From the Editor's Desk:
COVID-19 global pandemic, "intelligent" technologies, and you: a brief observation

by Jing Dong
jdong@nlpr.ia.ac.cn
http://cripac.ia.ac.cn/en/EN/column/item113.shtml

The COVID-19 global pandemic has put a spotlight on challenges faced by cities and nations and has increased the demand for "intelligent" technologies.

There is an international effort to seize the "digital opportunity" to make our cities smarter, to make industry more intelligent, to make economies more resilient.

In addition, these intelligent technologies are badly needed for epidemic prevention, social governance, and economic recovery.

"Intelligent" recognition techniques in an epidemic situation also forced the improvement of a "technology industrialization" and a rapid market response for "smart tech". We shall need a "smart" Noah's ark to save lives.

As a smart community, the IAPR also empowers you to help shape your future with a wide array of opportunities. Many of these are described quarterly in this *Newsletter*. You may find the footprint of distinguished scientists' early stage interests that can inspire you in your own research or news about free datasets or code that you can use with your ideas or news about conferences and summer/winter schools that you can attend (many now online with significantly reduced registration fees).

This challenging time calls for all researchers to work tirelessly to improve societal systems.

Get involved. Stay involved. Make a difference.

CALLS for PAPERS

For the most up-to-date information on IAPR-supported conferences, workshops and summer schools, please visit the IAPR web site: *www.iapr.org/conferences/*

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Call for Nominations

2020 J. K. Aggarwal Prize
to be presented at ICPR 2020 (Jan. 2021) in Milan, Italy
Deadline: Sep. 11, 2020

ICPRAM 2021
10th International Conference on
Pattern Recognition Applications and Methods
Vienna, Austria
Deadline: Sep. 14, 2020
Dates: Feb. 4-6, 2021

VISAPP 2021
16th International Conference on
Computer Vision Theory and Applications
Vienna, Austria
Deadline: Sep. 14, 2020
Dates: Feb. 8-10, 2021

ICPRS 2021
11th International Conference on
Pattern Recognition Systems
Curicó, Chile
Deadline: Sep. 25, 2020
Dates: Mar. 17-19, 2021

MVA 2021
17th International Conference on
Machine Vision Applications
Nagoya, Japan
Deadline: Mar. 1, 2021
Dates: Jul. 25-27, 2021

ICPR 2020 Workshops
Click above to go to the ICPR 2020 Workshops web page
for a list of Workshops that have been
accepted as part of the ICPR 2020 Program.
Milan, Italy
Dates: Jan. 10 & 11, 2021

S+SSPR 2020
IAPR Joint International Workshops on
Statistical Techniques in Pattern Recognition (SPR) and
Structural and Syntactic Pattern Recognition (SSPR)
Padua, Italy
Deadline: Oct. 16, 2020; Dates: Jan. 19-22, 2021

CIARP 2020
25th Iberoamerican Congress on Pattern Recognition
Porto, Portugal
Deadline: Dec. 15, 2020
Dates: May 10-13, 2021

DGMM 2020
1st International Conference on
Discrete Geometry and Mathematical Morphology
Uppsala, Sweden
Deadline: TBD
Dates: TBD in Spring 2021

Thoughts on articles you've read in this issue of the IAPR Newsletter?
Ideas for features you'd like to see in the IAPR Newsletter?
Send your comments to: Jing Dong, Editor-in-Chief, *jdong@nlpr.ia.ac.cn*

Calls from IAPR Committees

From the J.K. Aggarwal Prize Committee:

Call for Nominations for the 2020 J.K. Aggarwal Prize
to be presented at ICPR 2020 (January 2021) in Milan, Italy

Deadline for Submission of Nomination & Endorsement Forms:
~~May 14, 2020~~ September 11, 2020

https://iapr.org/fellowsandawards/awards_aggarwal.php

The recipient is a young scientist, under the age of 40 at the nominations deadline, who has brought a substantial contribution to a field that is relevant to the IAPR community and whose research work has had a major impact on the field.

Please click on the link above for details about nominations and selection.

From the IAPR Education Committee:

Call for Applications for IAPR Research Scholarships

https://iapr.org/docs/IAPR-EC-RS-Call-2018.pdf

Description: IAPR Research Scholarships seek to make possible mobility across institutions and international boundaries for Early Career Researchers working in fields within the scope of the IAPR's interests. The scholarship covers round trip travel & basic living expenses for a visit of less than 12 months.

Requirements: The candidate must be a full-time researcher with between one and eight years experience. The candidate must also be a member of an IAPR member society.

Contact information: IAPR Secretariat, c/o Linda O'Gorman, *secretariat@iapr.org*

From the IAPR Industrial Liaison Committee:

Call for Internship Listings for the
IAPR Internship Brokerage Page

for Companies with internships available
and for Students seeking internship opportunities

http://homepages.inf.ed.ac.uk/rbf/IAPR/INDUSTRIAL/

Description: The IAPR-ILC wishes to promote opportunities for students to undertake internships at companies working in Pattern Recognition, AI, Computer Vision, Data Mining, Machine Learning, etc. We propose to do this by having a web-based internship listing service. Companies can list their internship opportunities; students can browse the listings and contact the company.

For companies with internships to list:
(see examples at the URL above)

Please email your listings as follows:

> To: Bob Fisher - *rbf@inf.ed.ac.uk*
> Subject: IAPR internship listing
> Details:
> - Host:
> - Location:
> - Post Type:
> - Specialty:
> - Funded:
> - Length:
> - Degree & Visa Requirements:
> - Internship start date:
> - Application closing date:
> - Details:
> - Contact:

For students:
If you are a student, please visit the web site listed above.

NOTE: At the time of publication, there were 35 opportunities listed and more than 8500 accesses since November 2017.

Contact Information:
Bob Fisher, *rbf@inf.ed.ac.uk*
Chair, IAPR-ILC

From the IAPR Executive Committee (ExCo):

Call for Proposals for Summer/Winter Schools

https://iapr.org/conferences/summerschools.php

Deadline schedule:

Deadline:	School dates:
February 1st	**April-July**
June 1st	**August-November**
October 1st	**December-March**

"Summer" schools are training activities that expose participants to the latest trends and techniques in the particular pattern recognition field. ("Summer" is used generically; the school can take place in any season.)

To be eligible for a grant, the organizers must work through at least one of the IAPR's technical committees as they develop and present the proposal.

How to Submit: Proposals for IAPR funded summer schools should be submitted to IAPR Secretariat Linda O'Gorman by email (*secretariat@iapr.org*). A PDF attachment containing all the required information is appreciated.

For detailed guidelines on the proposal, see the ExCo Initiative on Summer Schools.

From the IAPR
Conferences & Meetings Committee (C&M)

Call for Bids to Host ICPR 2024
Deadline: ~~May 1, 2020~~ October 1, 2020

Click here to go the ICPR Proposals page at the IAPR website.

The International Conference on Pattern Recognition (ICPR) is the major scientific event organised under the auspices of the International Association for Pattern Recognition (IAPR).

The aim of this conference is to bring together international experts to share their work and experiences and to promote research and development in Pattern Recognition.

The conference is hosted by an institution under the auspices of an endorsing IAPR member organisation (national pattern recognition society).

Any such institutions interested in making a proposal to host an ICPR must proceed according to the rules outlined in the latest version of the guidelines.

NOTE: the Bidding and Hosting Guidelines have recently been revised as two separate documents. The content has also changed from previous versions. It is important for prospective hosts to carefully read both documents.

The submission of a bid implies full agreement with the guidelines and procedures for hosting the conference as well as with the IAPR constitution.

Deadlines and Decisions:

Bids to host ICPR 2024 must be submitted to the Chair of the IAPR Conferences and Meetings Committee (C&M) by ~~May 1, 2020~~ **October 1, 2020**.

The selection of the conference venue will be made by the IAPR Governing Board (GB) during its meeting at ICPR 2020 in Milan, Italy, in January 2021.

Institutions interested in organising ICPR 2024 should submit the bid to C&M Chair Laurence Likforman (likforman@telecom-paristech.fr) by ~~May 1, 2020~~ **October 1, 2020.**

Laurence Likforman
IAPR C&M Chair

Follow on to the Special Issue

ICDAR 2019

15th International Conference on Document Analysis and Recognition
20–25 September 2019 | International Convention Centre Sydney, Australia

An Interview with Prof. Xiang Bia

Editor's note:

During ICDAR 2019, two ICDAR Young Investigator Awards were presented.

- *Prof. Xiang Bai, "for his outstanding contributions to scene text understanding"*
- *Dr. Faisal Shafait, "for his outstanding contributions to document image analysis and computational forensics"*

In this interview, the I asked Prof. Bai to respond to questions about his own research and about working with other young researchers and students.

~ Jing Dong, IAPR Newsletter *EiC*

Xiang Bai received his B.S., M.S., and Ph.D. degrees from the Huazhong University of Science and Technology (HUST), Wuhan, China, in 2003, 2005, and 2009, respectively, all in electronics and information engineering. He is currently a Professor with the School of Electronic Information and Communications, Huazhong University of Science and Technology (HUST). His research interests include object recognition, shape analysis, and OCR. He has published more than 150 research papers. He is an editorial member of IEEE T-PAMI, Pattern Recognition, and Frontier of Computer Science. He is the recipient of 2019 IAPR/ICDAR Young Investigator Award for his outstanding contributions to scene text understanding.

EiC: Briefly: Why/How did you get involved in pattern recognition?

XB: When I was in my junior year as an undergraduate student, I began to work with my supervisor on a project based on 3D skeleton analysis. At the beginning, I didn't realize that it was all about pattern recognition, and I thought it was more about graphics. After finishing that project, I became very interested in 3D skeleton and PR based projects, and also followed this direction through my doctoral studies.

EiC: What is/are your current research interest(s) and why you doing these?

XB: At present, my main research interests include object recognition, shape analysis, and OCR.

Now I lead the Vision and Learning Representation Group, which is part of Media and Communication Lab in HUST, and I have some ongoing research projects in 3D Vision, Multi-Sensor Fusion, Multimedia Segmentation and OCR: Scene Text Detection and Recognition.

During my Ph.D. study, I visited the Prof. Longin Latecki at Temple University, and Prof. Alan Yuille & Prof. Zhuowen Tu at UCLA to collaborate on research projects on shape representation and object recognition. After I graduated and became a faculty in my university, I realized that I should do research in my own frontier academic direction. By chance, while visiting

Microsoft Research Asia, I saw the practical value of scene text detection and began to lead students towards that.

EiC: What factors will you address when you supervise students and when working with your team members?

XB: I think the most important thing is their interest in doing research—whether or not they have a strong interest in my research topic—and how they feel when facing the practical challenge of their tasks. Only with enough interest will they have the motivation and aspiration to stick to it.

Second, I place more value on their ability to solve the real problems. What I mean by that

is that sometimes a student will perform well when doing experiments but may not fully understand the underlying research problem.

Finally, I prefer those students who have good communication skills and are willing to cooperate with other team members. We need to recognize the importance of collaboration in researching. Great things may be done by group effort.

EiC: How can we help young researchers succeed in the early stage?

XB: In my opinion, the most important thing for young researchers is persistence. We should focus on our research and try to be the best in this field. Don't always think about changing your research direction when facing difficulties. Professional skills often come with patience and persistence.

As young researchers, we should also keep up with the frontier research topics and contribute our own judgment and efforts there. It is important to follow great footprints but also very important to develop new ideas and break new paths.

EiC: How can the IAPR help young researchers?

XB: The IAPR is a high-standard and well-known international professional organization focusing on PR. It has many recognized conferences and has built a good platform for scientists, engineers and researchers, which provides more opportunities for young people to communicate and network.

This exposure helps young researchers gain recognition in their own research fields. In order to better help young researchers, it is necessary to increase the visibility of talented younger researchers and provide more awards and encouragements to those people, e.g. IAPR could initiate the IAPR Outstanding PhD Thesis Award to encourage the youth researchers in this field.

ICDAR
LAUSANNE 2021

16th International Conference on Document Analysis and Recognition ICDAR 2021

September 5-10, 2021, Lausanne, Switzerland

IAPR...The Next Generation

In this series of Feature Articles, the IAPR Newsletter asks young researchers to respond to three questions:

- *Briefly: How did you get involved in pattern recognition?*
- *In more detail: What technical work have you done, and what is/are your current research interest(s)?*
- *And lastly: How can the IAPR help young researchers?*

~Jing Dong, Editor -in-Chief

Sameera Ramasinghe

Sameera Ramasinghe obtained his B.Sc. Engineering degree in Electronics and Telecommunication (first-class honours), in 2014 and the M.Phil. in computer vision in 2017, from the university of Moratuwa (Sri Lanka). He is a co-founder of ConscientAI, a start-up Focused on AI technologies. He is currently reading for his Ph.D. at the Australian National University College of Engineering and Computer Science. His current research interests are in the general area of computer vision and machine learning. He works in spectral analysis of 3D data and deep energy based modelling of Multimodal spaces.
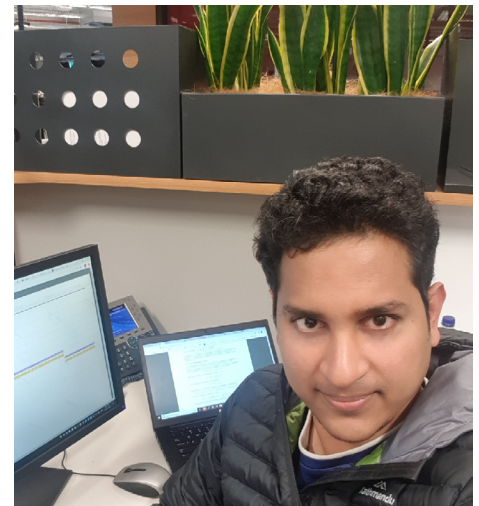
How did you get involved in pattern recognition?

Since my childhood, I always loved mathematics and science, which led me to pursue my bachelor's degree in Electronic and Telecommunications Engineering at University of Moratuwa, Sri Lanka. In the final year of my undergraduate studies, I took the module "Fundamentals of Image processing". This was the first time that I was intrigued by the immense potential and beauty of computer vision and pattern recognition.

We take it for granted how our brain recognizes patterns and images. After the sound fundamentals I received from that module, I felt amazed as well as challenged at the prospect of designing computer systems and algorithms to imitate the brain at pattern recognition tasks. That was the main trigger point which catalysed my journey.

This led me to further self-study of pattern recognition concepts, and I ended up working on several applications related to Optical Character Recognition while I was an undergrad. After the bachelor's degree, I completed my M.Phil. in machine learning and computer vision at the same university. My thesis topic was activity recognition from video data. I also worked as a machine learning researcher in the industry for three years and in the meantime, co-founded a start-up (ConscientAI), which was awarded as the best AI start-up in Sri Lanka in 2019. At ConscientAI, I consulted and led AI projects in various industries, such as fashion, education etc.

In 2018, I received a full scholarship to read for my Ph.D. at Data61 at CSIRO, affiliated to Australian National University under Dr. Salman Khan, Prof. Nick Barnes and Prof. Stephen Gould. In my thesis, I am mainly working on spectral domain analysis of 3D

point clouds and energy-based models. I envision a future where machines enable humans to make better decisions. The initial amazement I felt has kept on growing over the years, and that is what motivates me to get involved in the domain and contribute to the advancement of the cutting-edge tech.

What technical work have you done, and what is/are your current research interest(s)?
During my M.Phil. degree, my main research interest was automatic recognition of human activities from video data using machine learning. Automatic action recognition has a wide range of real-world applications in sports, health care, surveillance, robot vision and video streaming platforms. However, this problem is challenging due to the view point variations, background clutter, high dimensionality of data and low resolution videos. In contrast to image classification, the information contained in videos are not in a single domain. Both the motion patterns of the actors and objects, as well as the static information—such as, background and still objects that the actors interact with—are important for determining an action. For example, the body movements of a group of people fighting may closely relate to the body movements of a sports event, e.g., wrestling. In such a case, it is tough to distinguish between the two activities solely by looking at the motion patterns. Inspecting the background setting and objects is crucial in such a scenario. My work specifically focused on mining useful features from motion and static domains, and optimal fusion of such features for improved performance.

Currently, in my Ph.D., my work can be mainly categorized into two sub-topics: a) spectral analysis of 3D point clouds and b) energy based modelling of multi-model spaces. The human world exists in 3D, therefore understanding and interpreting 3D data is an active and important research problem. Existing state-of-the-art models that perform analysis on 3D point clouds primarily work in the spatial domain and Euclidean spaces. A critical drawback of such methods is that there is no inherent mechanism to deal with the high redundancy of point clouds. In contrast, the corresponding spectral spaces enable us to come up with structured, compact and permutation invariant representations of 3D point clouds, that can be utilized in designing highly efficient deep networks. Since the computational power is a limited resource, such networks are highly desirable in real-world applications. Another key advantage is that the properties of spectral spaces can be leveraged to design deep networks that are invariant to fundamental transformations such as translation and rotation, which is very important when interpreting 3D data. I specifically focus on developing necessary theoretical foundations as well as efficient implementations of such networks.

On the other hand, most of the current deep learning models assume one-to-one mappings between inputs and outputs. For example, given a set of historical data, a machine learning model can make a future prediction. For a traditional model, this prediction will be the same every time the input data is fed to the model. However, many real world scenarios contain more than one possible solution for a given situation. For instance, a human can predict multiple possible future trajectories of a bird by observing its current behaviour. This aspect is not properly investigated in current deep learning models, making them deterministic.

In my research, I aim to develop models that can take these multiple possible outcomes in to account and provide multiple solutions to a given problem. This is specifically important in regression and generative tasks. One such example is determining the best course of future actions for a self-driving car. Given the current situation, the next action should not always be limited to a single output, allowing the model to have an element of randomness without increasing the risk factors.

This behaviour is also useful in generative modelling. Assume that you want to design a model that can automatically apply colours to a given black and white image. A traditional model will always apply the same colours to a specific input image every time you feed it to the network. But there are many choices of colours that can be applied to the same object and the model will disregard all such possible alternative solutions. Therefore, it is crucial that the model has enough flexibility to be creative and apply different sensible colours. I specifically look at this problem from an energy based perspective, where the model constructs an energy space, allocating low energy to possible outputs. Then, at the time of the decision, the model can converge to any of the possible low energy areas, allowing multiple predictions.

How can the IAPR help young researchers?
A critical component in developing a research career is networking and brainstorming. I was able to attend the ICPRAM 2020 conference, which was endorsed by IAPR, to present my work and it was a great opportunity for me

to connect with both junior and senior researchers. We were able to discuss different aspects of our work and ideas that can further extend our research. In fact, I was able to utilize some of the ideas I gathered from such discussions and propose an alternative approach to the problem I was working on. I think the young research community can immensely benefit if IAPR can organize such regular workshops on different topics, and also allow remote participation for people who cannot attend physically (*Ed. Note: see list below of 2020 events that have gone online*). Such regular discussions can greatly motivate students and early career researchers.

Another possible improvement I can suggest is to encourage more participation from industrial experts. The majority of the audience who take part in academic conferences are biased towards the academia. However, I strongly believe that the participation of industrial experts will be vital for students to develop new connections and most importantly, to bridge the gap between academic and applied research.

Moreover, in my opinion, hosting machine learning related competitions would be of immense value to boost the careers of young researchers. Such competitions enable students to showcase their applied machine learning knowledge in a competitive environment and would also be a significant confidence booster. It would also encourage the young researchers to work as teams and collaborate. Such eco-systems would create breeding grounds for innovative ideas whilst enhancing their soft skills.

I sincerely thank IAPR for all the initiatives that it has taken over the years for the benefit of early career researchers. I eagerly look forward to actively engage with the IAPR community in future.

2020 IAPR Conferences in Online Format

Due to the COVID-19 pandemic, many IAPR sponsored and endorsed conferences, workshops, and summer/winter schools moved to an online format. Here are some examples. Please check the IAPR website listing for links to the websites of all IAPR events: *https://iapr.org/conferences/*.

Event	Dates
IWBF 2020: 8th International Workshop on Biometrics and Forensics	April 29-30, 2020
SSB 2020: 17th International Summer School for Advanced Studies on Biometrics for Secure Authentication	June 8-12, 2020
MCPR 2020: 12th Mexican Congress on Pattern Recognition	June 24-27, 2020
DeLTA 2020: 1st International Conference on Deep Learning Theory and Applications	July 8-10, 2020
DAS 2020: 14th IAPR International Workshop on Document Analysis Systems	July 26-29, 2020
ISAIR 2020: 5th International Symposium on Artificial Intelligence and Robotics	August 8-10, 2020
ANNPR 2020: 9th Workshop on Artificial Neural Networks in Pattern Recognition	September 2-4, 2020
ICFHR 2020: 17th International Conference on Frontiers in Handwriting Recognition	September 7-10, 2020
IJCB 2020 2020: International Joint Conference on Biometrics	September 28 - October 1, 2020
CVIP 2020: 5th International Conference on Computer Vision & Image Processing	December 4-6, 2020
MedPRAI 2020: 4th Mediterranean Conference on Pattern Recognition and Artificial Intelligence	December 20-22, 2020

From the ExCo
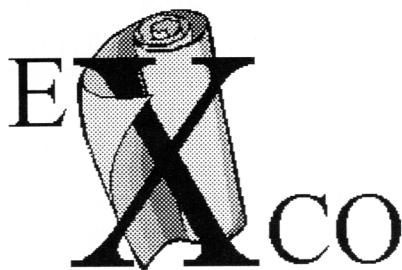
The IAPR ExCo on…
The impact of the COVID-19 pandemic on ICPR 2020

by Simone Marinai (Italy)
IAPR Past President and ICPR 2020 Liaison

News from the IAPR Executive Committee

- The ExCo has been discussing the impact of the COVID-19 pandemic on the various IAPR sponsored and endorsed conferences. Check the IAPR website and those of the specific conference for news and updates.

- ICPR 2020 and the Governing Board meeting there have our special attention (see the letter at right).

- ICPR 2020 received a record number of paper submissions (see the ICPR 2020 website and the letter at right).

- Student stipends for ICPR 2020 will be announced in September.

- The Nomination Deadline for the J. K. Aggarwal Prize has been extended to September 11, 2020. Please see the official Call for Nominations here.

- The deadline to submit Bids to Host ICPR 2024 has been extended to October 1, 2020. Please see the Call for Bids to Host ICPR 2024 here.

- The ExCo thanks Prof. Robert Haralick, a former President of the IAPR and the recipient of the 2016 K. S. Fu Prize, for his donation of proceedings from early ICPRs, now preserved in the library of the University of Florence, Italy.

- Wear a mask. Stay healthy.

ICPR, the IAPR's main event, is not just a venue for presenting the latest research progress and meeting friends and colleagues from around the world. It is also a place for shaping the future of the IAPR. Many of the IAPR's Technical Committees meet at ICPR, and it is also the location of the biennial meeting of the full Governing Board (GB), with delegates from each member society discussing and voting on key directions for the association.

This year, because of issues related to the COVID-19 pandemic, the biennial ICPR, originally planned to be held in September 2020, has been postponed to January 10-15, 2021. As of now, ICPR 2020 is still planned to take place in Milan (*https://iapr.org/icpr2020*). More on that later in this letter.

Due to the postponement of ICPR 2020, our colleagues on the organising and program committees decided to have—for the first time in ICPR history—a two-round submission process. With this approach, papers submitted by the original deadline and judged not yet suitable for acceptance by the reviewers were given the chance to resubmit revisions in the second round. Additionally, new manuscripts were able to be submitted by the second round deadline of July 14, 2020.

Because of this two-round submission, there were a record number of papers submitted to ICPR 2020. In the first round, 1557 papers were submitted (of which 552 were accepted), and this was already a very large quantity since only ICPR 2010 had received more than 2000 submissions. The second round attracted 1705 submissions, of which 1217 were new papers. In the end, ICPR 2020 had a total of 2774 unique papers submitted, more than twice the number in other recent ICPRs. While improving the overall quality of the conference, the two round reviewing process was a lot of additional work, and we are grateful to all the reviewers and to the area, track, and program chairs.

In addition to the main program, ICPR 2020 will also host a record number of workshops, carefully selected by the workshop chairs with the support of the IAPR Conferences & Meetings (C&M) Committee. On January 10th and 11th, 48 workshops (*https://www.micc.unifi.it/icpr2020/index.php/workshops/*) on different topics will take place. Calls for Papers for these workshops are still open. Because of the large number of planned workshops these will be held over two days rather than the single day of workshops that has been seen at previous ICPRs.

With the current global impact of the COVID-19 pandemic, it is difficult to predict if it will possible to have an in-person conference in January 2021. The ExCo is in constant communication with the ICPR Liaison Committee and with the ICPR 2020 Organisers to monitor risks and to update plans to identify the best solutions for the organisation of ICPR

2020 as an online only or a hybrid online/in-person event.

The final decision about the organisation of the conference will be made in September and shared with the community.

The ExCo has begun analyzing ways to organise the biennial GB Meeting so as to guarantee time and space for discussion in the event that the meeting will be conducted online. Final decisions about organisation details will be discussed and decided with the GB representatives from the IAPR's member societies.

A final note on ICPR 2020. The ExCo is working with the ICPR 2020 organisers to once again provide stipends to help students attend. Look for the application at the ICPR 2020 website in September.

It is worth spending a few words about future and past ICPRs. ICPR 2022 is still scheduled to

be organised in August 2022 in Montréal, Canada. The ExCo and ICPR Liaison committee are working closely with the local team regarding the organisation of ICPR 2022 in light of recent changes to the structure of conferences due to the COVID-19 pandemic. News about the conference will be communicated during ICPR 2020 and announced on the IAPR website and in the IAPR *Newsletter*.

Concerning ICPR 2024, the Call for Bids to Host ICPR 2024 is now out and the bid submission deadline is October 1, 2020. Guidelines for bid preparation and submission can be found on the IAPR website (https://iapr.org/conferences/proposals.php).

Last but not least, I would like to mention the earliest ICPRs. Thanks to a donation from Prof. Bob Haralick (former IAPR President and recipient of the 2016 K.S. Fu Prize) the proceedings

of the first ICPR editions are now preserved in the Library of the University of Florence. The collection includes all the volumes (from 1973 to 1986) that we risked losing because only a few copies survive.

Proceedings since 1988 of ICPRs and other IAPR conferences are online and digitized, but works from earlier years are not currently digitized and accessible.

Proceedings of other conferences would also be a relevant additions to this collection, and, therefore, I ask the readers to contact me in case some valuable witnesses to Pattern Recognition research could be safely stored in the library together with the early ICPR proceedings.

I look forward to meeting you in-person or online at ICPR 2020

Simone Marinai
IAPR Past President

IAPR Then and Now...Proceedings from early ICPRs

Cover images of the Proceedings of the International Conference on Pattern Recognition from 1973 to 1986.

IAPR Technical Committee News

This section the IAPR Newsletter publishes short, timely items by and about the IAPR's Technical Committees.

There are three main aims:

1. *to give the IAPR's TCs regular access to the broader IAPR community*
2. *to introduce the various TCs to those who are new to the IAPR and*
3. *to keep the rest of the IAPR community interested and informed about TC happenings.*

~Jing Dong, IAPR Newsletter EiC

IAPR TC4 Biometrics
http://iapr-tc4.org/
Zhenan Sun, Chair
Julian Fiérrez, Vice Chair

The Winter School on Biometrics 2020 was held in Shenzhen during January 12-16, 2020. The winter school attracted 68 participants and had 13 lecturers. Industry was deeply involved in the winter school. Ping An Tech was the golden sponsor, and Open AI Lab was the silver sponsor. A hands-on session was organized by OpenCV China Team and Open AI Lab. *(Please see report in this issue.)*

The 17th IAPR Summer School on Biometrics was held during June 7-12, 2020. Traditionally held in-person in Alghero, Italy, this year's Summer School on Biometrics was held online because of the pandemic. 63 students from 8 different time zones participated. Several subjects were taught at the summer school forming a total of 39 hours of theoretical lectures from 25 different lecturers and several hours of guided practical sessions using Matlab tools. *(A full report will be published in the October issue of the IAPR Newsletter).*

IAPR-TC4 endorsed two workshops. They are TC4 Workshop on Mobile and Wearable Biometrics in conjunct with ICPR 2020 and TC4 Workshop on Human Identification at a Distance in conjunct with ACCV 2020.

TC4 Workshop on Mobile and Wearable Biometrics Workshop
WMWB 2020

@ ICPR 2020

TC4 Workshop on Human Identification at a Distance
(as of time of publication, website under construction)

@ ACCV 2020

More IAPR ⊚ Technical Committee News

IAPR TC6 Computational Forensics
http://iapr-tc6.univ-lr.fr
Jean-Marc Ogier (University of La Rochelle, France), Chair
Chang-Tsun Li (Deakin University, Australia), Vice Chair

TC6 Vice Chair Professor Chang-Tsun Li of Deakin University, Australia is co-editing a special issue on Advances in Digital Security: Biometrics and Forensics (BIOFOR) for IAPR's Pattern Recognition Letters (*https://www.journals.elsevier.com/pattern-recognition-letters*) with Dr. Diego Gragnaniello, Dr. Francesco Marra, and Professor Daniel Riccio of University Federico II of Naples, Italy.

This special issue gathers innovative contributions in the field of security, forensics, and biometrics which include many key sectors like Forensics Analysis, Watermarking & Data Hiding, Steganography, Surveillance, Biometrics and Soft Biometrics, Biometric analysis of crime scene traces, etc.

Also, please see the report on IWBF 2020 (which switched to an online format due to the global pandemic) in this issue of the *IAPR Newsletter*.

8th International Workshop on Computational Forensics @ICPR2020

IEEE International Workshop on Biometrics and Forensics (IWBF) 2021

Rome, Italy
May 6-7, 2021

And ^ More IAPR ⊚ Technical Committee News

IAPR TC9 - Pattern Recognition in Human Machine Interaction
https://neuro.informatik.uni-ulm.de/TC9/
Friedhelm Schwenker, Chair
Mariofanna Milanova, Vice Chair

First, news about MPRSS 2020:

The 6th TC9 Workshop on Multimodal Pattern Recognition of Social Signals in human computer interaction (MPRSS 2020) will take place JANUARY 10, 2021, organized in conjunction with the 25th International Conference on Pattern Recognition (ICPR 2020), Milan, Italy, January 10-15, 2021. More information on workshop topics, submission details, etc are available at the MPRSS webpage *https://neuro.informatik.uni-ulm.de/MPRSS2020/*. The paper submission deadline is October 10, 2020.

Second, IAPR-TC9 is offering free online NVIDIA courses:

For a limited time, IAPR-TC9 is offering free online NVIDIA courses, *https://www.nvidia.com/en-us/deep-learning-ai/education/*.

To receive the CODE, please register using this link: *https://www.eventbrite.com/e/nvidia-deep-learning-ai-free-courses-tickets-114364661782*

Finally, to become a member of IAPR-TC9 please contact the Chair Professor Friedhelm Schwenker (*friedhelm.schwenker@uni-ulm.de*) or the Vice Chair Professor Mariofanna Milanova (*mgmilanova@ualr.edu*).

MPRSS 2020
6th TC9 International Workshop on Multimodal Pattern Recognition for Social Signal processing in human computer interaction

in conjunction with ICPR 2020
Milan, Italy

Dates: January 10, 2020
Deadline: October 10, 2020
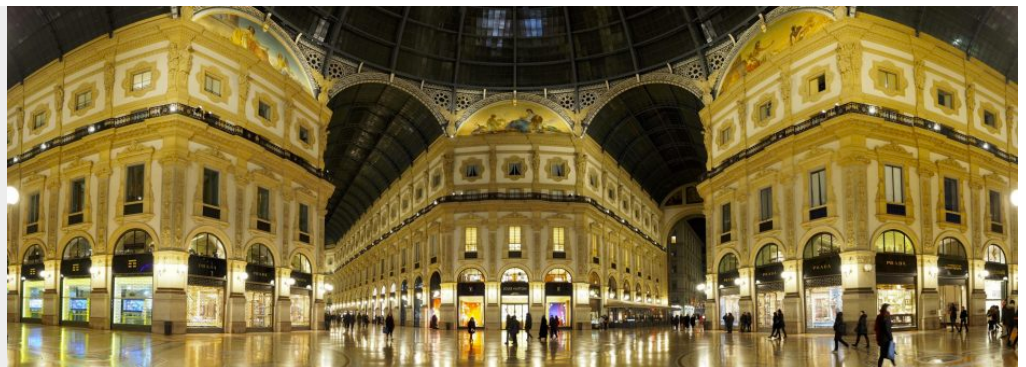
NVIDIA Deep Learning AI FREE courses

by IAPR TC9 Committee and NVIDIA DLI

And still ^More IAPR ⬡ Technical Committee News

IAPR TC12 Multimedia and Visual Information Systems
http://iapr-tc12.info

Sergio Escalera, Chair
Henning Müller and Martha Larson, Vice Chairs
Hugo Jair Escalante, Information Officer

The Fair Face Recognition and Analysis Workshop is co-located with the European Conference on Computer Vision (ECCV 2020). The aim of this workshop is to compile the most recent advances in methodologies to reduce biases in facial biometric analysis systems. The workshop is also associated with a competition on the subject. A future TC12 News update will share more on the approaches presented towards alleviating this critical issue.

The 34th Conference on Neural Information Processing Systems (NeurIPS 2020) competition program was recently announced, the program features 16 exciting competitions associated with relevant problems to the IAPR TC12 community. It represents an excellent opportunity for the community to prove their solutions in quite engaging scenarios. IAPR-TC12 is supporting some of these competitions. Of particular interest is the ChaLearn 3D+Texture garment reconstruction competition that asks participants to develop methods to render 3D garments from RGB imagery. This challenge will remain open until early October.

The Multimedia Evaluation Benchmark (MediaEval) held its 10th anniversary workshop MediaEval 2019 at EURECOM in Sophia Antipolis, France. The workshop took place October 27-29, 2019, right after ACM Multimedia 2019, in Nice, France. The MediaEval benchmark offers challenges to the research community related to multimedia retrieval, access and exploration. The challenges are focused on the human and social aspects of multimedia and encourage participants to combine multiple modalities (e.g., images, sound, text, and sensor data). The tasks being offered at MediaEval 2020 have just been announced, and more information can be found on the MediaEval 2020 webpage. The MediaEval 2020 Workshop will be held in December and will be a fully online event.

IAPR TC19 Computer Vision for Cultural Heritage Applications
www.cvl.iis.u-tokyo.ac.jp/IAPR-TC19

Guillaume Caron, **Chair**
Olga Regina Pereira Bellon, Vice Chair
Advisors: Katsushi Ikeuchi, Roberto Scopigno, El Mustapha Mouaddib, and Takeshi Oishi

A special note from Roberto Scopigno (Consiglio Nazionale delle Ricerche, Italy), the "Future of 3D digital preservation during pandemic - The Italian case"

COVID-19 and the related counter-measures initiated an unprecedented shut-down of most activities concerning culture in Italy. Digitization also shut-down, since all museum and research institute staff moved to smart working and was unable to perform any new or planned digitization campaigns.

But this stop was also somehow beneficial since it made clear that the only way to bring culture to the general public was by digital media. All cultural institutions did their best to present their assets as much as possible on the internet (see, for example, the long list of initiatives presented in [1]).

Any digital asset became precious; for example, many museums opened and publicized virtual visits to the public. In several cases, museums transformed planned events into digital events; webinars and video-conferences have been offered to the community. The audience reacted to the exploding offer of digital assets with vibrant participation. Cultural institutions understood that they could have invested more in digitalization tasks. Among the lessons learned for the future was the key role of 2D/3D digitization and digital content creation. We hope this lesson will not be forgotten in the future when we return to our pre-COVID life and activities.

[1] Roberto Antonelli, "Inchiesta mondiale esclusiva mostre, musei, aste, gallerie, case editrici: i progetti di riapertura di 136 esponenti e del Ministero" (in Italian), Il Giornale dell'Arte, May-June 2020, *https://docplayer.it/185471404-N-408-maggio-giugno-2020.html*

ICPR 2020 Workshops endorsed by TC19: *deadlines are open*!

- *2nd International Workshop on Pattern Recognition for Cultural Heritage*, PatReCH 2020 (@ ICPR 2020)
  Paper submission deadline: October 1, 2020; website: *http://lia.unicas.it/patrech2020*

IAPR-TC19 has endorsed PatReCH 2020, organized by Francesco Colace (University of Salerno, Italy), Dario Allegra and Filippo Stanco (University of Catania, Italy), Mario Molinara and Alessandra Scotto di Freca (University of Cassino and Southern Lazio, Italy), on January, 11th 2021, in conjunction with ICPR 2020.

PatReCH 2020 focuses on issues in exploiting, analyzing and manipulating useful information in the huge number of digitized artifacts and information that come from the past. In recent years, progress in machine learning and pattern recognition algorithms to deal with the acquired data allows researchers to better exploit the contained information, generate the best digital representation, and provide automatic or semi-automatic tools for supporting archaeologists and researchers in the field.

Thus, the aim of this workshop is to bring together the work of many experts in this multidisciplinary subject to highlight these advances from a wide-angle perspective, as well as to stimulate new theoretical and applied research for better characterizing the state-of-the-art in this subject.

The workshop program features invited speakers Antonio Picariello (University of Cassino "Federico II", Italy) and Davide Tanasi (University of South Florida, USA).

- *International Workshop on Fine Art Pattern Extraction and Recognition*, FAPER 2020 (@ ICPR 2020)
  Paper submission deadline: October 10, 2020; website: *https://sites.google.com/view/faper-workshop*

Updates since the April announcement in the news from TC19.

FAPER 2020 focuses on fine art with aesthetic purposes (e.g., paintings, sculptures, and architecture), its digitization and pattern recognition and computer vision for automatic analysis.

Organizers announce the invited talk of Fabio Remondino, head of the 3D Optical Metrology (*http://3dom.fbk.eu*) research unit at FBK - Bruno Kessler Foundation (*http://www.fbk.eu*), Italy. He will share outstanding work in the field of reality-based surveying and 3D modeling, sensor and data fusion and 3D data classification.

The workshop will be held on January, 11th 2021.

TC19 website updates

www.cvl.iis.u-tokyo.ac.jp/IAPR-TC19

New appearance, revised members list (new members are welcome, please contact chairs!), clearer references to workshops (organized/endorsed), links to tutorials and resources thanks to our members.

Chair: Guillaume Caron, *guillaume.caron@u-picardie.fr*
Vice Chair: Olga Regina Pereira Belon, *olga@ufpr.br*

https://iapr.org/icpr2020

ICPR 2020
25th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION
Milan, Italy 10 | 15 January 2021
"putting Artificial Intelligence to work on patterns"

COVID-19
PENSA POSITIVO
Think positive

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Calls for Papers for Workshops
and
Calls for Proposals for
Tutorials, and Demos and Exhibits

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IEEE computer society

Organizing Team

General Chairs:
Rita Cucchiara (UNIMORE, Italy), **Alberto Del Bimbo** (Univ. of Firenze, Italy), and **Stan Sclaroff** (Boston Univ., USA)

Program Chairs:
Kim Boyer (U. of Albany, USA), **Brian Lovell** (U. of Queensland, Australia), **Marcello Pelillo** (U. of Ca' Foscari Venezia, Italy), **Nicu Sebe** (U. of Trento, Italy), **René Vidal** (Johns Hopkins U., USA), **Jingyi Yu** (Shanghai Tech. U, China)

ICPR 2020 Workshops

January 10, 2021	January 11, 2021
CVAUI Computer Vision for Analysis of Underwater Imagery	FAPER Intl Wksh on Fine Art Pattern Extraction & Recognition
MAES Machine Learning Advances Environmental Science	MANPU coMics ANalysis, Processing & Understanding
PRAConBE PR and Automation in Construction & the Built Environment	PATRECH Pattern Recognition for Cultural Heritage
PRRS 11th IAPR Wksh on PR in Remote Sensing	VIQA Video and Image Question Answering: building a bridge between visual content analysis and reasoning on textual data
WAAMI Wksh on Analysis of Aerial Motion Imagery	CADL Wksh on Computational Aspects of Deep Learning
AIDP Artificial Intelligence for Digital Pathology	DLPR Deep Learning for Pattern Recognition
AIHA Intl Wksh on AI for Healthcare Applications	EDL/AI Explainable Deep Learning/AI
CAIHA Computational and Affective Intelligence in Healthcare Applications for Vulnerable Populations	HDL High-dimensional Deep Learning
CARE PR for positive teChnology And eldeRly wEllbeing	IADS Integrated Artificial Intelligence in Data Science
GOOD Designing AI in support of Good Mental Health	IML Intl Wksh on Industrial Machine Learning
MadiMA 6th Intl Wksh on Multimedia Assisted Dietary Management	ManifLearn Manifold Learning in Machine Learning
3dHU 3D Human Understanding	MMDCLCA Multi-Modal DL: Challenges & Applications
FBE Wksh on Facial and Body Expressions	MOI2QDN Metrification and Optimization of Input Image Quality in DL
HCAU 1st Intl Wksh on Deep Learning for Human-centric Activity Understanding	FGVRID Fine-Grained Visual Recognition and re-Identification
MPRSS Wksh on Multimodal pattern recognition for social signal processing in human computer interaction	IWBDAF Intl Wksh on Biometric Data Analysis and Forensics
W3AS Automatic Affect Analysis and Synthesis Wksh	IWCF Intl Wksh on Computational Forensics
CBIR Content-Based Image Retrieval	MMForWild MultiMedia FORensics in the WILD
TAILOR Texture Analysis, cLassificatiOn and Retrieval	RISS Research & Innovation for Secure Societies
EgoApp Wksh on Applications of Egocentric Vision	WMWB TC4 Wksh on Mobile and Wearable Biometrics
ETTAC Wksh on Eye Tracking Techniques, Applications and Challenges	DEEPRETAIL Wksh on Deep Understanding Shopper Behaviours and Interactions in Intelligent Retail Environments
IWCR Wksh on Cognitive Robotics	IMTA Wksh on Image Mining Theory and Applications
PaMMO - Perception and Modelling for Manipulation of Objects	IUC Human & Vehicle Analysis for Intelligent Urban Computing
W4PR Woman at ICPR 2020	PATCAST Intl Wksh on Pattern Forecasting
	RRPR Wksh on Reproducible Research in PR
	VAIB Visual observation and analysis of Vertebrate and Insect Behavior

Meeting Reports
Conferences, Workshops & Summer/Winter Schools

The 9th Pacific-Rim Symposium on Image and Video Technology

18-22 November, 2019
Sydney, Australia
www.psivt.org/psivt2019

General Chairs:
Manoranjan Paul (Charles Sturt University, Australia)
Weisi Lin (Nanyang Technological University, Singapore)
Junbin Gao (The University of Sydney, Australia)

by Manoranjan Paul, General Co-Chair

PSIVT is a premier-level, biennial series of symposia that aim at providing a forum for researchers and practitioners who are contributing to theoretical advances or practical implementations in image and video technology. Previous editions were held in China, New Zealand, Mexico, South Korea, Japan etc.

PSIVT 2019 offered an outstanding technical program thanks to the dedicated work of the technical Program Committee members, area chairs and reviewers.

We were honoured to have three keynote and two tutorial presentations from distinguished researchers:

- Developing spaceborne imaging sensors – look in the past and in the future by Dr. Anko Börner, Institute of Optical Sensor Systems, Germany
- Cars: From Zero Emission to Zero Accidents? Prof. Thomas Bräunl, UWA, Australia
- Advance Biomedical Imaging Technologies for Blindness by Prof. Yalin Zheng, University of Liverpool, UK
- Deep Reinforcement Learning in Vision-Language by Dr. Ehsan Abbasnejad, University of Adelaide, Australia
- 3D Urban Feature Extraction and Mapping with Geospatial Artificial Intelligence Techniques by Dr. Maher I. Sameen, UTS, Australia

PSIVT 2019 attracted papers submissions for the main conference from 19 countries and covered all regions of the world. To ensure quality, each submission was rigorously reviewed with a double-blind process by three to four independent reviewers. 17 Area Chairs allocated the reviewers and made recommendations to the Program Chairs for the final decisions. A total of 14 (25%) and 17 (31%) papers were accepted for oral and poster presentations, respectively, from among 55 valid submissions.

The oral papers were presented in the following five sessions:

- Application I
- Pattern Analysis
- Computer vision
- Image/Video Analysis
- Applications II

There were two poster sessions.

To provide significant contributions on contemporary topics, four workshops were organised:

- Vision-Tech
- Electro-optical Sensors
- Deep Medical Imaging
- Deep Video/Image Analysis

The workshops received 23 paper submissions from which 17 papers were presented based on the recommendations of at least two reviewers for each paper.

All the accepted papers in the main conference and the workshop were published in separate volumes as the Lecture Notes in Computer Science, Springer.

Click on the image to go to the publisher's website for this volume.
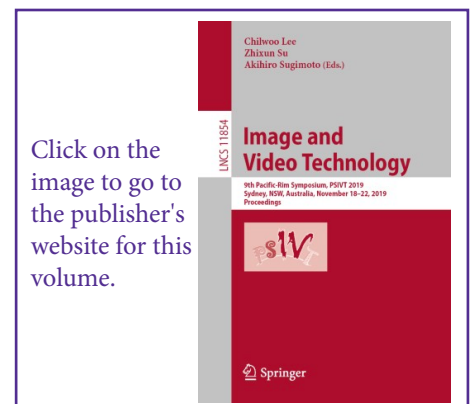
Following the PSIVT tradition, a five member award committee nominated four outstanding papers to receive the best paper award and the best student paper award plus honorary mention papers in each of these categories as well. For outstanding review reports, eight researchers were nominated for the best reviewer award.

Winner of the PSIVT 2019 Best Paper Award: *Exposure Correction and Local Enhancement for Backlit Image Restoration* by S. K. Dhara and D. Sen.

Winner of the PSIVT 2019 Student Best Paper Award: *Enhanced Transfer Learning with ImageNet Trained Classification Layer* by T. Shermin, S. W. Teng, M. Murshed, G. Lu, F. Sohel, M. Paul.

On behalf of all the general chairs I would like to thank the Technical Program Chairs, Proceedings Chairs, Tutorial Chair, Workshop Chairs, Publicity Chair, Web Chair, Local Chairs, Area Chair, Event Managers, and Reviewers. There were also a number of administrative staff and student

volunteers who provided valuable ongoing support to make the conference run smoothly.

This event could not have been possible without the time and effort of all of these volunteers.

I would also like to thank IAPR and Springer. Their support is an essential part of the program.

Particular thanks go to Charles Sturt University (especially the Faculty of BJBS, School of Computing & Mathematics, Study Centre Sydney, and CSU Finance), who provided financial sponsorship, as well as services in finance, conference registration, venue, and staff hours.

https://allindonesiatravel.com/bintan-island-popular-weekend-trip-from-singapore/

ACPR 2019

5th Asian Conference on Pattern Recognition

November 26-29, 2019, Auckland, New Zealand
https://www.acpr2019.org/

General Chairs:
Reinhard Klette (Auckland University of Technology, New Zealand)
Brendan McCane (University of Otago, New Zealand)
Umapada Pal (Indian Statistical Institute, Kolkata, India)

by the General Chairs

The Asian Conference on Pattern Recognition is a biennial conference held in alternating years from ICPR within the Asian and Oceanic regions. The 5th version was held in the City of Sails – Auckland, NZ, and was hosted by the Centre for Robotics and Vision at Auckland University of Technology.

ACPR 2019 was endorsed by IAPR and the proceedings were published in Springer's Lecture Notes in Computer Science, with workshop proceedings published in Springer's Communications in Computer and Information Science.

We would like especially to thank our sponsors: the Centre for Robotics and Vision; Auckland University of Technology; the International Society for Artificial Intelligence and Robotics; Auckland Tourism, Events and Economic Development; ControlVision; SkyCity; AJ Hackett Bungy NZ; N3T; and the IAPR.

A total of 214 papers were submitted from 37 countries, of which 36 were accepted as orals and 89 as posters resulting in an oral acceptance rate of 16.8% and a poster acceptance rate of 41.6%.

The technical program of the main conference included 9 oral sessions, 3 poster spotlights, 3 poster sessions, and three keynotes. The keynote speeches were given by three internationally renowned researchers active in pattern recognition and computer vision:
• Professor Andrea Cavallaro of Queen Mary University of London, United Kingdom gave a talk on Multimodal Learning for Robust and Privacy Preserving Analytics,
• Professor Yihong Wu of the

Chinese Academy of Sciences, China gave a talk on Possibility to Localize a Camera without Matching, and
• Professor Dacheng Tao of the University of Sydney, Australia gave a talk on AI at Dawn - Opportunities and Challenges.

There were also 3 tutorials and 5 workshops.

The tutorials included:
• "Classic and Deep Vision for Healthcare" by Angelica Wiles-Rivero;
• "Geometric Total Variation" by Jacques-Oliver Lachaud; and
• "Geometric Algebra" by Stephane Breuils.

The workshops were:
• "Computer Vision for Modern Vehicles";
• "Multi-sensor for Action and Gesture Recognition";
• "Towards Automatic Data Processing Chain for Airborne and Spaceborne Sensors;
• "Advances and Applications on Generative Deep Learning Models"; and
• "Image and Pattern Analysis for Multidisciplinary Computational Anatomy".

Click on the images below to go to the publisher's web page for these volumes.

Main conference:

Workshops:

ACPR 2019 had four categories of paper awards.

- IAPR Best Paper Award went to "Perceptual Image Anomaly Detection" by Nina Tuluptceva, Bart Bakker, Irina Fedulova and Anton Konushin;
- IAPR Best Application Paper Award went to "Multi-Person Pose Estimation with Mid-Points for Human Detection under Real-World Surveillance" by Yadong Pan and Shoji Nishimura;
- IAPR Best Poster Award to "Prototype-based Interpretation of Pathological Image Analysis by Convolutional Neural Networks" by Kazuki Uehara, Masahiro Murakawa, Hirokazu Nosato and Hidenori Sakanashi; and
- the N3T Best Paper on Road and Vehicle Safety went to "Visual Counting of Traffic Flow from A Car via Vehicle Detection and Motion Analysis" by Kevin Kolcheck, Zheyuan Wang, Haiyan Xu and Jiang Yu Zheng.

The 2019 edition was a great success and we hope to see many people attend the 6th ACPR at Jeju Island in South Korea in 2021.

IAPR Then and Now... *IAPR Newsletter* Volume 34 Number 2, April 2012
ACPR 2011 1st Asian Conference on Pattern Recognition
November 28-30, 2011
Beijing, China

General Chairs:
Tieniu Tan, IAPR Fellow (China)
Brian Lovell, IAPR Fellow (Australia)
Anil K. Jain, IAPR Fellow (USA)

8th International Workshop on Representations, analysis and recognition of shape and motion FroM Imaging data

December 11-13, 2019, Sidi Bou Saïd, Tunisia

General Co-Chairs:
Dr. Mohamed Hammami (MIRACL, University of Sfax, Tunisia),
Dr. Slim M'Hiri (CRISTAL, University of Manouba, Tunisia)

by Emna Ghorbel and Mohamed A. Mezghich, on behalf of the local organizing committee of RFMI'19

The main goal of the eighth RFMI edition was to maintain and promote interaction between researchers working on static and dynamic shape analysis, targeting a wide spectrum of applications in pattern recognition, computer vision, scene understanding, computer animation, biometrics recognition, robotics, cultural heritage conservation, and medical imaging. As with previous editions (2016 and 2017), the 2019 edition received the endorsement of the prestigious International Association for Pattern Recognition (IAPR). It also planned to publish the workshop proceedings in Springer's Communications in Computer and Information Science (CCIS) series as post-proceedings of revised papers. (Previous editions are available via http://www.springer.com/series/7899).

RFMI 2019 was organized in Hotel Sidi Bou Saïd located north Tunis in the authentic white and blue village of Sidi Bou Saïd. About eighty researchers from different countries (France, Austria, USA, Morocco, Algeria, UAE, and Tunisia) attended the workshop, with several young scientists (PhD and Master candidates) among the participants. In fact, the Tunisian association Arts-pi (Association de la Recherche Tunisienne des Sciences pour l'Image), an important sponsor of the workshop, offered 21 scholarships to junior PhD students and 11 scholarships to Master students in Data Science coming from two Tunisian engineering schools, ENSI and ISAMM.

The Program Committee received 25 submissions from which eight were accepted as regular papers (32%). Also, eight papers were invited as short papers. Between two and five reviewers were involved in a rigorous peer-review process for each submission. All authors of accepted papers were given the opportunity to present their research, with 25 minutes for long papers and 15 minutes for short papers.

Distinguished researchers in the field were invited to attend the workshop and give tutorial-form talks on their research and recent trends. Their talks lie on fundamental tasks of shape and motion analysis from imaging data as well as their applications in medical imaging, computer vision, and pattern recognition. Among these, Anuj Srivastava (IAPR and IEEE Fellow, Professor, Florida State University, USA) talked about "Functional and Shape Data Analysis". Prof. Srivastava was also invited to serve as the **honorary chair** of this edition.

The rest of the program was organized in five oral sessions related to different topics including 2D/3D shape registration and comparison; Deep Learning; Video and Motion Analysis; and Human and Face Analysis and Recognition.

An outing was organized to visit the bardo museum which houses the largest mosaic collections in the world, dating from antiquity.

Also, we visited the old and historical towns of Tunis and Sidi Bou Saïd. A social evening at the gammarth club was organized. The evening was animated by a young group of Tunisian musicians "Zarafa-Electro Live Band". Furthermore, the banquet was organized at a Franco-Italian restaurant at the majestic Carthage city.

We are very thankful to the reviewers, the steering committee, and all the members of the young local organization committee for their excellent work to make RFMI 019 a successful event. The steering committee of RFMI is pleased to announce the next edition in Hanzhou China (a former Imperial city, where the G20 took place in 2016). The proposed dates are August 23-25, 2021.

8th International Conference on Pattern Recognition and Machine Intelligence

December 17-20, 2019, Tezpur, Assam, India
http://www.tezu.ernet.in/~premi2019/

Honorary General Chair:
Sankar Kumar Pal (Indian Statistical Institute, Kolkata, India)

General Co-Chairs:
Sushmita Mitra (Indian Statistical Institute, Kolkata, India)
Dhruba K. Bhattacharyya (Tezpur University, Assam, India)
Prabin K. Bora (Indian Institute of Technology, Guwahati)

Program Co-Chairs:
Pradipta Maji (Indian Statistical Institute, Kolkata, India)
Bhabesh Deka (Tezpur University, Assam, India)

by the Program Co-chairs

The International Conference on Pattern Recognition and Machine Intelligence (PReMI) is a most prestigious conference in the field of pattern recognition, machine learning, computational intelligence and related application areas. It is held in alternate years, preferably at different locations. The 2005, 2007, 2013 and 2017 editions were held at the Indian Statistical Institute, Kolkata, India. The Indian Institute of Technology, New Delhi, India, hosted in 2009, the Higher School of Economics, Moscow, Russia, in 2011, and the Warsaw University of Technology, Warsaw, Poland, in 2015. Just like previous editions, PReMI-19 at the Tezpur University, Tezpur, Assam, India was of four days' duration, the first day for tutorials and a Doctoral symposium, followed by the three-day main conference. It was attended by a large number of researchers and leading experts from all over the world.

The primary goals of the conference were to present state-of-the-art scientific results, encourage academic and industrial interaction, and promote collaborative research activities involving scientists, engineers, professionals, researchers and students in pattern recognition, machine intelligence and related fields.

PreMI 2019 received 341 submissions from 22 countries spanning six continents. After critical review, 90 papers were accepted for oral presentation and 41 for poster cum short oral presentation. All 131 revised papers were included in the proceedings, which were divided into eleven categories. The papers were presented by researchers in three parallel sessions on various theoretical and application areas, including new developments in deep learning, medical imaging, big-data analytics, and social media mining.

The conference took place in 24 technical sessions, each being preceded by a plenary speech or an invited talk. Besides these, PReMI 2019 had a unique feature, a Doctoral Symposium entitled "Professor C. A. Murthy Memorial Colloquium for Doctoral Candidates".

The conference was inaugurated by Prof. Dilip Kumar Saikia, Pro Vice-Chancellor, Tezpur University, in the presence of Prof. Jayaram K. Udupa, University of Pennsylvania, Philadelphia (Chief Guest), Prof. Dhruba K. Bhattacharyya (General Co-Chair), Prof. Pradipta Maji (Program Co-Chair), Dr. Bhabesh Deka (Program Co-Chair), Prof. Partha P. Sahu (Organizing Co-Chair) and other dignitaries. There were 55 externally registered participants.

The speakers at the conference tutorials were Prof. Shyamanta M. Hazarika (India), Dr. Ajit Rajwade (India), and Dr. M. Tanveer (India). The conference highlights were marked by some of the leading researchers in the areas of pattern recognition and machine learning, who presented the plenary and invited talks covering various aspects and the forefront application areas:

- Professor Jayaram K. Udupa (USA) gave a plenary talk on Anatomy-Guided AI for Body-Wide Medical Image Analysis
- Professor Witold Pedrycz (Canada) gave a plenary talk on Granular Aritificial Intelligence: A New Avenue of Artificial Intelligence for Modeling Environment and Pattern Recognition

- Professor Pushpak Bhattacharyya (India) discussed Imparting Sentiment and Politeness on Computers
- Professor C. V. Jawahar (India) spoke about Beyond Text Detection and Recognition: Emerging Opportunities in Scene Understanding
- Professor Sudip Misra (India) spoke on Internet of Things: Enabling Cross-domain Convergence and Innovation
- Dr. Animesh Mukherjee (India) gave a talk about The Rise of Hate Content in Social Media
- Professor Sanjoy Kumar Saha (India) discussed Cognitive Analysis using Physiological Sensing
- Dr. Praneeth Netrapalli (India) spoke about How to Escape Saddle Points Efficiently
- Dr. Anil Kumar (India) discussed Machine Learning and its Application in Remote Sensing Data Classification Applications.

The program included a banquet. The conference was concluded with a valedictory ceremony.

The proceedings of the conference have been published by Springer as Lecture Notes in Computer Science, Volumes 11941 and 11942.

Click on the images below to go to the publisher's web page for these volumes.

Two post-conference special issues of international journals like Multimedia Tools and Applications (Springer) and SN Computer Science (Springer), are planned to be published out of the extended versions of some selected papers together with others obtained through open CFPs.

Sponsors of the conference who added to the success of the event include: Indian Oil Limited, Govt. of India; Indian Space Research Organization, Govt. of India; Centre for Soft Computing Research: A National Facility (ISI, Kolkata); International Association for Pattern Recognition (IAPR); International Rough Set Society (IRSS); and Web Intelligence Consortium (WIC).

In conclusion, PReMI 2019 was a great success academically and otherwise with several interesting presentations on state-of-the-art subjects, thereby generating new ideas and avenues of research, and possible collaborations within India and outside.

"Piled Higher and Deeper" by Jorge Cham
www.phdcomics.com

http://phdcomics.com/comics/archive.php?comicid=462

Advisory Committee
Tieniu Tan, Chinese Academy of Sciences, China [Chair]
Anil Jain, Michigan State University, USA
Jaihie Kim, Yonsei University, Korea
Brian Lovell, The University of Queensland, Australia
Massimo Tistarelli, University of Sassari, Italy
Yasushi Yagi, Osaka University, Japan

School Directors:
School Director:
P C Yuen, Hong Kong Baptist University, Hong Kong

School Co-Directors:
Zhenan Sun, Chinese Academy of Sciences, China
Norman Poh, Trust Stamp

The 4th IAPR/IEEE Winter School on Biometrics was a training course to promote research in biometrics and related fields. It was jointly organized by the Department of Computer Science, Hong Kong Baptist University; the Institute of Automation, Chinese Academy of Sciences; and the Department of Computer Science and Engineering, Southern University of Science and Technology. It was co-sponsored by the IAPR, IEEE and AIRS (Shenzhen Institute of Artificial Intelligence and Robotics for Society).

There were 68 participants, two from Japan, two from Bangladesh, and the rest from China. The school is grateful for the five grants from the IAPR that made it possible for the four international students and one from inside China to attend.

Thirteen lectures were given by internationally renowned experts from academic and industry, discussing the most up-to-date view in biometrics and sharing their experiences. The topics covered biometric identification with face, fingerprint, palmprint, iris, gait, signature. Some related topics such as fusion of multiple modalities, privacy, presentation attack detection and biometrics in applications were also included.

Industry was deeply involved in the winter school. Ping An Tech was the golden sponsor, and Open AI Lab was the silver sponsor. The hands-on session was organized by OpenCV China Team and Open AI Lab. Ms. Jia Wu and Mr. William Gao gave lectures on how to develop a real-time face recognition system on ARM embedded development boards. One of the sponsors, Open AI Lab, donated one ARM development

Review of the Winter School on Biometrics 2019
by Margaret Dy Manalo (Osaka University, Japan)

The Winter School on Biometrics 2020 tackled not only different areas of biometric research but also its industry and real-world applications. Experts from different countries gathered to give talks on a range of topics from algorithms fundamental to state-of-the-art to challenges encountered along their research careers. It definitely felt like the world came to teach biometrics.

In general, what did you learn from the School, and, in particular, did you learn anything new?
I could probably summarize my learning experience from two points of view: as an academic and as a future researcher in the industry.

board to each participant. Most participants finished their project on face recognition and submitted their reports. Three teams received awards for their excellent work.

To encourage sharing and communication, an open poster session and a discussion session were organized. Prof. Mark Nixon organized the discussion entitled Journal Paper Writing Club. Then the participants were divided into eight groups. One of the lecturers was the mentor in each group to guide the discussion on any topics that interested the students.

This was one of the most popular sessions.

During the social program, the participants visited the fourth highest tower in the world, Ping An Financial Center, and then enjoyed a banquet.

As an academic, one could appreciate what the program tries to do: inspire students and researchers alike to explore biometrics by bringing the world to Shenzhen. Having different topics discussed one after the other definitely allowed one to at least have a general view of each as well as be able to make comparisons of each topic's scope and advancements.

As a graduate student of a laboratory that mainly focuses on gait recognition, I was able to see other topics that could interest me. Also, with talks like the one on biometric attacks, learning about all the loopholes made me realize the different angles from which research can be conducted.

On the lighter side, talks like the Journal Writing Club by Prof. Nixon reminded us all why we conduct research and the proper way to do it.

As a potential researcher in the industry, it was encouraging to see concepts being taken off paper and applied in the real world. The talk by Dr. Xiao Jing on the biometric applications in Ping An sparked some interest, specifically the new techniques they are using for verification. One example would be requiring the client to utter some words to verify their identity. I saw this as opening doors for lip-reading research.

What will you do differently because of what you learned? How will you use what you learned in your research?
Thanks to Prof. Nixon's presentation on conducting research, I now have a clear reminder of how I should deal with the ups and down of research, as well as the goals that I should set for future publications. Furthermore, presentations by Prof. Kittler and Prof. Ross on

fusion biometrics and Prof. Nixon's soft biometrics are encouraging when researching in the absence of the ideal dataset in such a way that we could still make robust models and systems by using (and/or fusing) data from various sources.

Why was this a valuable experience for you?
Other than the scrumptious food, the experience was enriching in both an academic and social aspect. With attendees from different countries, discussions ranged from research work to cultural diversity. It was indeed wonderful meeting everyone. Also, with the biometric school being held in Shenzhen which is a leading technology hub, it was inspiring to see technological advancements brought to life from research.

Conference Chair:
Ana Fred (Instituto de Telecomunicações and University of Lisbon, Portugal)

Program Co-Chairs:
Maria De Marsico (Sapienza Università di Roma, Italy)
Gabriella Sanniti di Baja (Italian National Research Council CNR, Italy)

Local Chair:
George Azzopardi (University of Groningen,Netherlands, and University of Malta, Malta)

by Ana Fred, Maria De Marsico, and Gabriella Sanniti di Baja

The conference general and program chairs at the ICPRAM 2020 Opening Session.

The series of ICPRAM annual conferences is sponsored by the "Institute for Systems and Technologies of Information, Control and Communication (INSTICC)", and is endorsed by the IAPR. As with previous editions, ICPRAM 2020 was organized "in cooperation" with several international organizations engaged in research related to Pattern Recognition, namely: the Association for Computing Machinery (ACM), in particular ACM SIGAI (Special Interest Group on Artificial Intelligence), the Italian Association for Artificial Intelligence (AI*IA), and the Associação Portuguesa de Reconhecimento de Padrões (APRP).

Since its first edition, ICPRAM has aimed at providing a shared forum for researchers involved in theoretical investigation and/ or design and implementation of applications related to the manifold branches of pattern recognition. The conference attendees have been able to meet and exchange ideas regarding their respective scientific achievements and future research plans. This is hoped to spur new and original threads of collaboration relying on brand new approaches.

ICPRAM 2020 received 102 submissions from 33 countries. Out of the accepted papers, 23 were selected for oral presentation as full papers, 33 for oral presentation as short papers, and 24 as posters. The conference program also included a panel entitled "People-centric, Trustworthy AI: Humans Enhancing AI and AI Enhancing Humans". The panel, chaired by the ICPRAM Local Chair, George Azzopardi, and the three ICPRAM 2020 invited speakers (Cristina Conati, ACM Distinguished Speaker, Andrea Cavallaro, IAPR Fellow and IAPR Distinguished Speaker, and Max Welling, research chair in Machine Learning at the University of Amsterdam), shared their ideas and stimulated an interesting discussion with the audience. Moreover, the invited speakers also presented the following plenary lectures:

- Max Welling, University of Amsterdam, Netherlands, talked about "Integrating Generative Modeling into Deep Learning".
- Cristina Conati, University of British Columbia, Canada, gave a talk entitled "Toward User-adaptive Visualizations".
- Andrea Cavallaro, Queen Mary University of London, UK, talked about "Privacy-preserving Machine Learning for Multimedia Data.

The conference also offered an interesting tutorial with title "An introduction to Biometrics" given by Rangachar Kasturi, University of South Florida, US.

In order to testify to the value of the best contributions, the conference organization assigned four awards to be given during the conference: the Best Paper Award, the Best Student Paper Award, The Best Industrial Paper Award, and the Best Poster Presentation Award. The winning papers were chosen by the Program/Conference Chairs based on the best combination of review marks, assessed by the Program Committee, and of paper presentation quality, assessed by the Session Chairs and Program Chairs at the conference venue.

For this edition, the winning papers were:

BEST PAPER
Area: Applications
Segmentation of Moving Objects in Traffic Video Datasets by Anusha Aswath, Renu Rameshan, Biju Krishnan and Senthil Ponkumar

BEST STUDENT PAPER
Area: Theory and Methods
Learned and Hand-crafted Feature Fusion in Unit Ball for 3D Object Classification by Sameera Ramasinghe, Salman Khan and Nick Barnes (Ed. note: Please see related article by Sameera Ramasinghe in this issue).

BEST INDUSTRIAL PAPER
Area: Applications
Learning Question Similarity in CQA from References and Query- *logs* by Alex Zhicharevich, Moni Shahar and Oren S. Shalom

BEST POSTER PRESENTATION
Area: Applications
Mosaic Images Segmentation using U-net by Gianfranco Fenu, Eric Medvet, Daniele Panfilo and Felice A. Pellegrino

We would like to point out that authors of ICPRAM 2020 selected papers will be invited to submit an extended version of their work for a book in the Springer LNCS Series.

As usual, besides the interesting technical program, also social events were planned to offer to the participants different opportunities to meet and discuss in a relaxed atmosphere. A Welcome Reception was offered on the first conference day, while on the second day participants could enjoy a delicious dinner in the walled-city of Mdina, where they were met by Knights led by the Master of Ceremonies. During the banquet, the entertainment included tarot reading, sword fighting and sword swallowing.

We look forward to meeting you at the 10th edition of ICPRAM in Vienna, Austria, February 4-6, 2021 (*http://www.icpram.org/home. aspx*).

ICPRAM 2020 Award winners

Photos courtesy of INSTICC

ICPRAM 2021
10th International Conference on Pattern Recognition Applications and Methods
Vienna - Austria
4 - 6 February, 2021

UPCOMING SUBMISSION DEADLINES
Regular Paper Submission: September 14, 2020
Doctoral Consortium Paper Submission: December 9, 2020
Abstracts Track Submission: December 9, 2020

IWBF 2020
8TH INTERNATIONAL WORKSHOP ON BIOMETRICS AND FORENSICS

April 29-30, 2020, Porto, Portugal

General Chairs:
Jaime S. Cardoso (INESCTEC, Porto & University of Porto, Portugal)
Raghavendra Ramachandra (Norwegian University of Science and Technology, NTNU, Norway)

Local Organisation Chairs:
Ana F. Sequeira (INESCTEC, Porto, Portugal)
Kiran Raja (Norwegian University of Science and Technology, NTNU, Norway)

by Ana F. Sequeira

The eighth edition of the International Workshop on Biometrics and Forensics (IWBF 2020) was organized by the Institute for Systems and Computer Engineering, Technology and Science (INESC TEC), Porto, Portugal; the Norwegian University of Science and Technology (NTNU), Norway, and the European Association of Biometrics (EAB). IWBF 2020 received technical co-sponsoring from IAPR–TC4 on Biometrics.

After the 2019 edition that took place in Mexico, IWBF was brought back to Europe in 2020 in what was planned to be a pioneer event in these fields for the city of Porto. Porto is Portugal's second-largest city and proudly European Best Destination in 2017, 2014, and 2012. Full of contrasts within a small area, Porto is a city of great wine and long history, and there you can enjoy the famous baroque style monuments and the world famous Port Wine cellars. With the World Heritage Douro Riverside in the background, the narrow and sinuous cobbled streets of this old and charming city contrast with the growing innovation, cutting edge technology, and technological start-ups that have made this city their home.

However, life is full of surprises and in face of the COVID-19 event, this edition ended up being remarkable in a very different way! This was a pioneer IWBF edition held in a complete remote on-line mode, connecting Porto to the rest of the globe. The event took place on April 29 and 30, and e-connected about 30 researchers from 15 different places spread all over Europe, India, USA and Hong Kong.

The local team at INESCTEC—composed by Jaime Cardoso, Ana Filipa Sequeira, Sara Oliveira, João Pinto and Ana Rebelo—was confined to their homes in the couple of months that preceded the even, but were working in close collaboration "at a Zoom link distance". Moreover, the communication and support between members of the other co-organising entities, especially Kiran Raja and Raghavendra Ramachandra (NTNU) and Christoph Busch (EAB), made IWBF 2020 possible. When facing the COVID-19 event's evolution,

the main concern of the committee members was the safety of the participants. However, there was a need to measure the negative effects that a cancellation or a postponement of IWBF 2020 would have on the prospective authors. Thus, very efficient teamwork made it possible to successfully overcome all the challenges that were faced along the way and run IWBF 2020 on the initially planned dates.

IWBF 2020 received 55 regular paper submissions that went through a double blind review process. Our three Programme Chairs, Andreas Uhl, Hugo Proença and Lena Klasén, coordinated a set of nearly 50 technical programme members in the reviewing process. From this arduous task resulted a set of 27 accepted papers. The 27 accepted articles were divided into 17 oral presentations and 10 poster presentations.

Keynote talks
IWBF 2020 is a two-day event and comprised two keynote talks. These very interesting talks set the bar high from the beginning of each day.

On the first day, we welcomed the IAPR Invited Speaker, Prof. Peter Eisert (Humboldt University Berlin, Germany & Fraunhofer Institute for Telecommunications - Heinrich Hertz Institute Berlin, Germany) for a talk entitled "Explainable AI for face morphing attack detection".

On the second day, Prof.Zeno Geradts (Netherlands Forensic Institute & University of Amsterdam, Netherlands) met everyone's expectations to hear about a hot topic with his talk on "Forensic aspects and the analysis of deepfake videos".

Both keynote talks raised many questions from the audience and were followed by highly participated Q&A sessions managed using the slido tool.

IWBF2020 novelties
In this year's edition, there were some novelties, like the call for Demos and the Doctoral Consortium. This resulted in additional sessions: the presentation of two very interesting practical cases (demos) and a Doctoral Consortium proposal discussion moderated by the two doctoral consortium mentors Lena Klasén and Zeno Geradts. The doctoral consortium proposal, "Biometrics as forensic evidence: some reflections from the Italian Criminal proceeding's point of view" by Ernestina Sacchetto raised a very interesting interdisciplinary discussion.

Another novelty of this year's edition was the industry session. We were very glad to be joined by Ho Chang (CEO of BioID), Miguel Lourenço (Co-founder and CTO of Yoonik) and André Lourenço (Co-founder of CardioID). These three invited speakers participated in IWBF 2020 to tell us about their companies' achievements and to present some use cases.

Awards
The quality of the works presented at IWBF 2020 was very satisfying as well as the degree of innovative ideas. All the participants were invited to vote for three categories that highlighted the best works. It should be noted that, for the best paper award a list of six candidates was composed taking into account the best-reviewed papers and the recommendation of the meta-reviewers and programme chairs.

The prize for the "Computers

Journal Best Paper Award" was awarded to the paper "Secure Triplet Loss for End-to-End Deep Biometrics", by João Pinto, Jaime S. Cardoso (INESCTEC & Faculty of Engineering, University of Porto) and Miguel Correia (Faculty of Engineering, University of Porto). This work proposes a reformulation of the triplet loss, to guarantee the security of personal data stored in biometric systems. Models based on deep learning can, thus, without loss of performance or additional encryption or hashing processes, guarantee the cancellability of biometric data.

There were also attributed honorary mentions for the "Most Remarkable Oral Presentation" to Andreas Uhl for presenting the paper "Security Assessment of Partially Encrypted Visual Data: Using Iris Recognition as Generic Measure"; and the "Most Captivating Poster Presentation" for Philipp Terhörst for the poster presentation of the paper "Comparison-Level Mitigation of Ethnic Bias in Face Recognition".

The conference proceedings will be made available via IEEE Xplore. Following the conference, authors of the selected best papers presented at the conference will be invited to submit substantially extended versions of their papers to a Special Issue of the IEEE T-BIOM Journal.

The awards were announced in the closing session by Prof. Massimo Tistarelli.

Then the organiser of the next IWBF edition, Prof. Patrizio Campizi, gave us a glimpse of what is being planned for IWBF 2021 in Rome, Italy. *https://www.iwbf2021.com/*.

(Please also see IAPR-TC6 Computational Forensics News in this issue.

BOOKSBOOKSBOOKS

Below is a list of recently or soon-to-be published titles by Springer and CRC Press. Also, please let us know if you have a new book coming out, and we'll list it here. Happy reading!
~*[Jing Dong](#)*, IAPR Newsletter *EiC*

New titles published by Springer:

The following recently-published Springer titles may be of interest to the IAPR members:

* *Hyperspectral Image Analysis* by Saurabh Prasad and Jocelyn Chanussot (Eds.): https://www.springer.com/us/book/9783030386160

* *Handbook of Image Processing and Computer Vision* by Arcangelo Distante and Cosimo Distante: https://www.springer.com/us/book/9783030381479

* *Introduction to Medical Image Analysis* by Rasmus R. Paulsen and Thomas B. Moeslund: https://www.springer.com/us/book/9783030393632

* *Deep Reinforcement Learning* by Hao Dong, Zihan Ding, and Shanghang Zhang (Eds): https://www.springer.com/us/book/9789811540943

* *Human Centric Visual Analysis with Deep Learning* by L. Lin, D. Zhang, P. Luo, and W. Zuo: https://www.springer.com/us/book/9789811323867

* *Handbook of Vascular Biometrics* by A. Uhl, C. Busch, S. Marcel, and R. Veldhuis (Eds.): https://www.springer.com/us/book/9783030277307

* *Unsupervised Learning in Time and Space* by Marius Leordeanu: https://www.springer.com/us/book/9783030421274

New titles published by CRC Press:

Recently published, summer 2020:

* *Smart CMOS Image Sensors and Applications* by Jun Ohta: https://www.crcpress.com/Smart-CMOS-Image-Sensors-and-Applications/Ohta/p/book/9781498764643

* *Unmanned Aerial Remote Sensing: UAS for Environmental Applications* by David R. Green: https://www.crcpress.com/Unmanned-Aerial-Remote-Sensing-UAS-for-Environmental-Applications/Green/p/book/9781482246070

* *Deep Learning for Remote Sensing Images with Open Source Software* by Rémi Cresson: https://www.crcpress.com/Deep-Learning-for-Remote-Sensing-Images-with-Open-Source-Software/Cresson/p/book/9780367858483

* *Fuzzy Machine Learning Algorithms for Remote Sensing Image Classification* by Anil Kumar, A. Senthil Kumar, Priyadarshi Upadhyay: https://www.crcpress.com/Fuzzy-Machine-Learning-Algorithms-for-Remote-Sensing-Image-Classification/Kumar-Kumar-Upadhyay/p/book/9780367355715

![IAPR logo]

This bulletin board contains items of interest to the IAPR Community

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Call for Bids to Host ICPR 2024

Deadline:
~~May 1, 2020~~ October 1, 2020

Click **here** to go the ICPR Proposals page at the IAPR website.

The nomination deadline for the 2020 J. K. Aggarwal Prize
to be presented at ICPR 2020 (Jan. 2021) in Milan, Italy
has been extended to September 11, 2020

IAPR
International Association for Pattern Recognition

J. K. Aggarwal Prize

presented to

Your nominee

For contributions to …

January 11, 2021   *Apostolos Antonacopoulos, IAPR President*

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https://iapr.org/icpr2020

ICPR 2020
25th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION
Milan, Italy 10 | 15 January 2021
"putting Artificial Intelligence

COVID-19
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WORKSHOP Submission deadlines are still open!

Meeting and Education Planner

The IAPR web site has the most up-to-date information on IAPR events. Click here.
NOTE: Highlighting indicates that the paper submission deadline is still open.
+ Plus sign denotes pending application for IAPR endorsement/sponsorship +   * Asterisks denote non-IAPR events *

All dates indicated below are as of the time of publication. Conference dates and venues may change due to COVID-19 concerns. Some may be held online. Please check the conference websites for the most up-to-date information.

		Meeting	Report on previous edition	Venue
2020	AUG	ISAIR 2020: 5th International Symposium on Artificial Intelligence and Robotics	ISAIR 2019	**Online** - Japan
		ANNPR 2020: 9th Workshop on Artificial Neural Networks in Pattern Recognition	ANNPR 2018	**Online** - Switzerland
	SEP	ICFHR 2020: 17th Intl. Conference on Frontiers of Handwriting Recognition	ICFHR 2018	**Online** - Germany
		IJCB 2020: 4th International Joint Conference on Biometrics (IJCB is a triennial conference)	IJCB 2017	**Online** - USA
	OCT	ISPR 2020: First Intl. Conference on Intelligent Systems and Pattern Recognition		**Tunisia**
	DEC	CVIP 2020: 5th Intl Conference on Computer Vision and Image Processing	CVIP 2019	**In-person/On-line** - India
		MedPRAI 2020: 4th Mediterranean Conference on Pattern Recognition and Artificial Intelligence	MedPRAI 2018	**In-person/On-line** - Tunisia
2021		ICPR 2020: 25th International Conference on Pattern Recognition	ICPR 2018	**Italy**
		ICPR 2020 Workshops: Workshops that have been provisionally accepted as part of the ICPR 2020 program	ICPR 2018	**Italy**
	JAN	S+SSPR 2020: IAPR Joint International Workshops on Statistical Techniques in Pattern Recognition (SPR) and Structural and Syntactic Pattern Recognition (SSPR)	S+SSPR 2018	**Italy**
	FEB	ICPRAM 2021: 10th Intl. Conf. on Pattern Recognition Applications and Methods	ICPRAM 2020	**Austria**
		VISAPP 2021: 16th Intl. Conf. on Computer Vision Theory and Applications		**Austria**
	Spring	DGMM 2020: 1st Intl. Conf. on Discrete Geometry and Mathematical Morphology		**Sweden**
	MAR	ICPRS 2021: 11th International Conference on Pattern Recognition Systems	ICPRS 2019	**Chile**
	MAY	CIARP 2020: 25th Iberoamerican Congress on Pattern Recognition	CIARP 2019	**Portugal**
	JUL	MVA 2021: 17th International Conference on Machine Vision Applications	MVA 2019	**Japan**