



# The 2<sup>nd</sup> International Conference on Embedded Systems and Artificial Intelligence

**ESAI'21**  
**April 01-02, 2021**  
**ENSA, USMBA**  
**FEZ MOROCCO**



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المدرسة الوطنية للعلوم التطبيقية - فاس  
 ⵜⴰⵎⴰⵏⴻⵜ ⴰⵏ ⵙⵉⵎⵓⵎ ⵎⵓⵎⵎⴰⵏ ⵏ ⵑⵓⵔ ⵏ ⴱⵏ ⵏ ⵙⵉⵎⵓⵎ ⵎⵓⵎⵎⴰⵏ  
**Ecole Nationale des Sciences Appliquées de Fès**



جامعة سيدي محمد بن عبد الله بفاس  
 ⵜⴰⵎⴰⵏⴻⵜ ⴰⵏ ⵙⵉⵎⵓⵎ ⵎⵓⵎⵎⴰⵏ ⵏ ⵑⵓⵔ ⵏ ⴱⵏ ⵏ ⵙⵉⵎⵓⵎ ⵎⵓⵎⵎⴰⵏ  
**UNIVERSITÉ SIDI MOHAMED BEN ABDELLAH DE FES**



# ESAI'21 Official Program

Thursday, April 01, 2021

08h15 - 09h:00	Welcoming and Registration
09h00 - 9h:30	Opening Ceremony
<b>ZOOM Link:</b>	<a href="https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09">https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09</a>
09h30 - 10h30	<p>Keynote Talk 1 : Automated design of deep neural networks</p> <p>Prof. El-ghazali Talbi, University of Lille, France</p> <p><b>Moderator : Prof. Abdellatif EZZOUHAIRI</b></p>
10h30 – 13h00	<p>Oral Session ESAI 1 : Artificial intelligence</p> <p><b>Chairs: Prof. Nabil EL AKKAD, Prof. Mohammed BERRADA, Prof. Badraddine AGHOUTANE and Prof. Oumayma BANOUAR</b></p> <p>Oral Session ESAI 2 : Embedded systems and applications</p> <p><b>Chairs: Prof. Hassane MOUSTABCHIR, Prof. Jamal ZBITOU, Prof. Driss ACHEMLAL and Prof. Mohamed OUAHI</b></p> <p>Oral Session ESAI 3 : Image and video processing</p> <p><b>Chairs: Prof. Khalid SATORI, Prof. Abderrahim SAAIDI and Prof. Mostafa EL MALLAHI</b></p> <p>Oral Session ESAI 4: Telecom &amp; Network Technology</p> <p><b>Chairs: Prof. Bachir BENHALA, Prof. Said MAZER and Prof. Prof. Prof. Hakim EL FADILI</b></p>
13h00 - 15h00	Break
15h00 – 16h00	<p>Keynote Talk 2: Non-conventional computer arithmetic.</p> <p>Prof. Leonel Sousa, University of Lisbon, Portugal</p> <p><b>Moderator : Prof. Hassan SATORI</b></p>
<b>ZOOM Link:</b>	<a href="https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09">https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09</a>
16h00– 18h30	<p>Oral Session ESAI 5 : Artificial intelligence</p> <p><b>Chairs: Prof. Khalid HADDOUCH, Prof. Mohamed LAZAAR and Prof. Karim EL MOUTAOUAKIL</b></p> <p>Oral Session ESAI 6 : Embedded systems and applications</p> <p><b>Chairs: Prof. Zakaria CHALH, Prof. Mohammed ALFIDI, Prof. Abdelmjid SAKA and Prof. Hicham HIHI</b></p> <p>Oral Session ESAI 7 : Image and video processing</p> <p><b>Chairs: Prof. Hamid TAIRI, Prof. Jamal RIFFI, Prof. Abdellatif EL ABDERRAHMANI and Prof. Mohammed Chakib SOSSE ALAOUI</b></p> <p>Oral Session ESAI 8: Data analysis and Serious games</p> <p><b>Chairs: Prof. Mohamed BENSLIMANE, Prof. Lahcen OUGHDIR, Prof. Ahmed ABERQI and Prof. Younes LAKHRISSI</b></p>

# ESAI'21 Official Program

Friday, April 02, 2021	
<b>ZOOM Link:</b>	<a href="https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09">https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09</a>
09h00 -10h00	<p><b>Keynote Talk 3: Network for the sky: Challenges and open problems</b></p> <p>Prof. Amine Dhraief, University of Manouba, Tunisia.</p> <p><b>Moderator :</b> Prof. Jamal Zbitou</p>
10h00 – 12h30	<p><b>Oral Session ESAI 9 : Natural language processing</b></p> <p><b>Chairs: Prof. El Habib NFAOUI, Prof. Adil JEGHAL, Prof. Fadoua ATAA ALLAH and Prof. Youssef EL ALLIOUI</b></p> <p><b>Oral Session ESAI 10: : Security and Wireless Network Technologies</b></p> <p><b>Chairs: Prof. Abdellatif EZZOUHAIRI, Prof. Adil KENZI, Prof. Fadoua YAKINE and Prof. Afafe ANNICH</b></p> <p><b>Oral Session ESAI 11: Renewable Energies</b></p> <p><b>Chairs: Prof. Souad EL KHATTABI, Prof. Saad MOTAHHIR, Prof. Fatima BENNOUNA and Prof. Mohammed ZOUITEN</b></p> <p><b>Oral Session ESAI 12 : Embedded systems and applications</b></p> <p><b>Chairs: Prof. Mohammed OUDGHIRI BENTAIE, Prof. El mehdi MELLOULI, Prof. Badre BOUSSOUFI and Prof. Abdeslam EL AKKAD</b></p>
12h30 - 15h	Break
15h00 - 16h00	<p><b>Keynote Talk 4 : Recent trends in fuzzy modeling and decision making applications in real time world</b></p> <p>Prof. Sunny Joseph Kalayathankal, APJ Abdul Kalam Technological University, Thrissur, Kerala India</p> <p><b>Moderator :</b> Prof. El Habib NFAOUI</p> <p><b>Keynote Talk 5: The 3D reconstruction and its evolution in the last decades.</b></p> <p>Prof. Khalid Satori, Sidi Mohamed ben Abdellah University, Fez, Morocco</p> <p><b>Moderator :</b> Prof. Nabil EL AKKAD</p>
<b>ZOOM Link:</b>	<a href="https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09">https://zoom.us/j/97122669835?pwd=Z3hvUHNraXhXVDdRc3U4RWZ5NG10QT09</a>
16h00– 18h30	<p><b>Oral Session ESAI 13 : Artificial intelligence</b></p> <p><b>Chairs: Prof. Jaouad BOUMHIDI, Prof. Chakir LOQMAN, Prof. Insaf BELLAMINE and Prof. Fatima EL HAOUSSI</b></p> <p><b>Oral Session ESAI 14 : Speech &amp; Signal Analysis</b></p> <p><b>Chairs: Prof. Hassan SATORI, Prof. Ali YAHYAOU, Prof. Zouhair ABDELHAMID and Prof. Fahd KALLOUBI</b></p> <p><b>Oral Session ESAI 15 : Fuzzy and Expert systems</b></p> <p><b>Chairs: Prof. Abdelhak BOULAALAM, Prof. My Abdelouahed SABRI and Prof. Mohammed adnane MAHRAZ</b></p> <p><b>Oral Session ESAI 16 : Artificial Intelligence and Embedded Systems</b></p> <p><b>Chairs: Prof. Mhamed SAYYOURI, Prof. Jamila EL HAINI, Prof. Mostafa MERRAS and Prof. Hamid LOULIJAT</b></p>
18h30 – 19h00	Closing Ceremony

## ESAI 2021 Official Program

<b>Oral Session ESAI 1 : Artificial Intelligence</b> <b>10h30 – 13h00, Thursday, April 01, 2021</b> <b>Chairs: Prof. Nabil EL AKKAD, Prof. Mohammed BERRADA, Prof. Badraddine AGHOUTANE and Prof. Oumayma BANOUAR</b>	
<b>ZOOM Link:</b>	<a href="https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09">https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09</a>
ID: 35	<b>Youssef Boutazart, Hassan Satori, Anselme Affane, Mohamed Hamidi and Khalid Satori</b> Two-dimensional Moroccan dataset COVID-19 classification using K-Means and EM algorithm
ID: 41	<b>Abdellatif El Ouissari, Karim El Moutaouakil, Hicham Baizri, Mouna Cheggour and Saliha Chellak</b> An original version of support vector machine for unbalanced datasets to early detection and predict of diabetes.
ID: 53	<b>Khadija Yakoubi, Hassan Moustachir and Ahmed El Khalfi</b> Isogeometric analysis: solution to solve the problem of linear elasticity, for more precision.
ID: 120	<b>Yassine Akhiat, Mohamed Chahhou and Ahmed Zinedine</b> Reinforcement Learning based approach for Feature Selection
ID: 25	<b>Khalid Alafandy, Hicham Omara, Mohamed Lazaar, Osama Faragallah and Mohammed Al Achhab</b> A Survey of Using Machine Learning Techniques for Classifying Remote Sensing Images
ID: 227	<b>Elazzaby Fouzia, Nabil El Akkad, Sabour Khalid and Kabbaj Samir</b> Image RGB Encryption Algorithm Based on a transformation by block and Pickover 3D
<b>Oral Session ESAI 2 : Embedded systems and applications</b> <b>10h30 – 13h00, Thursday, April 01, 2021</b> <b>Chairs: : Prof. Hassane MOUSTABCHIR, Prof. Jamal ZBITOU, Prof. Driss ACHEMLAL and Prof. Mohamed OUAHI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09">https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09</a>
ID: 37	<b>Manare Zerifi, Abdellatif Ezzouhairi and Abdelhak Boulaalam</b> SDN and NFV security approaches for IoT environments
ID: 52	<b>Majda Lakhal, Mohamed Benslimane, Mehdi Tmimi and Abdelali Ibriz</b> ARCHITECTURE OF A TELEMEDICINE SYSTEM FOR REMOTE MONITORING OF CORONAVIRUS PATIENTS
ID: 60	<b>Boutaina Elkinany, Mohammed Alfidid and Zakaria Chalh</b> LMI And PID+LQR For Stabilizing A Unicycle Robot
ID:98	<b>Achraf Daoui, Hicham Karmouni, Mhamed Sayyouri and Hassan Qjidaa</b> LabVIEW Implementation of Bio-signal Zero-Watermarking Using Tchebichef Moments
ID: 104	<b>Nouha Taifi</b> Cloud Computing Synchronization: Case of Late Emails' Social Impact
ID: 123	<b>Hamid El-Moumen, Nabil El Akchioui and Mohammed Hassani Zerrouk</b> About the reliability Analysis by Stochastic Petri net and Markovien model
ID: 200	<b>Driss Khouili, Ilyas Lahlouh, Mustapha Ramzi and Abdelmajid Bybi</b> Identification and comparison of three controllers for aerothermic process: experimental validation in real time conditions
<b>Oral Session ESAI 3 : Image and Video Processing</b> <b>10h30 – 13h00, Thursday, April 01, 2021</b> <b>Chairs: Prof. Khalid SATORI, Prof. Abderrahim SAAIDI and Prof. Mostafa EL MALLAHI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJISCS2WEFUUT09">https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJISCS2WEFUUT09</a>
ID: 8	<b>Mohammed Es-Sabry, Nabil El Akkad, Mostafa Merras, Abderrahim Saaidi and Khalid Satori</b> A New Image Encryption Algorithm Using Arnold Cat and Chebyshev Map
ID: 75	<b>Sara Chillali and Lahcen Oughdir</b> Image Encryption and Decryption Using Xilinx System Generator
ID: 119	<b>Mohamed Yamni, Hicham Karmouni, Mhamed Sayyouri and Hassan Qjidaa</b> New Invariant Meixner Moments for Non-Uniformly Scaled Images
ID: 144	<b>Laatra Yousfi, Lotfi Houam and Rachid Jennane</b> BSIF and Co-occurrence Matrices for Bone texture Characterization: Application to Osteoporosis Diagnosis
ID: 148	<b>Yahya M.A. Mohammed, Said El Garouani and Ismail Jellouli</b> Active Semantic Segmentation of Brain Tumor Regions from 2D MRI
ID: 202	<b>Aziz Sayouri, Mohammed Es-Sabry, Nabil El Akkad and Mostafa Merras</b> Encrypting Approach for Color Images Based on Combination of RSA Algorithm and XOR Operator

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<b>Oral Session ESAI 4: Telecom &amp; Network Technology</b> 10h30 – 13h00, Thursday, April 01, 2021 Chairs: <b>Prof. Bachir BENHALA, Prof. Said MAZER and Prof. Prof. Hakim EL FADILI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09">https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09</a>
ID: 4	<b>Tounzi El Mehdi, Rouijaa Hicham, Zbitou Jamal, Latrach Mohammed and Lakhssassi Ahmed</b> A New design of a Millimeter Planar Antenna for 5G Applications
ID: 57	<b>Elyazid Flihi, Mohammed Sriti, Driss Achemlal and El Haroui Mohamed</b> Convective heat transfer in porous materials : Semi-analytical simulation approach
ID: 67	<b>Souad Ajjaj, Souad El Houssaini, Mustapha Hain and Mohammed-Alamine El Houssaini</b> Taguchi and ANOVA methods for the performance analysis of VANET routing protocols
ID: 92	<b>Mohammed Bendaoued, Rachid Mandry, Abdelali Tajmouati, Otman Oulhaj, Larbi El Abdelaoui and Mohamed Latrach</b> Design of a Planar Multi-band Antennas Array based on Split Ring Resonator
ID: 97	<b>Jamal-Eddine Salhi, Tarik Zarrouk and Najim Salhi</b> Analysis of the surface state's influence on the thermohydraulic behavior of an incompressible fluid in convective laminar flow through a microchannel with corrugated surfaces
ID: 100	<b>Fatima Ouberri, Abdelali Tajmouati, Jamal Zbitou, Ahmed Errkik, Larbi El Abdellaoui and Mohamed Latrach</b> A Novel Circular Polarized Antenna Array for Wireless Power Transmission
ID: 101	<b>Asmae El Beqal, Bachir Benhala and Izeddine Zorkani</b> Genetic Algorithm for the Optimal Design of CMOS Voltage Controlled Oscillator
<b>Oral Session ESAI 5 : Artificial Intelligence</b> 16h00 – 18h30, Thursday, April 01, 2021 Chairs: <b>Prof. Khalid HADDOUCH, Prof. Mohamed LAZAAR and Prof. Karim EL MOUTAOUAKIL</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09">https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09</a>
ID: 33	<b>Asmae Bouchareb, Abdelhak Boulaalam, HASSANI Abdelhadi and HAROU Ahmed Amine</b> Sustainable Product Lifecycle Management through Internet of Things: An IoT-based Smart Parking System
ID: 86	<b>Narjiss Tilioua, Fatima Bennouna and Zakaria Chalh</b> Implementation of digital technologies to support automotive Products lifecycle management towards efficient collaboration
ID: 139	<b>Lotfi Houam, Abdallah Meraoumia, Meriem Mebarkia, Seddik Khemaissia and Rachid Jennane</b> Improved Osteoporosis Detection Accuracy Through Ensemble Classification
ID: 147	<b>Badreddine Benyacoub, Mohamed Barhdadi and Mohamed Ouzineb</b> A variable neighborhood search (VNS) algorithm model for credit scoring
ID: 195	<b>Ali El Kihel, El Mahdi Bouyahrouzi, Amar Bakdid, Yosra El Kihel, Hassan Gziri and Abdelmajid Saka</b> Bearing Fault Detection based on Artificial Neural Networks for the implementation of predictive maintenance
ID: 138	<b>Rokia Lamrani Alaoui and El Habib Nfaoui</b> Web attacks detection approach based on stacked generalization ensemble for LSTMs and word embeddings
<b>Oral Session ESAI 6 : Embedded systems and applications</b> 16h00 – 18h30, Thursday, April 01, 2021 Chairs: <b>Prof. Zakaria CHALH, Prof. Mohammed ALFIDI, Prof. Abdelmjid SAKA and Prof. Hicham HIHI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09">https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09</a>
ID: 31	<b>Hammadi Mezin, Ahmed Oussous and Ayoub Ait Lahcen</b> E-commerce recommender systems: A concise survey
ID: 109	<b>Youssef Jedidi, Abdelali Ibriz, Mohamed Benslimane, Mehdi Tmimi and Mounia Rahhali</b> Predicting student's performance using Data Mining Techniques from Big Data Technology in Cloud Computing
ID: 122	<b>Aissa Hali and Yamina Khlifi</b> A fine modeling of three types of photovoltaic modules using a combined analytical and numerical approach
ID: 183	<b>Hajar Chadli, Sara Chadli, Youssef Bikrat, Khalid Salmi, Abdelwahad Tahani and Amine Fakir</b> Real-time implementation of novel 5-level inverter controlled by digital SPWM technique
ID: 127	<b>Abderrahim Zannou, Abdelhak Boulaalam and El Habib Nfaoui</b> Data gathering from IoT networks
ID: 133	<b>Anass Slamti, Youness Mehdaoui, Driss Chenouni and Zakia Lakhliai</b> Design of High PSRR LDO Regulator for Internet of Things System on a Chip in 180-nm CMOS Technology

## ESAI 2021 Official Program

<b>Oral Session ESAI 7: Image and Video Processing</b> <span style="float: right;"><b>16h00 – 18h30, Thursday, April 01, 2021</b></span>	
<b>Chairs: Prof. Hamid TAIRI, Prof. Jamal RIFFI, Prof. Abdellatif EL ABDERRAHMANI and Prof. Mohammed Chakib SOSSE ALAOUI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJlSCs2WEFUUT09">https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJlSCs2WEFUUT09</a>
<b>ID: 40</b>	<b>Hamza Abdellahoum and Abdelmadjid Boukra</b> I-FCM: improving the Fuzzy c-means with a cooperative approach : Application in Image segmentation
<b>ID: 66</b>	<b>Fatima Haddani, Anas El Maliki and Ahmed Lkouen</b> Random Microstructure Generation
<b>ID: 129</b>	<b>Ilham Addarrazi, Hassan Satori and Khalid Satori</b> The Moroccan Arabic viseme-based visual speech recognition system using HMM
<b>ID: 135</b>	<b>Houam Mohamed Yassine, Meraoumia Abdallah, Laimeche Lakhdar and Bendib Issam</b> A Lightweight deep learning DCTNet for Facial Age Estimation
<b>ID: 180</b>	<b>Mohamed Najoui, Mounir Bahtat, Abdessamad Klilou, Anas Hatim and Said Belkouch</b> Faster Implementation Scheme of Complex Matrix Multiplication for VLIW architecture
<b>ID: 188</b>	<b>Zoheir Mentouri, Hakim Doghmane, Kaddour Gherfi, Rachid Zaghdoudi and Hocine Bourouba</b> Tool combination for the description of steel surface image and defect classification
<b>Oral Session ESAI 8 : Data analysis and Serious games</b> <span style="float: right;"><b>16h00 – 18h30, Thursday, April 01, 2021</b></span>	
<b>Chairs: Prof. Mohamed BENSLIMANE, Prof. Lahcen OUGHDIR, Prof. Ahmed ABERQI and Prof. Younes LAKHRISSE</b>	
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<b>ID: 9</b>	<b>Khaled Lounnas, Mourad Abbas, Mohamed Lichouri, Hocine Teffahi, Mohamed Hamidi and Hassan Satori</b> A Transfer Learning Approach For Identifying Spoken Maghrebi Dialects
<b>ID: 39</b>	<b>Manal Mouhajir, Abdellatif Ezzouhairi, Mohamed Baghrous and Soukayna Riffi Boualam</b> OBSdp: Ontology of Bike Sharing data privacy and their measures
<b>ID: 50</b>	<b>Soufiane Montassir, Hassane Moustabchir and Ahmed El Khalfi</b> A NURBS Basis Function for Structural Analysis
<b>ID: 87</b>	<b>Okba Kamal, Tmimi Mehdi, Ouazzani Kamar and Benslimane Mohamed</b> Artificial intelligence a major asset for Serious Games
<b>ID: 173</b>	<b>Amina Bengag, Asmae Bengag and Mohamed El Boukhari</b> The Greedy Perimeter Stateless Routing protocol in VANETs: Review, enhancements and analysis
<b>ID: 197</b>	<b>Adil Kenzi and Fadoua Yakine</b> A Model Driven Development Approach to Creating Adaptable REST Services
<b>ID: 130</b>	<b>Abdelouahed Selmani, Bachir Benhala, Mohamed Guerbaoui, Mohamed El Khayat, Iliass Rkik, Abdelali Eddahhak and Abdeslam Lachhab</b> Proposal of low-cost design for portable autonomous artificial respirator with remote managing features
<b>Oral Session ESAI 9 : Natural language processing</b> <span style="float: right;"><b>10h00 – 12h30, Friday, April 02, 2021</b></span>	
<b>Chairs: Prof. El Habib NFAOUI, Prof. Adil JEGHAL, Prof. Fadoua ATAA ALLAH and Prof. Youssef EL ALLIOUI</b>	
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<b>ID: 63</b>	<b>Otman Moussaoui, Yacine El YOUNOUSSI and Chaimae Azroumahli</b> Creating a Corpus of Moroccan comments by exploring Facebook
<b>ID: 79</b>	<b>Saida Laaroussi, Si Lhoussain Aouragh and Abdellah Yousfi</b> Distant n-gram Language Model for Contextual Spelling Correction Applied to Arabic Language
<b>ID: 153</b>	<b>Ibrahim Kaibi, El Habib Nfaoui, Hassan Satori and Benaissa Bellach</b> ArCovBERT: an Arabic Natural Language Understanding Model for Covid-19 Web Content Processing and Analysis
<b>ID: 201</b>	<b>Awatif Karim, Jaouad Boumhidi, Loqman Chakir and Youssef Hami</b> Classification of text documents: A Survey
<b>ID: 121</b>	<b>Hanane Grissette and El Habib Nfaoui</b> Embedded Techniques Comparison for Bio-Medical Sentiment Analysis: A Corpus-Based Case Study of COVID19 Drug-related Reviews

## ESAI 2021 Official Program

<b>Oral Session ESAI 10: Security and Wireless Network Technologies</b> 10h00 – 12h30, Friday, April 02, 2021 Chairs: <b>Prof. Abdellatif EZZOUHAIRI, Prof. Adil KENZI, Prof. Fadoua YAKINE and Prof. Afafe ANNICH</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09">https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09</a>
<b>ID: 10</b>	<b>Anselme Russel Affane Moundounga, Hassan Satori, Youssef Boutazart and Khalid Satori</b> An Energy Reducing Routing Model Based-on HMM in WSNs
<b>ID: 29</b>	<b>Rachid Fateh, Anouar Darif and Said Safi</b> Reproducing Kernel for Broadband Radio Access Network Channel Identification With Binary-Valued Outputs
<b>ID: 46</b>	<b>Latifa El Ahmar, Ahmed Errkik, Jamal Zbitou, Ilham Bouzida and Mohamed Latrach</b> A New Configuration of A Planar Passive UHF RFID Tag Antenna using Meander Technique
<b>ID: 49</b>	<b>Salaheddine Aourik, Ahmed Errkik and Jamal Zbitou</b> Design and Simulation of a Planar 4x4 Butler Matrix feeding a Serial Patch Antenna Arrays at 28 GHz
<b>ID: 56</b>	<b>Imad Badi, Hassan Badi, Mohamed Adoch, Abdelkhalek Bahri and Karim Elmoutaouakil</b> Supervised Identification and Equalization of Transmission Channel Using Reproducing Kernel Hilbert Space
<b>ID: 62</b>	<b>Mohamed El Haroui, Mohammed Sriti, Driss Achemlal and Elyazid Flihi</b> Mixed Convective flow in a Saturated Porous Medium with Variable Permeability
<b>ID: 113</b>	<b>El Fezazi Youssef, Said Idrissi, El Fezazi Nabil and Tissir El Houssaine</b> Stabilization of discrete systems with time-varying delay: control of the Mach number dynamics in wind tunnels
<b>Oral Session ESAI 11: Renewable Energies</b> 10h00 – 12h30, Friday, April 02, 2021 Chairs: <b>Prof. Souad EL KHATTABI, Prof. Saad MOTAHHIR, Prof. Fatima BENNOUNA and Prof. Mohammed ZOUTEN</b>	
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<b>ID: 110</b>	<b>Elmostafa Chetouani, Youssef Errami, Abdellatif Obbadi and Smail Sahnoun</b> Optimal Control of a DFIG Wind Turbine using Multi-Objective Particle Swarm Optimization Meta-Heuristic Algorithm
<b>ID: 152</b>	<b>Jamal-Eddine Salhi and Najim Salhi</b> Three-dimensional analysis of flow characteristics in a heat exchanger equipped with a perforated heat sink
<b>ID: 210</b>	<b>Hassna Salime, Badre Boussoufi and Youness El Mourabit</b> Fuzzy logic control for a permanent magnet synchronous generator used in wind energy conversion system
<b>ID: 162</b>	<b>Mohammed Karrouchi, Ismail Nasri, Hajar Snoussi, Kamal Kassmi and Abdelhafid Messaoudi</b> Realization and demonstration an attack technique on the vehicle's electrical system to control the dashboard computer via the CAN bus
<b>ID: 177</b>	<b>Mohamed Ribate, Rachid Mandry, Jamal Zbitou, Larbi El Abdellaoui and Mohamed Latrach</b> A 1.5 ~ 3.1 GHz Microstrip Broadband Power Amplifier for L and S Bands Applications
<b>ID: 154</b>	<b>Mounir Amraoui, Rachid Latif, Abdelhafid El Ouardi and Abdelouahed Tajer</b> Efficient GPU Implementation to Speed up Bio-Inspired Simultaneous Localization and Mapping of Mobile Robots
<b>Oral Session ESAI 12 : Embedded systems and applications</b> 10h00 – 12h30, Friday, April 02, 2021 Chairs: <b>Prof. Mohammed OUDGHIRI BENTAIE, Prof. El mehdi MELLOULI, Prof. Badre BOUSSOUFI and Prof. Abdeslam EL AKKAD</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09">https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09</a>
<b>ID: 159</b>	<b>Hamdaoui Mohammed, Alsharahi Gamil, Rochdi Majid and Faize Ahmed</b> Ground-penetrating radar modeling and application for detection and location of rebar in concrete
<b>ID: 203</b>	<b>Hanae Chaaouan, Mohamed Bouhadda, Rachid El Alami, Abdelouahed Essahlaoui and Youness Mehdaoui</b> Machine Learning Algorithms for Early and Accurate Diabetic Detection
<b>ID: 209</b>	<b>Iliass El Mrabti, Abdelhamid Touache, Abdelhadi El Hakimi and Abderrahim Chamat</b> Using artificial neural networks to predict springback in deep drawing process
<b>ID: 214</b>	<b>Ali Abarkan, Abderrahim Saaidi and Majid Benyakhlef</b> Educational-fun method for learning a programming language
<b>ID: 215</b>	<b>Youssef Admi</b> Gap Spacing Effect Between a Cylinder and Two partitions on Wake Structure and Drag Force
<b>ID: 226</b>	<b>Badreddine Lahfaoui</b> Digital Control of Wind Turbine Systems Without Disturbance by Using a DSPACE Card

## ESAI 2021 Official Program

<b>Oral Session ESAI 13 : Artificial intelligence</b> <span style="float: right;"><b>16h00 – 18h30, Friday, April 02, 2021</b></span>	
<b>Chairs: Prof. Jaouad BOUMHIDI, Prof. Chakir LOQMAN, Prof. Insaf BELLAMINE and Prof. Fatima EL HAOUSSE</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09">https://zoom.us/j/93863366289?pwd=MisvVFJiMFBDT25IT0p6YVh2RXNFdz09</a>
<b>ID: 47</b>	<b>Monir Ech-Chouyyekh, Mohamed Lazaar and Hicham Omara</b> Content-based filtering recommendation systems for scientific articles using SOM and k-means
<b>ID: 48</b>	<b>Safae Belamfedel Alaoui, Hassan Chafik and Mohamed Berrada</b> Land cover and land use classification: A comparison between random forest and k-means
<b>ID: 55</b>	<b>Sabrina Ennaji, Khalid Haddouch and Nabil El Akkad</b> An Analytical Performance Evaluation of Machine Learning Classifiers for Network Intrusion Detection System
<b>ID: 150</b>	<b>Nessrine Moumen, Abdellatif Ezzouhairi and Khalid Haddouch</b> Towards a new approach of intrusion detection system based on machine learning algorithms
<b>ID: 167</b>	<b>Hamza Touil, Nabil El Akkad and Khalid Satori</b> Enhance data integrity security in communication-based on the SHA-1 reconstruction.
<b>ID: 176</b>	<b>Ismail Nasri, Mohammed Karrouchi, Hajar Snoussi, Kamal Kassmi and Abdelhafid Messaoudi</b> Safety Embedded System for Accident Prevention Based on Artificial Intelligence Techniques
<b>Oral Session ESAI 14 : Speech &amp; Signal Analysis</b> <span style="float: right;"><b>16h00 – 18h30, Friday, April 02, 2021</b></span>	
<b>Chairs: Prof. Hassan SATORI, Prof. Ali YAHYAOU, Prof. Zouhair ABDELHAMID and Prof. Fahd KALLOUBI</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09">https://zoom.us/j/92918957490?pwd=LzVDRHU0ZVFhcmFUNWZPc0MzeWsvQT09</a>
<b>ID: 45</b>	<b>Nouhaila Bensalah, Ayad Habib, Abdellah Adib and Abdelhamid Ibn El Farouk</b> Improving Arabic to English Machine Translation
<b>ID: 17</b>	<b>Ezzine Abderrahim, Hassan Satori and Mohamed Hamidi</b> Automatic Speech Recognition for Mixed Amazigh and Darija Moroccan Dialects
<b>ID: 15</b>	<b>Ezzine Abderrahim, Mohamed Hamidi and Hassan Satori</b> Moroccan Darija Connected words Speech Recognition System
<b>ID: 171</b>	<b>Mohamed Sraitih and Younes Jabrane</b> An overview on signal processing methods for ECG Denoising
<b>ID: 12</b>	<b>Mohamed Hamidi, Hassan Satori, Ouissam Zealouk, Khaled Lounnas, Mourad Abbas, Mohamed Lichouri and Hocine Teffahi</b> Mixed ASR System for Amazigh and Arabic Under-Resourced Dialects in Maghreb Region
<b>ID: 18</b>	<b>Khaoula El Manaa, Hassan Satori and Mohamed Hamidi</b> Moroccan Arabic Voice Commands for Drones Control System
<b>Oral Session ESAI 15 : Fuzzy and Expert systems</b> <span style="float: right;"><b>16h00 – 18h30, Friday, April 02, 2021</b></span>	
<b>Chairs: Prof. Abdelhak BOULAALAM, Prof. My Abdelouahed SABRI and Prof. Mohammed adnane MAHRAZ</b>	
<b>ZOOM Link</b>	<a href="https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJlSCs2WEFUUT09">https://zoom.us/j/94139543622?pwd=MDgyejJMWW1xbm4wUTJlSCs2WEFUUT09</a>
<b>ID: 91</b>	<b>Lahcen Ouboubker, Jawad Lamterkati, Mohamed Khafallah and Aziz El Afia</b> IP Fuzzy Self Tuning Controller Based on Direct Torque Control for Improved Speed Control of Induction Machine
<b>ID: 114</b>	<b>Soukayna Riffi Boualam and Abdellatif Ezzouhairi</b> The utility of combining link and node metrics using fuzzy logic
<b>ID: 208</b>	<b>Mohammed Benzaouia, Bekkay Hajji, Anne-Megan Dubois, Adel Mellit and Rabhi Abdelhamid</b> An intelligent irrigation system based on fuzzy logic con-trol: A case study for Moroccan oriental climate region
<b>ID: 102</b>	<b>Irfan Syamsuddin and Dekar Urumsah</b> A Fuzzy Analytic Hierarchy Process (FAHP) Methodology to Open Source Cloud Data Storage Selection
<b>ID: 140</b>	<b>Abdelilah Et-Taleby, Mohamed Benslimane, Mohammed Boussetta and Kaoutar Kouryani</b> Photovoltaic Faults Detection and Classification Based on K-means and Fuzzy Logic Algorithms
<b>ID: 174</b>	<b>Mohammed Merhraoui and Nabil Elakkad</b> Extraction and analysis of consumer opinions on the web for decision-making: Application to tourism



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**Oral Session ESAI 16 : Artificial Intelligence and Embedded Systems 16h00 – 18h30, Friday, April 02, 2021**

**Chairs: Prof. Mhamed SAYYOURI, Prof. Jamila EL HAINI, Prof. Mostafa MERRAS and Prof. Hamid LOULIJAT**

<b>ZOOM Link</b>	<a href="https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09">https://zoom.us/j/92653729261?pwd=eXFuSkh3NTZQeDhweitKMEFod1N6Zz09</a>
<b>ID: 94</b>	<b>Jamal-Eddine Salhi, Tarik Zarrouk, Seyed Soheil Mousavi Ajarostaghi and Najim Salhi</b> Numerical Evaluation the Impact of the Inserts Shape on Thermo-Flow Behavior in a Heat Exchanger
<b>ID: 181</b>	<b>Houda Bouyarmane, Mehdi El Amine and Mohammed Sallaou</b> Taking into Account Behavior Models Accuracy on the Product Environmental Performance
<b>ID: 191</b>	<b>Hayat El Asri, Laila Benhlime and Abderrahim Agnaou</b> From Paper-based to Electronic Procurement: The Role of Artificial Intelligence
<b>ID: 206</b>	<b>Mohamed Baghrous, Abdellatif Ezzouhairi, Nabil Benamar, Manal Mouhajir and Soukayna Riffi Boualam</b> Deploying Fog Computing in Smart Farming
<b>ID: 193</b>	<b>Abdeslam Fakchich, Mohamed Bouhadda, Rachid El Alami, Abdelaouahed Essahlaoui and Youness Mehdaoui</b> Optical Wireless Communication using BPSK Modulation over Turbulence Channel with Fog Attenuation.
<b>ID: 228</b>	<b>Nadia Berrahou, Abderrahim Mesbah, Abdelmajid El Alami, Zouhir Lakhili and Hassan Qjidaa</b> Charlier Moments for Reducing the Computational Complexity and Improving Image Classification of Deep Convolutional Neural Networks