

P11.11: Imene Setha and Hassina Aliane.

Paragraph vector model for plagiarism detection.

P11.12: Lyes Abada, Merouane Bennaceur, Ahmed Boudjenana and Saliha Aouat.

Using PSO metaheuristic to solve photometric 3D reconstruction.

P11.13: Sara Sabba, Nahla Chkired, Hana Kateb, Nassira Chekkai and Mohammed Chelbi.

Sentiment Analysis for IMDb Reviews Using Deep Learning Classifier.

P11.14: Houda Latrache, Lallouani Bouchakour and Fariza Meziani.

Isolated Arabic Characters Recognition System Based On Combined Features And DNN.

P11.16: Sid Ahmed Henni, Sidali Bourenane, Benabdellah Yagoubi and Jean Caelen.

Detection of serious falls by camera for the safety of old person in intelligent building.

P11.17: Omar Guermoua, Abdelheq Boukarkar, Abdelmounaim Boulahbel, M.Anouar Ghozlane and M. Amine Merabet.

A Continuously Tunable Low-Cost 311 Phase Shifter for Beam-Steering Applications.

P11.18: Yasser Radouane Haddadi and Boualem Mansouri.

Ultrasound Medical Image Deconvolution Using L2 Regularization Method and Artificial Bee Colony Optimization Algorithm.

P11.19: Salima Attache, Labib Sadek Terrissa, **Ikram Remadna**, Soheyb Ayad, Fadila Madaci and Noureddine Zerhouni.

Predicting COVID-19 Outbreak in Algeria Using Long Short-Term Memory Networks.

P11.20: **Hakim Tayakout**, Fatima Zohra Bouchibane and Elhocine Boutellaa.

On the Robustness of Digital Modulation Recognition for Cooperative Relaying Networks under Imperfect CSI.

P11.21: Fayçal Abbas, **Mehdi Malah** and Mohamed Chaouki Babahenini.

Efficient deep Neural Network Architectures for Subsurface Scattering Approximation.

P11.22: **Khalil Bousbai** and Mostefa Merah.

Hand Gesture Recognition Using Capabilities of Capsule Network and Data Augmentation.

14:15-14:30: Coffee Break

14h30-16h50: Oral Session

<p><u>Session: Application I</u> (<i>Conference Room 1</i>) <u>Chairs:</u> Pr Youcef Ferdi, Pr Nasr-Eddine Berrached</p>	<p><u>Session: Applications II</u> (<i>Conference Room 2</i>) <u>Chairs:</u> Pr Zine-Eddine Baarir, Pr Fella Hachouf</p>
<p><u>14:30 Nour El Houda Bouakal</u>, Messaoud Hettiri, Abdelhakim Chergui, Abdelkrim Ouafi, Azeddine Benlamoudi and Salah Eddine Bekhouche. <i>Kinship Verification System based on the Color Spaces Analysis</i></p> <p><u>14:50 Hasna Yazid</u> and Said Gaci. <i>Machine learning-based techniques for reservoir characterization using rock-typing from well logs</i></p> <p><u>15:10 Zahira Hanane Meftahi</u> and Medjeded Merati. <i>Utilization of pre-trained models of CNN in mammograms processing for the diagnosis of breast cancer</i></p> <p><u>15:30 Djamel Eddine Boudechihe</u>, Nadir Boudjefdjouf and Said Benierbah. <i>Reducing the feedback requests in distributed coding of capsule endoscopy images with an LSTM model</i></p> <p><u>15:50 Souad Chabbi</u>, Faiçal Farah and Nouh Guidoum. <i>CFAR-CNN Detector of Ships from SAR Image Using Generalized Gamma Distribution and Real Dataset</i></p> <p><u>16:10 Aissa Boudjella</u>, Manal Yasmine Boudjella, Bachir Bellebna and Djamila El-Kebir. <i>Machine Learning-Based Classification of Chest X-Ray MRI Images into Covid-19 -Graphic User Interface</i></p> <p><u>16:30 Aissa Amrouche</u>, Youssef Bentrchia, Ahcène Abed and Nabil Hezil. <i>Vehicle Detection and Tracking in Real-time using YOLOv4-tiny</i></p>	<p><u>14:30 Hadjer Ykhlef</u>, Zhor Diffallah and Adel Allali. <i>Ensembling Residual Networks for Multi-Label Sound Event Recognition with Weak Labeling</i></p> <p><u>14:50 Fethi Demim</u>, Abdelkrim Nemra, Abdenebi Rouigueb, Abdelouahab Bazoula, Mustapha Hamerlain and Rekia Bouguessa. <i>Localization of an Unmanned Aerial Vehicle with an Improved Technique based on New Form of the Smooth Variable Structure Filter</i></p> <p><u>15:10 Ahcene Arbaoui</u>, Chouaib Aribi and Saddika Mohamadi. <i>CNN-based Concrete Cracks Detection Using Multiresolution Analysis</i></p> <p><u>15:30 Reda Yagoub</u>, Mohamed Benaissa and Belkacem Benadda. <i>Web Browser Based Real Time Spectrum Analyzer for RTL-SDR Dongles</i></p> <p><u>15:50 Nadjla Bentekhici</u>, Assia Saad and Ahmed Zegrar. <i>Contribution of spectral indices of chlorophyll (RECI and GCI) in the analysis of multi-temporal mutations of cultivated land in the Mostaganem plateau</i></p> <p><u>16:10 Wahiba Menasri</u> and Karim Meddah. <i>Low level Syntax Elements Study in Intra HEVC/H.265 Video Codec</i></p> <p><u>16:30</u> Nouredine Aissaoui, <u>Redouane Kaibou</u> and Mohamed Salah Azzaz. <i>Real-Time FPGA Implementation of Digital Video Watermarking Techniques using Co-Design Approach: Comparative Study</i></p>

16:50-17:30: Awards and Closing of the IEEE ISPA 2022

Chairs: Pr Malika Mimi, Pr Abdelmalik Taleb Ahmed and Pr Abdeldjalil Ouahabi