12th IEEE International Conference on Image Processing Theory, Tools and Applications

IPTA 2023

October 16-19, 2023

Paris, France

Location

The conference will be held in Paris at the Hôtel CIS Paris:

Centre International de Séjour de Paris, 6 avenue Maurice Ravel, 75012 Paris, France
https://www.hotel-cis-paris-ravel.com/en

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Forword

On behalf of the 12th IPTA 2023 Program and Organizing Committees, we welcome you to the twelfth International Conference on Image Processing Theory, Tools and Applications to be held October 16-19, in Paris, France. We are pleased to inform you that the conference program prepared by the Technical Committee includes a number of keynote addresses and the latest research findings in the area of image processing and machine learning. The initial call for paper resulted in an overwhelming response with many submissions from Africa, Asia, Europe, and America.

After a thorough review of the submissions, the program committee accepted finally 45 regular papers for presentation. The papers cover a variety of topics in the field of image processing theory, tools and applications. In addition, the program includes five keynote speeches to be presented by renowned experts in the field of image processing.

The 12th International Conference on Image Processing Theory, Tools and Applications IPTA 2023 continues to be a platform that brings together leading researchers and practitioners from academia and industry engaged in research and development related to image processing theory and applications. As with previous IPTAs, the papers presented at the conference will be indexed in IEEE Explore for wider access.

Putting together IPTA 2023 was a team effort. First of all, we would like to thank the authors and invited speakers for preparing and organizing the content of the program. We would like also to express our gratitude to the program committee and external reviewers, who worked very hard in reviewing the submissions and providing suggestions for further improvements of the papers.

Finally, we want to express our thanks to the sponsors and supporting institutions and we hope that all the participants of IPTA 2023 will find the program to their expectations while enjoying the beautiful city of Paris.

Program and Organizing Committees
IPTA 2023

12th IEEE International Conference on Image Processing Theory,
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Sponsored and Supported by:

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Mourad OUSSALAH, Finland
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IPTA Venue

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Adress: Centre International de Séjour de Paris, 6 avenue Maurice Ravel, 75012 Paris, France

Homepage: https://www.hotel-cis-paris-ravel.com/en

Author Informations:

Official Language of the Conference:
The official language of the conference is English and will be used for all presentations and printed material.

Oral Presentations:

A 20 mn (15mn presentation and 5mn for questions) is allocated for each contributed oral presentation by a video projector.

Monday October 16, 2023

8h30-08h50	Welcome Desk / Registration
08h50-09h00	Opening, Conference Chairs

Monday October 16, 09h00-10h30

Tutorial T1: Explainable AI in the problems of Image Classification

Prof. Jenny Benois-Pineau, University of Bordeaux, France
Chairs: Mourad OUSSALAH, Khalifa DJEMAL
Room: Bastille

10h30: Coffee Break

Monday October 16, 10h45-12h30

Tutorial T2: Retinal images: From biometrie to early diagnosis of ocular pathologies.

Prof. Rostom Kachouri, ESIEE Paris, France
Chairs: Rachid JENNANE, Jean-Yves DIDIER
Room: Bastille

12h30: Lunch

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Oral Session 1: Pattern recognition and computer vision: I
Chairs: Rachid JENNANE, Sheli Sinha CHAUDHURI
Room: Bastille

P61: Exploration of Deep Methods for Cross-Domain Aerial Image Matching.
Md Shahid, Prajwal VK, Inzamam-ul Haq, Md. Faisal (India)

P14: A 3D Deep Learning Approach for Meniscus Tear Severity at the Region-level.
Mohamed BERRIMI, Rachid JENNANE, Mourad OUSSALAH (France / Finland)

P15: RWU3D: Real World ToF and Stereo Dataset with High Quality Ground Truth.
Ankita AGRAWAL, Tobias SCHMAHLING, Tobias MULLER (Germany)

P42: Foliage-Pattern-Identifier: A Hybridized Grey Wolf & Adam optimized Deep Learning architecture designed for identification of similarly patterned leaves.
Sriparna BANERJEE, SK Daud HASSAN, Suranjana MUKHERJEE, Sheli Sinha CHAUDHURI, Khalifa DJEMAL, Amir Ali FEIZ (India / France)

P47: VK-SITS: a Robust Time-Surface for Fast Event-Based Recognition.
Laure ACIN, Pierre JACOB, Camille SIMON-CHANE, Aymeric HISTACE (France)

16h00: Coffee Break

Oral Session 2: Medical image identification
Chairs: Mourad OUSSALAH, Rostom KACHOURI
Room: Bastille

P55: Early glaucoma screening Decision Tree using in-depth clinical analysis of the optic nerve head.
Rostom Kachouri, Mohamed Akil, Amed Mvoulana (France)

P39: Skin Cancer Classification using Levy Stable Based Ensemble and It's Real-Time Implementation on OpenVINO Toolkit.
Moumita Hait, Rajani Das, Asfak Ali, Sheli Sinha Chaudhuri, Khalifa Djemal (India / France)

Oral Session 3: Image and video processing, coding and compression: I
Chairs: Dionysis GOULARAS, Jean-Yves DIDIER
Room: Bastille

P5: Automatic Retail Dataset Creation with Multiple Sources of Information Synchronization.
Ricardo PALACIOS, Bryan PIGUAVE, Jefferson HERNANDEZ, Andres ABAD (Equator)

P41: Fuzzy Logic based adaptive weighted despeckling method designed considering inter-pixel scattering similarities.
Debanka PAL, Sriparna BANERJEE, SK Daud HASSAN, Sheli Sinha CHAUDHURI, Khalifa DJEMAL (India / France)

P25: Blind Image Separation Using Composite Criteria based on Statistical Information and Sparse Representation.
Fouad BOUDJENOUIA, Karim ABED-MERAIM, Rachid JENNANE, Aladine CHETOUANI (France)

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Tuesday October 17, 2023

8h20-08h30	Welcome Desk / Registration

Tuesday October 17, 08h30-10h30

Oral Session 4: Pattern recognition and computer vision: II
Chairs: Sheli Sinha CHAUDHURI, Jenny BENOIS-PINEAU
Room: Trichaud 2

P17: Context-Aware Facial Expression Recognition in Group Photos.
Duygu CAKIR, Nafiz ARICA (Turkey)

P22: An Order and Difference Local Binary Pattern for Hyperspectral Texture Classification.
Adam EL BERGUI, Alice POREBSKI, Nicolas VANDENBROUCKE (France)

P24: Visualization for Multivariate Gaussian Anomaly Detection in Images.
Joao Paulo CASAGRANDE BERTOLDO, David ARRUSTICO (France)

P34: EOD-Net: Enhancing Object Detection in Challenging Weather Conditions Using an Innovative End-to-End Dehazing Network.
Sargis HOVHANNISYAN, Hayk GASPARYAN, Sos AGAIAN (USA)

P35: Leveraging Transfer Learning for Analysing Cattle Front Teat Placement.
Hina AFRIDI, Mohib ULLAH, Anne Guro LARSGARD, Faouzi ALAYA-CHEKH (Noway)

P53: Interactive and light approach for near duplicate retrieval in multiple contexts.
Samuel LOZACHMEUR, Thierry URRUTY, Philippe CARRE *(France)*

10h30: **Coffee Break**

Tuesday October 17, 10h45-11h45

Invited Speaker 1: Development of Land Cover Monitoring System using Simultaneous Multi-pixel Classification Strategy based Deep Neural Architecture
Prof. Sheli Sinha CHAUDHURI, Jadavpur University, Kolkata, India
Chairs: Sos Agaian AGAIAN, Jérôme LAPUYADE-LHORGUE
Room: Trichaud 2

Tuesday October 17, 11h45-12h30

Oral Session 5: Image forensics and security
Chairs: Dionysis GOULARAS, Jean-Yves DIDIER
Room: Trichaud 2

P7: Enhanced DFT-Based Chaotic Image Block Cipher with Several Modes of Operation.
Mahmoud YASSIN, Ali NASIR, Mostafa TAHA, Naveed IQBAL (Saudi Arabia / Canada)

P30: Deep Ensemble Learning with Frame Skipping for Face Anti-Spoofing.
Usman MUHAMMAD, Md Ziaul HOQUE, Mourad OUSSALAH, Jorma LAAKSONEN (Finland)

12h30: **Lunch**

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Special Session 1: Signal, Image processing and Machine Learning for Neuroscience

Chairs: Mouloud ADEL, Régine LE BOUQUIN JEANNÈS, Salah BOURENNANE
Room: Trichaud 2

P9: Retrospective motion estimation for fetal brain MRI.
Chloé MERCIER, Sylvain FAISAN, Alexandre PRN, Nadine GIRARD, Guillaume AUZIAS, Thierry CHONAVEL, Francois ROUSSEAU (France)

P21: Features Extraction on Independent Component Analysis Computed on Interictal Magnetoencephalography to Characterize Epileptic Sources.
Aurore SEMEUX-BERNIER, Francesca BONINI, Maria FRATELLO, Elodie GARNIER, Samuel MEDINA VILLALON, Jean-Michel BADIER, Frédéric RICHARD, Christian-George BENAR (France)

P31: Post-processing of light sheet fluorescence microscope images using auto-encoders and Richardson-Lucy deconvolution.
Adrien JULIA, Rabah IGUERNAISSI, François MICHEL, Valery MATARAZZO, Djamal MERAD (France)

P60: Dynamic Time Warping-based distance for constructing individual brain networks from FDG-PET Images: Application to Alzheimer's Disease.
MinhTuan PHAM, Mouloud ADEL, Nguyen LINH TRUNG, Eric GUEDJ (France)

15h15: **Coffee Break**

Oral Session 6: Machine Learning methods for image and video analysis: I

Chairs: Pong C Yuen, Mouloud ADEL
Room: Trichaud 2

P6: Invariant Convolutional Networks.
Matěj LEBL, Jan FLUSSER (Czech Republic)

P11: CNN Ensemble Robust to Rotation Using Radon Transform.
Václav KOSIK, Jan FLUSSER, Tomáš KARELLA (Czech Republic)

P13: Heuristic hyperparameter choice for image anomaly detection.
Zeyu JIANG, Joao Paulo CASAGRANDE BERTOLDO, Etienne DENCECIERE (France)

P28: U-Net with Attention Module: Gland Segmentation in H&E Histopathological Images.
Zeynep YILDIRIM, Refik SAMET, Emrah HANCER, Nooshin NEMATI, Mohamed Traore MALI (Turkey)

P29: OSA-NET : An Efficient Convolutional Neural Network for OSA Diagnosis Screening Tool.
June-Young PARK, Tae-Joon KIM, Hye-Rim SHIN (Korea)

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Oral Session 7: Machine Learning methods for image and video analysis: II

Chairs: Jérôme LAPUYADE-LAHORGUE, Dionysis GOULARAS
Room: Trichaud 2

P36: Self-supervised Animal Detection in Indoor Environment.
Taifour YOUSRA, Adane TAREKGN, Mohib ULLAH, Azeddine BEGHDADI, Faouzi ALAYA-CHEKH (France / Norway)

P40: Prediction of Head-Neck Cancer Recurrence from PET/CT Images with Havrda-Charvat Entropy.
Thibaud BROCHET, Jérôme LAPUYADE-LAHORGUE, Li HUA, Pierre VERA, Pierre DECAZES, Su RUAN (France)

P48: Transformers-Based Neural Network for Cardiac Infarction Segmentation in Delayed-Enhancement MRI.
Erwan LECESNE, Antoine SIMON, Mireille GARREAU (France)

Concert

Tuesday October 17, 18h00-19h00

Music meets Science Group

Artists: *François Pineau-Benois, violon and Mark Drobinsky, violoncelle*
Room: Restaurant Salle-Blanche

Program:

W.-A. Mozart : Duo sol Majeur K-423	G.-F. Haendel-J. Halvorsen : Passacaglia
Allegro-Adagio-Rondo	C. Saint-Saëns : Introduction et Rondo Cappriccioso, op. 28
C. Saint-Saëns : Danse Macabre, op. 40	L.-C. Daquin :Coucou
J.-B. Rameau : La Poule	N. Paganini : Carnival de Venise

Cocktail for all participants: Tuesday October 17, 19h00-22h00

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Wednesday October 18, 2023

08h20-08h30	Welcome Desk/ Registration

Oral Session 8: Machine Learning methods for image and video analysis: III

Chairs: Jenny BENOIS-PINEAU, Rachid JENNANE
Room: Salle Terrasse Bel Air

P43: MangNet: A Muti-Scale Contextual Information Driven Deep Learning Architecture designed to perform Sunderban Landcover classification.
SK Daud Hassan, Sriparna Banerjee, Debanka Pal, Sheli Sinha Chaudhuri, Khalifa Djemal, Amir Ali Feiz (India / France)

P50: Leveraging Explainability methods in Spectral Domain for Data Augmentation and efficient training of CNN classifiers for Covid-19 Detection.
Meaza Eyakem GEBREAMLAK, Meghna P AYYAR, Jean-Pierre SALMON, Jenny BENOIS-PINEAU, Akka ZEMMARI (France)

P58: Prediction of Air Pollutant Concentrations in Airport Areas using Machine Learning Architecture.
Huaijin WANG, Khalifa DJEMAL, Amir Ali FEIZ, Sheli Sinha CHAUDHURI (France / India)

P49: Effects of Region of Interest Location on Osteoarthritis Detection Using Deep Learning.
Bouyahmed TINHINANE, Yassine NASSER, Ahmad ALMHDIE, Soraya ALOUI, Rachid JENNANE (France)

10h00: Coffee Break

Invited Speaker 2: Annotation-Efficient Deep Learning for Medical Image Segmentation

Prof. Pong C Yuen, Hong Kong Baptist University, Hong Kong
Chairs: Mouloud ADEL, Sheli Sinha CHAUDHURI
Room: Salle Terrasse Bel Air

Oral Session 9: Applications: I

Chairs: Djemel ZIOU, Jean-Yves DIDIER
Room: Salle Terrasse Bel Air

P26: Tobacco Leaf Disease Segmentation based on TDSSNet.
JinLiang OU, Hong LIN, Zhenping QIANG, ZhuQun CHEN, YanZe ZOU (China)

P23: Skin Lesion Classification Based on Segmented Image.
Aleksandra DZIENISZEWSKA, Piotr GARBAT, Ryszard PIRAMIDOWICZ (Pland)

P19: A deep-learning based algorithm for image reconstruction in Compton tomography.
Ishak AYAD, Javier CEBEIRO, Cecilia TARPAU, Mai K. NGUYEN (France / UK / Argentina)

P37: Identifying color space for improved image display.
Djemel ZIOU (Canada)

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12h30: **Lunch**

14h00 – 18h00: Free tour of Paris

19h00 Gala Dinner

WARNING: You should be before **18h45** at the following address:

Paris en Seine, Pont de Bir-Hakeim l'île aux cygnes 75015 Paris

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Thursday October 19, 2023

08h20-08h30	Welcome Desk/ Registration

Thursday October 19, 08h30-10h00

Oral Session 10: Image and video processing, coding and compression: II
Chairs: Ehsan SEDGH GOOYA, Amir FEIZ
Room: Salle Stage

P8: Privacy Preserving Encoder Classifier for Access Control Based on Face Recognition.
Raghida EL SAJ, Chi-Hieu PHAM, Ehsen SEDGH GOOYA, Ayman AL FALOU, Mohamad KHALIL (France / Libanon)

P27: Road Condition Detection and Crowdsourced Data Collection for Accident Prevention: A Deep Learning Approach.
Md Saroar JAHAN, Mominul ISLAM, Md Sanjid HOSSAIN, Mourad OUSSALAH, Jhuma Kabir MIM (Finland)

P32: Frequency Analysis on Neuromorphic Data Using Discrete Fourier Transform.
Jens GUNDMARK, Hanna HAMRELL, Johan BERNELAND, David GUSTAFSSON (Sweden)

P59: VMD Based Powerline Interference Cancellation in ECG Signals.
Haroon YOUSUF Mir, Omkar SINGH (India)

10h00: **Coffee Break**

Thursday October 19, 10h15-11h15

Invited Speaker 3: Quaternion Neural Networks: A Novel Framework for Robust Scene Perception in Self-Driving Cars
Prof. Sos Agaian, College of Staten Island and Graduate Center, USA
Chairs: William PUECH, Jenny BENOIS-PINEAU
Room: Salle Stage

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Oral Session 11: **Applications: II**
Chairs: Jenny BENOIS-PINEAU, Dionysis GOULARAS
Room: **Salle Stage**

P2: Animated lightning bolt generation using machine learning.
Henrik Johansson, Prashant Goswami, Abbas Cheddad (Sweden)

P51: Pest Detection and Identification Guided by Feature Maps.
Miao Chen, Yanan Chen, Minghui Guo, Jianji Wang (China)

P56: A Robustness Study of Machine Learning Based Methods for Macula Detection in Pathological Fundus Images.
Yaroub ELLOUMI, Rostom KACHOURI (Tunisia / France)

12h30: Lunch and Closing

Looking forward to see you in IPTA 2024

Thank you

12th IEEE International Conference on Image Processing Theory, Tools and Applications