THE INTERNATIONAL ASSOCIATION FOR PATTERN RECOGNITION

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IN THIS Issue

a Glimpse @ an Inspiring Technical Paper

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http://cripac.ia.ac.cn/en/EN/column/item113.shtml

Editor's note:
The aim of the "Glimpse" series is to introduce recent papers/articles/ presentations that advance technology towards the benefit of humanity, inspiring us all to strive in that direction.

~ Jing Dong, EiC

S.K. Ramesh, "Engineeringing the Future: Adapting for Success in a Brave New World"

This article has been adapted from an invited talk given at the 1st IEEE Beijing Engineering Education Research Forum held July 24, 2021.

Prof. S. K. Ramesh is a renowned engineering educator with over three decades of leadership experience as a dean, department chair, and faculty member in the California State University system. He is presently a Professor of Electrical and Computer Engineering at California State University, Northridge, and founding Director of CSU Northridge's internationally recognized AIMS^2 program (www.ecs.csun.edu/aims2) that mentors and supports underrepresented minorities in engineering. Earlier, he served as dean of CSUN's College of Engineering and Computer Science from 2006-17 when he established innovative programs to serve industry in renewable energy, assistive technology, and advanced manufacturing.

"It was the best of times. It was the worst of times" in the words of Charles Dickens, and his immortal classic "A Tale of Two Cities". Fast forward to March 2020 and Dickens might well have been writing about our collective experiences around the world. We are witnessing an extraordinary test of the human spirit during the past year and a half, as governments and institutions worldwide are taking steps to protect

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/*

2022

ICPRAM 2022
11th International Conference on Pattern Recognition Applicaions and Methods
Online Streaming
Deadline: Oct. 29, 2021
Dates: Feb. 3-5, 2022

ICPRAI 2022
3rd International Conference on Pattern Recognition and Artificial Intelligence
Paris, France
Deadline: Dec. 15, 2021
Dates: Jun. 1-3, 2022

IGS 2021
20th Conference of the International Graphonomics Society
Las Palmas de Gran Canaria, Spain
Deadline: Dec. 15, 2021
Dates: Jun. 7-9, 2022 (moved from Sep.13-15, 2021)

ISPR 2022
22nd International Conference on Intelligent Systems and Pattern Recognition
Hammamet, Tunisia
Deadline: Dec. 31, 2021
Dates: Mar 24-26, 2022

DAS 2022
15th IAPR Intl Wkshp on Document Analysis Systems
La Rochelle, France
Deadline: Jan. 4, 2022
Dates: May 22-25

ICPR 2022
26th Intl. Conf. on Pattern Recognition
Montréal, Québec, Canada
Paper Registration Deadline: January 10, 2022
Paper Submission Deadline: January 17, 2022
Dates: Aug. 21-25, 2022

IJCB 2022
2022 International Joint Conference on Biometrics
Abu Dhabi, United Arab Emirates
Deadline: April 15, 2022
Dates: October 24-27, 2022

people and prevent the spread of the global pandemic resulting from COVID-19. The world as we knew it has changed; forever. We are learning to adapt in this rapidly changing environment, focusing on sustaining the things we value the most. Perhaps more importantly, we have been challenged to become resilient and innovate in the face of adversity.

As we all work to learn the impacts on our global economy, two constants remain certain—innovation and economic development will remain critical drivers of regional and human success. Think about the challenges we face from pollution, congestion, lack of access to clean water and housing; the impact of climate change from forest fires, to flooding, and how all of these global challenges affect our quality of life. How do we rebuild? What do we rebuild? We can look upon this time as an opportunity to rebuild what we need.

Addressing environmental issues requires a commitment to change. Even prior to the pandemic, over 100 countries in the world were making plans to transition to 100 % renewable energy by 2050 by utilizing wind, water, and solar for all purposes from electricity, transportation, heating/cooling and industry. At my own university, I championed several renewable energy projects during my tenure as dean of the College of Engineering and Computer Science at CSUN from 2006-2017 with solar PV's, a utility scale fuel cell and micro-turbines, and our Energy Research Center. Our projects on renewable energy, sustainability and the smart grid prepare graduates to meet the emerging workforce needs in these fields.

International organizations like the IAPR and IEEE etc. will play a vital role in this redeveloped world. With the switch to telework and telehealth, the technologies created by top engineers are

clearly making a difference and will continue to play an important role in the new world economy when we emerge from this pandemic. New and exciting opportunities await at the confluence of AI, Machine Learning, Robotics, and Biotechnology to name a few.

We also know that the ways in which we teach and learn are changing rapidly across the educational spectrum from kindergarten to graduate school.

Nowhere is this more visible than in the field of Engineering Education. The skills, attributes, and competencies of engineering graduates are significantly different and more complex than ever before. With the disruption from the global pandemic, it is clear that jobs of the future will require engineers with strong communication skills, teamwork, leadership, interdisciplinary research, and professional skills for diverse engineering environments. Systems thinking, sustainable practices, and cross-cultural sensitivities are vital in an environment where engineers will need to address global challenges with local impact. Additionally they will have to address the new realities of global innovation: increasing distance between technology innovators and their markets. On a large scale, we need engineers who can collaborate globally while addressing societal needs.

Engineers who are Collaborative, Accountable, Resilient, and Ethical. Engineers who “CARE” as we adapt for success in a brave new world.

I see these values as intrinsic to our future where we come together as a community, innovating in the face of adversity, with an urgency fueled by the passion and commitment to make a difference for a bright and sustainable future for humanity.

Trusted, Diverse, and Inclusive, – We are in a great position to “Engineer the Future”.

Calls from IAPR Committees

From the IAPR Education Committee:

Call for Applications for IAPR Research Scholarships

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

COVID-19: Applications are welcome, assuming pandemic travel regulations allow a visit during the proposed period.

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 39 opportunities listed and more than 11,600 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/winter schools are training activities that expose participants to the latest trends and techniques in the particular pattern recognition field.

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/winter 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.

CALLS FOR NOMINATIONS

FOR AWARDS TO BE PRESENTED @ ICPR 2020

In the coming months, an official Call for Nominations for the prestigious King-Sun Fu Prize, the highest honor given by the IAPR, will be posted at the IAPR web site
https://iapr.org/fellowsandawards/awards_kingsunfu.php

The IAPR established this prize in honor of the memory of Professor King-Sun Fu, who was instrumental in the founding of the IAPR, served as its first President, and is widely recognized for his extensive contributions to the field of pattern recognition.

This biennial prize is given to a living person in recognition of an outstanding technical contribution to the field of pattern recognition.

The nomination must be made by a member of a national member society of IAPR and by endorsement of at least five members, representing at least two member societies different from that of the nominator. The prize recipient shall be selected by the Prize Committee, subject to approval by the IAPR Governing Board.

Members of the IAPR Executive Committee, as well as of the Prize Committee, shall be ineligible for the prize and may not serve as nominators or endorsers.

J.K. Aggarwal Prize

A Call for Nominations will soon be posted at the IAPR web site:
https://iapr.org/fellowsandawards/awards_aggarwal.php

Professor Aggarwal is widely recognized for his extensive contributions to the field of pattern recognition and for his participation in the IAPR's activities.

The recipient is a young scientist, under the age of 40 at the date of the deadline for nominations, 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.

The prize recipient shall be selected by the J. K. Aggarwal Prize Committee, subject to approval by the IAPR Governing Board, upon nomination by a member of a national member society of IAPR and by endorsement of four members, representing at least two member societies different from that of the nominators and nominee.

Members of the IAPR Executive Committee, as well as of the J.K. Aggarwal Prize Committee, shall be ineligible for the prize and may not serve as nominators or endorsers.

Maria Petrou Prize

A Call for Nominations will oon be posted at the IAPR web site:
https://iapr.org/fellowsandawards/awards_petrou.php

The Maria Petrou Prize is awarded biennially at ICPRs to a living female scientist/engineer who has made substantial contributions to the field of Pattern Recognition, and whose past contributions, current research activity and future potential may be regarded as a model to both aspiring and established researchers. This Prize honors the memory of Professor Maria Petrou as a scientist and engineer of the first rank, and particularly in her role as a pioneer for women researchers and highly successful role model. She is widely recognized for her extensive contributions to the field of image processing and pattern recognition. She also made significant contributions to the growth of IAPR, covering significant leadership roles.

The Prize consists of a suitably inscribed plaque and a cash amount partially covering a visiting period of the winner at some research institution or university.

IAPR Fellow Award

Deadline for Submission of Nomination & Endorsement Forms: January 31, 2022

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

We welcome nominations for the award of FIAPR. Anyone is eligible to be nominated, except for current members of the IAPR Executive and Fellow Committees.

To initiate a nomination, a nominator must write and submit an IAPR Fellow Nomination Form. Current members of the Executive and Fellow Committees may not serve as nominators.

Each nomination must be endorsed by at least one recommendation letter (submitted Endorsement Form), either from a member of an IAPR Member Society (different from the nominator) or from an IAPR Fellow.

Each electronic submission will be acknowledged by an email.

Massimo Tistarelli, Chair,
IAPR Fellow Committee
tista@uniss.it
Subject: IAPR Fellowship 2022
cc: *webmaster@iapr.org*

Call for Bids to Host ICPR 2026 from the IAPR Conferences & Meetings Committee

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

Call for Bids to Host ICPR 2026
Deadline: May 1, 2022

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, which can be linked to from here: *https://iapr.org/conferences/proposals.php*.

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 2026 must be submitted to the Chair of the IAPR Conferences and Meetings Committee (C&M) by **May 1, 2022**.

The selection of the conference venue will be made by the IAPR Governing Board (GB) during its meeting at ICPR 2022 in Montréal, Québec, Canada.

Institutions interested in organising ICPR 2026 should submit the bid to C&M Chair Elisa Barney Smith (*EBarneySmith@boisestate.edu*) by **May 1, 2022.**

Elisa Barney Smith
IAPR C&M Chair

Computer Vision, Reductionism and Holism

by Katsushi Ikeuchi, IAPR Fellow

Katsushi Ikeuchi is a Sr. Principal Research Manager, Applied Robotics Research, at Microsoft and Emeritus professor, University of Tokyo. He received a Ph.D degree in Information Engineering from the University of Tokyo. After working at MIT-AI, AIST-Japan, CMU-RI and U. Tokyo, he joined Microsoft in 2015.

His research interest spans computer vision, robotics, and computer graphics. In the field of computer vision, he proposed the so-called "smoothness constraints," near-by pixels have similar visual characteristics and a variational approach with this constraint in the shape-from-shading algorithm. Later, this smoothness constraint was extended as the regularization term. His original paper, "Numerical shape from shading and occluding boundaries," was selected as one of the most influential papers to have appeared in the Artificial Intelligence Journal within the past 10 years. In the field of robotics, he created the field of learning-from-observation, where a robot learns how to do from observing human actions. One of his papers on this topic, "Toward Automatic Robot Instruction from Perception-Mapping Human Grasps to Manipulator Grasps" won the IEEE-RAS K-S Fu memorial best transaction paper award. He also started an area, e-Heritage, to digitally preserve cultural heritage by using computer vision and computer graphics technique, and the U. Tokyo team, led by him, successfully digitized the Cambodian Bayon Temple. Through this project, he won best conference papers three times at the VSMM conference series.

*He general-program-chaired many international conferences including IROS95, CVPR96, ICCV03, ITSW07, ICRA09, ICPR12 and ICCV17. He has received several awards, including IEEE-PAMI Distinguished Researcher Award, IEICE outstanding achievements and contributions award as well as a Medal of Honor with Purple Ribbon from the Emperor of Japan. He is a fellow of IAPR, IEEE, IEICE, IPSJ and RSJ. (*http://www.cvl.iis.u-tokyo.ac.jp/~ki*)*

Katsushi Ikeuchi, IAPR Fellow
ICPR 2020, Milan
For fundamental contributions to computer vision applied to robotics and man-machine interaction

David Marr, the proposer of the basic paradigm of computer vision (CV), defines CV as the field of research on algorithms that can replace a variety of human visual functions [1]. So far, CV research has been conducted along this direction, and various algorithms have been derived bottom-up and collected as algorithm recipes, such as in OpenCV or Github. Moreover, in the last decade or so, a dramatic development of algorithms has occurred thanks to deep learning and other machine learning technologies.

However, when it comes to the original definition of CV, I feel that something is still missing in CV. It seems to lack a bird's eye view through the whole CV. It is said that humans cannot see unless we try to see. It is necessary to re-think the idea of "the will to see" or "the purpose of seeing"

For the past 20 years, I have been developing robot vision systems that can observe, recognize, and learn human behaviors from human demonstrations, learning-from-observation. I have created robots that can assemble building blocks [2], that can tie strings [3], and that can dance Japanese folk dances [4], under this learning-from-observation paradigm. These robots performed well but did not have will. They did not learn dances because they wanted to dance. Instead, I just tried to make the robots learn. The robots did not want to dance well; I wanted to make them dance well.

In the field of machine learning, I am hearing encouraging arguments such that the recognition rate of machines has surpassed that of humans, or extreme arguments that artificial intelligence (AI) systems will eventually surpass all human capabilities. However, currently, in these machine-learning systems, there are always researchers

who collect data and prepare the environment for the systems to learn. It is not that the machine itself wants to learn. Alpha Go is not the one who wants to learn and to play Go well.

Originally, CV began as a branch of artificial intelligence. In the early years after the AI big bang, the Dartmouth Conference, researchers with various specialties worked together and collaborated with each other in the same place. Early successful demos, such as the MIT-AI Copy demo [5] and the MIT-AI Bin-Picking demo [6], were achieved through the collaborations of the researchers in the sub fields of CV, robotics, and AI. In the mid-1980s, however, the difficulties and challenges of each sub fields became apparent and began to take their different paths, reductionism. Most notably, ICCV and ICRA started in 1987 and 1984, respectively.

In late 20th century and the current early 21st century, this reductionism has been successful, and each field looks like a hundred flowers are in full bloom. For example, the number of participants at CV conferences has doubled each year, reaching ten times that of the previous decade.

In a sense, a Cambrian explosion is occurring in CV. The Cambrian explosion of biology happened because biology systems acquired vision at that time, while the Cambrian explosion of CV occurs through the acquisition of deep learning and cloud computing technologies. After the explosion, however, a mass extinction occured. We know from fossils that a large number of species are extinct. Only those with the awareness of the environment and the will to adapt to the environment are believed to have survived.

A similar mass extinction could happen in CV. To avoid the extinction, CV systems need the awareness and the will to adapt to the environment. So, then for CV systems, what does the environment and the will to adapt mean?

The environment that CV systems have to adapt to is human beings and human will. Ultimately, CV, robotics, and AI systems should be designed and work for the well-being of humans. We, humans, are the Creators of those systems; it is the time to explore CV systems with an awareness of the human environment and the will to adapt to it. This requires research with a holistic perspective, which is lacking in the current conventional reductionism approach.

We need to consider the relationship between humans and machines. How can we design CV and AI systems with a “machine will?" To what extent are CV and AI systems with "machine will" optimal for humans? Where should the boundary of "machine will" be for CV and AI systems? What is the difference between "machine will" and "human will?"

In order to think about these questions, it is not enough to simply study computer science; we need to collaborate with all fields of science, including aesthetics, psychology, and philosophy. This direction requires a holistic review of the existing academic disciplines. Through this, we should be able to propose CV & AI systems that can assist and augment human functions and co-exist in a friendly manner. Furthermore, by doing so, new academic disciplines can be established on top of the current CV, Robotics and AI disciplines.

[1] Marr, D. Vision: A computational investigation into the human representation and processing of visual information, Freeman, 1982.

[2] Ikeuchi, K. and Suehiro, T. “Toward an assembly plan from observation” IEEE Trans. Robotics and Automation, Vol. 10, No. 3, pp. 368-385, 1994

[3] Takamatsu, J., Morita, T., Okawara, K. and Ikeuchi, K. “Representation for knot-tying tasks” IEEE Trans. Robotics, Vol. 22, No. 1, pp. 65-78, 2006.

[4] Okamoto, T., Shiratori T., Kudoh S., Nakaoka S. and Ikeuchi, K., “Toward a dancing robot with listening capability” IEEE Trans Robotics, Vol. 30, No. 3, pp.771-778, 2014.

[5] Winston, P. Learning structural descriptions from examples, MIT-AITR-231, 1970.

[6] Horn, B.K.P. and Ikeuchi, K. “The mechanical manipulation of randomly oriented parts,” Scientific American, Vol. 251, No.2, pp:100-113, 1984.

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)?*
- *How can the IAPR help young researchers?*

~Jing Dong, Editor -in-Chief

Smitha Anil

Smitha A received her bachelor's degree in Electronics and Communication Engineering from St. Joseph Engineering College, Karnataka. Later she completed Master's in Network Engineering from Manipal Institute of Technology, India, in the year 2013. At present, she is a Ph.D. research scholar, in the Department of Mathematical and Computational Sciences, National Institute of Technology, Karnataka, India. Prior to her ongoing doctoral studies, she was working as an Assistant Professor in the Department of Information and Communication Technology, Manipal Institute of Technology, Manipal. Her research interests include the applications of deep learning to medical image processing and image restoration using variational models. Her present work includes retinal disorder classification using Generative Adversarial Networks. She is working under the guidance of Dr. Jidesh P, Assistant Professor in the department of Mathematical and Computational Sciences, National Institute of Technology Karnataka.

Editor's note: Smitha Anil was the recipient of the Best Student Paper Award at CVIP 2020 (please see the report on this conference in the July 2021 issue [43:3]).
~ Jing Dong, EiC

by Smitha Anil, PhD Student, Department of Mathematical and Computational Sciences, National Institute of Technology, Karnataka, India

Briefly: How did you get involved in pattern recognition?

It was in January 2018 that I stumbled upon a Pattern Recognition course to teach the undergraduate students, instigating my interest in artificial intelligence. Discussions with my colleague Mrs.Swathi B. P. and my friend, Mr. Pruthviraj, helped me to realize how we can extract the pattern in almost every aspect of our daily life. For instance, concepts like Bayesian Maximum Aprioiri and other regression or classification algorithms have simplified applications like weather forecasting. Interactive sessions with undergraduate students motivated me to connect technical concepts such as clustering algorithms to real life examples like the arrangement of related items in a supermarket. Simple concepts appeared exotic, paving the way for me to take up research in this domain.

Later that year, when I joined the National Institute of Technology as a doctoral candidate under the guidance of Dr. Jidesh P I deep-dived into the fields of machine learning and pattern recognition. I attended the Machine learning course handled by my mentor and attended several other related workshops including the course of Mr. Ian Goodfellow. My knowledge in this domain further strengthened after attending the summer school run by Dr. Jeny Rajan at NITK. Further, I explored this domain by practically implementing some projects and online courses. This way, I became involved in pattern recognition and my passion continues till this day.

In more detail: What technical work have you done and what is/are your current research interest(s)?

I began exploring the domain of medical image processing using deep learning working under the guidance of my supervisor. Specifically, retinal disorders detection and analysis from

fundus and optical coherence tomography images is my research topic. This research is mainly based on developing novel image restoration models and automatic classification models to detect conditions such as age-related macular degeneration (AMD) and glaucoma. So far, using public repositories, we have implemented a semi-supervised Generative Adversarial Network that was awarded the best student paper at CVIP 2020. We proposed a nonlocal deep image prior based image denoising model and this work is published as a journal. We are fortunate to be able to connect with well-established researchers like, Prof. Vasudevan Lakshminarayanan from University of Waterloo and Dr. Jothi Balaji, Medical Research Foundation, Chennai. Our collaborative works mainly include the applications of pattern recognition to distinguish the AMD and normal conditions. Together, we published a poster paper in the SPIE event as well.

Retinal disorders are the leading causes of visual impairments in elderly populations (aged above 60 years). A wide range of retinal disorders are progressive and irreversible. Early diagnosis and proper monitored medication can assist in reducing the impact of these retinal disorders. Unfortunately, the severe shortage of ophthalmologists and the tedious manual diagnosis procedures are posing severe challenges to early diagnosis.

Tremendous applications of deep learning have assisted in automating diagnosis to some extent. DeepRetina, Eye Track, IDx-DR are some of the leading products that are AI-enabled to automatically grade the diabetic retinopathy from fundus images. These products can be easily integrated into smartphones, expediting the diagnosis of diabetic retinopathy. Furthermore, such products are useful in tracking the progress of the retinal disorder over a prolonged time period. It enables the telemedicine, where the patient can easily contact the ophthalmologist even from a remote location. The major downside of these products is that most are integrated to the IOS platform and are overpriced. Furthermore, these are unavailable in India and importing adds to the expenditures.

Though diabetic retinopathy is a widespread disorder globally, macular disorders such as age-related macular degeneration (AMD) and diabetic macular edema are also key concerns in recent years. There are no automated applications available to detect the glaucoma and AMD conditions. This motivated us to take up the automatic detection of retinal disorders as our research topic.

Glaucoma is a condition associated with the optic cup and optic disc ratio. It is reflected by significant variation in intra ocular pressure. Therefore this is analyzed primarily using color fundus photographs. On the other hand, AMD, being a macular disorder, is diagnosed using Optical Coherence Tomography (OCT) images. Though there are other retinal imaging modalities such as Fluorescein Angiography, OCTs are widely preferred due to the non-invasive nature. However, these modalities are subjected to inherent speckle noise and other artifacts. Speckle is formed due to constructive and destructive interference of optical rays. Therefore, it is necessary to perform a despeckling operation before image analysis. Our preliminary work on retinal disorder detection indicated that the existing deep learning models do not place emphasis on preprocessing the images. Considering the fact that variational models are well known for image restoration, we proposed novel algorithms to perform despeckling operation. Color fundus photographs need contrast enhancement so that the features within the retina such as optic disc, blood vessels, and the abnormalities are distinguishable. Therefore, perceptually inspired retinex based variational models are suitable restoration methods due to their edge preserving quality. Automatic classification of these disorders necessitates deep learning models such as a semi-supervised GAN that can give exemplary performance when a partially labeled dataset is available. Developing such an end-to-end retinal disorder application can assist ophthalmologists to grade the retinal disorders.

How can the IAPR help young researchers?

The IAPR can help the young researchers by offering financial assistance such as scholarships to assist young researchers who greatly rely on external sources to publish their work. The IAPR can extend their support to research scholars who would like to take up post-doctoral studies by connecting young researchers with established eminent industry oriented mentors. Furthermore, The IAPR can make it easier for young researchers to find information about the programs it has to support them: Research Scholarships, Internship Brokerage web page, and stipends to attend conferences and summer/winter schools. In addition, The IAPR can initiate a forum or a blog section to transfer knowledge or help the beginners.

From the ExCo

The IAPR ExCo on…

As we move beyond the COVID era, what comes next?

by Dan Lopresti (USA), IAPR President

News from the IAPR Executive Committee

- **BEWARE OF SCAMMERS!!!!** If you receive a request that looks like it's from an ExCo member and asks for "emergency funds", it is almost surely a scam. ***Before you act, please send a separate email—using the email addresses in your Contacts—to the ExCo member and the Secretariat to verify.***
- The ExCo held its Interim Meeting (extended meeting in the year between ICPRs) via Zoom. One topic was the upcoming IAPR anniversaries, the first being the 50th anniversary of the first IJCPR, which took place in Washington, D.C., in 1973.
- The ExCo will continue having quarterly Zoom meetings for now, reporting on them in this column.
- Start planning whom you might nominate for the IAPR Awards and fellowships to be presented at ICPR 2022. Calls for nominations are forthcoming.
- ICPR 2022 is only 10 months away! Check out the Call for Papers and Call for Workshops, Tutorials, and Challenges in this issue.

Conferences are the lifeblood of IAPR. For this reason, we owe a deep debt of thanks to those colleagues who apply their energy and talents to organizing any of our first-rate events. The pandemic has compounded these challenges, demanding even greater degrees of flexibility and creativity. If you are like me, you have enjoyed some excellent virtual conference experiences over the last year while travel has been impossible.

Looking forward, we will soon be entering a post-COVID phase. While there is much to be hopeful about, it seems unlikely that conferences, and conference travel, will immediately leap back to “normal.” It is much more likely we will see a new normal, with travel being possible for some members of our community, while others are still restricted. We may also find that some of the new features of our virtual conferences—developed at first out of necessity—have proven to be so attractive and effective that we will want to keep them. Virtual participation options could improve the sustainability of IAPR events and also increase their inclusiveness.

The answer to all this will certainly be some form of hybrid conference structure, supporting both local and remote attendees. Because this adds yet more complexity for organizers, it is tempting to delay planning in the hope that COVID will become a “bad dream,” forgotten by the time the conference takes place. In my opinion, it is a mistake to adopt this attitude. Rather, conference organizers should proceed full-speed ahead with confidence and enthusiasm. From the data I have seen, attendance at our virtual and hybrid events has exceeded past figures by a significant margin, demonstrating strong demand on the part of the community.

It is true that we are entering unknown territory. There are not yet “best practices” for hybrid conferences, although some such events are now taking place and I encourage you to investigate them. The recent ICDAR 2021 conference is one such example (*https://www.iapr.org/icdar2021*).

For those organizing upcoming IAPR events, probably the most important piece of advice is to make sure to communicate regularly with your community to explain your current plans, solicit their input, and adapt. You might conduct a survey to understand people’s attitudes about attending in-person or virtually along with other concerns. Such information can be useful in planning your local activities and the requirements for your online platform, as well as determining registration fees. Above all, it is vital to remain flexible since the worldwide situation will remain fluid for the foreseeable future.

I close by reminding you that ICPR 2022 is approaching rapidly, with submission deadlines in January. Check out the details at *https://iapr.org/icpr2022*. I hope to see you there, in whatever mode you choose to participate!

CALL for PAPERS
and Workshop and Tutorial Proposals

The 26th International Conference on Pattern Recognition

Montréal, Québec, Canada
August 21-25, 2022

https://iapr.org/icpr2022

Register papers via PaperCept prior to submission	PAPERS	WORKSHOPS	TUTORIALS	CHALLENGES
Registration deadline	Jan. 10, 2022			
Submission deadline	Jan. 17, 2022	Jan. 17, 2022	Jan. 17, 2022	Dec. 20, 2021
Acceptance/Rejection/Revision decision	Mar. 14, 2022	Feb. 14, 2022	Apr. 11, 2022	Jan. 10, 2022
Revisio/rebuttal deadline	Apr. 11, 2022			
Final decision on submissions	May 9, 2022			
Camera ready manuscript deadline	Jun. 6, 2022	Jun. 6, 2022	Jun. 6, 2022	Jun. 6, 2022
Early bird registration deadline	Jun. 6, 2022	Jun. 6, 2022	Jun. 6, 2022	Jun. 6, 2022
Presentation dates	Aug. 22-25, 2022	Aug. 21, 2022	Aug. 21, 2022	Aug. 21, 2022

The International Conference on Pattern Recognition (ICPR) is the premier world conference in Pattern Recognition, covering both theoretical issues and applications of the discipline. ICPR 2022 solicits original research for publication in the main conference. Topics of interest include all aspects of Pattern Recognition, Computer Vision, and Image Processing.

General Chairs: Michael Jenkin (Canada), Cheng-Lin Liu (China), and Henrik I. Christensen (USA)

Program Chairs: Gregory Dudek (Canada), Zhouchen Lin (China), Ingela Nyström (Sweden), and Simone Marinai (Italy)

Workshop Chairs: Giovanni Farinella (Italy), Jonathan Wu (Canada), Laurence Likforman (France), and Xiang Bai (China)

Tutorial Chairs: David Clausi (Canada), Markus Enzweller (Germany), and Umapada Pal (India)

Challenge Chairs: Marco Bertini (Italy) and Dimosthenis Karatzas (Spain)

Topics of Interest by Track

Track 1: Artificial Intelligence, Machine Learning for Pattern Analysis

● classification and clustering ● statistical learning theory ● syntactic and structural pattern recognition ● neural network architectures and models ● graph models ● deep learning ● representation learning ● online learning and continual learning ● supervised, unsupervised, self-supervised and semi-supervised learning ● transfer learning and meta learning ● multi-modal and multi-view learning ● active and ensemble learning ● reinforcement learning ● compressed sensing and sparse representation ● large scale learning and big data ● recurrent networks, temporal models and non-feed-forward methods ● low-shot and long-tailed learning ● generative models ●

Track 2 : Computer Vision and Robotic Perception

● early and low-level vision ● stereo and 3D vision ● multiple view geometry ● object detection and recognition ● motion, tracking and video analysis ● deformable models and registration ● learning for vision ● scene analysis and understanding ● action and behavior recognition ● vision and language ● perception for autonomous navigation and/or driving ● vision for robotics, robot navigation and SLAM ● perceptually driven reinforcement learning ●

Track 3: Image, Video, Speech, and Signal Analysis

● sensor array and multichannel signal processing ● image and video processing ● enhancement, restoration and filtering ● segmentation, features and descriptors ● coding, compression and super-resolution ● speech and speaker recognition ● audio and acoustic processing ● computational photography ● models, representations, and techniques for image mining ● image analysis with ill-structured and spatial information ●

Track 4: Biometrics and Human-Machine Interaction

● hard biometrics: face, iris, fingerprint, palmprint ● soft biometrics: skin, hair, ear, vein, facial expression ● gait and behavior ● multi-biometrics ● person identification and re-identification ● human-robot interaction ● brain-computer interfaces ● social robotics ● human body motion and gesture-based interaction ● speech and natural language-based interaction ● affective computing ● surveillance and security ● ethics and fairness issues in the use of biometrics ●

Track 5: Document and Media Analysis

● text and symbol recognition ● handwritten text recognition ● document image analysis ● document understanding ● natural language processing ● scene text detection and recognition ● graphics recognition ● content based image retrieval and data mining ● visual question and answering ● multimedia document analysis ● media analysis for augmented and virtual reality ● multimodal fusion ● table detection, recognition, and structure extraction ● video text detection and recognition ● Human-document interaction ●

Track 6: Biomedical Image Analysis and Informatics

● data-driven modeling of clinical care ● clinical predictive modeling ● biostatistics ● biomedical imaging techniques ● quantitative microscopy ● medical image analysis ● interactive segmentation ● visualization and 3D printing ● medical applications ●

IAPR Ethical Requirements for Authors (*https://iapr.org/constitution/soe.php*): IAPR requires that all authors wishing to present a paper declare that (1) The paper is substantially original and that no paper substantially similar in content has been submitted or will be submitted to any other conference or journal during the review period. (2) The paper does not contain any plagiarism. (3) The paper will be presented by the author or a co-author in person or online. (4) IAPR retains the right to eliminate any papers in violation of these requirements and to exclude the authors of such papers from future IAPR community activities.

In this issue:

IAPR TC4 Biometrics

http://iapr-tc4.org/

Zhenan Sun (National Laboratory of Pattern Recognition, China), Chair
Julian Fiérrez (Universidad Autónoma de Madrid, Spain), Vice Chair

IJCB 2021

The full report on the 2021 International Joint Conference on Biometrics is in this issue of the *IAPR Newsletter*. For the "TC News" section, we list some highlights:

- The IJCB series combines two major biometrics research conferences, the International Conference on Biometrics (ICB) and the Biometrics Theory, Applications and Systems (BTAS) conference.
- IJCB 2021 received 170 submissions (164 regular papers and 6 competition summary papers). 72 papers (66 regular papers and 6 competition summary papers) were accepted. The acceptance rate is 40.2% for normal papers.
- The conference also witnessed 3 keynote speakers, one panel session, four tutorials and six competition sessions.
- The conference was attended by 230 participants using an online conference platform.
- The 2021 Young Biometrics Investigator Award was presented to Dr. Vishal Patel (https://engineering.jhu.edu/vpatel36/) from Johns Hopkins University, USA. This highly competitive award recognizes an individual under the age of 40 who has made substantial contributions to the IAPR Biometrics community and whose research has had a major impact in biometrics.

WSB 2022:

The Winter School on Biometrics 2022 (*https://www.comp.hkbu.edu.hk/wsb2022/*) will be held in Shenzhen, China, from January 9 to 13, 2022. It will be organized in a mixed mode. Participants are encouraged to attend in-person; those who cannot, will attend online. To reduce risk during the pandemic, the school directors will select a maximum of 40 students to attend in-person. The application deadline is November 15, 2021.

IJCB 2022:

The 2022 International Joint Conference on Biometrics (https://iapr.org/ijcb2022) will be held in Abu Dhabi, United Arab Emirates from October 24 to October 27, 2022. This will be the first biometrics conference to be held in the Middle East. Abu Dhabi is the picturesque capital of UAE, an hour's drive away from Dubai. The deadline for paper submission is April 15, 2022.

More IAPR Technical Committee News

In this issue:

IAPR TC6 Computational Forensics

https://iapr.org/tc6

Chang-Tsun Li (Deakin University, Australia), Chair
Nicolas Sidere (La Rochelle University, France), Vice Chair
Victor Sanchez (University of Warwick, UK), Newsletter Editor
Xufeng Lin (Deakin University, Australia), Information Officer and Webmaster
Mickael Coustaty (City University of La Rochelle, France), Dataset Curator

IAPR TC6 hosted the inaugural invited speech of its new webinar series on September 29, 2021, with Professor Isao Echizen of Tokyo Institute of Technology, Japan. The talk, entitled, "Real or Fake? From Biometric Data Protection to Fake Media Detection," was well-received, attracting 36 attendees from around the world.

This series of IAPR TC6 webinars is intended to take place on a quarterly basis and to be open to the public.

Professor Isao Echizen
Tokyo Institute of Technology, Japan

Organized by IAPR TC-6, the Third International Workshop on Computational Document Forensics (IWCDF 2021) took place in Lausanne, Switzerland, on September 5, 2021, in conjunctonn A full report will appear in the forthcoming ICDAR 2021 Special Issue of the *IAPR Newsletter*. Here we note some highlights:

- This workshop aimed at addressing theoretical and practical works related to document processing, digital security, authenticity verification, forgery and counterfeit detection.
- IWCDF 2021 was organized in hybrid mode and 40 people participated to make it a real success.
- Proceedings of IWCDF2021 are available in the proceedings of the ICDAR 2021 Workshops *https://link.springer.com/book/10.1007/978-3-030-86198-8?page=2#toc*.

And More IAPR Technical Committee News

In this issue:

IAPR TC9 Pattern Recognition in Human Machine Interaction

https://iapr.org/tc9

Mariofanna Milanova (University of Arkansas Little Rock, USA), Chair
Xavier Alameda-Pineda (Inria Grenoble Rhône-Alpes, France), Vice Chair
Steering Board: Roland Goecke, Sumantra Dutta Roy, Stefan Scherer, Freidhelm Schwenker

Below is a summary of the current activities of TC9:

- Call for papers: **MDPI Interdisciplinary Topic (IDT) on Data Analytics and Machine Learning in Artificial Emotional Intelligence (MDPI)** is an Open Access Journal. This IDT is defined across five different MDPI Journals. Please check if your work fits to the call at *https://www.mdpi.com/topics/emotional_AI*.
- TC9 offers and delivers FREE workshops and tutorials organized by NVIDIA Deep Learning. One example is the training workshop entitled:"Fundamentals of Deep Learning Workshop" by NVIDIA. *https://www.nvidia.com/content/nvidiaGDC/us/en_US/training/instructor-led-workshops/fundamentals-of-deep-learning/* For more information contact: Mariofanna Milanova *mgmilanova@ualr.edu*.
- Deeptails Seminar and MIAI: This series of public seminars is now coming to an end. Depptails Seminar and MIAI were started over a year ago. The objective of these seminars has been to raise awareness about the amount of engineering work necessary to prepare solid scientific contributions based on deep neural networks. Hence the name "The devil is in the deeptails," or "deeptails." The seminars have been given by a confirmed researcher who discusses the overal idea and a junior researcher who can discuss the details required to obtain the results. All seminars are recorded and publicly available, and all the information can be found in: *https://project.inria.fr/ml3ri/dissemination-and-communication/deeptails/*. From now on, the Deeptails Seminars will be included in the scientific events of the Multidisciplinary Institute of Artificial Intelligence (MIAI, *https://miai.univ-grenoble-alpes.fr/*). MIAI is composed of academic and industrial actors who bring together the necessary core and applicative expertise to conduct first class science, include this knowledge in training programs, and transfer the technology to industrial products. For more information contact : *xavier.alameda-pineda@inria.fr*.

IAPR TC11 Reading Systems

https://iapr.org/tc11

Faisal Shafait (National University of Sciences and Technology NUST, Pakistan), Chair
Jihad El-Sana (Ben-Gurion University of the Negev, Israel), Vice Chair

*Editor's note: The forthcoming **ICDAR 2021 Specal Issue of the IAPR Newsletter** will include details of this vital conference.*

The 16th International Conference on Document Analysis and Recognition (ICDAR 2021) was a great success. For the first time in 30 years, the conference was held in hybrid mode from September 5-10 in Lausanne, Switzerland, bringing together over 200 on-site and over 400 online participants.

Registered participants can still access the digital memory of the conference and review the recorded videos of the keynotes and the oral sessions, both for the main conference and the pre-conference events. The Springer proceedings are also available online, with free access for everyone through the links on the conference website.

In this issue:

IAPR TC12 Multimedia and Visual Information Systems

https://iapr.org/tc12

Hugo Jair Escalante (INAOE and CINVESTAV, China), Chair
Henning Müller (HES-SO, Sierre, Switzerland), Vice Chair
Sergio Esclara (University of Barcelona, Spain), Vice Chair
Albert Ali Salah (Utrecht University), Information Officer

The **ImageCLEF scientific challenge** took place from September 21-23 (*http://www.imageclef.org/2021/*), unfortunately again as a virtual conference. Still, the virtual format and a conference that is free of charge allowed many scientists to participate and exchange their approaches. Over 40 research groups submitted their results to at least one of the four tasks (medical image analysis, web element detection in hand drawings, coral reef identification and social media analysis). Tasks for ImageCLEF 2022, the 20th edition of ImageCLEF are underway and details will be published in the web pages soon.

The Steering Board of the **IEEE International Conference on Automatic Face and Gesture Recognition (FG)** invites proposals to host the 2023 edition of the conference, preferably to be held May-June 2023. FG 2023 will be the 18th in a series that began in 1995 in Zurich, Switzerland. In keeping with past rotations between the Americas, Europe, and Asia, preference for FG 2023 will be given to proposals from Europe. FG 2021 is organized in India as a fully virtual event (*http://iab-rubric.org/fg2021/*) and FG 2022 is planned to be held in Guangzhou, China.

Important dates: Letters of intent are due **October 15**, draft proposal due **November 15**, and full proposals due **December 1**. All communications, including request for information and bid submission, should be sent to the FG Steering Board Chair (Albert Ali Salah, *a.a.salah@uu.nl*). More info: *http://iab-rubric.org/fg2021/FG2024.html*.

ChaLearn Looking at People invites papers/brief book chapters for the Proceedings in Machine Learning Research (PMLR) track on Understanding Social Behavior in Dyadic and Small Group Interactions. Contributions are solicited in the form of tutorials, surveys, and/or novel technical/scientific contributions from different perspectives (e.g., technical, psychological, social), including, but not limited to the detection, understanding, modeling, prediction and synthesis of individual and interpersonal social signals and dynamics; verbal / nonverbal communication analysis; contextual analysis; datasets, annotation protocols and bias discovering / mitigation methods; interpretability / explainability.

Deadlines: Letter of intent (not mandatory but strongly encouraged) **October 1st**; submission deadline **November 30th**. More info: *https://chalearnlap.cvc.uab.cat/workshop/44/schedule/*

Follow us on LinkedIn and Twitter:

https://www.linkedin.com/groups/8109409/ *https://twitter.com/IAPR_TC12*

In this issue:

IAPR TC15 Graph-Based Representations

https://iapr.org/tc15

Donatello Conte (Université de Tours, France), Chair
Vincenzo Carletti (University of Salerno, Italy), Vice Chair

The chairs of the TC15 hope this newsletter finds you in good health.

Due to the impossibility of organizing the 2021 edition of Graph-based Representations in Pattern Recognition (GbR), our biennial workshop, this year, TC15 is proposing and organizing several new events from now and until 2023. Some are online events, others are Special Sessions on topics related to our TC (i.e. graph-based representations in pattern recognition) organized within well-know IAPR conferences.

The **first online TC15 seminar** took place on October 22nd. Four invited speakers addressed about 30 participants on the following subjects:

- Graph based Video Processing (Ananda S. Chowdhury);
- Graphs and Pre-Image (Benoit Gaüzère);
- Differentiable Graph Matching (Romain Raveaux);
- Subgraph Isomorphism in Pattern Recognition (Pasquale Foggia).

Their talks, together with the related Q&A sessions, have been recorded, and you can find them on the TC website (*https://iapr.org/tc15*). It was a very nice event, both friendly and scientific, and all people were happy to participate and enjoyed it.

The event was also an opportunity to discuss and share ideas around the animation of the TC (sharing research activities, promoting the topic in the scientific community, and so on). Many interesting ideas have come out, and we will try to implement them in the coming months.

You can find all this information in detail, together with open positions about graphs and other related info, in our TC15 Newsletters published on our website.

GbR 2023

will be hosted by

the MIVIA Group

from the

University of Salerno

In this issue:

IAPR TC19 Computer Vision for Cultural Heritage Applications
https://iapr.org/tc19
Guillaume Caron (Université de Picardie Jules Verne, France), Chair
Olga Regina Pereira Bellon (Universidade Federal do Parana, Brazil), Vice Chair
Takeshi Oishi (University of Tokyo, Japan), Webmaster
Advisors: Katsushi Ikeuchi, Roberto Scopigno, El Mustapha Mouaddib, and Takeshi Oishi

1) International workshop:

On October 1st 2021, TC19 organized the 1st Workshop on "E-Heritage and Robotics" in conjunction with the IEEE/RSJ International Conference on Intelligent Robots and Systems. Please read the EHR 2021 meeting report in this issue for a summary of the event.

2) Special issue

Journal of Imaging

The chairs of TC19 are guest co-editors of the Special Issue on "Computer Vision and Robotics for Cultural Heritage: Theory and Applications" of the Journal of Imaging. The call for articles is open **until November, 30th 2021** (*http://mdpi.com/si/71039*).

We invite submissions of articles reporting new works within the multidisciplinary field of digital heritage, simultaneously contributing to computer and/or robot vision and digital heritage. More details on the scope are available on the website *http://mdpi.com/si/71039*.

A few waived fee vouchers are still available for members of the TC19 to publish in this special issue, if their article is accepted after reviewing. Please contact the guest editors beforehand: Guillaume Caron, Olga Regina Pereira Bellon and Ilan Shimshoni.

Meeting Reports

Conferences, Workshops & Summer/Winter Schools

Advisory Committee: Tieniu Tan, Chinese Academy of Sciences, China (Chair); Anil Jain, Michigan State U., USA; Rama Chellappa, U. of Maryland at College Park, USA, Josef Kittler, U. of Surrey, UK; Brian Lovell, The U. of Queensland, Australia; Massimo Tistarelli, U. of Sassari, Italy

School Director: P. C. Yuen, Hong Kong Baptist U.

School Co-Directors: Zhenan Sun, Chinese Academy of Sciences; Shiqi Yu, Southern U. of Science and Technology, China; Norman Poh, QuintilesIMD, UK

The 5th IAPR/IEEE Winter School on Biometrics (WSB 2021) was a training course to promote research in biometrics and related fields. The 2021 edition was held in a mixed mode in Shenzhen, China. 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 and IEEE. There were 71 participants (26 on-site participants, 31 online participants and 14 volunteer students). Nine of them were from Japan, India, Malaysia, US, Canada, Hong Kong and Macau. The rest were from Mainland China. The 16 IAPR grants were given to16 online participants who were selected by the school directors.

21 lectures were given by lecturers from academia and industry. Most lectures were given online. The topics covered biometric identification with face, fingerprint, palmprint, iris, gait, signature. Some related topics such as federated learning, privacy, security, presentation attack detection and biometrics in applications were also included. The lecturers are internationally renowned experts who presented the most up-to-date views in biometrics and shared their experiences.

Industry was deeply involved in WSB 2021. Open AI Lab sponsored an ARM development board for each participant and a high-performance ARM board to each winner in the hands-on session. The hands-on session was organized by OpenCV China Team and Open AI Lab. Vadim Pisarevsky and Jia Wu gave lectures on how to develop a real-time face recognition system on ARM embedded development boards. Most participants finished their projects on face recognition and submitted their reports. Four teams were awarded for their excellent work.

To encourage sharing and communication, a discussion session was organized. Dr. Jing Dong gave a short talk on women in engineering. Then all on-site participants were in 5 different groups, and all online participants were in 3 groups led by different professors. The discussion could be on women in engineering and any other topics of interest to the students. This was one of the most popular sessions. Prof. Mark Nixon gave a lecture titled "On Writing Journal Papers" which gave a good answer to participants on why we should publish papers and how.

WSB 2021 faced the most challenging moment because of the pandemic. The local organizing committee designed a detailed plan and adjusted according to the situation of the pandemic. Ultimately, the winter school was held successfully and smoothly. The participants gave very positive feedback.

General Chairs:

Edgar Roman-Rangel, ITAM, Mex
Ángel Fernando Kuri Morales, ITAM, Mex
Jesus Ariel Carrasco Ochoa, INAOE, Mex
José Francisco Martínez Trinidad, INAOE, Mex
José Arturo Olvera-López, BUAP

Program Co-Chairs:

Edgar Roman-Rangel, ITAM, Mex
Ángel Fernando Kuri Morales, ITAM, Mex
Jesus Ariel Carrasco Ochoa, INAOE, Mex
José Francisco Martínez Trinidad, INAOE, Mex

MCPR 2021 was organized by the Academic Division of Engineering of the Instituto Tecnologico Autonomo de Mexico (ITAM) and Coordinacion de Ciencias Computacionales of Instituto Nacional de Astrofísica Optica y Electronica (INAOE). MCPR2 021 was sponsored by the Mexican Association for Computer Vision, Neural Computing and Robotics (MACVNR) and the IAPR.

Due to the measures taken worldwide to avoid the spread of the coronavirus COVID-19 disease, MCPR 2021 could not be held in person so it was onine.

MCPR 2021 received contributions from 16 countries. In total, 75 papers were submitted, out of which 35 were accepted for publication in the MCPR 2021 proceedings and for presentation at the conference in a single track. The Scientific Committee consisted of 65 outstanding international researchers and pattern recognition specialists carried out the review process.

Springer published the 35 accepted papers in the volume Pattern Recognition, LNCS 12725, edited by the General Chairs.

The oral sessions covered the topics: Artificial Intelligence Techniques and Recognition, Pattern Recognition Techniques, Neural Networks and Deep Learning, Computer Vision, Image Processing and Analysis, and Medical Applications of Pattern Recognition.

Three outstanding invited speakers gave keynote addresses on topics in Pattern Recognition:

- "Biases in Machine Learning and Responsible Artificial Intelligence" by Prof. Julian Fierrez, Universidad Autonoma de Madrid, Spain.
- "An introduction to Social AI" by Prof. Alessandro Vinciarelli, School of Computing Science and Associate Academic at the Institute of Neuroscience and Psychology, University of Glasgow, UK.
- "Aligned representation learning for vision-language understanding" by Prof. Lei Zhang, Computer Vision research group, Microsoft Cloud & AI, USA.

We are sure that MCPR 2021 once again provided a forum, now in a virtual format, for enhancing the collaboration between the Mexican Pattern Recognition researchers and the broader international Pattern Recognition community.

The steering committee for the MCPR decided the 14th Mexican Conference on Pattern Recognition will be held in Ciudad Juarez, Chihuahua, Mexico in the last week of June 2022, organized by the Institute of Engineering and Technology of the Autonomous University of Ciudad Juarez, Chihuahua, Mexico and Coordinacion de Ciencias Computacionales of Instituto Nacional de Astrofísica Optica y Electronica.

MVA2021

17th International Conference on Machine Vision Applications
July 25-27, 2021, **Fully Online**

General Chairs:
Norimichi Ukita, Toyota Technological Institute
Kyoko Sudo, Toho University

Program Chairs:
Rei Kawakami, TITECH/Denso IT Lab
Minsu Cho, POSTECH

by The General Chairs

MVA 2021 was sponsored by the MVA Organization, co-organized by IEICE PRMU and IPSJ SIG-CVIM, and endorsed by the IAPR. Since 1988, this biennial conference series has aimed to bring together researchers and practitioners from academia and industry, covering the topics of sensing, algorithms, and applications in machine vision research. MVA 2021 was online, with 138 participants from 13 countries.

We received 127 full-paper submissions, from which 24 papers were selected—through a double-blind peer-review process carried out by an international program committee of 19 area chairs and 174 reviewers—for single-track, oral presentation, together with 41 papers for poster presentation.

The conference proceedings will be made available via IEEEXplore, as well as at the MVA Organization website (*http://www.mva-org.jp/proceedings.php*), with the proceedings of other past MVA conferences.

During the conference, three IAPR Distinguished Lectures were given by three leading researchers:

- "Self-supervision for Learning from the Bottom Up" by Professor Alexei A. Efros (UC Berkeley),
- "How Technology Can Help the Visually Impaired Navigate the World" by Dr. Chieko Asakawa (IBM), and
- "Leaning to Enhance Images" by Professor Ming-Hsuan Yang (UC Merced).

The financial support from the IAPR that enabled us to organize these valuable talks is greatly appreciated as well as the generous financial support from the Tateisi Science and Technology Foundation for other activities.

After the main conference, three tutorial sessions were given by up-and-coming vision researchers:

- "Markov Decision Processes and Imitation Learning for Vision-based Human Activity Understanding" by Dr. Kris M. Kitani (Carnegie Mellon U.),
- "Cross-modal Retrieval" by Dr. Jingjing Chen (Fudan U.), and
- "Generative Image Models" by Dr. Björn Stenger.

Following the MVA tradition, the following four awards were presented at the conference:

Most Influential Paper over the Decade Award (selected from the papers presented at MVA 2011)

- "A Head-Wearable Short-Baseline Stereo System for the Simultaneous Estimation of Structure and Motion" by Hernan Badino and Takeo Kanade
- "Human Skin Detection by Visible and Near-Infrared Imaging" by Yusuke Kanzawa, Yoshikatsu Kimura, and Takashi Naito

Best Paper Award: "Boosting Semi-Supervised Anomaly Detection via Contrasting Synthetic Images" by Sheng-Feng Yu and Wei-Chen Chiu

Best Practical Paper Award: "Crack Segmentation for Low-Resolution Images using Joint Learning with Super-Resolution" by Yuki Kondo and Norimichi Ukita

Best Poster Awards:

- "Lossless AI: Toward Guaranteeing Consistency between Inferences Before and After Quantization via Knowledge Distillation" by Tomoyuki Okuno, Yohei Nakata, Yasunori Ishii and Sotaro Tsukizawa
- "ROT-Harris: A Dynamic Approach to Asynchronous Interest Point Detection" by Shane P Harrigan, Sonya Coleman, Dermot Kerr, Yogarajah Pratheepan, Zheng Fang and Chengdong Wu
- "Understanding the Reason for Misclassification by Generating Counterfactual Images" by Muneaki Suzuki, Yoshitaka Kameya, Takuro Kutsuna and Naoki Mitsumoto

All of the aforementioned awards were awarded at the closing session and warmly celebrated by many attendants.

MVA 2023 will be held in Japan around the same time of the year.

Advisory Committee:
Anil K. Jain, Michigan State University, USA
Josef Kittler, University of Surrey, UK
Mark Nixon, University of Southampton, UK
Alice J. O'Toole, The University of Texas at Dallas, USA
Tieniu Tan, Chinese Academy of Sciences, China

General Chairs:
Arun Ross, Michigan State University, USA
Zhenan Sun, Chinese Academy of Sciences
Yunhong Wang, Beihang University, China
Jianguo Zhang, Southern U. of Sci. & Tech., China

Program Chairs:
Julian Fierrez, Univ. Autónoma de Madrid, Spain
Maria De Marsico, Sapienza Univ. of Rome, Italy
Shiqi Yu, Southern U. of Sci. and Tech., China
Pong C. Yuen, Hong Kong Baptist U., China

by the General Chairs, on behalf of the Organizing Committee

IJCB combines the IEEE Biometrics Theory, Applications, and Systems (BTAS) conference and the International Conference on Biometrics (ICB). The blending of these conferences in 2021 was through a special agreement between the IEEE Biometrics Council and the IAPR TC-4 on Biometrics.

Over 230 participants attended IJCB 2021. There were 170 papers (164 normal papers and 6 competition summary papers) submitted to the conference and eventually 72 papers (66 normal papers and 6 competition summary papers) were accepted. The acceptance rate is 40.2% for normal papers, and so we can be assured that only the best papers were presented at IJCB 2021. Out of the 66 normal papers, 25 were selected for long oral presenta-ion and 41 for short oral presentation.

The review process was managed by four Program Chairs, with the assistance of 174 reviewers. The whole process was conducted double-blind using Microsoft CMT with at least three reviewers per paper. The papers accepted cover a wide range of topics including face recognition, iris, fingerprints, palmprints, gait, mobile-based biometrics, anti-spoofing, attack detection, data security, privacy protection, etc.

Proceedings of
IJCB 2021
are available through
IEEE Xplore® Digital Library
https://ieeexplore.ieee.org/xpl/conhome/9484326/proceeding

The program included three keynote speakers, Prof. Maja Pantic, Prof. Siwei Lyu and Prof. Vishal Patel.

- Prof. Pantic gave a keynote on "Faces & Emotional AI". The keynote was about emotional AI, about machine learning and computer vision methods developed for various human-centric AI applications, and about the face analysis technology in general.
- Prof. Lyu's keynote was titled "Fighting AI-synthesized Fake Media". He highlighted recent technical developments to fight AI-synthesized fake media and discuss the future of AI-synthesized fake media and their counter technology.
- The third keynote was given by the 2021 recipient of the IAPR Young Biometric Investigator Award (YBIA), Prof. Vishal Patel, and the title was "Nighttime and low-light face recognition". Prof. Patel provided some recent advances in thermal to visible face synthesis and verification using deep learning methods.

During the first day, the conference offered 4 tutorials: "Trustworthy Biometrics", "Face Analysis beyond Recognition", "Human-centric Visual Understanding: From Research to Applications" and "Deep learning for fingerprint recognition". The tutorials attracted many participants and gained very good feedback.
The conference hosted 6 competitions and offered a competition session for them. The 6 competitions were

- "7th Edition of International Fingerprint Liveness Detection Competition",
- "Liveness Detection Competition – Face (LivDet-Face 2021)",
- "Deepfake Game Competition (DFGC 2021)",
- "Human Identification at a Distance 2021 (HID 2021)",
- "NIR Iris Challenge Evaluation in Non-cooperative Environments: Segmentation and Localization (NIR-ISL 2021)" and
- "Competition on Masked Face Recognition (IJCB-MFR-2021)".

The organizers of the competitions announced the results, and the winners shared their methods and experiences with the conference attendees.

Awards:
Several awards were announced during a ceremony.

Firstly, Prof. Arun Ross announced that the 2021 IAPR Young Biometrics Investigator Award (YBIA) was given to Dr. Vishal Patel from Johns Hopkins University, USA for "advancing learning in biometrics and identity science".

Prof. Julian Fierrez announced the winners of the best papers. The Best Paper Award was given to Weili Yang, Zhuoming Chen, Junduan Huang, Linfeng Wang and Wenxiong Kang for their paper LFMB-3DFB: A Large-scale Finger Multi-Biometric Database and Benchmark for 3D Finger Biometrics.

The best paper 1st runner up award was given to Wenwei Song, Wenxiong Kang, Yulin Yang, Linpu Fang, Chang Liu and Xingyan Liu for their paper TDS-Net: Towards Fast Dynamic Random Hand Gesture Authentication via Temporal Difference Symbiotic Neural Network.

The best paper 2nd runner up award was given to Bulat Khaertdinov, Esam A. H. Ghaleb and Stylianos Asteriadis for their paper Contrastive Self-supervised Learning for Sensor-based Human Activity Recognition.

The IAPR Best Biometrics Student Paper Award was given to Changyuan Jiang, Shisong Lin, Wei Chen, Feng Liu and Linlin Shen for their paper PointFace: Point Set Based Feature Learning for 3D Face Recognition.

Prof. Shiqi Yu announced that 20 reviewers won the best reviewers for their expertise, dedication, high quality and timely review reports.

Best wishes for IJCB 2022 in Abu Dhabi, United Arab Emirates.

Some students participated IJCB 2021 offline in Shenzhen

IJCB 2021 Technical team in Shenzhen

Non-IAPR Meeting Report

Main Organizer

Guillaume Caron, UPJV, France and CNRS-AIST, Japan

Co-organizers

Takeshi Oishi, University of Tokyo, Japan
Olga Regina Pereira Bellon, Universidade Federal do Paraná, Brazil
El Mustapha Mouaddib, University of Picardie Jules Verne, France
Vincent Creuze, University of Montpellier, France

Program Chair

Ilan Shimshoni, University of Haifa, Israel

Program co-chairs

Fumio Kanehiro, National Institute of Advanced Industrial Science and Technology, Japan
Gennaro Vessio, University of Bari, Italy

The "E-Heritage" workshop series has been the flagship biennial event organized by the IAPR TC19 "Computer Vision for Cultural Heritage Applications" for a dozen of years now (please see TC19 News in this issue). It is usually organized in conjunction with major international conferences on computer vision: three times with the IEEE/CVF International Conference on Computer Vision (ICCV, in 2009, 2017 and 2019) and four times with the Asian Conference on Computer Vision (ACCV, in 2010-2016.

For the first time, it was enlarged to the first workshop on E-Heritage and Robotics (EHR 2021), organized in conjunction with the IEEE/RSJ Intelligent Robots and Systems (IROS). EHR2021 was a two-hour, online workshop gathering five renowned invited speakers. This is the largest panel ever of invited speakers among the series of E-Heritage workshops. The speakers ranged from underwater archaeology, such as Michel L'Hour, former director of DRASSM, France, to researchers on humanoid and flying robotics, such as Oussama Khatib, the director of the Stanford Robotics Lab, USA, Martin Saska, the head of CTU's Multi-robot Systems group, Czech Republic and Frank Ruffier, CNRS Research Director at ISM, France, as well as the CEO of the French imaging and AI company Artéka, Cyrille Chaidron. They could show the large landscape of the robotics and computer vision for cultural heritage from the needs to the market.

Extended abstracts were submitted to EHR 2021, among which the one entitled "LightBot: A multi-light robotic acquisition system for adaptive capturing of Cultural Heritage surfaces and its applicability on performing RTI data stitching" was selected by the program committee for oral presentation during the workshop. Ramamourthy Luxman, PhD student at ImViA lab of UBFC, France did the presentation on behalf of his co-authors Y. Emilia-Castro, M. Nurit, A. Siatou, G. Le Goïc, L. Brambilla, C. Degrigny, F. Marzani and A. Mansouri. The program committee also allocated a waived-fee voucher to this work encouraging the submission of a full article to the Special Issue on "Computer Vision and Robotics for Cultural Heritage: Theory and applications" with the Journal of Imaging, before the deadline set on November, 30th 2021. The special issue is open to all contributions in its scope (*http://mdpi.com/si/71039*).

This bulletin board contains items of interest to the IAPR Community

Upcoming Special Issues in Pattern Recognition Letters

https://www.journals.elsevier.com/pattern-recognition-letters

Visual dEscriptors for TexturE Recognition: from Gabor to deep leArNing (VSI:VETERAN)

Guest Editors: Francesco Bianconi, Università degli Studi di Perugia, Italy (MGE) - Claudio Cusano, Università di Pavia, Italy - Antonio Fernández, Universidade de Vigo, Spain - Paolo Napoletano, Università degli Studi Milano-Bicocca, Italy

Submission period: January 1 2022 - January 20 2022

More information at: *https://www.journals.elsevier.com/pattern-recognition-letters/call-for-papers/visual-descriptors-for-texture-recognition*

Deep Learning for Acoustic Sensor Array Processing (VSI:DL-ASAP)

Guest Editors: Daniele Salvati, University of Udine, Italy - Maximo Cobos, Universitat de València, Spain - Fabio Antonacci, Politecnico di Milano. Italy - Carlo Drioli, University of Udine, Italy

Submission period: March 1 2022 - March 20 2022

More information at: *https://www.journals.elsevier.com/pattern-recognition-letters/call-for-papers/deep-learning-for-acoustic-sensor-array-processing-dl-asap*

BEWARE OF SCAMMERS!!!!

If you receive a request that
looks like it's from an ExCo member and
asks for "emergency funds",
it is almost surely a scam.

Before you act, please ***send a separate email—***
using the email address in your Contacts—
to the ExCo member as well as the IAPR Secretariat to verify.

Any legitimate emails from the ExCo
about any financial matter
will not come from a single person —
it will include other ExCo members on the cc.

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
2021	NOV	ACPR 2021: 6th Asian Conference on Pattern Recognition	ACPR 2019	Hybrid - Korea
		DICTA 2021: 2021 Intl. Conf. on Digital Image Computing: Techniques and Applications	DICTA 2020	Australia
	DEC	CVIP 2021: 6th Intl. Conf. on Computer Vision and Image Processing	CVIP 2020	Hybrid - India
2022	FEB	ICPRAM 2022: 11th Intl. Conf. on Pattern Recognition Applications and Methods	ICPRAM 2021	Online
		VISAPP 2022: 17th Intl Conf on Computer Vision Theory and Applications	VISAPP 2021	Austria
	MAR	ISPR 2022: 22nd Intl Conf on Intelligent Systems and Pattern Recognition	ISPR 2020	Tunisia
	MAY	DAS 2022: 15th IAPR Intl Workshop on Document Analysis Systems	DAS 2020	France
	JUN	ICPRS 2022: 12th Intl. Conference on Pattern Recognition Systems	ICPRS 2021	France
		ICPRAI 2022: 3rd Intl. Conf. on Pattern Recognition and Artificial Intelligence		France
		IGS 2021: 20th Conference of the International Graphonomics Society		Spain
	AUG	ICPR 2022: 26th International Conference on Pattern Recognition	ICPR 2020	Canada
	OCT	IJCB 2022: 2022 IAPR/IEEE International Joint Conferenct on Biometrics	IJCB 2021	UAE
2024	DEC	ICPR 2024: 27th International Conference on Pattern Recognition		India

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*

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