# **2022 International Conference on Intelligent Systems and Computer** Vision (ISCV 2022)

Fez, Morocco 18-19 May 2022



IEEE Catalog Number: CFP22A23-POD **ISBN:** 

978-1-6654-9559-2

# **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:    |  |
|-------------------------|--|
| ISBN (Print-On-Demand): |  |
| ISBN (Online):          |  |
| ISSN:                   |  |

CFP22A23-POD 978-1-6654-9559-2 978-1-6654-9558-5 2768-0746

# 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





http://iscvconf.com/2022/

# Table of contents

# Deep Learning

1. Diab Abuaiadah, Alexander Switzer, Michael Bosu and Yun Liu; Automatic counting of chickens in confined area using the LCFCN algorithm...1

2. Bilal Hassan and Ebroul Izquierdo; OneDetect: A Federated Learning Architecture for Global Soft Biometrics Prediction...8

3. Lina Nicolaieff, Mohamed Mehdi Kandi, Younes Zegaoui and Christophe Bortolaso; Intelligent Document Processing with Small and Relevant Training Dataset...16

4. Abdelmajid El Alami, Abderrahim Mesbah, Nadia Berrahou, Aissam Berrahou and Hassan Qjidaa; Quaternion Discrete Racah Moments Convolutional Neural Network for Color Face Recognition...23

# Machine Learning

1. Yiwei Xia, Jun Ma, Chuyue Yu, Xunhuan Ren, Viktar Yurevich Tsviatkou and Anatoliy Antonovich Boriskevich; Recognition System Of Human Activities Based On Time-Frequency Features Of Accelerometer Data...28

2. Hanae Aoulad Ali, Mohamed Chrayah, Abdelhamid Bouzidi, Nabil Ourdani and Taha El Alami; A Comparative Evaluation use Bagging and Boosting Ensemble Classifiers...33

3. Mohammed Oughanem, Samira Bounid and Salman Bourkadi; Advanced Financial Data Processing and Labeling Methods for Machine Learning...39

4. Mouhssine El Atillah, Khalid El Fazazy and Jamal Riffi; Recognition of Arabic digits using a convolutional neural network...45

5. Younes Manzali and Mohamed El Far. A new decision tree pre-pruning method based on nodes probabilities...50

# **Text Mining and Applications**

1. Salehah Omar, Juhaida Abu Bakar, Maslinda Mohd Nadzir, Nor Hazlyna Harun and Nooraini Yusoff; Malay lexical simplification model for non-native speakers...55

2. Hanane Grissette and El Habib Nfaoui; Do Patients Tend to Find Positive or Negative Feedback on Social Networks? A Study of the Main Aspects of Modelling Patient Understanding Based on Emotional Variants...61



#### http://iscvconf.com/2022/

3. Mohamed Zouitni, Alami Hamza, Said Lafkiar, Nabil Burmani, Mohammed Taleb and Noureddine En Nahnahi; Machine Learning Based Methods for Arabic Duplicate Question Detection...69

4. Anoual El Kah and Imad Zeroual; Is Arabic text categorization a solved task?...75

5. Nabil Burmani, Hamza Alami, Said Lafkiar, Mohamed Zouitni, Mohammed Taleb and Noureddine En Nahnahi; Graph based method for Arabic text summarization...81

#### Intelligent Transport System

1. Jun Ma, Chuyue Yu, Yiwei Xia, Xunhuan Ren, Viktar Yurevich Tsviatkou and Boriskevich Anatoliy Antonovich. Framework for Estimating Distance and Detecting Object on Mono-camera...89

2. Amine Kherraki, Muaz Maqbool and Rajae El Ouazzani. Robust Traffic Signs Classification using Deep Convolutional Neural Network...94

3. Anas Charroud, Ali Yahyaouy, Karim El Moutaouakil and Uche Onyekpe. Localisation and Mapping of Self-driving Vehicles based on Fuzzy K-means Clustering : A Non-semantic Approach...100

4. Zakaria Benyahia, Mostafa Hefnawi, Mohammed Aboulfatah, Elhassane Abdelmounim and Taoufik Gadi. SqueezeNet-Based Range, Angle, and Doppler Estimation for Automotive MIMO Radar Systems...108

5. Imad El Mallahi, Asmae Dlia, Jamal Riffi, Hamid Tairi and Mohammed Adnane Mahraz. Prediction of Traffic Accidents using Random Forest Model...113

#### Advanced Deep Learning

1. Amine Kheldouni and Jaouad Boumhidi. A Study of Bidirectional Encoder Representations from Transformers for Sequential Recommendations...120

2. Ghizlane Hnini, Jamal Riffi, Mohamed Adnane Mahraz, Ali Yahyaouy and Hamid Tairi. Spam image detection based on convolutional block attention module...125

3. Marem H. Abdulabas and Noor D. Al-Shakarchy. Face information forensics analysis based on facial aging: A Survey...129

4. El Hadi Moulay Lhabib, Nasri M'Barek, Farhaoui Youssef and Ellaoui Ahmad. Application of the deep learning approach for identification and face recognition in real-time video...136

5. Omar Aitoulghazi, Ahmad Jaafari and Asmaa Mourhir. DarSpeech: An Automatic Speech Recognition System for the Moroccan Dialect...142



#### http://iscvconf.com/2022/

6. Anis Ammar, Amani Chebbah, Hana Ben Fredj and Chokri Souani. Comparative Study of latest CNN based Optical Flow Estimation...148

#### **Advanced Machine Learning**

1. Zaynabe Ragala, Asmaa Retbi and Samir Bennani. MTTR Prediction of railway rolling stock using regression algorithms...154

2. Sabri Abdelouahed, Cherrate Meryem, Ali Yahyaouy and Aarab Abdellah. Moroccan sign language recognition based on machine learning...160

3. Abdelaaziz Hessane, Ahmed El Youssefi, Yousef Farhaoui and Badraddine Aghoutane. Toward a Stage-wise Classification of Date Palm White Scale Disease using Features Extraction and Machine Learning Techniques...165

4. Kawtar Najmani, Lahbib Ajallouda, El Habib Ben Lahmar, Sael Nawal and Zellou Ahmed. Offline and Online Evaluation for Recommender Systems...171

5. Marwa Kebir and Kais Ouni. Perspectives Of Classical Methods Of Face Recognition...176

#### **Advanced Text Mining and Applications**

1. Sylia Amarouche, Sabrina Mostefai, Fatiha Amirouche and Said Talbi. New approach of smoothing to extend language model in Lucene...184

2. Dounia Rahhali, Noureddine En-Nahnahi and Yassine Khaider. Exploring text representation impact on K-means based arabic text documents clustering...191

3. Mohamed El Boujnouni. A study and identification of COVID-19 viruses using N-grams with Naïve Bayes, K-Nearest Neighbors, Artificial Neural Networks, Decision tree and Support Vector Machine...196

4. Bouchra El Idrissi, Karim Doumi and Chadia Tetou. On The Formalization of The TOGAF Content MetaModel Using Ontologies...203

5. Mohammed Taleb, Hamza Alami, Nabil Burmani, Mohamed Zouitni, Said Lafkiar and Noureddine En Nahnahi. Detection of toxicity in social media based on Natural Language Processing methods...209

#### **Image Processing and Analytics**

 Ouchker Rabab, Tahiri Mohamed Amine, Ahmed Bencherqui, Hicham Amakdouf, Qjidaa Hassan and Ouazzani Jamil Mohammed. Efficient localization and reconstruction of 3D objects using the new hybrid squire moment...216
Amiera Syazlin Md Azhar, Nor Hazlyna Harun, Nooraini Yusoff, Mohamad Ghozali Hassan and Beng Chu Kua. Image Enhancement on Underwater Images for Protozoan White Spot Fish Disease Detection...224



#### http://iscvconf.com/2022/

3. Tahiri Mohamed Amin-e, Bencherqui Ahmed, Karmouni Hicham, Sayyouri Mhamed, Qjidaa Hassan and Ouazzani Jamil Mohamed. Optimal 3D object reconstruction and classification by separable moments via the Firefly Algorithm...228

4. Sabeeh-Abdul Rehman, Zoe Jeffrey, Yichuang Sun and Oluyomi Simpson. SASHA: A Shift-Add Segmented Hybrid Approximated Multiplier for Image Processing...236

5. Hanae Mahmoudi, Hiba Ramadan, Jamal Riffi and Hamid Tairi. Iconic registration based on the local dissimilarity card...241

6. Jiyuan Hu, Tao Wang and Shiqiang Zhu. VMM: Viewpoint-based Memory Mechanism for Object Detection of Moving Sensors...245

#### **Reinforcement Learning and Optimization**

1. Chaymae Chouiekh, Ali Yahyaouy, Abedellah Aarab and Abdelouahed Sabri. Road Traffic: Deep Q-learning Agent Control Traffic lights at an intersection...252

2. El Mehdi Ben Laoula, Omar Elfahim, Mohamed Youssfi and Omar Bouattane. Drone path optimization in complex environment based on Qlearning algorithm...257

3. Omar Elfahim, El Mehdi Ben Laoula, Mohamed Youssfi, Oussama Barakat and Mohamed Mestari. Deep Reinforcement Learning Approach for Emergency Response Management...264

4. Ali Tarraq, Faissal Elmariami, Abdelaziz Belfqih, Touria Haidi, Naima Agouzoul and Rabiaa Gadal. Meta-heuristics Applied to Multiple DG Allocation in Radial Distribution Network: A comparative study...271

5. Abdellah Ahourag, Karim El Moutaouakil, Saliha Chellak and Hicham Baizri. Multi-criteria optimization for optimal nutrition of Moroccan diabetics...279

6. Imad El Hajjami and Bachir Benhala. Simulation Experiments of Different Metaheuristics Algorithm using Benchmark Functions: A Performance Study...285

#### **Fuzzy and Control Systems**

1. Hamza Es-Sarraj, Ayoub El Bakri, Ismail Boumhidi and Rim Mrani Alaoui. FSMC for PWM rotor side converter in DFIG-based wind turbine system...291

2. Hafid Oubouaddi, Adil Brouri and Abdelmalek Ouannou. Speed control of switched reluctance machine using fuzzy controller and neural network...298



#### http://iscvconf.com/2022/

3. Driss El-Jimi, Noreddine Chaibi, Ismail Boumhidi, Mohammed Charqi and Ghizlane El Khaloufi. Admissibility Analysis of T-S Fuzzy singular system with time varying-delay...304

4. Mohamed Kmich, Hicham Karmouni, Inssaf Harrade, Achraf Daoui and Mhamed Sayyouri. Image-Based Visual Servoing Techniques for Robot Control...310

5. Zaidan Didi and Ikram El Azami. Monitoring Photovoltaic Panels Using the ESP32 Microcontroller via low-power Bluetooth Communication...316

6. Jawad Abdouni, Tarik Jarou, Abderrahim Waga, Sofia El Idrissi, Meryam El Mahri and Ihssane Sefrioui. A new sampling strategy to improve the performance of mobile robot path planning algorithms...322

#### Healthcare and Medical Data Analytics

1. Ghizlane El Khaloufi, Noreddine Chaibi, Sadek Belamfedel Alaoui, Driss El-Jimi and Ismail Boumhidi. Design of Observer for Cardiovascular Anomalies Detection: an LMI approach...329

2. Mohamed Sraitih and Younes Jabrane. A survey of deep learning approaches for classifying ECG heartbeat arrhythmias...335

3. Khalil Bouramtane, Said Kharraja and Omar Elbeqqali. A Decision-Making System for emergency service design and management during pandemic COVID-19...343

4. Kaouthar Touchanti, Moulhime El Bekkali and Imad Ezzazi. A 2-stages feature selection framework for colon cancer classification using SVM...351

5. Alaa Jamal and Ashwan A. Abdulmunem. Bone age assessment using deep learning architecture: A Survey...356

6. Khaoula Mkhayar, Souad Elkhattabi and Ossama Daoui. In silico molecular investigations of derived cyclohexane-1,3-dione compounds as potential inhibitors of protein tyrosine kinase C-met: 2D QSAR, molecular docking and ADMET...362

7. Youssef Filali, Hasnae El Khoukhi, My Abdelouahed Sabri and Abdellah Aarab. Analysis and Classification of skin cancer Based on Deep Learning approach...370

#### Smart Enterprise and Financial Data Analytics

1. Yahya Hanine, Mohamed El Moktar Malick, Mohamed Tkiouat, Younes Lahrichi and Youssef Lamrani Alaoui. A New Financial Group Lending Based on Smart Contracts: An Agent-based Simulation...376



#### http://iscvconf.com/2022/

2. Nabil Ourdani and Mohamed Chrayah. Big Data and public finance sector...381

3. Youness Jouilil and Driss Mentagui. An ARIMA Model for Modeling and Forecasting the Dynamic of Univariate Time Series : The case of Moroccan Inflation Rate...387

4. Mourad Zbakh, Noura Aknin and Mohamed Chrayah. Towards a new method for classifying employee performance using machine learning algorithms...392

5. Imane Mjimer, Es-Saadia Aoula and El Hassan Achouyab. Using Support Vector Regression to Predict the Overall Equipment Effectiveness Indicator...397

6. Meryeme El Yadari, Ali Yahyaouy, Khalid El Fazazy, Stéphane Le Masson and Hamid Gualous. Placement methods of Virtual Machines in servers...402

### **E-Learning**

1. Taleb Mahdi and Pheniqi Youssef. IT Agility and Moroccan HEI's Innovation Performance: The Moderating Role of IT Ambidexterity...409

2. Mohamed Timmi, Loubna Laaouina, Adil Jeghal, Said El Garouani and Ali Yahyaouy. Learning analytics: a review of the literature...416

3. Youssra Bellarhmouch, Adil Jeghal, Nadia Benjelloun and Hamid Tairi. Overview of personalization approaches in MOOCs...420

4. Abdelwahab El Azzouzi, Fatiha Kaddari and Abdelrhani Elachqar. Physics mathematization: Teachers observations on the integration of ICT...427

#### **Additional Paper**

1. S. E. Loukili, A. Ezzati, S Ben Alla and B. Zraibi. Reducing the Training Time of Deep Learning Models Using Synchronous SGD and Large Batch Size...432