

IAPR
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Newsletter

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Collaborations in Pattern Recognition, a new series of From the Editor's Desk columns

by Jing Dong

jdong@nlpr.ia.ac.cn

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

Since early May, I have been considering launching a new series of From the Editor's Desk columns in the *Newsletter*. I thought about several topics such as "Great Scientists in PR", "Recent Advances in Applied PR", "PR in Industry", "PR for Humanitarian Purposes", "Women in PR" etc. Then the word "collaboration" came to me and I realized that I would choose it as the foundation for the new series.

I realized that pattern recognition is a very challenging and multidisciplinary research area attracting passionate researchers and practitioners from many fields, including signal processing, computer science, computational intelligence, statistics, data analytics, and medical and cognitive sciences. Yet, while the advantages of various techniques used to transform this technology into real-world applications in areas such as security, medicine, and information processing have been addressed in many publications and from many aspects, the communications, the compromises, the cooperation, and the understanding beyond or behind these technical contributions have received less attention..

Pattern recognition is seen as the enabling technology for artificial intelligence around the globe, and researchers and developers have faced and are still facing many challenges to applying numerous PR techniques in and outside their handwriting recognition, natural language processing, multimedia retrieval, speech recognition, and biometrics laboratories. Collaborations can ease those challenges.

I ask our senior researchers, young professionals, students, instructors, investigators, designers, engineers to share your stories, successes, difficulties and suggestions, of your collaborations and partnerships. Whether from your past or current experience, your input will make this new series of columns more interesting reading, and your insights may help others in the broader IAPR community. I look forward to hearing from you!

And, the [Fellow](#) and [Next Generation](#) features in this issue both spotlight important collaborations for the authors. Check them out. Happy reading!

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>

Description: IAPR Research Scholarships, awarded by the IAPR through its Education Committee (IAPR-EC), 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. Through this program, the IAPR sees an opportunity to make a significant contribution to the development of Early Career Researchers as well as the wider Pattern Recognition community.

Covered expenses and duration: 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. See [Call for Applications](#) for a full list of requirements.

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: For students:

(see examples at the URL above)

If you are a student, please visit the web site listed 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:

NOTE: At the time of publication, there were 31 opportunities listed and over 6800 views.

Contact Information:

Bob Fisher, rbf@inf.ed.ac.uk
Chair, IAPR-ILC

From the IAPR

Executive Committee (ExCo):

Call for Proposals for "Summer" Schools

<https://iapr.org/committees/SummerSchool-2018.pdf>

Deadline schedule:

Deadline:

February 1st

June 1st

October 1st

School dates:

April-July

August-November

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](#).

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 soon 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

A Call for Nominations will soon be posted at the IAPR web site:

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

The prestigious IAPR Fellow Award was introduced in 1994 and since then is biennially conferred on persons to acknowledge their distinguished contributions to the field of pattern recognition and to IAPR activities.

According to the Constitution and Bylaws of IAPR, the number of fellows elected every two years must not exceed 0.25% of the total IAPR membership. Both service to IAPR and scientific contributions to the field of pattern recognition are taken into account in the selection process.

The IAPR Fellow Committee is in charge of the selection process and solicits nominations of high quality.

An Interview with Sven Dickinson, IAPR Fellow



*Sven Dickinson, IAPR Fellow
ICPR 2018, Beijing*

For contributions to shape perception, object recognition, perceptual organization, and graph-based methods in computer vision

Editor's note:

For this essay, the IAPR Newsletter invited Prof. Dickinson to touch on these questions.

- 1. Can you identify the most disruptive technology for computer vision, or, more specifically, for object recognition, in the past 30 years?*
- 2. You organized the First International Workshop on Shape Perception in Human and Computer Vision. Can you say something about this? What was its purpose and impact?*
- 3. What are your thoughts on deep learning for Computer Vision at this time?*

~ Jing Dong, IAPR Newsletter EiC

Can you identify the most disruptive technology for computer vision, or, more specifically, for object recognition, in the past 30 years?

Without a doubt, the most disruptive technology in computer vision has been deep learning, boasting significant performance gains (in terms of both accuracy and speed) on almost any vision task, from medical

image diagnosis to autonomous driving. Since Krizhevsky, Sutskever, and Hinton took the ImageNet classification challenge by storm in 2012, our computer vision conferences have been growing almost exponentially, and now feature massive industrial exhibitions that are focused primarily on recruiting. For a young vision researcher, there's no shortage of exciting opportunities to choose from.

Sven Dickinson received the B.A.Sc. degree in Systems Design Engineering from the University of Waterloo, in 1983, and the M.S. and Ph.D. degrees in Computer Science from the University of Maryland, in 1988 and 1991, respectively.

He is Professor and past Chair of the Department of Computer Science at the University of Toronto, and is also Vice President and Head of the new Samsung Toronto AI Research Center, which opened in May, 2018. Prior to that, he was a faculty member at Rutgers University where he held a joint appointment between the Department of Computer Science and the Rutgers Center for Cognitive Science (RuCCS).

His research interests revolve around the problem of shape perception in computer vision and, more recently, human vision.

He has received the National Science Foundation CAREER award, the Government of Ontario Premier's Research Excellence Award (PREA), and the Lifetime Research Achievement Award from the Canadian Image Processing and Pattern Recognition Society (CIPPRS). He currently serves on eight editorial boards, including the role of Editor-in-Chief of the IEEE Transactions on Pattern Analysis and Machine Intelligence, and the role of co-editor of the Morgan & Claypool Synthesis Lectures on Computer Vision.

You organized the "First International Workshop on Shape Perception in Human and Computer Vision". Can you say something about this? What was its purpose and impact?

I've always been a strong advocate of interdisciplinary vision research, and feel that a better understanding of human vision can benefit computer vision, and vice versa. In an effort to bring together these two communities, I first co-organized a set of four interdisciplinary workshops on Object Categorization in Human and Computer Vision, which brought together leading researchers from both communities to reflect on the progress they've made and the challenges they face.

Since object recognition is fundamentally a shape perception problem, I later co-organized four workshops on Shape Perception in Human and Computer Vision to further focus the discussion. My co-organizer for these last four meetings was my human vision colleague, Zygmunt Pizlo, who, along with our PhD supervisor, Azriel Rosenfeld, helped me appreciate the importance of

interdisciplinary research.

In recent years, my own research in shape perception has explored the role of symmetry in human scene categorization.

What are your thoughts on deep learning for Computer Vision at this time?

The first wave of deep learning research allowed an individual with absolutely no vision background to download TensorFlow and some image dataset, turn the crank, and produce competitive results. The geometrical, optical, and signal processing fundamentals of computer vision—traditionally barriers to entry—were no longer required to compete in this new arena.

While this made computer vision far more successful and far more accessible, both highly admirable, it also distracted our community from better understanding the vision problem. Vision became almost exclusively about pixels, but as Jan-Olof Eklundh once said, "we should not build vision systems that look at images, but vision systems that look at the world."

Deep learning-based recognition systems performed remarkably well when tested on images similar to those found in the datasets they were trained on. Yet, they failed catastrophically when asked to generalize beyond those training sets. As a human, when we see something unfamiliar, we can draw on our understanding of 3-D geometry, physics, compositionality, and affordances to provide a scaffold for interpretation. Without this understanding of our 3-D world, it's impossible to make sense out of an unfamiliar set of pixels.

The good news is that the community is moving beyond this paradigm, and starting to find ways of incorporating domain priors from physics, geometry, and even human vision into deep learning systems. What was originally dismissed as "handcrafted features" is now celebrated as handcrafted loss functions. I feel that this is an exciting new frontier of computer vision, and I'm starting to see more inspired interdisciplinary research as people recognize that you can't solve hard vision problems simply by throwing more data at them.

IAPR Then and Now...Professor Azriel Rosenfeld (1931-2004)

excerpt from *IAPR Newsletter* Volume 26 Number 2, April 2004, <https://iapr.org/docs/newsletter-2004-02.pdf>

Professor Azriel Rosenfeld, one of the world's leading scholars and scientists in the field of computer image processing and pattern recognition during the last 40 years, died Sunday, 22 February 2004, in Baltimore, Maryland, at the age of 73.

Professor Rosenfeld obtained his PhD degree in mathematics from Columbia University in 1957 and a Doctor of Hebrew Literature in 1955 from Yeshiva University.

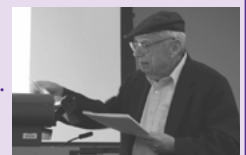
From 1960 until his death, Professor Rosenfeld exerted an enormous influence on the field of computer image processing and its related sciences. His was a strong voice arguing for creating a

formal structure to deal with the rapidly advancing developments in pattern recognition and image processing. Together with the late K.S. Fu and others he organized a meeting at Airlie House in a suburb of Washington, DC, in 1972 at which it was agreed to form a "Standing Committee" to organize biennial conferences on pattern recognition.

From the late 1960s through the 1980s, it was a rare conference program committee dealing with pattern recognition or image processing that did not have Professor Rosenfeld as a member and/or contributor, and just about every journal dealing with these topics had him on its editorial board. He [published] more than

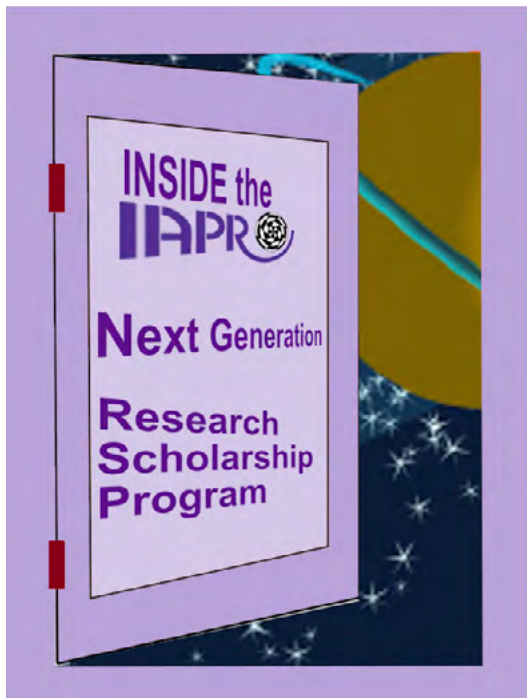
500 articles and [wrote] or [edited] more than 30 books.

During his years at the University of Maryland, he supervised nearly 60 PhD students, many of whom subsequently moved to universities all over the world and became leaders in image processing in their own right. In 1988, IAPR awarded him its highest honor, the K.S. Fu Prize, for his accomplishments. His death is a great loss for IAPR and for all who knew him and interacted with him.



Talk given at CUNY, 11 April 2002
Photo courtesy of CUNY
Computer Science Department

Herbert Freeman



An interview with Dena Bazazian, the second IAPR Education Committee Research Scholar



Editor's note:

The interviews of recipients of IAPR Research Scholarships give insight into the IAPR Education Committee as well as an IAPR...the Next Generation researcher as well as the [IAPR Research Scholarship Program](#) itself, essentially three features in one.

~ Jing Dong, IAPR Newsletter EiC

EiC: *How did you learn about the IAPR Research Scholar program?*

DB: I received an email through my PhD supervisor, and he shared the IAPR Research Scholar call with me.

EiC: *Did you know Prof. Del Bimbo before? How did you meet?*

DB: I didn't have a chance to know Prof. Del Bimbo in person before my research stay at MICC. It was a great opportunity for me to get to know him and all his outstanding projects at MICC.

EiC: *Before the research scholarship stay, what was your area of research and what technical work had you done?*

DB: Before my research scholarship, I was working on scene text detection techniques based on deep learning algorithms. My research focused mainly on the concepts and attributes of text in scene images.

EiC: *Did you achieve any scientific results that you would not have achieved otherwise?*

DB: Yes, through the scholarship, I was able to collaborate with some researchers at MICC (Leonardo Galteri, Lorenzo Seidenari, Marco Bertini, Andrew Bagdanov, Alberto Del Bimbo), with whom I did a project on reading text in the wild from compressed images.

That research stay opened a great idea for this collaboration, since I had a background of working on scene text images and the researchers at MICC had experience working with compressed images. Therefore, we could combine our backgrounds and experiences in order to build a novel tool for reading text from compressed scene images.

EiC: *Did your stay have an impact on further collaborations or opportunities?*

DB: In my research stay at MICC, I had a great opportunity to get to know many amazing researchers in various fields of Computer Vision and Multimedia. So, by knowing them in person and having worked with them for a while I can easily consider starting new collaborations as new ideas come up.

EiC: *Were there any outcomes (scientific, collaborative, other) that were not anticipated?*

DB: Yes, the work that we have done with the collaboration of MICC has been published and presented in one of the ICCV 2017 workshops in Venice, Italy.

Before starting my research stay, we had some proposals and different ideas for collaborations, but when I was there we could move forward faster and formulate ideas in a much more clear and

Dena Bazazian is a postdoctoral researcher at Computer Vision Center (CVC), Autonomous University of Barcelona (UAB) where she accomplished her PhD in 2018.

She is working on text localization and recognition in unconstrained conditions. Her research focuses on computer vision and deep learning algorithms to improve text understanding techniques in scene images.

Dena Bazazian in 2017 was given an IAPR Research Scholar grant to visit the Media Integration and Communication Center (MICC) at the University of Florence, Italy.

efficient manner in order to focus on one of them and pursue it. Working and collaborating in person can improve the efficiency of research since we can easily discuss with each other and move forward to our goal.

EiC: *In addition, please share any recommendations you*

may have to improve the IAPR Research Scholarship program.

DB: I was very glad for this great opportunity offered to me by IAPR, and I had a terrific opportunity to do this useful research stay in MICC, Florence, Italy. Through this research scholarship program and the achievements obtained

by collaborating with MICC, I made a great step forward towards finishing my PhD thesis. Furthermore, this research stay gave me an amazing chance to collaborate with more researchers in various topics of computer vision and multimedia.

IEEE Xplore®
Digital Library

Reading Text in the Wild from Compressed Images <https://ieeexplore.ieee.org/document/8265493>

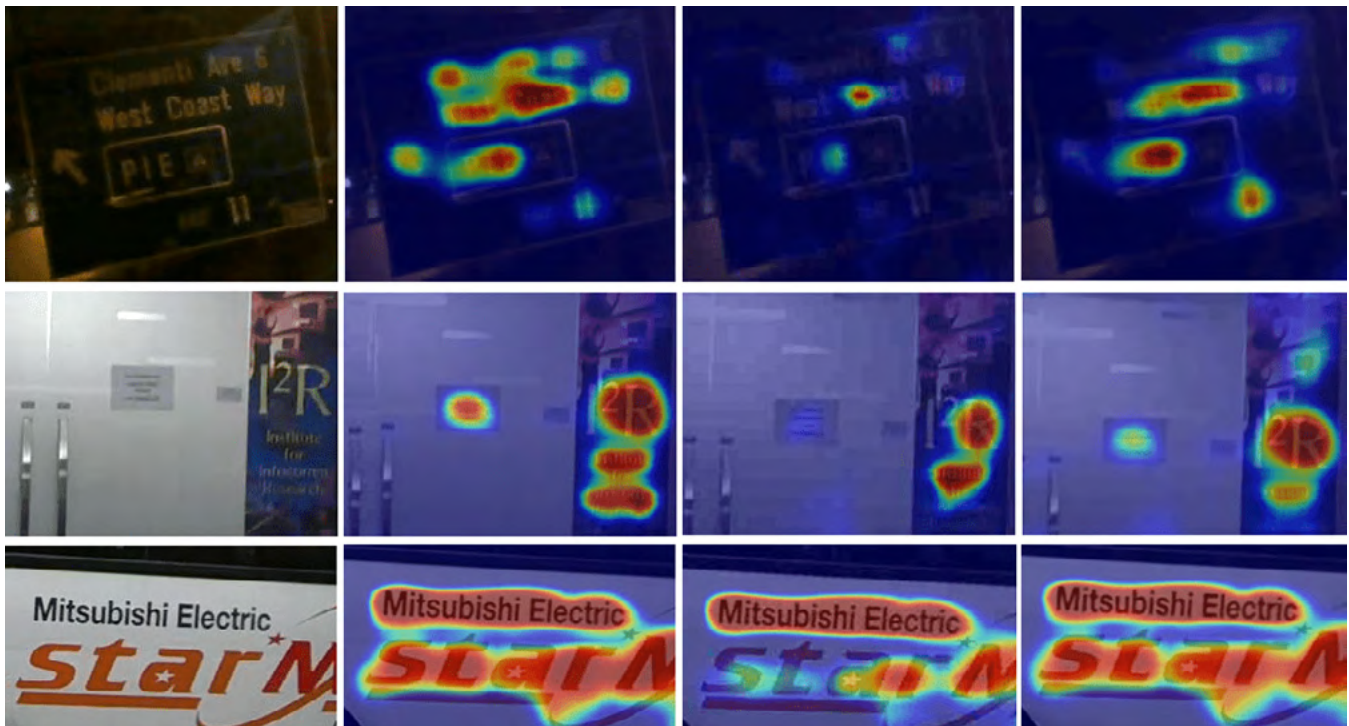
Authors: Leonardo Galteri, Dena Bazazian, Lorenzo Seidenari, Marco Bertini, Andrew D. Bagdanov, Anguilos Nicolaou, Dimosthenis Karatzas, Alberto Del Bimbo

Published in: [2017 IEEE International Conference on Computer Vision Workshops \(ICCVW\)](#)

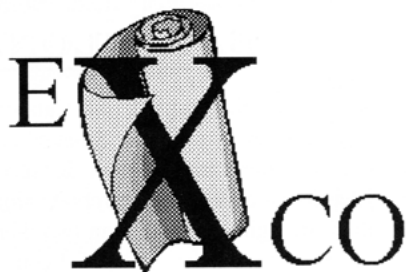
Date of Conference: 22-29 October 2017

Abstract:

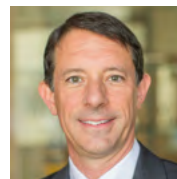
Reading text in the wild is gaining attention in the computer vision community. Images captured in the wild are almost always compressed to varying degrees, depending on application context, and this compression introduces artifacts that distort image content into the captured images. In this paper we investigate the impact these compression artifacts have on text localization and recognition in the wild. We also propose a deep Convolutional Neural Network (CNN) that can eliminate text-specific compression artifacts and which leads to an improvement in text recognition. Experimental results on the ICDAR-Challenge4 dataset demonstrate that compression artifacts have a significant impact on text localization and recognition and that our approach yields an improvement in both - especially at high compression rates.



In this figure we illustrate the original images and their corresponding heatmaps for the original, compressed, and reconstructed (from left to right) in order to demonstrate the improvement in text detection after reconstructing compressed images.



by [Dan Lopresti](#) (USA)
IAPR Treasurer



President's note:

The IAPR is a non-profit organization set up for and led by researchers. Its revenues are used to benefit the research community. As a long-serving member of the ExCo, I have been privileged to participate in the formation of new and exciting programs that make excellent use of those revenues. The purpose of this column is to help the broader IAPR community to understand how funds from conference/workshop levies and annual dues of IAPR member societies are used.

~ Apostolos Antonacopoulos, IAPR President

As with any organization, the IAPR depends upon a careful balance between its revenues and its expenses, managing these two categories with the ultimate goal of fostering the ongoing success of our international community and the many researchers who participate in any of a number of ways. Times have never been more exciting for pattern recognition, as machine learning and its applications are profoundly transforming our society. The IAPR and its members are helping to lead this revolution.

Unlike some other professional societies, the IAPR does not require that individual researchers pay dues. Rather, the IAPR's revenues derive from annual dues payments from member societies and levy payments from endorsed and sponsored workshops and conferences.

The IAPR currently has 50 national member societies who share in our mission and recognize the value of being part of a truly international community. You can find the list of [active member societies](#) on the IAPR website. These societies pay [annual dues](#) to help support that shared mission.

The IAPR also depends heavily on its more than a dozen [Technical Committees](#) (TC's) that engage their respective communities by organizing conferences and meetings where participants can publish and present cutting-edge research. These events benefit thousands of researchers each year, and they support the IAPR through the levy payments they provide to our revenue stream. To lend further support to qualified events that require it, timely requests to use a portion of the levy in the name of the IAPR (for activities that enhance the event—an invited speaker, best paper award etc.) are considered and usually accepted.

The IAPR uses its revenues to support a variety of worthy initiatives. For example:

- We provide significant support in the form of Travel Stipends for authors of accepted papers who wish to attend ICPR, but need financial help to do so.
- In 2012, we began soliciting proposals to encourage the development of [Summer Schools](#), with the idea that nurturing the development of the next generation of researchers is advantageous to the field as a whole. To date, the IAPR has invested a substantial sum in supporting such Summer Schools, in particular to enable them to offer support to students with limited means.
- A few years later, in 2016, the IAPR's Education Committee initiated a [Research Scholarship](#) program whereby early career researchers apply to spend up to 12 months at another institution (see [related article](#) in this issue).

Initiatives such as these are only possible so long as our revenue streams remain healthy. The result is a positive feedback loop, where we encourage and support more and more professional activities within our community, and those activities provide the necessary funds for future activities. We encourage you to explore the IAPR and TC websites, and if you have an idea, let us know!

News from the IAPR Executive Committee

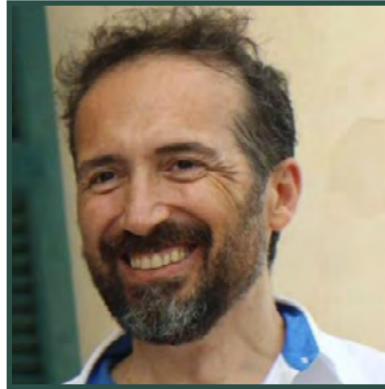
It is with sadness that the ExCo shares the news that Prof. Alfredo Petrosino (Parthenope University, Naples, Italy) passed away in May. Please see "[In Memoriam](#)" in this issue.

The ExCo is getting ready for its interim meeting, hosted by Past President Simone Marinai. Look out for the news from that meeting in the October issue of the *IAPR Newsletter*!

Check out the calls in this issue related to [ICPR 2020](#): CfNs for Awards and the ICPR 2020 CfP.

In Memoriam

Professor Alfredo Petrosino 1964-2019



Mourning in the Italian scientific and academic community. On May 31, at the age of 54, Professor Alfredo Petrosino, Vice Rector of Information Technology at the Parthenope University in Naples, passed away. Prof. Petrosino was President of the Master of Science in Applied Computer Science and President of the CVPRLab of the Parthenope University. He was responsible for Apple courses in the Apple foundation of Villa Doria D'Angri (Naples) and was Vice President of CVPL (the Italian IAPR Member Society).

Prof. Petrosino started his research activity receiving the M.Sc. in computer science at the University of Salerno, in 1989, under the supervision of the neural network pioneer E.R. Caianiello. Fellow researcher at the National Research Council (CNR) from 1989 to 1994, he joined in 1995 the International Institute for Advanced Scientific Studies (IIASS) and, from 1996 to 2000, the National Institute for Physics of Matter (INFM) as Researcher. In 2000 he joined the National Research Council (CNR) as Researcher and in 2003 became Senior Researcher. In 2005 he moved to the University of Naples Parthenope as Associate Professor and from 2013 as Full Professor in Computer Science. He taught courses on Operating Systems, Image Processing/Computer Vision and Machine Learning since 1991 at the University of Salerno (1991-2006), Siena (1997/98), Naples "Federico II" (1999-2006), Naples "Parthenope" (2001-).

His research interests covered a broad spectrum of issues related to Computational Intelligence - neural networks and rough sets mainly - and Computer Vision. He participated in a variety of national and European projects. He was in the editorial board of Information Sciences, Pattern Recognition Letters and IET Image Processing journals, and was guest-editor of various special issues of different journals like IEEE SMC, Image and Vision Computing, Parallel Computing. Since 1995, he has also been the main organizer of the biennial Workshop on Fuzzy Logic and Applications (WILF) about computational intelligence. He was Senior Member of the IEEE and member of IAPR.

Prof. Petrosino was much loved by his students and was appreciated by the many researchers with whom he cooperated thanks to his untiring energy in organizing events and initiatives, his great sensitivity in dealing with all situations, and the enthusiasm and creativity with which, through his research, he enriched the scientific community.

The IAPR Newsletter is grateful to the Italian Association for Computer Vision, Pattern Recognition and Machine Learning (CVPL) for permission to reprint this obituary.

~Jing Dong, IAPR Newsletter EiC

Call for Papers & Call for Proposals for Workshops, Competitions, Tutorials, and Demos



25th INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION

Milan, Italy 13 | 18 September 2020

“putting Artificial Intelligence to work on patterns”

IMPORTANT DATES

- Jan. 15, 2020 - Workshop proposals
- Jan. 15, 2020 - Competition proposals
- Mar. 2, 2020 - Paper submission deadline
- Apr. 1, 2020 - Tutorial proposals
- Jun. 15, 2020 - Demo / Exhibit proposals

<https://iapr.org/icpr2020>

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Massimo Tistarelli (Univ. of Sassari, Italy)
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IMAGE AND SIGNAL PROCESSING

Sebastiano Battiato (Univ. of Catania, Italy)
Andrea Cavallaro (Queen Mary Univ. of London, UK)
Ana Fred (Technical Univ. of Lisbon, Portugal)
Shiguang Shan (Chinese Academy of Sciences, China)

The 25th International Conference on Pattern Recognition (ICPR 2020), sponsored by the International Association for Pattern Recognition (IAPR), will be an international forum for discussions on recent advances in the fields of Pattern Recognition and related technologies and applications. We seek for qualified contributions in the areas of Artificial Intelligence and Machine Learning for Pattern Analysis, Computer Vision, Robotics and Intelligent Systems, Biometrics and Human Behavior Analysis, Media Analysis and Understanding, Image and Signal Processing.

We seek Tutorials on core techniques and emerging research topics that are of interest within the Pattern Recognition community. We seek for Workshops on timely topics and applications of the field. They are expected to provide a forum for active exchange of ideas and experiences. We seek for proposals for Challenges on key applicative topics that demonstrate the state of the art of capabilities of Pattern Recognition, Computer Vision and Media Analysis in real world applications.



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BENCHMARK DATASETS

Editor's note: Do you have benchmarking news to share?

Send the link.

Describe the contents.

Include a contact person.

We'll feature your dataset in this series.

~ Jing Dong, IAPR Newsletter EiC, jdong@nlpr.ia.ac.cn

About LILA BC: "LILA BC is a repository for data sets related to biology and conservation, intended as a resource for both machine learning (ML) researchers and those that want to harness ML for biology and conservation.

LILA BC is maintained by a working group that includes representatives from [Zooniverse](#), the [Evolving AI Lab](#) at the University of Wyoming, the University of [Minnesota Lion Center](#), [Snapshot Safari](#), and [Microsoft AI for Earth](#). Hosting on Microsoft Azure is provided by Microsoft AI for Earth."

For more information, go to the LILA BC Home page: <http://lila.science>

WCS Camera Traps

<http://lila.science/datasets/wcscameratraps>

"This data set contains approximately 1.4M camera trap images representing around 675 species from 12 countries, making it one of the most diverse camera trap data sets available publicly. Data were provided by the [Wildlife Conservation Society](#). The most common classes are *tayassu pecari* (peccary), *meleagris ocellata* (ocellated turkey), and *bos taurus* (cattle). A complete list of classes and associated image counts is available [here](#). Approximately 50% of images are empty.

"Sequences are inferred from timestamps, so may not strictly represent bursts. Images were labeled at a combination of image and sequence level, so – as is the case with most camera trap data sets – empty images may be labeled as non-empty (if an animal was present in one frame of a sequence but not in others). Images containing humans are referred to in metadata, but are not included in the data files.

"Annotations are provided in the [COCO Camera Traps](#) .json format used for most data sets on [lila.science](#).

"This data set is released under the [Community Data License Agreement \(permissive variant\)](#)."



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

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IAPR TC1 - Statistical Pattern Recognition Techniques

<http://pralab.diee.unica.it/iapr-tc1/>

Battista Biggio, Chair
Simone Scardapane, Vice Chair

The IAPR TC1 on Statistical Pattern Recognition Techniques has the aim to promote interaction and collaboration among researchers working in statistical pattern recognition and related applications. Its role is to expand and promote interest in these topics, with a focus on real-world scenarios and machine learning in cybersecurity.

In May 2019, the Member Board changed, with Battista Biggio (University of Cagliari, Italy - <http://pralab.diee.unica.it/en/BattistaBiggio>) reappointed as the TC chair, and Simone Scardapane (Sapienza University of Rome, Italy - <http://ispac.diet.uniroma1.it/scardapane/>) as the new TC vice chair. The former TC vice-chair was Luis Muñoz-González (Imperial College London, UK - <https://www.doc.ic.ac.uk/~lmunozgo/>).

We are in the process of expanding the range of activities of the committee and planning several new activities. You can find all the information on the TC website <http://pralab.diee.unica.it/iapr-tc1/>.

If you are working in this domain areas and want to be kept up-to-date (or maybe contribute to the TC's activities), please mail to battista.biggio@diee.unica.it.

IAPR TC4 Biometrics

Zhenan Sun, Chair
Julian Fierrez, Vice Chair

On June 6, 2019, at the 12th IAPR International Conference on Biometrics (ICB 2019), IAPR TC-4 announced that the 2019 Young Biometrics Investigator Award is presented to Prof. Zhen Lei for his "contributions in face biometrics: methodology, systems and databases". The recipient of the YBIA is a researcher 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.



Zhen Lei is a professor in Center for Biometrics and Security Research (CBSR), National Laboratory of Pattern Recognition (NLPR), Institute of Automation, Chinese Academy of Sciences (CASIA). He hosted several national foundations, including National Key Research and Development Plan and National Natural Science Foundation of China.

His research interests includes face recognition and video analytics. His work has been cited more than 10,000 times (by Google Scholar, with H-index: 52). He holds 11 invention patents and has drawn up 7 standards of public security.

His developed face recognition algorithms and systems have been deployed in many practical applications, including Beijing 2008 Olympic Games, Shanghai 2010 World Expo, and immigration control at China borders. He was awarded as 2008 Beijing Olympic and Paralympic Great Contribution and Finalist World Smart Cities Project in 2013.

For more, please see <http://www.cbsr.ia.ac.cn/users/zlei/>



More IAPR Technical Committee News

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IAPR TC12 Multimedia and Visual Information Systems

<http://iapr-tc12.info>

Sergio Escalera, Chair

Henning Müller, Martha Larson and Hugo Jair Escalante Vice Chairs

IMAGE
CLEF



ImageCLEF had four tasks organized in 2019, on security, coral images and lifelogging as well as a medical task with three subtasks. 62 research groups submitted results to these tasks! The [CLEF](#) conference to which these tasks are linked will take place in Lugano, Switzerland, from September 9-12, 2019. This is usually the best forum for participants to compare approaches and share ideas on the success of specific techniques. More information can also be found on <http://www.imageclef.org/2019/>.



A workshop and challenge on Anti-Spoofing Attack Detection was held at [CVPR2019](#) last June in Long Beach, CA, USA. The workshop was attended by more than 100 participants and featured keynote talks from Stan Z. Li, Xioaming Liu, Abdenour Hadid and Guodong Guo. Winners of the challenge and authors of submitted papers delivered oral presentations of their work. Prizes were donated by Baidu Research. Anti spoofing facial attack detection is a hot topic nowadays, and there are many open issues that deserve the attention from the community. Please stay tuned for the second version of this challenge. For more information please visit: <http://chalearnlap.cvc.uab.es/workshop/32/description/>.

ChLearn is running a new series of challenges on AutoML for deep learning. This series is supported by the IAPR TC 12 committee. The so called AutoDL competition is challenging participants to develop automatic solutions that can deal with multimodal data (text, images, video, etc). Solutions must be able to process raw data directly and without any human supervision. The first round of the challenge, called AutoCV, focused on image classification problems, this round has just concluded and results are to be presented at [JCNN2019](#). The second round, AutoCV2, has just started. This is a more complex scenario that includes video recognition tasks. Stay tuned for the progress of the AutoDL challenge at: <https://autodl.chalearn.org>.



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IAPR TC15 - Graph-based Representations in Pattern Recognition

<https://iapr-tc15.greyc.fr>

Pasquale Foggia, Chair
Bin Luo, Vice Chair
Luc Brun, Vice Chair



The goal of this Technical Committee is to federate and to encourage research works at the intersection of Machine Learning, Pattern Recognition, and Image Analysis on one side and graph theory framework on the other side. Among the topics covered by TC15 we find: graph matching, graph-based segmentation and graph pyramids, graph-based clustering regression or classification together with clustering, classification and regression of graphs using various methods such as graph edit distance, graph embeddings, graph kernels and graph neural networks. More on TC15 can be found on its web site: <https://iapr-tc15.greyc.fr>.

The main event of TC15 is the IAPR-TC15 Workshop on Graph-based Representations (GbR). The 12th edition of the workshop ([GbR2019](#)) has just been held in Tours (France) from June 19 to June 21, 2019. In the warm and friendly atmosphere that is traditional for this event, we exchanged and discussed ideas, experiences and suggestions on our research activities. The workshop was also enriched by invited talks on performance assessment by Christine Solnon and on graph neural networks by Marco Gori. A heartfelt thank goes to the GbR2019 chairs, Donatello Conte and Jean-Yves Ramel, for the wonderful work they have done.

IAPR Then and Now...History of TC 15

From the TC 15 website <https://iapr-tc15.greyc.fr/history.html>

Birth of TC15

IAPR Technical Committee #15 on "Graph based Representations" was created during the meeting of the IAPR governing board in Vienna on 27 August 1996. The scope of the new committee was of interest to a large section of people dealing with graph representations and willing to exchange algorithms and applications in this area. Several activities were planned. Quoting from the original document announcing the birth of this Technical Committee:

- Workshops on the topics related to this technical committee in order to better federate research works in the community. For instance, it is of importance to define a standard vocabulary and to compile a set of most important open problems related to graphs used for pattern recognition, image processing and computer vision.
- Collaboration projects including several laboratories at an international level should be initiated.
- Students should be exchanged with links to already existing international programs like ERASMUS/SOCRATES.

Past and present chairmen

The first chairmen of the TC-15 have been:

- Prof. Walter G. Kropatsch (Vienna Technical University, Austria), for the years 1998-2000
- Prof. Jean-Michel Jolion (INSA-Lyon, France), for the years 2000-2002
- Prof. Mario Vento (University of Salerno, Italy) for the years 2002-2006
- Prof. Luc Brun (ENSICAEN, France) for the years 2006-2010
- Prof. Andrea Torsello (University of Venice, Italy) for the years 2010-2012
- Prof. Xiaoyi Jiang (University of Muenster, Germany) for the years 2012-2016
- Prof. Pasquale Foggia (University of Salerno, Italy) for the years 2016-2020

And still
More

IAPR Technical Committee News

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IAPR TC18 Discrete Geometry and Mathematical Morphology

<http://www.tc18.org>

Bertrand Kerautret, Chair
Michael Wilkinson, Vice Chair
email: tc18@tc18.org



https://twitter.com/IAPR_TC18

TC18 New Common Event

This Technical Committee combines the main fields of discrete geometry (DG) and mathematical morphology (MM). Until now, the two main associated conferences, namely DGCI and ISMM, were almost independent, focusing on their respective topics of DG and MM.

Discrete geometry was animated with a series of 21 conferences (held in France, Austria, Canada, Hungary, Italy, Spain, and Sweden), starting from its first edition in 1991 in Paris and the most recent one held last March in Paris (<https://iapr.org/dgci2019>).

In parallel, for mathematical morphology, the biennial ISMM symposium was initiated in Spain (Barcelona) in 1993. The 2019 edition was held in Saarbrücken (<http://ismm.uni-saarland.de>). Previous editions had been held in Austria, Brazil, France, Germany, Iceland, Italy, Spain, Sweden, The Netherlands, and the USA.

In order to facilitate / increase scientific interactions between researchers working in DG and MM, it was decided to initiate a new common event that will be organized for the first time in 2020. A call for proposals was released, and the steering committee is happy to announce that Upsalla (Sweden) was selected to organize the first edition of this event in Fall 2020 (December 10-13, to be confirmed). The event will be chaired by Filip Malmberg (main chair), Nataša Sladoje (program chair) and Joakim Lindblad (Organization Chair). The organisation team is completed by advisors (Robin Strand, Ingela Nyström), honorary chair (Gunilla Borgefors, Christer Kiselman) and assistant (Johan Öfverstedt).

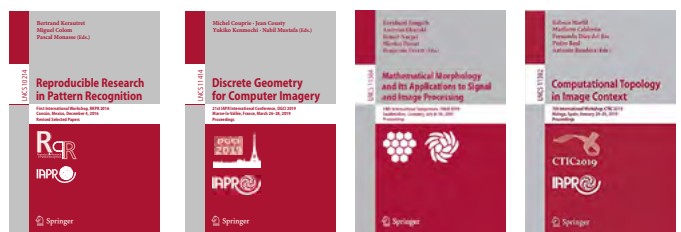
Next activities

A new tutorial on Digital Geometry has been accepted for presentation during the ACPR2019. It will take place on the first day of the conference (see <https://www.acpr2019.org/tutorials.html> and here <https://kerautret.github.io/ACPR19-DGPRTutorial/>): “Digital Geometry in Pattern Recognition: Extracting Geometric Features with DGtal and Applications” presented by Bertrand Kerautret (Université de Lyon 2, France) and Jacques-Olivier Lachaud (Université Savoie Mont-Blanc, France).

Also organized in conjunction with ACPR2019, a new workshop is proposed including discrete geometry in its topics (submission deadline 5 September): <http://www.media.imit.chiba-u.jp/ipaMAC2019/>.

Previous news

Proceedings from the first two RRPR workshops are available in the Springer LNCS series. Proceedings of the most recent DGCI, ISMM and CTIC editions are also available (click on images below to go to publisher's website for RRPR2018, DGCI2019, ISMM2019, and CTIC2019 volumes).



^ More IAPR Technical Committee News

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IAPR TC19 Computer Vision for Cultural Heritage Applications

<http://www.cvl.iis.u-tokyo.ac.jp/IAPR-TC19>

Guillaume Caron, Chair

Olga Regina Pereira Bellon, Vice Chair

Advisors: Katsushi Ikeuchi, Roberto Scopingno, El Mustapha Mauaddib, and Takeshi Oishi

We proudly announce that submissions are open for the Workshop on e-Heritage to be held in conjunction with ICCV'2019, in Seoul-Korea. This year, the workshop has been organized by [Katsushi Ikeuchi](#) (Microsoft Research Asia) and Xudong Wang (Dunhuang Academy), and includes the [Dunhuang Grotto Challenge](#).



Dunhuang Grotto is widely recognised as a priceless heritage site. Digital processing is the modern trend for heritage protection and restoration. The first public dataset for Dunhuang Grotto Painting restoration is released to workshop attendees interested in participating in the challenge. To enable a data driven fashion, this dataset provides a large number of training and testing examples, which is sufficient for a deep learning approach. For more information, please see: <http://www.eheritage-ws.org/>.

An international spring/summer school about computer vision for cultural heritage has been planned for 2020. So stay tuned!



Meeting Reports

Conferences, Workshops & Summer/Winter Schools



Workshop Organizers/Chairs:

Shoji Tominaga (NTNU, Gjøvik, Norway)
Raimondo Schettini (University of Milano-Bicocca, Milan, Italy)
Alain Trémeau (Université Jean Monnet, Saint-Etienne, France)
Takahiko Horiuchi (Chiba University, Chiba, Japan)

by Shoji Tominaga

The Computational Color Imaging Workshop (CCIW2019) brought together 90 researchers from more than 11 countries in the beautiful city of Chiba, Japan. This, the seventh CCIW, was organized by the Chiba University with the endorsement of the International Association for Pattern Recognition (IAPR); the Institute for Global Prominent Research and Next Generation Research Incubator "Creation of Imaging Science and Technology for Material Appearance" at Chiba University; the Color Science Association of Japan (CSAJ); the Groupe Français de l'Imagerie Numérique Couleur (GFNIC); the Associazione Italiana per la ricerca in Computer Vision, Pattern recognition e machine Learning (CVPL) affiliated

with IAPR; and the Special Interest Group on Foundations of Visual Information (SigFVI) affiliated with CSAJ.

Eight distinguished researchers were invited to deliver tutorials and invited speeches on current, hot research directions of the topics in computational color imaging:

Tutorials

- Shin'ya Nishida, on "Image Features for Human Material Perception."
- Roland W. Fleming, on "Visual Perception of Materials and their Properties."
- Ming Ronnier Luo, on "Status Quo of Colour Appearance Modelling."
- Ko Nishino, on "Freeing Computer Vision from Its Fundamental Limits."

Invited talks

- Takayuki Okatani, on "Improving Generalization Ability of Deep Neural Networks for Visual Recognition Tasks."
- Mathieu Hébert, on "How Microarrangement of Colored Materials Influences the Macroscopic Color of a Surface."
- Daisuke Iwai, on "Computational Imaging in Projection Mapping."
- Jon Y. Hardeberg, on "On the Acquisition and Reproduction of Material Appearance."

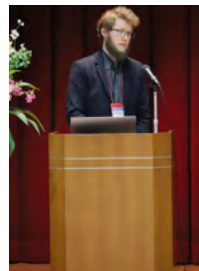
There were also many excellent submissions with high scientific level, and each paper was peer-reviewed. The conference was organized in one track for oral presentations. However, because



of the time constraint, only the best 22 papers were selected for oral presentation at the workshop. The content relevance of the particular paper to the goal of the workshop was considered, and the final decision of which paper to be selected was based on the critiques and recommendations of the reviewers. Only 62% of the papers submitted were accepted for inclusion in the program. The 22 accepted papers were published by Springer Verlag in the volume Computational Color

Imaging, LNCS 11418, edited by Shoji Tominaga, Raimondo Schettini, Alain Trémeau, and Takahiko Horiuchi.

We would like to congratulate Dorian Saint-Pierre who had won the Young Author Best Paper



Award sponsored by CVPL, with his excellent paper entitled "Reflectance computation for a specular only V-cavity."

The next CCIW2021 will be organized in Lyon, France. We look forward to seeing you there!

Click on the image to go the publisher's web site for the CCIW 2019 Proceedings.



MVA2019

16th International Conference on Machine Vision Applications

Tokyo, Japan

May 27-31, 2019

<http://www.mva-org.jp/mva2019/>

General Chairs:

Ryuzo Okada, Toshiba, Japan

Norimichi Ukita, Toyota Technological Institute, Japan

by the General Chairs

The Sixteenth International Conference on Machine Vision Applications (MVA 2019) was sponsored by the MVA Organization, co-organized by IEICE PRMU and IPSJ SIG-CVIM, and endorsed by IAPR. The biennial MVA conference series, established in 1988, has aimed at bringing together researchers and practitioners from both academia and industry, covering the topics of sensing, algorithms, and applications in machine vision research. The venue of the 16th MVA was National Olympics Memorial Youth Center, Tokyo, Japan, where 242 participants gathered from 27 countries.

We received 163 full-paper submissions, from which 30 papers were selected for single-track oral presentation, together with 47 papers for poster presentation, through a rigorous, double-blind peer-review process carried out by an international program committee composed of 20 area chairs and 138 reviewers.

The conference proceedings will be made available via IEEE Xplore, in addition to the MVA Organization website (<http://www.mva-org.jp/proceedings.php>), which also offers proceedings of all of the past MVA conferences. The two selected papers were also simultaneously published in the journal IPSJ Transactions on

Computer Vision and Applications and are also freely accessible.

During the conference, three IAPR Distinguished Lectures on wide-ranging topics were given:

- “From SLAM to Spatial AI” by Professor Andrew Davison (Imperial College London),
- “AI Embedded in the Real World” by Mr. Hideki Asoh (National Institute of Advanced Industrial Science and Technology), and
- “Machine Learning for Autonomous Driving: The Ingredients for a Safe and Scalable System” by Professor Amnon Shashua (Mobileye/ Intel Corporation/the Hebrew University).

The financial support from the IAPR that enabled us to organize these valuable talks is greatly appreciated as well as the generous financial support for other activities of MVA2019 from the Tateisi Science and Technology Foundation and the Research Foundation for the Electrotechnology of Chubu.

MVA 2019 also offered several technical events. Technical demonstration sessions, held during the two middle days, were intensified by the invitation of a number of internationally-renowned companies.

Two events for promoting networking and friendship among

young researchers in Machine Vision research were also arranged.

- A Young Researchers Meeting was held at the lunch time on the 29th May, where junior researchers enjoyed discussing their work in a relaxed atmosphere with senior colleagues in industry and academia.
- We also arranged a Doctoral Thesis Session in collaboration with the IPSJ SIG-CVIM, a leading Japanese computer vision special interest group.

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

- “Scaling-up Deep Learning for Autonomous Driving” by Dr. Jose M. Alvarez (NVIDIA/ Australian National University) and “3D Computer Vision and
- Open3D” by Dr. Jaesik Park (Intel Corporation). Finally, a technical tour was conducted, in which the participants visited to the open house of the University of Tokyo to watch activities in vision-related laboratories.

MVA 2019 Proceedings
will be available at



And the MVA Organization website
has proceedings from past MVAs:
<http://www.mva-org.jp/proceedings.php>

- 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 2009)

- “Eye Blink Based Fatigue Detection for Prevention of Computer Vision Syndrome” by Matjaž Divjak and Horst Bischof
- “A Cloth Detection Method Based on Image Wrinkle Feature for Daily Assistive Robots” by Kimitoshi Yamazaki and Masayuki Inaba
- “A New Approach for In-Vehicle Camera Traffic Sign Detection and Recognition” by Andrzej Ruta, Yongmin Li, Fatih Porikli, Shintaro Watanabe, Hiroshi Kage and Kazuhiko Sumi

Best Paper Award

- “A Three-Player GAN: Generating Hard Samples To Improve Classification Networks” by Simon Vandenhende, Bert De Brabandere, Davy Neven and Luc Van Gool

Best Practical Paper Award

- “EyeWeS: Weakly Supervised Pre-Trained Convolutional Neural Networks for Diabetic Retinopathy Detection” by Pedro Costa, Teresa Araújo, Guilherme Aresta, Adrian Galdran, Ana Maria Mendonça, Asim Smailagic and Aurélio Campilho

Best Poster Award

- “News2meme: An Automatic Content Generator from News Based on Word Subspaces from Text and Image” by Erica K. Shimomoto, Lincon S. Souza, Bernardo B. Gatto and Kazuhiko Fukui
- “Automatic Human Pose Annotation for Loose-Fitting Clothes” by Takuya Matsumoto,

Kodai Shimosato, Takahiro Maeda, Tatsuya Murakami, Kou Murakoso, Kazuhiko Mino and Norimichi Ukita

The Most Influential Paper over the Decade Awards were given at the Banquet on May 29th. The prize winners for their presentations at MVA2019 were awarded at the closing session and were warmly celebrated by the many attendants.

We hope that the group photo below, taken just after the closing session, conveys the friendly atmosphere during the conference.

The next MVA will be organized by a team lead by Norimichi Ukita (Toyota Technological Institute) as a General Chair, and it will be held in Nagoya around the same time of the year in 2021.



IAPR Then and Now...About MVA

From the [MVA Organization website](http://www.mva-org.jp/about.php)
<http://www.mva-org.jp/about.php>

Organization

The MVA Organization is a professional society consisting of researchers on Machine Vision and Applications, mainly from Japanese academia and industries. The goal of the organization is to promote research in the field by sponsoring a conference series on machine vision and applications.

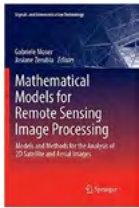
Conference series

The conference series evolved three times. It began in 1988 as the International Association for Pattern Recognition (IAPR) Workshop on Computer Vision, held in Tokyo, in conjunction with the IAPR conference in Beijing. At the next meeting of this body, it was named the IAPR Workshop on Machine Vision Applications, or MVA. Subsequently, due to the increase in the number of papers and improvement in their quality, we renamed it again to the IAPR Conference on Machine Vision Applications, and this name has continued since MVA2005, the ninth of the series.

Late Professor Mikio Takagi

The series was run by a group of researchers loosely organized by the Late Professor Mikio Takagi (University of Tokyo, Tokyo University of Science, and Shibaura Institute of Technology). MVA has been partly supported by the IAPR as well as universities and companies. It also has received much help from overseas in its organization. Nevertheless, it has consistently been organized by researchers led by the late Professor Mikio Takagi. After the sudden death of Professor Takagi, we have decided to establish an organization to carry on his activity.

BOOKSBOOKSBOOKS



Mathematical Models for Remote Sensing Image Processing
by Gabreile Moser and
Josiane Zerubia, Editors
Springer, 2018

<https://www.springer.com/us/book/9783319663289>

Reviewed by [Zoltan Kato](#), Institute of Informatics of Szeged, Szeged, Hungary

Remote sensing for Earth observation is a key technology to extract environmental data collected by satellite or aerial sensors. Remote sensing imagery represents a valuable information source for a wide range of applications, including vegetation resource management, precision agriculture, forest inventory, urban planning, oceanography (e.g. water quality assessment or current studies), hydrology (e.g. ice, snow monitoring), geology, geography, meteorology and climate change, defense and security, natural disasters (both for prevention and as a support for crisis management and post-crisis damage assessment). The reviewed book gives insight into the field of mathematical models and methods for the analysis of 2D remote sensing images. The acquisition of such images relies on various passive and active sensors, hyperspectral cameras, synthetic aperture radar (SAR), interferometric as well as polarimetric SAR.

The book has 10 chapters with the same structure: an overview of the current literature, basic concepts and main challenges of the topic followed by at least two advanced remote sensing image analysis methodologies with application examples and experimental results. The first chapter defines the basic terminology used consistently throughout the book. It summarizes

the general characteristics of sensors and systems for Earth observation, remote sensing acquisition by passive and active sensors on board spaceborne and airborne platforms. Furthermore, it recalls the basic concepts of spatial, spectral, temporal, and radiometric resolution and gives an overview of the main families of mathematical models and methods for 2D remote sensing image processing. The rest of the book (Chapters 2 to 10) discusses various models and methods. Chapters 2-5 focus on the main types of 2D remote sensing data and their processing and analysis techniques. Hyperspectral image analysis is presented in Chapter 2 with a special focus on models and optimization methods for unmixing and on binary partition trees for object classification. Chapter 3 deals with VHR optical images, particularly data representation through graph-theoretic models for data mining and tempo-angular anisotropic models for multiangular spectral signatures. In Chapter 4, VHR-SAR and InSAR data are considered. Probability density estimation of SAR data, Markovian and patch-based models for SAR image estimation are discussed as well as denoising and InSAR phase unwrapping. Chapter 5 is dedicated to PolSAR, in particular probability density estimation for matrix-valued PolSAR through Mellin transform and the time-frequency decomposition of PolSAR images are presented. Chapters 6-7 deal with fusion of multisource remote sensing imagery: Chapter 6 is devoted to signal-level multiresolution fusion of panchromatic and hyperspectral images as well as the fusion of spectral, spatial, and elevation features by guided filtering and graph-theoretic approaches. Chapter 7 presents a tree image

representation associated with mathematical morphology and hierarchical Markov random fields for multilevel feature extraction and multilevel, multiscale, and multisensor image classification. Chapters 8-9 discuss the analysis of multitemporal remote sensing images. Chapter 8 focuses on multitemporal SAR image change detection based on information-theoretic concepts and multiscale wavelet transforms. Chapter 9 deals with satellite image time series: models for such time series data representation and mining are discussed and estimation-theoretic and compressive sensing techniques for missing data reconstruction are presented. Finally, Chapter 10 is dedicated to kernel machines for classification and regression.

Review summary:

The book provides a comprehensive picture of the advances in the field of mathematical models in 2D remote sensing image analysis, which is ideal as a reference resource for remote sensing scientists, practitioners, as well as graduate and doctoral students. Addressing the main types of 2D remote sensing data, their fusion, classification, and multi-temporal analysis are major research topics in Earth observation applications. While there exist many research articles in this area, a comprehensive analysis of the current cutting edge development in the field was missing. This book is a successful attempt at providing such an analysis from chapter authors who serve as editors of prestigious international journals and are actively involved in international scientific societies.

The book is presented in a lucid manner, starting with the basics and using unified notation throughout. It is therefore self-contained enough to help beginners, too.

FREE BOOKS / eBOOKS



Various publishers have partnered with the IAPR Newsletter to offer free books/ebooks to reviewers. If you have interest in and some knowledge of the topic, email us. Depending upon the publisher's availability, you will get an ebook or a hardcopy book or both. In some cases, the publisher may send the ebook first and the hardcopy after review.

~[Owais Mehmood](#), Associate Editor for Book Reviews



We are offering the following Springer titles for review:

- * **"Denoising of Photographic Images and Video"** by Marcelo Bertalmio (Ed.): <https://www.springer.com/book/9783319960289>
- * **"Composing Fisher Kernels from Deep Neural Models"** by Tayyaba Azim and Sarah Ahmed: <https://www.springer.com/book/9783319985237>
- * **"Nonlinear Eigenproblems in Image Processing and Computer Vision"** by Guy Gilboa: <http://www.springer.com/book/9783319758466>
- * **"Domain Adaptation in Computer Vision Applications"** by Gabriela Csurka (Ed.): <http://www.springer.com/book/9783319583464>
- * **"Deep Learning for Biometrics"** by Bir Bhanu et al. (Eds.): <http://www.springer.com/book/9783319616568>
- * **"Decision Forests for Computer Vision and Medical Image Analysis"** by Antonio Criminisi and J. Shotton (Eds.): <http://www.springer.com/gb/book/9781447149286>
- * **"Handbook of Biometric Anti-Spoofing, Second Edition"** by Sébastien Marcel et al. (Eds.): <http://www.springer.com/book/9783319926261>
- * **"Hierarchical Perceptual Grouping for Object Recognition"** by Eckart Michaelsen and Jochen Meidow: <http://www.springer.com/book/9783030040390>
- * **"Contactless 3D Fingerprint Identification"** by Ajay Kumar: <http://www.springer.com/book/9783319676807>



We are offering the following from CRC Press:

- * **Image Operators: Image Processing in Python** by Jason M. Kinser: <https://www.crcpress.com/Image-Operators-Image-Processing-in-Python/Kinser/p/book/9781498796187>
- * **A Beginner's Guide to Image Pre-processing Techniques** by Jyotismita Chaki and Nilanjan Dey: <https://www.crcpress.com/A-Beginners-Guide-to-Image-Pre-processing-Techniques/Chaki-Dey/p/book/9781138339316>
- * **Imaging from Spaceborne and Airborne SARs, Calibration, and Applications** by Masanobu Shimada: <https://www.crcpress.com/Imaging-from-Spaceborne-and-Airborne-SARs-Calibration-and-Applications/Shimada/p/book/9781138197053>
- * **Remote Sensing Time Series Image Processing** by Qihao Weng: <https://www.crcpress.com/Remote-Sensing-Time-Series-Image-Processing/Weng/p/book/9781138054592>
- * **Remote Sensing and Cognition: Human Factors in Image Interpretation** by Raechel A. White, Arzu Coltekin, and Robert R. Hoffman: <https://www.crcpress.com/Remote-Sensing-and-Cognition-Human-Factors-in-Image-Interpretation/White-Coltekin-Hoffman/p/book/9781498781565>
- * **High Spatial Resolution Remote Sensing: Data, Analysis, and Applications** by Yuhong He and Qihao Weng: <https://www.crcpress.com/High-Spatial-Resolution-Remote-Sensing-Data-Analysis-and-Applications/He-Weng/p/book/9781498767682>
- * **Image Processing and Data Analysis with ERDAS IMAGINE®** by Stacy A. C. Nelson and Siamak Khorram: <https://www.crcpress.com/Image-Processing-and-Data-Analysis-with-ERDAS-IMAGINE/AC-Nelson-Khorram/p/book/9781138034983>
- * **Planetary Remote Sensing and Mapping** by Bo Wu, Kaichang Di, Jürgen Oberst, Irina Karachevtseva: <https://www.crcpress.com/Planetary-Remote-Sensing-and-Mapping/Wu-Di-Oberst-Karachevtseva/p/book/9781138584150>
- * **GIS-Based Simulation and Analysis of Intra-Urban Commuting** by Yujie Hu, Fahui Wang: <https://www.crcpress.com/GIS-Based-Simulation-and-Analysis-of-Intra-Urban-Commuting/Hu-Wang/p/book/9780367023034>
- * **Low Power Circuits for Emerging Applications in Communications, Computing, and Sensing** by Jyotismita Chaki, Nilanjan Dey: <https://www.crcpress.com/Low-Power-Circuits-for-Emerging-Applications-in-Communications-Computing/Yuan/p/book/9781138580015>
- * **Compressed Sensing for Engineers** by Angshul Majumdar: <https://www.crcpress.com/Compressed-Sensing-for-Engineers/Majumdar/p/book/9780815365563>
- * **Advanced Applications in Remote Sensing of Agricultural Crops and Natural Vegetation** by Prasad S. Thenkabail, John G. Lyon, Alfredo Huete: <https://www.crcpress.com/Advanced-Applications-in-Remote-Sensing-of-Agricultural-Crops-and-Natural/Thenkabail-Lyon-Huete/p/book/9781138364769>
- * **Optical Remote Sensing of Ocean Hydrodynamics** by Victor Raizer: <https://www.crcpress.com/Optical-Remote-Sensing-of-Ocean-Hydrodynamics/Raizer/p/book/9780815360148>
- * **Image Analysis, Classification and Change Detection in Remote Sensing: With Algorithms for Python, Fourth Edition** by Morton John Canty: <https://www.crcpress.com/Image-Analysis-Classification-and-Change-Detection-in-Remote-Sensing-With/Canty/p/book/9781138613225>



We are offering the following from Sebtel Press, Sheffield, UK:

- * **Principles of Neural Information Theory: Computational Neuroscience and Metabolic Efficiency** by Dr. James V. Stone: <http://jim-stone.staff.shef.ac.uk/BookNeuralInfo/NeuralInfoMain.html>



**This bulletin board
contains items of interest to the
IAPR Community**

INTERNATIONAL JOINT CONFERENCE ON BIOMETRICS 2020

<http://ieee-biometrics.org/ijcb2020/>

**HOUSTON, USA
SEPTEMBER 27-30, 2020**

CALL FOR PAPERS

The 2020 **International Joint Conference on Biometrics (IJCB 2020)** combines two major biometrics research conferences, the Biometrics Theory, Applications and Systems (BTAS) conference and the International Conference on Biometrics (ICB). The blending of these two conferences in 2020 is through a special agreement between the IEEE Biometrics Council and the IAPR TC-4, and should present an exciting event for the entire worldwide biometrics research community.

**Important dates:
IJCB 2020 introduces a two-round
submission procedure.**

First round

Paper submission: December 9, 2019

Decision to authors: February 11, 2020

Camera ready: March 9, 2020

Second round

Paper submission: April 6, 2020

Decision to authors: June 9, 2020

Camera ready: July 6, 2020

Don't miss these important items in this issue:

[Discussion of the IAPR's Finances](#)

[Calls from IAPR Committees:](#)

[Education Committee](#)

[Industrial Liaison Committee](#)

[Executive Committee](#)

[Calls for Nominations for
Awards to be Presented at ICPR 2018:](#)

[K-S Fu Prize](#)

[J. K. Aggarwal Prize](#)

[Maria Petrou Prize](#)

[ICPR2020:](#)

[Call for Papers](#)

[and](#)

[Workshop and Tutorial Proposals](#)

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 *

| | Meeting | Report on previous edition | Venue |
|------|---------|--|--|
| 2019 | AUG | ISAIR 2019 : 4th International Symposium on Artificial Intelligence and Robotics | ISAIR 2018 Korea |
| | | ICIG 2019 : 18th Intl. Conference on Computer Analysis of Images and Patterns | ICIG 2017 China |
| | | CAIP 2019 : 18th Intl. Conf. on Computer Analysis of Images and Patterns | Italy |
| | | ICIAP 2019 : 20th International Conference on Image Analysis and Processing | ICIAP 2017 Italy |
| | | * GCPR 2019 : German Conference on Pattern Recognition * | Germany |
| | | GREC 2019 : 13th IAPR Intl Workshop on Graphics Recognition (w/ ICDAR 2019) | GREC 2017 Australia |
| | | HIP 2019 : 5th Intl Workshop on Historical Document Imaging and Processing (w/ ICDAR 2019) | HIP 2017 Australia |
| | | ICDAR-OST : 2nd Intl Workshop on Open Services & Tools for Document Analysis (w/ ICDAR 2019) | Australia |
| | | HDI 2019 : 2nd Intl Workshop on Human-Document Interaction (w/ ICDAR 2019) | Australia |
| | | + CBDAR 2019 : 8th Intl Workshop on Camera-Based Document Analysis and Recognition (w/ ICDAR 2019) + | CBDAR 2017 Australia |
| | SEP | ICDAR 2019 : 15th International Conference on Document Analysis Systems | ICDAR 2017 Australia |
| | | CVIP 2019 : 4th Intl. Conference on Computer Vision and Information Processing | CVIP 2018 India |
| | OCT | CIARP 2019 : 15th 24th Iberoamerican Congress on Pattern Recognition | CIARP 2018 Cuba |
| | NOV | PSIVT 2019 : 9th Pacific-Rim Symposium on Image and Video Technology | PSIVT 2017 Australia |
| | | ACPR 2019 : 5th Asian Conference on Pattern Recognition | ACPR 2017 New Zealand |
| | DEC | RFMI 2019 : VIIIth Intl Workshop on Representation, analysis and recognition of shape and motion From Imaging data | RFMI 2017 Tunisia |
| | | PReMI 2019 : 8th Intl. Conference on Pattern Recognition and Machine Intelligence | PReMI 2017 India |
| | | MedPRAI 2019 : 3rd Mediterranean Conference on Pattern Recognition and Artificial Intelligence | MedPRAI 2018 Turkey |
| 2020 | | + ANNPR 2020 : 9th Workshop on Artificial Neural Networks in Pattern Recognition + | ANNPR 2018 Switzerland |
| | | ICFHR 2020 : 17th Intl. Conference on Frontiers of Handwriting Recognition | ICFHR 2018 Germany |
| | | ICPR 2020 : 25th International Conference on Pattern Recognition | ICPR 2018 Italy |
| | SEP | * IJCB 2020 : 4th International Joint Conference on Biometrics (IJCB is a triennial conference) * | IJCB 2017 USA |

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