

IAPR  
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# Newsletter

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## From the Editor's Desk: Add your voice to theirs, Gender Visibility in the Pattern Recognition Community, a collection of Her Stories

*Editor's note:*

*This column merges two projects. The first is "An IAPR Her Story", a series of feature articles launched in 2018 to spotlight the career paths of women in the IAPR to provide inspiration and encouragement to upcoming generations of women researchers. The second is "Gender Visibility in the Pattern Recognition Community" <https://iapr.org/aboutus/gender-visibility.php>, a video showcase for women researchers.*

*Here, the IAPR Newsletter publishes transcripts of videos from three prominent women in the IAPR Community. Click on the link above to watch these and other videos in the showcase. Contact me if you're interested in adding your voice to theirs.*

*~ Linda O'Gorman, Layout Editor, [secretariat@iapr.org](mailto:secretariat@iapr.org)*



**Prof. Ingela Nyström**

<https://www.cb.uu.se/~ingela/>

IAPR Governing Board 2002-2010,

IAPR Secretary 2010-2014,

IAPR President 2014-2016,

IAPR Past President 2016-2018,

**Research interests:** Medical Image

Analysis, Visualization,

**Affiliation:** Centre for Image Analysis,

Uppsala University, Sweden

Hej. I am Ingela Nyström, Professor in Visualization at Uppsala University, Sweden. My main area of research is medical image analysis, and one of my favorite projects is involving interactive segmentation and visualization where we develop methods for surgery planning. We have a close collaboration and this is with dental surgeons, and we built a system today being used in clinical research.

So to me it's really rewarding as a computer scientist to contribute



# 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/](http://www.iapr.org/conferences/)  
+ denotes pending IAPR Conferences & Meetings Approval +

## 2022

### [CVIP 2022](#)

7th International Conference on  
Computer Vision & Image Processing  
Nagpur, Maharashtra, India  
Deadline: May 15, 2022  
Dates: Nov. 4-6, 2022

### [S+SSPR 2022](#)

2022 Joint Intl Wksp on Statistical Techniques in PR (SPR)  
and Structural and Syntactic PR (SSPR)  
Montreal, Quebec, Canada  
Deadline: May. 20, 2022  
Dates: Aug. 26-27, 2022

### [ICPR 2022 Workshops](#)

Click above to go to the ICPR 2022 Workshops web page.  
These workshops are part of the ICPR 2022 Program and  
many still have open submission deadlines.  
Montreal, Quebec, Canada  
Date: Aug. 21, 2022

### [ICPR 2022 Challenges](#)

Click above to go to the ICPR 2022 Challenges web page.  
These challenges are part of the ICPR 2022 Program  
Montreal, Quebec, Canada

### [ANNPR 2022](#)

10th IAPR Workshop on  
Artificial Neural Networks in Pattern Recognition  
Dubai, UAE  
Deadline: Jun. 5, 2022  
Dates: Nov. 24-26, 2022

### [ICCP 2022](#)

11th International Conference on  
Computing and Pattern Recognition  
Beijing, China  
Deadline: Jun. 10, 2022  
Dates: Oct. 21-23, 2022

## 2023

### [GbR 2023](#)

13th International Workshop on  
Graph-based Representations in Pattern Recognition  
Vietri sul Mare, Italy  
Deadline: Apr. 14, 2023  
Dates: Sep. 6-8, 2023

to medicine. And it brings shorter time in the surgery room, but it also improves results with the patients.

I became involved in IAPR more than 20 years ago, and I had very good mentors in Gabriella Sanniti di Baja and Gunilla Borgefors. They introduced me to people and to various committee work. So, during 10 years, I was an active member of the Executive Committee, and it was a big honor for me when I was elected IAPR President in 2014.

What makes IAPR so special is

that, in the community, I meet colleagues who share the same research interests as I do and also that I meet people who do not, and regardless, we learn from each other and we inspire each other. So, my bottom line to you with this presentation is that, if you love pattern recognition research, as I do, find yourself a mentor, build your network, and enjoy the ride to be part of the large IAPR Community for many years to come.

**IAPR Then and Now...**  
Excerpt from  
**"Letter from the President"**  
(Advice from Three Wise  
Former IAPR Presidents on the  
occasion of her having been  
elected IAPR President  
for the 2014-16 term)  
Ingela Nyström  
*IAPR Newsletter*, 36:4, Oct. '14

- Don't lose your sense of humour
- Don't try to solve everything
- Enjoy the ride



**Dr. Lale Akarun**

<https://www.cmpe.boun.edu.tr/~akarun/doku.php>

IAPR 2nd Vice President 2018-2020,

IAPR 1st Vice President 2020-present, **Research interests:**

Biometrics, Human-Computer Interaction

**Affiliation:** Bogazici University, Turkey

Hello. My name is Lale Akarun. I have been working in Computer Vision for the last 35 years.

I started doing image and signal processing during my PhD in New York, New York Polytechnic University, then I returned to my alma mater as faculty. I was the first woman on the faculty, but now there are 25% women among both students and faculty. My areas of research are face recognition, I've done 3D face recognition, and currently I'm doing work in sign language recognition.

We have a group which is interdisciplinary. We have sign language linguists among them. I like doing interdisciplinary research, because I learn a lot from people in other disciplines. I like what I'm doing. I like working with students; I like working with young people, and I like that my work benefits people, for example the deaf community. Our research is now being used for their annotation tools for some human-computer interface software.

So I enjoy my research a lot.



**Dr. Jing Dong**

<http://cripac.ia.ac.cn/people/jdong/en/IAPR> Newsletter EiC,

2019-present

**Research interests:** Biometric Security/Forensics

**Affiliation:** Institute of Automation, Chinese Academy of Sciences, China

Hello everyone. My name is Jing Dong from the Institute of Automation, Chinese Academy of Sciences. I am very happy to be one of the speakers for the new project called Gender Visibility in the Pattern Recognition Community launched recently. I am also the EiC of the *IAPR Newsletter* this year.

My research interests are focusing on signal processing, computer vision and biometrics. With the wide application of biometrics systems and personal analysis systems, it is becoming more and more important to insure their trustworthiness.

Untrustworthy biometrics systems can cause serious security problems, some of which are newly emerging and quickly getting tremendous attention. To name a few, facial recognition and analysis methods may be subject to bias and uncertainty. Biometrics systems can be failed and adversary attacks, imagery of people can be maliciously tampered. And recently, deep fake techniques pose a serious problem against media trustworthiness.

So, my research group recently is focusing on these topics related to trustworthy biometrics.

If you want to know more about my research and me, please follow me on the IAPR community with the *IAPR Newsletters*.

## Gender Visibility in the Pattern Recognition Community

<https://iapr.org/aboutus/gender-visibility.php>

The IAPR is a diverse organisation. We'd like to share some of that diversity with you.

If you would like to be represented on this webpage, contact [rbf@inf.ed.as.uk](mailto:rbf@inf.ed.as.uk)

# 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](mailto: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](mailto: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 41 opportunities listed and more than 12,000 accesses since November 2017.

#### Contact Information:

Bob Fisher, [rbf@inf.ed.ac.uk](mailto: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](mailto: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](#).



# IAPR...The Next Generation



## Vishal M. Patel

*Editor's note: Vishal M. Patel received the 2021 IAPR Young Biometrics Investigator Award. The IAPR Newsletter editorial staff is grateful to the TC4 Chairs for sending this interview with him for publication in this issue.*

*~ Jing Dong, EiC*

*Vishal M. Patel is an associate professor of electrical and computer engineering and a member of the Vision and Image Understanding Lab at Johns Hopkins University, USA. His research interests are focused on biomedical image analysis, biometrics, computer vision, machine learning, and signal and image processing.*

**Question: Could you introduce yourself and your career to us?**

I'm an Associate Professor in the Department of Electrical and Computer Engineering (ECE) at Johns Hopkins University. Prior to joining Hopkins, I was an A. Walter Tyson Assistant Professor in the Department of ECE at Rutgers University and a member of the research faculty at the University of Maryland Institute for Advanced Computer Studies (UMIACS). I completed my Ph.D. in Electrical Engineering from the University

of Maryland, College Park, MD, in 2010. I received my undergraduate degrees in Electrical Engineering and Applied Mathematics and a master's degree in Applied Mathematics from North Carolina State University in 2004 and 2005, respectively.

**Question: What is the most interesting research topic for you?**

In recent years, we have seen an increased use of drones and long-range surveillance systems for automatic recognition of humans. One of the challenges that we face in long-range surveillance systems is the poor quality of the collected imagery. Recently, my research group has been developing various image restoration and

enhancement methods as well as domain adaptive methods for dealing with such imagery.

**Question: What do you think will happen in your research area in the next 3-5 years?**

In recent years we have seen an exponential growth in the use of various biometric technologies for trusted automatic recognition of humans. With rapid adaptation of biometric systems, there is a growing concern that biometric technologies may compromise privacy and anonymity of individuals. In my opinion, privacy-preserving methods that are robust to presentation attacks will be a very active area of research in the next 3-5 years.

**IAPR Then and Now...Excerpt from "Conference Report: IJCB 2021 International Joint Conference on Biometrics"**

IAPR Newsletter, Vol. 43 No. 4, October 2021

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".

From the



## The IAPR ExCo on... Gender Visibility in the Pattern Recognition Community, Part 2



by Bob Fisher (UK)  
IAPR Treasurer  
[rbf@inf.ed.ac.uk](mailto:rbf@inf.ed.ac.uk)

### News from the IAPR Executive Committee

- Governing Board Ballots for the Prize and Nominating Committees have been finalized. Results for each are here: <https://iapr.org/committees/standing-committees>.
- **ICPR 2022** is only 4 months away! The Early Bird Registration deadline is June 6th. <https://www.icpr2022.com/registration/>
- From the January meeting of the IAPR ExCo: The IAPR's [Policy on Equality, Diversity, and Inclusion](#) has been added to the IAPR website. It is one of several initiatives on this vital topic. Please see Bob's column to the right.
- It is with great sadness that we share the news that Sargur Srihari has passed away. Please see the special [In Memoriam](#) section in this issue of the IAPR Newsletter.

Gender visibility within the IAPR has been an on-going conversation that has led to more opportunities for women in particular to network and share their insights and advice. The Gender Visibility in the Pattern Recognition Community web page is one concrete outgrowth of this conversation.

Since my last column on this subject [43:3], the collection of videos spotlighting some of the women who belong to and contribute to the IAPR has grown. Have a look and listen to these researchers as they speak about their varied experiences (<https://iapr.org/aboutus/gender-visibility.php>). The IAPR is a place for **all** pattern recognition, machine learning, computer vision etc. researchers. If you would like to contribute a 1 minute video introducing yourself, send me an email ([rbf@inf.ed.ac.uk](mailto:rbf@inf.ed.ac.uk))

While this web page celebrates the gender diversity in the IAPR, there are many forms of diversity. Should there be another web page that celebrates our broader diversity? Let me know what you think [rbf@inf.ed.ac.uk](mailto:rbf@inf.ed.ac.uk).

Lastly, I'd like to point to another concrete product of the IAPR's diversity discussions, the [IAPR Policy on Equality, Diversity, and Inclusion](#), which can be found on the IAPR website.

#### IAPR POLICY ON EQUALITY, DIVERSITY, AND INCLUSION

##### OVERARCHING PRINCIPLES

The overarching principles of the policy should be as follows:

- All members are treated fairly in the IAPR's dealing with them.
- All members should have the right to be free from harassment and bullying of any description, or any other form of unwanted behaviour in their dealings with IAPR.
- All members should have an equal chance to contribute to the Association and its activities and to achieve their potential, irrespective of any defining feature that may give rise to unfair discrimination.
- All members have the right to be free from discrimination because they associate with another person who possesses a Protected Characteristic or because others perceive that they have a particular Protected Characteristic, even if they do not. The Protected Characteristics are: Age • Disability • Race • Religion or belief • Sex • Gender reassignment • Marriage or civil partnership • Pregnancy and maternity • Sexual orientation.

##### STATEMENT OF EDI POLICY

The IAPR opposes all forms of unlawful and unfair discrimination. All our members, officers and volunteers will be treated fairly and with respect. Selection for office or any other benefit within the association will be based on the skills and ability of the candidates.

We will work to create an organisational culture where people are able to express their individual identities and celebrate diversity. People must feel confident and supported to challenge attitudes and behaviours which are deemed biased, discriminatory or disrespectful.

We want to embed our values throughout the organisation. It is only by accepting and valuing diversity that we enable people to achieve their full potential. We will do all we can to ensure no individual receives less favourable treatment or is to be disadvantaged by requirements or conditions, which cannot be shown to be justifiable.

##### RESPONSIBILITIES

All members, officers and volunteers of the IAPR have a duty to act within this policy, ensuring that it is followed and to draw attention to any suspected discriminatory acts or practices, through the officers of the association line or the complaints procedure.

# IN MEMORIAM: SARGUR N. SRIHARI

May 7, 1950 - March 8, 2022

## *Editor's note:*

*We were saddened to learn of the passing of Professor Sargur Srihari. In this section, we reprint excerpts from the obituary published by UBNow, News and views for the University at Buffalo community, along with personal messages from some of Srihari's colleagues and items from the IAPR Newsletter archives.*

*~ Jing Dong, EiC*

## **Groundbreaking computer scientist Sargur Srihari dies at 72**

by UBNow Staff, published March 10, 2022 (excerpted with permission)

<https://www.buffalo.edu/ubnow/stories/2022/03/hari-srihari-obit.html>

Sargur "Hari" Srihari, an internationally renowned UB professor of computer science who taught computers to read handwriting and significantly advanced the fields of pattern recognition, computational forensics and machine learning, died March 8 due to complications from a glioblastoma. He was 72.

A SUNY Distinguished Professor of Computer Science and Engineering and UB faculty member for more than 40 years, Srihari established the university as a leading center for pattern recognition and machine learning. He founded the Center of Excellence for Document Analysis and Recognition (CEDAR), which did groundbreaking research for the U.S. Postal Service in the 1990s, ultimately teaching machines how to read handwritten envelopes. This work at CEDAR, which received total funding of more than \$60 million over 25 years, led to handwritten digit recognition being recognized as the "fruit fly" of artificial intelligence and machine learning.

"Dr. Srihari was, quite simply, a towering figure in computer science," said President Satish K. Tripathi. "Always at the cutting edge of innovation, he transformed pattern recognition, machine learning and computational forensics with findings that brought global renown to UB and had a profound impact on society."

"Beyond his truly exceptional research contributions, Hari was a devoted university citizen and dedicated mentor. In his own patient, gentle and encouraging manner, he inspired generations of aspiring computer scientists to excel in their own right," Tripathi said.

Srihari's research advances, which have received

seven U.S. patents, paved the way for the handwriting-recognition technology that is used in modern systems ranging from tablets to scanners. His early research work on 3D imaging also remains influential in fields such as 3D printing.

Srihari later would become a pioneer in the field of computational forensics. In 2002, he conducted the first computationally based research to establish the individuality of handwriting, with important implications for the criminal justice community.

This work led to the first automated system, known as CEDAR-FOX, for determining whether two handwritten samples came from the same or different writers. The handwriting work was eventually extended to comparing fingerprints and footwear prints. The work led to Srihari being invited to serve as the only computer scientist on a National Academy of Sciences' committee that produced an influential 2009 report on strengthening forensic sciences in the U.S. that has had a major impact in courts worldwide.

Srihari is survived by his wife of 45 years, Rohini, UB professor of computer science and engineering; his sons, Dileep Srihari and Ashok Srihari (Caroline); and granddaughter, Vera Srihari.

A memorial fund, the Professor Sargur (Hari) Srihari Memorial Fund, has been established to support student scholarships. Donations can be made here.

Born in Bangalore, India, Srihari earned an undergraduate degree in electrical and communication engineering from the world-renowned Indian Institute of Science in Bangalore in 1970. Immigrating to the U.S. later that year, he obtained an MS (1972) and PhD (1976), both in

# In Memoriam: Sargur N. Srihari

computer and information science, from The Ohio State University. His doctoral thesis focused on the design and evaluation of classification algorithms for a type of pattern recognition related to radar aircraft identification.

After receiving his PhD, Srihari joined the faculty at Wayne State University. He came to UB in 1978.

During his career, Srihari authored more than 350 research papers with 20,000 citations (h-index=64); edited five books; and served as principal adviser to 40 doctoral students.

He was the recipient of numerous honors, among them the IAPR/ICDAR Outstanding Achievements Award in 2011 for his outstanding and continued contributions to research and education in handwriting recognition and document analysis, and services to the community; the Distinguished Alumnus of the Ohio State University College of Engineering in 1999; and the UB Excellence in Graduate Mentoring Award in 2018.

He held fellowships in the International Association for Pattern Recognition (IAPR) and the Institute of

Electronics and Telecommunications Engineers (IETE, India), and was a life fellow of the Institute of Electrical and Electronics Engineers (IEEE).

In his later years, Srihari remained an active faculty member, continuing to teach and supervise graduate students. He also developed an extensive set of lecture slides for machine learning, which are widely used in courses around the world.

His final teaching efforts were focused on integrating the wealth of research being produced in deep learning from various books, papers and blogs. He served as a visiting professor and scientist at his alma mater, the Indian Institute of Science, during spring 2020, and later established a scholarship there. During the pandemic, he began recording videos of his explanation of topics in deep learning, and did livestreaming as well.

He enjoyed traveling with Rohini to Washington, D.C., and Florida to visit their sons and granddaughter. He also continued to read avidly while pursuing his lifelong love of history, science and gardening.

## IAPR Then and Now...

### Excerpt from "Conference Report: ICDAR 2011 11th International Conference on Document Analysis and Recognition"

by Cheng-Lin Liu, IAPR Newsletter, Vol. 34 No. 1, January 2012

*"In addition to the regular paper sessions, there were five plenary sessions (an award session, three invited keynote speeches, and a panel discussion) and three parallel competition sessions. Prof. Sargur Srihari, IAPR Fellow (University of Buffalo, SUNY) received the IAPR/ICDAR Outstanding Achievements Award for his outstanding and continued contributions to research and education in handwriting recognition and document analysis, and services to the community. He gave a speech titled "Probabilistic Graphical Models in Machine Learning" at the award session following the opening ceremony.*



Sargur Srihari, IAPR Fellow,  
recipient of the IAPR/ICDAR  
Outstanding Achievements Award



# Remembering Sargur N. Srihari

I was shocked and saddened when I learned of the passing of Sargur Srihari. "Hari," as he was known, was a true luminary in the field of document analysis, and especially in all matters associated with handwriting recognition and forensics.

I recall his openness and warmth when we met at numerous conferences over the years, dating back to the earliest days of my involvement when he was already recognized as a senior leader. We talked about many things, both research-related and much more general.

Hari was an informal mentor to many of us, and cared deeply about the health and success of the international research community. I offer my sincerest condolences to his family, friends, and colleagues; he will be missed.

*Dan Lopresti, IAPR President*

## Sargur Srihari's Activities within the IAPR

<i>Years</i>	<i>Activity</i>
1986-88	<i>Chair, TC11 Applications in Text Processing (now Reading Systems)</i>
1996	<i>Awarded IAPR Fellowship "For contributions to character recognition and for service to IAPR"</i>
2002-08	<i>Chair, Publications &amp; Publicity Committee</i>
2005	<p><i>Assumed responsibility for the IAPR website, bringing it to its current location at CEDAR and arranging for professional web services.</i></p> <p>News from the IAPR Executive Committee by Denis Laurendeau, IAPR Newsletter, April 2005</p> <p>"those of you who have visited the IAPR site recently have probably noticed that its layout has changed. This results from the transfer of the site from its previous server, which was located in the Czech Republic and was maintained by Michal Haindl, to a new server that is now hosted at CEDAR, the Center of Excellence for Document Analysis and Recognition, at the State University of New York at Buffalo. The migration was done very smoothly and, although a few details still need to be addressed, the Web site is now fully operational. Our warmest thanks go to Michal Haindl who has maintained the IAPR Web page for so many years and to Professor S. Srihari and his team at CEDAR for taking over this important task for the IAPR.</p>
2008-14	<i>Member, IAPR Publications &amp; Publicity Committee</i>
2008-14	<i>Co-chair, TC6 Computational Forensics</i>
1993-2010	<i>IAPR Conference Chair/Co-Chair: IWFHR 1993, ICDAR 1995, ICDAR 1999, IWCF 2008, IWFHR 2002, ICFHR 2010</i>



IWCF 2008: 2nd International Workshop on Computational Forensics, Workshop Co-Chairs: Sargur N. Srihari and Katrin Franke

# Remembering Sargur N. Srihari

With the passing of Hari, many of us lost a dear friend, colleague, mentor or teacher. He left us a legacy of ethics, scholarship, enduring theoretical results, and large-scale computational systems. His refulgent ideas inspired hundreds of dissertations and theses. Several of his former students are already established authorities on sundry aspects of pattern recognition.

Hari's contemporaries are likely to think first of his contributions to layout analysis, document image understanding and handwriting recognition that culminated in their integration into a high-performance postal address reading system. As J.J. Hull said in his nomination for the 2011 IAPR/ICDAR Outstanding Achievements Award, "... every person who uses the U.S. Mail owes Prof. Srihari a debt of gratitude."

Younger researchers may be more aware of Hari's leading role in digital documentary and physical forensics. The methods he developed had a major impact on biometrics. His procedural recommendations were adopted in several countries.

Old curmudgeons like me remember Hari's landmark Computing Surveys exposition of three-dimensional image representation. He wrote it shortly after completing his doctorate. He next published a series of important results in multi-dimensional image processing. This set the pattern for his lifetime insistence to study every proposed approach to a problem before pursuing his own.

I have not read all of Hari's papers, but I read many of them more than once. Hari had a deep comprehension of linear algebra, graph theory, probability and statistics, and of automata, algorithms and data structures. He knew all the bumps and potholes of Bayesian decision theory. He could move effortlessly from crossing t's in online script to feature invariants or classifier combination. His training in physics gave him an easy grasp of metrology and sensor technologies. To my mind, he exemplified pattern recognition prowess.

When we met at conferences, we sometimes found sessions that we were both willing to skip in favor of an hour or two's walk and talk. What he said was always worth listening to, even as the topic shifted from nearest neighbors to confidence measures to multilayer neural networks to the flora by the path. Our last conversation took place nearly ten years ago at lunch in his house.

Thank you, Hari. You were the best of the best.

*George Nagy*



Prof. Srihari is second from the left.  
photo by Young-Bin Kwon

# Remembering Sargur N. Srihari

Very sad to hear of the loss of our close friend Hari!! We weep to see him fade away so soon! More than a Pattern Recognition pioneer for almost the last 4 decades, Prof. Sargur Srihari was such a kind and nice person.

I first met Dr. Srihari in 1986 at our laboratory at Paris 6 University when he was visiting Prof. Jean-Claude Simon. I have been following his work and collaborating with him ever since. During our more than 30 years of friendship, I have had the pleasure of witnessing many of his academic achievements and have come to see firsthand why he is so highly regarded by the international research community.

Dr. Srihari worked for more than thirty years in pattern recognition, particularly in handwriting recognition and document analysis. There is no doubt that he is one of the true leaders in this field. He made contributions of the highest originality and significance. To be specific, let me mention just two examples, namely, his seminal work in multiple classifier combination and multiple expert systems, and the application of highly novel classifier concepts (support vector machine recently, and neural networks in the past) to very difficult classification problems. Complementary to these mainly fundamentally and methodologically oriented problems, Dr. Srihari and his co-workers were able to develop high-performance engines for handwriting recognition applications from the real world, such as postal address. Everyone working in handwriting recognition and document analysis knows Dr. Srihari's work and his accomplishments. Dr. Srihari made outstanding contributions to character recognition, authored/co-authored more than 400 papers, published more than 24 books, and had 7 patents.

Dr. Srihari provided service to the scientific community in an outstanding manner. Moreover, Dr. Srihari is known to everyone working in the field as the general chair of ICDAR 1999, IWFHR 1993, and ICFHR 2002 where I served as Co-Chair. A dedicated and inspirational teacher, Dr. Srihari has guided visiting scientists and professors and supervised more than 30 doctoral and master's students.

Because of Prof. Srihari's global visibility, I wish to underline that his modesty, reliability, helpfulness and professional integrity provide a most appropriate role model for newcomers to the discipline.

It was in this same spirit of enthusiastic recommendation that I wrote on June 11, 2011, in Support of Prof. Sargur Srihari nomination for the 2011 ICDAR Outstanding Achievement Award, "I can truly say that Dr. Srihari's outstanding humanitarian values are matched only by his incredible scientific success."

I am sure his friends will remember Hari for his unique sense of humor and his fun-loving personality. He made us laugh and enhanced our lives. His intellectual talent encouraged his friends to always do their best with every task or endeavor attempted. That attitude influenced us more than most of us have realized. Thank you, Hari. We will miss your wonderful friendship and never forget your incredible contributions to the community.

Hari is survived by his loving wife and family; and many friends.

*Mohamed Cheriet, École de technologie supérieure (University of Quebec)*

# Remembering Sargur N. Srihari

IAPR Then and Now: From the *IAPR Newsletter*, Vol. 28, No. 2, April 2006

## ***Pattern Recognition at the US Postal Service: A Decade of Achievement***

by [Sargur Srihari](#) and [Srirangaraj Setlur](#), [CEDAR](#), University at Buffalo, State University of New York, USA

*The early 1990s brought an upsurge of interest in document image processing. This was partly the result of scanners becoming inexpensive thanks to the prevalence of fax machines, and also due to improvements in computer speed and memory size to deal with document images that were about 9Mbyte (scanned at 300 dpi).*

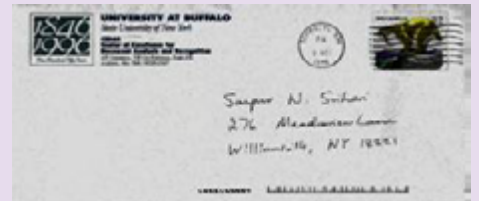
*[...]One of the most exciting applications of document image processing was in the postal area. The purpose was to recognize information in the address fields of envelopes and boxes to route this mail more efficiently and inexpensively. This required the techniques of machine- and hand-written character recognition, automatic page layout analysis, and low-level processing such as noise reduction and binarization. There were two reasons that this was a perfect application for document image recognition. One was that the fields on envelopes have a well-defined syntax, and, though there are deviations, this constrained a very difficult problem to be more manageable. The other reason was that the impact that could be made, even by small improvements, was huge, given the volume of mail.*

*Professor Sargur Srihari and his group at CEDAR (Center of Excellence for Document Analysis and Recognition), were early pioneers in applying document image recognition techniques to the postal application. At this time, roughly a decade after the work began, I asked for a recap of the work and current status of deployment.*

~(L. O’Gorman, ed.)

The United States Postal Service (USPS) is a major consumer of pattern recognition technology. Systems for sorting printed addresses for letter mail have been in existence since the mid-sixties. Systems for sorting handwritten addresses were introduced in 1996.

The task of handwritten address interpretation (HWAI) is illustrated in the letter image shown here. The goal of the interpretation is to determine the ZIP+4+2 Postnet barcode from the handwriting—the result of which is sprayed at the bottom of the envelope. This barcode is used for further sorting of the mail at each post office that it has to go through. The envelope shown [...] was among those in the first deployment of the HWAI system in Tampa, Florida in 1996.



Today, at the USPS, Remote Computer Readers (RCRs) automatically scan non-barcode letter mail for address information, match the information against the Address Management System (AMS) databases—which contains addresses only and no individual names—and imprint the mail with barcodes for processing. When the RCRs are unsuccessful at finding a match, an image of the address is sent to a Remote Encoding Center (REC) where operators manually key the address information. The results are transmitted to the facility that has the mail piece, thereby keeping it in the automated mail stream. These failures are typically due to varying address formats from patron errors such as directionals in grid addresses (e.g., SW), illegible or missing address elements and technical problems that include inserts misaligned with envelope windows.

The RCR-driven, USPS letter mail address recognition program is a major success story that has resulted in substantial cost savings for the USPS and more accurate and efficient mail delivery for US residents and businesses. During the past several years computer-based image recognition improvements have significantly reduced the amount of images requiring manual keying at the RECs. From 1996 to 2004, the encode rate for RCRs has increased from 35 percent to 90 percent, reducing the need for manual matching at RECs from 24 billion pieces per year to 6 billion annually. As a result, the USPS has been able to reduce the number of RECs in the national network from a high of 55 in 1998 to only 15 today.

Moving forward, the USPS hopes to reduce the amount of manual intervention even further. The USPS will begin testing a commercial database to improve the performance of RCR devices that scan mail for address information. Using the commercial database, the USPS hopes to improve the percentage of non-barcode mail it can process automatically. While the USPS in-house database of addresses doesn’t include individual name information, the commercial database does. So, when mail compared to the AMS database fails to produce a match or produces multiple matches, the USPS plans to try to match the mail against the commercial database. For example, while mail addressed to John Doe at 123 Main St. might produce multiple matches against the AMS database (123 Main St S and 123 main St N), a comparison against the commercial database would reveal that a John Doe lives at 123 Main St. S, and a match would be made.

# Remembering Sargur N. Srihari

*It is with great sorrow that I heard of the passing news of Prof. Srihari at the age of 72. The first time, I met Prof. Srihari was about 27 years ago at our ICDAR conference. After that we generally met every year at one of our conferences. He also visited our institute (Indian Statistical Institute, Kolkata) several times.*

*He was a very important and outstanding researcher in our handwriting and document analysis community. His contribution towards USPS is known to all of us. Also, he was one of the main organisers to host ICDAR for the first time in India at Bangalore in 1999.*

*I attended his invited talks many times and noticed that he was a very nice speaker.*

*We will all miss him. My heartfelt sympathies to Prof. Srihari's family and relatives.*

*Umapada Pal, Indian Statistical Institute, Kolkata.*

This is sad news to hear about Hari's passing. I pray that he will rest in peace and for his eternal life. I met him so many times and even had invited him to Korea for a seminar on his excellent research works. I also met him in Buffalo, SUNY at an IWFHR workshop that was held at his university, and he had demonstrated his remarkable research results on the USPS project.

Time goes so fast, and we are now become old with good souvenirs!

*Young-Bin Kwon*

I've had the pleasure of knowing Dr. Srihari since joining the CEDAR research group as an undergraduate student in 2000. It was his participation on the IAPR Publications and Publicity Committee that led to my involvement with the IAPR website. For the many years we shared at the University at Buffalo, Hari was an ever-supportive mentor and friend. His curiosity and kindness will always be remembered.

*Ed Sobczak, IAPR Webmaster*

I consider myself very fortunate to have done my graduate study under the guidance of Prof. Srihari in 1982 through 1988. His advice as I was drafting our first paper stayed with me ever since: "if you can make it clear in two sentences, never write three."

In 2006, Prof. Srihari gladly accepted my school's invitation to serve as one of two external reviewers of our CS program. Among numerous valuable suggestions from the review panel was the advice regarding faculty recruitment that hiring decisions should be based on excellence as the first criterion and area of research as the second factor, because truly excellent faculty will be able to choose and prosper in whatever are hot areas of the day.

We took that advice to heart in our subsequent searches to elevate our research and instructional activities and managed to set a record of five NSF Career Award winners in a single academic department in our entire university system.

Prof. Srihari, thank you! You will truly be missed.

*Zhigang Xiang*

[IAPR Then and Now...  
INSIDE the IAPR: IAPR Publications  
and Publicity Committee: The New  
IAPR Website](#)

IAPR Newsletter, [27:3], July 2005  
[click above for article by Srihari and Sobczak](#)

# Remembering Sargur N. Srihari

We are a group of early students of Prof. Srihari's at CEDAR (Center of Excellence on Document Analysis and Recognition) and the Department of Computer Science and Engineering at the University at Buffalo, SUNY. In mourning Professor Srihari's passing, we want to remember and thank his tremendous contributions to our careers and personal growth.

CEDAR is known as the largest academic institution ever devoted to this research area.

At its creation, CEDAR was commissioned to conduct research on the most challenging, practical problems in document image understanding that were faced by the United States Postal Service (USPS). These challenges were the direct stimulants that led us to learn and explore the frontiers of pattern recognition methods.

In this highly stimulating environment created by Prof. Srihari, we learned the basic methodology of pattern recognition and began our professional careers. Besides the intensive training in scientific research and engineering knowledge, the motivation of the USPS work inspired us to put research on a solid grounding of real-world, practical challenges. The continuous, first-hand interactions with the project sponsors offered us many opportunities to acquire and practice presentation skills. Many of our subsequent successes in different career paths can be attributed to the intellectual growth and professional development at CEDAR under Prof. Srihari's guidance.

At his passing, the community has lost a great scientist, an inspiring leader, and a kind mentor.

With deep sorrow,

*Ed Cohen  
John Giattino  
Venu Govindaraju  
Tin Kam Ho  
Jonathan J. Hull  
Siamak Khoubyari  
Stephen Lam  
Dar-Shyang Lee*

*Sriganesh Madhvanath  
Uma Mahadevan  
Debashish Niyogi  
Paul Palumbo  
Michal Prussak  
Giovanni Seni  
Srirangaraj Setlur  
Indu Shankar*

*Gholam Sheikholeslami  
Ajay Shekhawat  
D. Sivakumar  
Geetha Srikantan  
Uma Srinivasan  
Steven Tylock  
Bin Zhang  
Anda Zhao*

IAPR Then and Now: Excerpted from the *IAPR Newsletter*, Vol. 26, No. 1, January 2014

## *Getting to Know... Tin Kam Ho, IAPR Fellow*

### **Knowledge from patterns: from the mail sorting facility to a world of connected devices**

[...] I joined Prof. Srihari's lab in SUNY at Buffalo, where leading edge research was conducted for the United States Postal Services (USPS). The USPS at that time was very enthusiastic about further automating mail sorting. One could easily understand this for cost saving reasons [...]. However, what that really meant did not occur to me until I came to the full comprehension of what this cost really was.

One day, I went with Jonathan Hull and a few fellow students to visit a regional mail sorting facility to prepare for the collection of image samples. In one area there were a couple of high speed sorting machines. Envelopes were lifted onto a fast moving belt from one end of the

machine to have their images scanned. They were then carried by the belt through a maze of delay lines that kept them on the machine for a short while. By the time an envelope arrived at the other end, its image had been analyzed. A bar code for the recognized zip code was printed on the envelope to direct it to a suitable bin off the machine. [...]

But the drama came as we walked into [...] an enormous room filled with numerous desks arranged in a classroom like setting. Behind each desk sat a person, and on each side of the desk there was a bucket filled with envelopes, presumably those rejected by the machines. Every second or so, a robotic arm would pick up an envelope from one side and flip it directly

in front of the person's face. The person read the envelope and punched a code using both of his hands on two keyboards, one on each side of the desk. The robot arm would then drop the envelope to the other side. [...]

It was a bizarre scene. [...] [I]n this room, a person was not asked of anything but his ability of understanding that bit of what he saw in front of his face. This was the part that the machine could not replace. And there were thousands of people throughout the sorting facilities in the country, spending their energy all day on this particular task, day after day and year after year. Suddenly I felt the weight of our work.

## Registration Information:

<https://www.icpr2022.com/registration/>

**Early Bird Registration Deadline:**  
**June 6, 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.

The following 25 workshops and 7 challenges are held in conjunction with ICPR 2022.

Link to the web pages for individual workshops from [here](#) to see more details, including paper submission deadlines.

Link to the web pages for individual challenges from [here](#) to see more details, including deadlines.

Workshop Title	Workshop Title
AI For - ICPR Workshop on Artificial Intelligence for Multimedia Forensics and Disinformation Detection	MMForWILD - Workshop on MultiMedia FOREnsics in the WILD
AI4D - AI for De-escalation: Autonomous Systems for De-escalating Conflict in Military and Civilian Contexts	MPRSS - 7th IAPR Workshop on Multimodal pattern recognition for social signal processing in human computer interaction
CVAUI - 5th Workshop on Computer Vision for Analysis of Underwater Imagery	PatReCH 2022 - III International Workshop on Pattern Recognition for Cultural Heritage
DLVDR - Deep Learning for Visual Detection and Recognition	PRHA - ICPR 2022 Workshop on Pattern Recognition in Healthcare Analytics
FaceDrone - Face Recognition Under Drone Surveillance Concerning Turbulence	PRRS - 12th Workshop on Pattern Recognition in Remote Sensing
FAIRBIO - ICPR 2022 Workshop on Fairness in Biometric Systems	RRPR - Fourth Workshop on Reproducible Research in Pattern Recognition
FOREST - Image analysis for forest environmental monitoring	SSL - Theories, Applications, and Cross Modality for Self-Supervised Learning Models
GLESDO - 2nd international workshop on Graph Representation Learning for Scanned Document Analysis	T-CAP - Towards a Complete Analysis of People: From Face and Body to Clothes
HBU - 12th Int. Workshop on Human Behavior Understanding	UMDBB - Understanding and Mitigating Demographic Bias in Biometric Systems
IML - 2nd International Workshop on Industrial Machine Learning	VAIB - Visual observation and analysis of Vertebrate And Insect Behavior
IMTA - 8th International Workshop "Image Mining, Theory and Applications"	WIDAV - Workshop on Identity Document Analysis and Verification
MANPU - The 5th International Workshop on coMics ANalysis, Processing and Understanding	XAIE - 2nd Workshop on Explainable and Ethical AI
MDMDR - Multimodal Data for Mental Disorder Recognition	
Challenge Title	Challenge Title
ODEuropa Competition on Olfactory Object Recognition - ODOR	Real-World Video Understanding for Urban Pipe Inspection - VideoPipe
Multimodal Subtitle Recognition - MSR	Moving Object Detection and Tracking in Satellite Videos - SatVideoDT
Face Recognition Under Drone Surveillance Concerning Turbulence - FaceDrone	Detection of wastewater contaminants through low cost sensors: a multi-class problem - WaterContaminants
Competition on HARvesting Raw Tables from Infographics - CHART-Infographics	

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## IAPR TC1 Statistical Pattern Recognition Techniques

<https://iapr.org/tc1>

Simone Scardapane (Sapienza University of Rome, Italy), Chair  
Ambra Demontis (University of Cagliari, Italy), Vice Chair

### Call for Nominations:

#### 2022 Pierre Devijver Award

The deadline for the call for nominations is **May 16, 2022**.

[https://iapr.org/fellowsandawards/awards\\_devijver.php](https://iapr.org/fellowsandawards/awards_devijver.php)

At request of the IAPR, the Technical Committee on Statistical Pattern Recognition (TC1) established a special award to commemorate Pierre Devijver, one of the founders of statistical pattern recognition, who left us all in 1996.

We solicit nominations for outstanding candidates for the 2022 award to be selected from leading scientists who have contributed significantly to the field of statistical pattern recognition and closely-related fields. The award committee (consisting of previous Pierre Devijver award winners) will evaluate the nominations to select the awardee.

The recipient will be expected to deliver the award lecture in person during S+SSPR 2022, the IAPR Joint International Workshops on Statistical Techniques in Pattern Recognition (SPR 2022) and Structural and Syntactic Pattern Recognition (SSPR 2022):

<https://iapr.org/ssspr2022>

Montreal, Canada, USA  
August 26-27, 2022





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## IAPR TC4 Biometrics

<https://iapr.org/tc4>

Zhenan Sun (National Laboratory of Pattern Recognition, China), Chair  
Julian Fierrez (Universidad Autónoma de Madrid, Spain), Vice Chair  
Shiqi Yu (Southern University of Science and Technology, China), Secretary

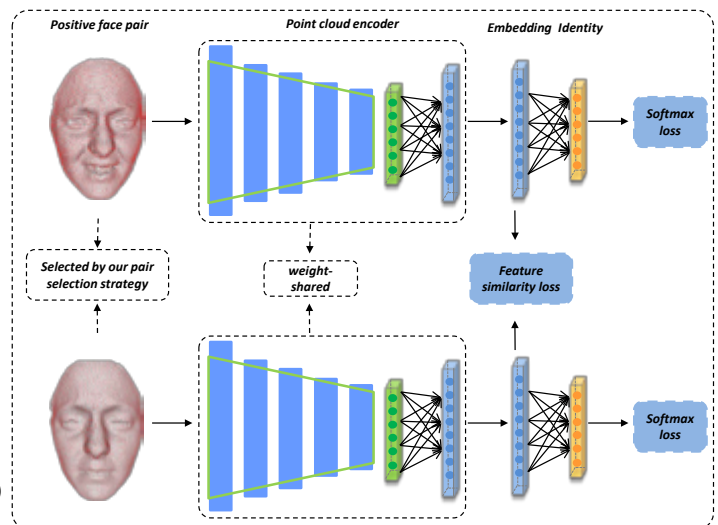
For this edition of TC4 News, we would like to spotlight the recipient of one of the main TC4 awards plus two papers in addition to a Call for Papers for IJCB 2022.

For the spotlight, please see "IAPR...The Next Generation" in this issue for our interview with Vishal M. Patel, winner of the 2021 Young Biometrics Investigator (YBIA) Award.

### 2021 IAPR Best Biometrics Student Paper Award (BBSPA) Paper Introduction

C. Jiang, S. Lin, W. Chen, F. Liu and L. Shen,  
"PointFace: Point Set Based Feature Learning for 3D Face Recognition," 2021 IEEE International Joint Conference on Biometrics (IJCB), 2021, pp. 1-8, doi: 10.1109/IJCB52358.2021.9484368.

In the paper, the authors propose a light-weight framework, PointFace, to directly process point cloud data for 3D face recognition. Two weight-shared encoders are designed to directly extract features from a pair of 3D faces. The distances between embeddings of the same person and different person can be minimized and maximized respectively. Extensive experiments on Lock3DFace and Bosphorus show that the proposed PointFace outperforms state-of-the-art 2D CNN based methods.



### Introduction to a New Influential Paper:

A. K. Jain, D. Deb and J. J. Engelsma, "Biometrics: Trust, but Verify," in IEEE Transactions on Biometrics, Behavior, and Identity Science, early access, doi: 10.1109/TBIOM.2021.3115465.

The authors provide an overview of some open-ended challenges including 1) questions related to system recognition performance, 2) security, 3) uncertainty over the bias and fairness of the systems to all users, 4) explainability of the seemingly black-box decisions made by most recognition systems, and 5) concerns over data centralization and user privacy. The authors also provide insights into how the biometric community can address core biometric recognition systems design issues to better instill trust, fairness, and security for all.



Figure. A typical biometrics recognition pipeline and the 5 major points that reduce trust in biometrics (highlighted in red).

# And More IAPR Technical Committee News

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## IAPR TC5 Computer Vision for Underwater Environmental Monitoring

<https://iapr.org/tc5>

Maia Hoeberechts (University of Victoria, Canada), Chair  
Alexandra Branzan Albu (University of Victoria, Canada), Vice Chair

### CALL for PAPERS

## 5th Workshop on Computer Vision for Analysis of Underwater Imagery (CVAUI)

<https://iapr.org/cvau2022>

In conjunction with the 26th International Conference on Pattern Recognition (ICPR)

<https://www.iapr.org/icpr2022>

Montreal, Canada, 21 August 2022

The analysis of underwater imagery imposes a series of unique challenges, which need to be tackled by the computer vision community in collaboration with biologists and ocean scientists. We invite submissions from all areas of computer vision and image analysis relevant for, or applied to, underwater image analysis. Topics of interest include, but are not limited to:

- underwater image enhancement
- physical models of reflectance and light transport
- underwater scene understanding
- classification, detection, segmentation
- autonomous underwater navigation
- detection and monitoring of marine life
- automated analysis for fisheries research
- object tracking
- automatic video annotation and summarization
- context-aware machine learning & image understanding

CVAUI is a flagship event of IAPR TC5 Computer Vision for Underwater Environmental Monitoring. CVAUI 2022 will be the fifth edition, and, like the four previous, successful and well-attended workshops, will also be held as satellite workshops of ICPR. The proceedings of the previous workshops are available via IEEEXplore for 2014 and 2016, and Springer for 2018 and 2020. Proceedings of CVAUI 2022 will be published as part of the ICPR 2022 Proceedings.

Workshop submissions are open until **June 6th!** Visit the website: <https://iapr.org/cvau2022>

## 5th Workshop on Computer Vision for Analysis of Underwater Imagery (CVAUI 2022)



And more &  
More



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## 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

The IAPR Computational Forensics Technical Committee (TC6) started its quarterly webinar series in Q4 2021. The first webinar of 2022 was the well-received “Deepfake detection: humans vs. machines” delivered by Dr. Pavel Korshunov of Idiap Research Institute, Switzerland on 27 January 2022. In this invited speech, Dr Korshunov compared the results of a subjective study (60 naive subjects) and three deepfake detection algorithms in terms of the human and machine ability to distinguish real videos from different types of deepfakes to discuss how realistic deepfake videos are for an average person and whether the algorithms are significantly better than humans at detecting them. A link to download the webinar and more about TC6 Keynotes and Talks can be found here <https://iapr-tc6.deakin.edu.au/keynotes-and-talks/>.

## IAPR TC7 Remote Sensing and Mapping

<https://iapr.org/tc7>

Ribana Roscher (University of Bonn, Germany), Chair  
Charlotte Pelletier (Université Bretagne Sud, France), Vice Chair  
Sylvain Lobry (Paris Descartes University, France) Vice Chair



<https://www.linkedin.com/groups/9029609>



@IAPR\_TC7, [https://twitter.com/IAPR\\_TC7](https://twitter.com/IAPR_TC7)

TC7 promotes the development and application of pattern recognition methods for the analysis of remote sensing data collected from space, air, and ground, and fosters academic collaboration and networking among related communities.

One of our main activities is the organization of events focusing on the interface between pattern recognition and remote sensing. We are happy to announce the 12th International Workshop on Pattern Recognition in Remote Sensing (PRRS 2022). The workshop is organized by Ribana Roscher, Charlotte Pelletier, and Sylvain Lobry, and co-sponsored by the European Space Agency (ESA).

Subscribe to our newsletter to stay informed about current events and conferences on remote sensing and pattern recognition <http://iapr-tc7.ipb.uni-bonn.de/newsletter/>. Information in the newsletter and recent TC-7 developments are also shared on Stay up to date...follow us on [LinkedIn](#) and [Twitter](#)!

*in conjunction with the International Conference on Pattern Recognition ICPR 2022*

PRRS 2022 <https://iapr.org/prrs2022>

# Workshop on Pattern

# Recognition in Remote Sensing

**Submission deadline:**  
**May 16, 2022**

August 21, 2022  
Montreal, Canada

And still  
^

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## IAPR TC12 Multimedia and Visual Information Systems

<https://iapr.org/tc12>

Hugo Jair Escalante (INAOE and CINVSTAV, 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

 <https://www.linkedin.com/groups/8109409/>

 [https://twitter.com/IAPR\\_TC12](https://twitter.com/IAPR_TC12)

12TH INTERNATIONAL WORKSHOP ON HUMAN BEHAVIOR UNDERSTANDING  
IN CONJUNCTION WITH ICPR  
MONTRÉAL, CANADA, 21-25 AUGUST 2022

Several members of TC12 are co-organizing the 12th edition of the International Workshop on Human Behavior Understanding (HBU), with the theme of “Applications for Clinical and Behavioral Sciences,” as a satellite to ICPR 2022, which will be held between August 21-25, 2022, in Montréal. The deadline for submitting papers is 3 May 2022 (check the webpage for possible extensions): <https://www.cmpe.boun.edu.tr/hbu/2022/>



The GoodBrother EU H2020 COST project has published a new report on “State of the Art of Audio- and Video- Based Ambient Assisted Living (AAL)” can be freely downloaded at <https://goodbrother.eu/deliverables/>.

The aim of GoodBrother is to increase the awareness on the ethical, legal, and privacy issues associated with audio- and video-based monitoring and to propose privacy-aware working solutions for assisted living, by creating an interdisciplinary community of researchers and industrial partners from different fields (computing, engineering, healthcare, law, sociology) and other stakeholders (users, policy makers, public services), stimulating new research and innovation.



The 24th ACM International Conference on Multimodal Interaction (ICMI) will be held in Bangalore, November 7-11, 2022. ICMI is the premier international forum for multidisciplinary research on multimodal human-human and human-computer interaction, interfaces, and system development. The special topic of this year’s ICMI is “Intelligent and responsible Embodied Conversational Agents (ECAs) in the multi-lingual real world”. <https://icmi.acm.org/2022/>

The ImageCLEF and LifeCLEF challenges have submissions open for several challenges on multimodal data analysis. The workshop where results will be discussed will be held in Bologna in September. ImageCLEF aims to provide an evaluation forum for the cross-language annotation and retrieval of images. Motivated by the need to support multilingual users from a global community accessing the ever growing body of visual information, the main goal of ImageCLEF is to support the advancement of the field of visual media analysis, indexing, classification, and retrieval, by developing the necessary infrastructure for the evaluation of visual information retrieval systems operating in both monolingual, cross-language and language-independent contexts. <http://www.imageclef.org>.



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## IAPR TC18 Discrete Geometry and Mathematical Morphology

<http://www.tc18.org>

Benjamin Perret (ESIEE Paris, France), Chair  
 Sara Brunetti (Università di Siena, Italy), Vice Chair  
 email: [tc18@tc18.org](mailto:tc18@tc18.org)



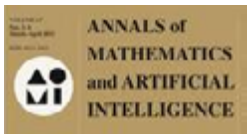
[https://twitter.com/IAPR\\_TC18](https://twitter.com/IAPR_TC18)



**DGMM 2022:** The second edition of the international conference on Discrete Geometry and Mathematical Morphology will be held in Strasbourg France, October 24-27, 2022. DGMM offers the opportunity for researchers, students, and practitioners to share and discuss novel high-quality research results within the fields of discrete geometry and mathematical morphology and their applications to image processing and image analysis. <https://iapr.org/dgmm2022>



**RRPR 2022:** The fourth edition of the Reproducible Research in Pattern Recognition (RRPR) workshop will be held in Montreal, Canada on August 21st during ICPR 2022. RRPR is intended as both a short participative course on Reproducible Research (RR) aspects, leading to open discussions with the participants, and also a practical workshop on how to actually perform RR. <https://iapr.org/rrpr2022>.



**Special Issue:** A special issue on “Combinatorial and Geometric Problems in Imaging Science” is opened in the journal Annals of Mathematics and Artificial Intelligence (AMAI) published by Springer. Deadline May 16, 2022 <https://www.editorialmanager.com/amai> (Article type: S714 ISAIM-Imaging)

**IEEE Executive board:** Leila De Floriani, professor at the University of Maryland and member of TC18, has been elected 2022 Director of the IEEE Computer Society (Division VIII). She has authored over 300 peer-reviewed scientific publications in data visualization, geospatial data representation and processing, computer graphics, geometric modeling, shape analysis and understanding. <https://www.computer.org/volunteering/board-of-governors/members>

## Past events:

- Special session on "Combinatorial Image Processing and Digital Geometry" held at International Symposium on Image and Signal Processing and Analysis (ISPA) 2021. The talks covered some interesting features of the topics such as coordinate systems for non-traditional grids, efficient implementation scheme for parallel thinning, dual space method for the segmentation of pixels into polynomial curves, and cellular automata for the generation of various binary patterns on the triangular grid. The proceedings are available online <https://doi.org/10.1109/ISPA52656.2021>.
- Special session on “Combinatorial and Geometric Problems in Imaging Sciences” held at the International Symposium on Artificial Intelligence and Mathematics (ISIAM) 2021. It received 12 contributions whose abstract and short papers are available online at <https://isaim2022.cs.ou.edu/papers.html>.

Wow!

# More IAPR Technical Committee News

IN THIS ISSUE:

[TC1 Statistical Pattern Recognition Techniques](#)  
[TC4 Biometrics](#)  
[TC5 Computer Vision for Underwater Environmental Monitoring](#)  
[TC6 Computational Forensics](#)  
[TC7 Remote Sensing and Mapping](#)  
[TC12 Multimedia and Visual Information Systems](#)  
[TC18 Discrete Geometry and Mathematical Morphology](#)  
[TC19 Computer Vision for Cultural Heritage Applications](#)

## 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



<https://twitter.com/cv4cha>

## International workshops promoted by TC19:



### **PatReCH 2022** (in conjunction with [ICPR 2022](#))

**3rd international workshop on**

**Pattern Recognition for Cultural Heritage**

in conjunction with

**August 21, 2022**

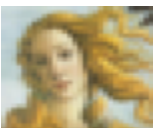
**Montreal, Canada**

TC19 promotes the 3rd international workshop on Pattern Recognition for Cultural Heritage, PatReCH organized by Mario Molinara and Alessandra Scotto di Freca (University of Cassino and Southern Lazio) and Dario Allegra and Filippo Stanco (University of Catania, Italy), in Montreal, Canada, in conjunction with ICPR 2022.

The workshop will welcome Franco Niccolucci, Director of VAST-LAB in Italy and Editor-in-Chief of JOCCH.

The call for contributed papers is open until **May, 15th 2022**.

For more information, please visit: <https://aida.unicas.it/patrech2022>.



FAPER2022

### **FAPER 2022** (in conjunction with [ICIAP 2021](#))

**2nd International Workshop on Fine Art Pattern Extraction and Recognition**

**May 23, 2022**

**Lecce, Italy**

Cultural heritage, especially fine arts, plays an invaluable role in the cultural, historical and economic growth of our societies. In recent years, a large-scale digitization effort has been made, which has led to an increasing availability of large digitized fine art collections. This availability, coupled with recent advances in pattern recognition and computer vision, has disclosed new opportunities, especially for researchers in these fields, to assist the art community with automatic tools to further analyze and understand fine arts. Among other benefits, a deeper understanding of fine arts has the potential to make them more accessible to a wider population.

The aim of the workshop is to provide an international forum for those wishing to present advancements in the state-of-the-art, innovative research, ongoing projects, and academic and industrial reports on the application of visual pattern extraction and recognition for a better understanding and fruition of fine arts.

# Meeting Reports

Conferences, Workshops & Summer/Winter Schools



## General Chairs:

João Manuel R. S. Tavares (University of Porto, Portugal)  
João Paulo Papa (São Paulo State University, Brazil)

## Program Chairs:

Manuel González-Hidalgo (University of the Balearic Islands)  
João Manuel R. S. Tavares (University of Porto, Portugal)  
João Paulo Papa (São Paulo State University, Brazil)

## Aurora Pons Porrata Committee Chair:

Leila Maria Garcia Fonseca (National Institute for Space Research)

## General Information

CIARP is an annual international conference that publishes original, high-quality papers related to Pattern Recognition, Artificial Intelligence, and related fields, welcoming contributions on any aspect of theory as well as applications.

CIARP has always been an open international event, and this edition received 82 contributions from 21 countries. The most significant presence was from Brazil, Portugal, and Colombia. Also, we received contributions from South Africa, Argentina, Austria, Canada, France, Italy, India, Netherlands, Spain, Sweden, Iraq, Switzerland, Mexico, Chile, Belgium, Uruguay, Cuba, and the Czech Republic.

82 papers from 266 authors from 21 countries were submitted, and after a rigorous blind reviewing process—where up to three highly qualified reviewers reviewed each submission (145 reviews from 63 reviewers who spent significant time and effort in reviewing the papers)—49 were accepted (an acceptance rate of 69.38%). All the accepted papers have scientific quality above the overall mean rating. The reviewers were chosen based on their expertise, ensuring that they came from different countries and institutions worldwide.

The conference was held in a virtual format and consisted of four days of papers, tutorials, and keynotes. As has been the case for

recent editions of the conference, CIARP 2021 was a single-track conference. The program comprised 12 sessions on the following topics: Natural Language Processing; Metaheuristics; Image Segmentation; Databases; Deep Learning; Explainable Artificial Intelligence; Image Processing; Machine Learning; Computer Vision.

Click on the image to go to the publisher's web page for this volume, Springer LNCS, Volume 12702



## Awards

CIARP traditionally gives two awards: (i) the CIARP-IAPR Best Paper Award and (ii) the Aurora Pons-Porrata Medal, which recognizes Iberoamerican women with excellence in Pattern Recognition and related fields. In this edition, the Aurora Pons-Porrata Medal was awarded to Dr. María Matilde García Lorenzo from Universidad Central "Marta Abreu" de Las Villas, Cuba, for her long-standing works on case-based reasoning and pattern recognition. The best paper award was given to the paper entitled "Bias Quantification for Protected Features in Pattern Classification Problems", authored by Lisa Koutsoviti Koumeri (Hasselt University, Belgium) and Gonzalo Nápoles (Tilburg University, Netherlands). The authors of the best paper were invited for an extended submission in the Pattern Recognition Letters journal.

The Aurora Pons Porrata Medal awardee was also invited for paper submission in a special issue at the Pattern Recognition Letters journal.

In addition, a special issue of the Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization journal devoted to the event with the extended version of the best accepted full papers related to bio-imaging or visualization is also being organized.

The awards were announced in the closing session by Prof. João Paulo Papa.

## Keynote Talks

CIARP 2021 was a four-day event and featured four keynotes. On the first day, Prof. Alejandro Frangi (University of Leeds, United Kingdom) gave a talk entitled". On the second day we welcomed Prof. Mário Figueiredo (Technical University of Lisbon) with his talk entitled "Dealing with Correlated Variables in Regression and Classification", and also Prof. Leo Joskowicz (The Hebrew University of Jerusalem) with the talk "Bootstrapping Deep Learning Medical Image Analysis in Radiology". On the third day, Prof. Emre Celebi (University of Central Arkansas, USA) talked

about "Two Decades of Research in Dermoscopy Image Analysis", and on the last and fourth day Prof. Alexandre Falcão (University of Campinas) gave a talk entitled "The Role of Human-Machine Interaction in the Design of Convolutional Neural Networks".

## CIARP Steering Committee Meeting

On the third day, the CIARP Steering Committee had a meeting to comment on the event's first impressions and discuss venues for further editions of the event.

## Local Committee

The local committee was composed of the following researchers: André Pilastrri, Gonçalo Almeida, Hugo Oliveira, Jessica Demoral, Zhen Ma, and Vahid Hajhashemi, all from Porto University, Portugal.

## Event Management

We decided to outsource the event management, so the home page, online environment to set up the conference (Zoom), registration, and information to compose the final proceedings were performed by Codan Consulting.



The banner features three main sections. On the left is the cover of the journal 'Pattern Recognition Letters' with ISSN: 0167-8655. In the center is the cover of the special issue 'Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization'. On the right is a dark green box with white text: 'Winning papers of CIARP-IAPR Best Paper Award and Medal Aurora Pons-Porrata will be published in the Pattern Recognition Letters journal.' and 'The best accepted full papers related to bio-imaging or visualization will be published in a special issue of the CMBBE: Imaging & Visualization journal.' Below these is a large white box with '25th Iberoamerican Congress on Pattern Recognition' and 'CIARPPORTO' in large letters. To the right of this box, it says '10 - 13 May 2021 Porto, Portugal www.ciarp25.org' and includes logos for unesp and PORTO.





# The 6th Asian Conference on Pattern Recognition (ACPR 2021)

9-12 November, 2021, Jeju Island, Korea



## Steering Committee

Seong-Whan Lee (Korea Univ., Korea)  
Cheng-Lin Liu (CASIA, China)  
Umapada Pal (Indian Statistical Institute, India)  
Tieniu Tan (Chinese Academy of Sciences, China)  
Yasushi Yagi (Osaka Univ., Japan)

## General Chairs

Seong-Whan Lee (Korea Univ., Korea)  
Cheng-Lin Liu (CASIA, China)  
Yasushi Yagi (Osaka Univ., Japan)

## Program Chairs:

Qingshan Liu (Nanjing Univ. of Sci. & Tech., China)  
Hajime Nagahara (Osaka Univ., Japan)  
Christian Wallraven (Korea Univ., Korea)

ACPR 2021 was held at the Jeju Conference Center in South Korea. It featured four tutorials



and one workshop, as well as three keynotes by distinguished speakers and was the first ACPR to be conducted in hybrid format.

ACPR 2021 was endorsed by the International Association for Pattern Recognition (IAPR) and the Korea Brain Education Society.

The conference was attended by 150 participants from all over the world, which was a big success given the difficult COVID-19 situation. It received 154 submissions from 13 countries that were reviewed by at least 3 reviewers. A total of 461 reviews were made with the help of the 105 members of the program

committee and 74 external reviewers.

Overall, 26 papers were accepted for oral presentation and 59 papers for poster presentation, resulting in an average acceptance rate of 55.2%. All accepted papers will be published in the LNCS series from Springer. The four highest ranked keywords of the submissions were Deep Learning, Neural Networks, Pattern Recognition, and Computer Vision.

ACPR 2021 was organized as a hybrid conference, combining an online, virtual conference system with a live audience and talks in the Jeju conference center. The program was organized as a single-track conference with nine oral sessions, two poster sessions, and three keynote talks.

## Keynote talks:

The keynote talks were given by Professor Lei Zhang on "Gradient centralization and feature gradient descent for deep neural network optimization", Professor Andreas

Dengel on "Combining Bird Eye View and Grass Root View for Earth Observation", and Professor Jure Leskovec on "Graph Neural Networks and Beyond".

## Awards:

The award for best student paper went to Yu-Ting Yang, Yan-Ming Zhang, Xiao-Long Yun, Fei Yin and Cheng-Lin Liu for their paper entitled "CASIA-onDo: A New Database for Online Handwritten Document Analysis".

The runner-up for overall best paper went to Xinlei Qi, Yaqing Ding, Jin Xie and Jian Yang for their paper entitled "Planar Motion Estimation for Multi-camera System", and the overall best paper award went to Weiqi Zhao, Haobo Jiang and Jin Xie for their paper entitled "Fast Proximal Policy Optimization".

## ACPR 2023:

Finally, the committee selected Kitakyushu as the hosting city for ACPR 2023 based on the proposal from Professor Huimin Lu.

# 23rd International Conference on Digital Image Computing: Techniques and Applications

# DICTA 2021

29 Nov - 1 Dec

Gold Coast / Online Hybrid Mode

<http://dicta2021.dictaconference.org/>



## General Chairs

[Mohammad Awrangjeb](#) (Griffith University, Australia),  
[Alan Liew](#) (Griffith University, Australia),  
[Paulo de Souza](#) (Griffith University, Australia)

by Mohammad Awrangjeb

DICTA is the main Australian Conference on computer vision, image processing, pattern recognition, and related areas. Established in 1991 as the premier conference of the Australian Pattern Recognition Society (APRS), DICTA has been successfully held in major cities in Australia and New Zealand during the past 30 years. This was the second time that DICTA was held in Gold Coast.

In this year, a total of 114 papers were received for consideration. After double-blind review with at least 3 reviews assigned to each paper, 83 papers (72.8%) were accepted. Among the accepted papers, 36 papers (43.3%) were chosen for oral presentation, and 47 papers (56.6%) were assigned for the poster sessions. These papers were presented in 8 oral sessions and 4 poster sessions under single track setting. All technical sessions were organised in a hybrid mode, with both physical and online attendees.

There were about 105 paid registrations (52 in-person and 53 virtual). In-person attendees were about 70 including VIPs and volunteers. The proceedings of DICTA 2021 will be published by the IEEE.

The submitted papers were contributed by more than 400 authors from 20 countries in Africa, Asia, Europe, North America, South America, and Oceania, even though DICTA is considered a predominantly Australian conference.

The ratio of accepted papers with student first author vs non-student first author was 44 to 39.

The main conference was highlighted by four **keynote** talks:

- “What we’ve learned about creating accurate image models quickly and easily” by Jeremy Howard, fast.ai, Australia
- “Using autonomous drones to map and explore underground mines”, by Stefan Hrabar, Emesent, Australia
- “Computer and Robot Vision”,

by Professor Mohammed Bennamoun, The University of Western Australia, Australia

- “Towards Deep Visual Understanding: from Perception to Cognition” by Tao Mei, JD.COM, China

Three pre-conference **workshop** sessions were delivered on November 28, 2021.

- “Deep Learning with Images using MATLAB - a Hands-on Workshop”, by Emmanuel Blanchard (Mathworks)
- “Deep Learning for Medical Image Analysis”, Yasmeen George (Deakin University, Vic, Australia) and Syed Islam (Edith Cowan University, Western Australia, Australia)
- “Fundamentals of Deep Learning – Cloud-based GPU deployment and testing”, by Abdul Bais (University of Regina, Saskatchewan, Canada) and Syed Afaq Shah (Edith Cowan University, Western Australia, Australia)

More than 150 participants registered for the workshops.

The DICTA 2021 banquet was held at the restaurant on the Skypoint Observation Deck on the 78th floor of Q1, which is the tallest building in the southern hemisphere. During the banquet, following conference awards were presented:

- **2021 APRS Early Career Researcher Award** to Zongyuang Ge (Monash U.)
- **2021 APRS Early Career Researcher Award - Honourable mention** to Naveed Akhtar (The U. of Western Australia) and Peng Wang (U. of Wollongong)
- **APRS/IAPR Best Paper Award:** “Learning To Segment Dominant Object Motion From Watching Videos”, by Sahir Shrestha (Australian National U.); Mohammad Ali Armin (CSIRO (Data61)); Hongdong Li (Australian National U.); Nick Barnes (Australian National U.)
- **DST Best Contribution to Science Award:** “Quantum Annealing Formulation for Binary Neural Networks”, by Michele Sasdelli (The U. of Adelaide); Tat-Jun Chin (The U. of Adelaide)
- **APRS/DST Best Student Paper Award:** “Semi-Supervised 3D Hand Shape and Pose Estimation with Label Propagation”, by Samira Kaviani (Australian National U.); Amir Rahimi (Australian National U.); Richard Hartley (Australian National U.)
- **DST Women in STEM Award:** “Multi-Resolution ResNet for Road and Bridge Crack Detection”, Fereshteh Nayyeri (Griffith U.); Jun Zhou (Griffith U.)
- **SmartSat CRC/AI4Space Best Paper Award on Deep**

### **Learning for Earth Observation and Remote Sensing:**

- “AF-Net: All-scale Feature Fusion Network for Road Extraction from Remote Sensing Images”, by Shide Zou (Nanjing U. of Science Technology); Fengchao Xiong (Nanjing U. of Science and Technology); Haonan Luo (Nanjing U. of Science and Technology); Jianfeng Lu (Nanjing U. of Science and Technology); Yuntao Qian (Zhejiang U.)
- **SmartSat CRC/AI4Space Best Paper Runner-Up Award on Deep Learning for Earth Observation and Remote Sensing:** “High Definition LiDAR mapping of Perth CBD”, by Muhammad Ibrahim (The U. of Western Australia); Naveed Akhtar (The U. of Western Australia); Mohammad Jalwana (The U. of Western Australia); Michael Wise (The U. of Western Australia); Ajmal Mian (The U. of Western Australia)
  - **Best Paper Award on Machine Learning for Medical Image Analysis:** “OCT Retinal Image-To-Image Translation: Analysing the Use of CycleGAN to Improve Retinal Boundary Semantic Segmentation”, by Ignacio A Viedma Escalona (Queensland U. of Technology); David Alonso-Caneiro (Queensland U. of Technology); Scott Read (Queensland U. of Technology); Michael Collins (Queensland U. of Technology)
  - **Best Paper Runner-Up Award on Machine Learning for Medical Image Analysis:** “Resetting the Baseline: CT-Based COVID-19 Diagnosis with

Deep Transfer Learning is not as Accurate as Widely Thought”, by Fouzia Altaf (Edith Cowan U.); Syed Islam (Edith Cowan U.); Naveed Akhtar (The U. of Western Australia)

We would like to thank the generous support from our sponsors for the above-mentioned awards and other activities during the conference. The sponsors of DICTA 2021 include the platinum sponsor Defence Science and Technology (DST) group, our financial sponsors MathWorks, Destination Gold Coast, SmartSat CRC, AI4Space, Singular Health, and our technical sponsors APRS, IAPR, and the IEEE. Thanks go to Griffith University which provided services in finance, conference registration, tutorial arrangements, and staff hours.

This event could not be possible without the time and effort from the Technical Program Chairs, Local Arrangement Chairs, Proceedings Chair, Publicity Chair, Treasurer, Web Chair and the Advisory Committee. We also would like to thank all the 73 technical program committee members and reviewers for their dedicated hours in evaluating the quality of the submitted papers. Several administrative staff and student volunteers (higher degree research students) from Griffith University provided ongoing support to make the conference run smoothly. During the conference preparation stage, Norma Swain from the Destination Gold Coast gave us lots of help. We are grateful for their great contributions.



### General Chairs

Prof. Rajeev Ahuja (IIT Ropar)  
 Prof. Venu Govindaraju (State University of New York, Buffalo)  
 Prof. Mohamed Abdel-Mottaleb (University of Miami, USA)

### General Co-chairs

Prof. Balasubramanian Raman (IIT Roorkee)  
 Prof. Javed N. Agrewala (IIT Ropar)

### Conference Chairs

Dr. Subrahmanyam Murala (IIT Ropar)  
 Dr. Satish Kumar Singh (IIIT Allahabad)  
 Dr. Gaurav Bhatnagar (IIT Jodhpur)  
 Dr. Sanjeev Kumar (IIT Roorkee)  
 Dr. Partha Pratim Roy (IIT Roorkee)

The sixth edition of the International Conference in Computer Vision and Image Processing (CVIP 2021) was organized by Indian Institute of Technology Ropar, Punjab, India. CVIP is a premier conference focused on image/video processing and computer vision.

Previous editions of CVIP were held at IIIT Allahabad (CVIP 2020), MNIT Jaipur (CVIP 2019), IIIT Jabalpur (CVIP 2018), and IIT Roorkee (CVIP 2017 and CVIP 2016). The conference witnessed extraordinary success with publications in multiple domains of computer vision and image processing.

In the face of a COVID-19 event,

the conference was held in virtual mode, connecting researchers from different countries like Sri Lanka, USA, etc. The team—composed of Dr. Pritee Khanna (IIIT DMJ), Dr. Krishna Pratap Singh (IIIT Allahabad), Dr. Shiv Ram Dubey (IIIT Sri City), Dr. Aparajita Ojha (IIIT DMJ), Prof. Anil B. Gonde (SGGSIET Nanded)—organized an online event with flawless communication through Webex. Moreover, the publicity for the submissions of research articles at CVIP by Dr. Shiv Ram Dubey (IIIT Sri City), Dr. Deep Gupta (VNIT Nagpur), Dr. Sachin Chaudhary (PEC Chandigarh), Dr. Akshay Dudhane (MBZUAI, Abu Dhabi), and Dr. Prashant Patil (Deakin University

Australia) made CVIP 2021 an altogether a great success with overwhelming participation of about 110 researchers. Also, the efficient teamwork by volunteers of IIT Ropar and PEC Chandigarh helped to overcome the challenges of virtual communication for a smooth event.

CVIP 2021 received 260 regular paper submissions that went through a rigorous review process by 500 reviewers from different renowned institutes and universities. The technical program chairs, Dr. Puneet Goyal (IIT Ropar), Dr. Abhinav Dhall (IIT Ropar), Dr. Narayanan C Krishnan (IIT Ropar), Dr. Mukesh Saini (IIT Ropar), Dr. Santosh K. Vipparthi (MNIT Jaipur), Prof. Deepak

Mishra (IIST Trivandrum), Prof. Ananda S. Chowdhury (Jadavpur University), coordinated the overall review process which resulted in the acceptance of 100 research articles.

#### **Plenary and Keynote Talks:**

CVIP 2021 was scheduled with one plenary talk and two keynote talk sessions for each day. The commenced with a plenary talk on "AI for Social Good" by Prof. Venu Govindaraju (State University of New York, Buffalo) followed by keynote talks by Prof. Shirui Pan (Monash University, Australia) and Prof. Victor Sanchez (University of Warwick, UK).

On second day, Prof. Tom Gedeon (Curtin University, Australia) guided the audience with a plenary talk on "Responsive AI and Responsible AI". The keynote talks by Prof. Vitomir Štruc (University of Ljubljana) and Prof. Munawar Hayat (Monash University Australia) enlightened the audience with informative discussion on computer vision.

The last day of the conference, began with an informative plenary talk on "Cognitive Model Motivated Document Image Understanding" by Prof. Santanu Chaudhury, (IIT Jodhpur), and the keynote talk by Prof. Sunil Gupta (Deakin University) gave a deep insight to the audience on AI and its applications.

**Awards:** CVIP 2021 presented high-quality research works with innovative ideas. All the session chairs were invited to vote for four different categories of awards. For each award, three papers were nominated depending on the novelty of work, presentation skills and reviewer scores. Four awards were announced: IAPR Best Paper Award, IAPR Best Student Paper Award, CVIP Best Paper Award, CVIP Best Student Paper Award. <https://iitrpr.cvip2021.com/awards/>

Also, CVIP 2021 awarded Prof. Prabir Kumar Biswas (IIT Kharagpur) with a CVIP Lifetime Achievement Award for

his remarkable research in the field of Image Processing and Computer Vision. The awards were announced in the valedictory ceremony by General Co-chair, Prof. Balasubramanian Raman (IIT Roorkee).

All the accepted and presented papers will be published by Springer Series on Communications in Computer and Information Science (CCIS). All previous editions of CVIP have been successfully published in Springer Book Series.

Successfully presented papers are indexed by ISI Proceedings, EI-Compendex, DBLP, SCOPUS, Google Scholar and Springer link, etc.

The organizers of the next CVIP gave us a glimpse of their plan for CVIP 2022 in VNIT Nagpur <https://vnit.ac.in/cvip2022/>.



# IAPR/IEEE WINTER SCHOOL ON BIOMETRICS 2022

9 - 13 January 2022 Shenzhen, China



**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 6th IAPR/IEEE Winter School on Biometrics was a training course to promote research in biometrics and related fields and was successfully 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 77 participants which included 24 on-site participants, 43 online participants and 10 volunteer students. Sixteen (21%) of them were from outside of China (Japan, Spain, Bangladesh and UAE). IAPR grants were given to 16 online participants who were selected by the winter school directors.

Fifteen lectures were given by lecturers from academic and industry: Prof. Rama Chellappa, Prof. Anil Jain, Prof. Josef Kittler, Dr. Brendan Klare, Prof. Ajay Kumar, Prof. Xiaoming Liu, Prof. Brian Lovell, Prof. Davide Maltoni, Prof. Mark Nixon, Prof. Vishal M. Patel, Prof. Arun Ross, Prof. Zhenan Sun, Prof. Tieniu Tan, Prof. Massimo Tistarelli and Prof. Pong C Yuen. The lectures were given online due to the international

## Student Report on the IAPR/IEEE Winter School on Biometrics 2022

**Malisha Islam Tapotee**

University of Dhaka, Bangladesh

I had the opportunity to attend the IAPR/IEEE Winter School on Biometrics 2022 online.

This winter school not only gave us some instruction or information, it also paved the way for networking with professors of other universities.

Then naturally the question comes, what I have learnt from these sessions. To be honest, sometimes it was not easy to do all sessions, because of technical problems and my ongoing offline classes.

I wish I could have attended the hands-on session in person. Professors

from different countries gave us some enthusiastic lessons, which was one of the most beautiful parts of this school. It's not all about learning, it's also about connectivity.

We had to find a mate from a different affiliation to complete the assignment. Again, online attendance made this difficult. However, I think it was a good step taken by the organizers of winter school, as this type of collaboration helps us to share different opinions.

I had a little idea about the application of Artificial Intelligence on Biometrics. Now I have got a

vast scenario of the application of Biometrics from winter school and have gained different perspectives.

I also enjoyed completing the face detection assignment with my colleague from the same affiliation. We have enjoyed learning something new within two days.

Lastly, I can say Winter School gave us the chance of networking, group working, and being exposed to new topics. It is a pleasure for me to attend the sessions, workshops organized by IAPR/IEEE Winter School on Biometrics 2022 as a member and volunteer of IEEE.

traveling restrictions. The topics covered biometric identification (with face, fingerprint, finger knuckle, gait, and iris), privacy in biometrics, trustworthy biometrics, multimodal biometrics, etc. The lecturers are internationally renowned experts. They presented the most up-to-date view in biometrics, and shared their experiences with the students and other researchers.

Industry was deeply involved in the winter school. One lecture was from a company in the US, Rank One Computing. Khadas, a company in Shenzhen, sponsored an ARM+NPU development board to each on-site participant in the hands-on session. The hands-on session was organized by the OpenCV China Team. Ms. Jia Wu, Mr. Yuantao Feng and

Mr. Zihao Mu gave lectures on how to develop a real-time face recognition system on ARM+NPU embedded development boards. Most participants finished their project on face recognition and submitted their reports. Three 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 humanitarian technologies. Participants who joined this

session were in three groups led by different professors. They discussed humanitarian technologies and other related topics.

It was a challenging task to organize the winter school, especially the on-site part, in the pandemic. The local organizing committee designed a detailed plan and adjusted it according to the situation of the pandemic to make the winter school run smoothly and successfully.



### Student Report on the IAPR/IEEE Winter School on Biometrics 2022

Jose Reinaldo Cunha Santos A V Silva Neto

Department of Information Science and Technology, Osaka University, Osaka, Japan

The IAPR/IEEE Winter School on Biometrics provided me with valuable information on many different topics related to biometrics research. I learned from the many lectures I attended and also in the hands on session, where we developed a face recognition system that worked with our webcam in real-time.

It was very important to me to participate in this event, as I was able to observe top researchers explain their work and the current state of the art for many different areas of biometrics. I was particularly interested in the topics of multimodal fusion that was addressed by Professor Dr. Josef Cutler and biometrics involving gait data that was addressed by Professor Mark Nixon.

I am currently starting to work in a research area that involves both multimodal fusion and gait data, and attending these two lectures has helped me better grasp the state of current research in this field and potential future directions this field might be heading towards.

All lectures I attended were very interesting, but the lecture on federated learning, led by Professor Dr. Vishal M. Patel, has positively surprised me. I definitely would like to learn more about federated learning, as it seems like a promising area of research, especially as it addresses data privacy, one of the main points of criticism of current works in biometrics.

In the hands-on session, I learned

to develop a face recognition system using pretrained modules, such as the face detection model and the feature extraction model. I would love to have trained all the models for both face detection and feature extraction from scratch, but the limited time did not allow me to. I would be very interested to attend the next edition of the Winter School, physically if possible, and maybe this time be better prepared to compete for the Outstanding Project Award certificate.

Unfortunately, as I had to participate online, the chances for networking were severely limited. But through the hands-on session I ended up talking to other attendees and discussing difficulties we were having with the face recognition system development.



ISPR 2022

<https://ispr2022.sciencesconf.org/>

# The Second International Conference On Intelligent Systems & Pattern Recognition

24-26 March 2022 , Hammamet - Tunisia

## General Chairs:

[Akram Bennour](#), Larbi Tebessi University, Algeria.

Yousri Kessentini, Digital research center of Sfax, Tunisia

## Program Committee Chairs:

Akram Bennour, Larbi Tebessi University, Algeria.

Tolga Ensari, Dept. of Computer and Information Science, Arkansas Tech University, USA

Yousri Kessentini, Digital research center of Sfax, Tunisia

Sean Eom Southeast Missouri State University, USA

by Akram Bennour

ISPR 2022 was organized by LAMIS Laboratory, Department of Mathematics and Computer Science at Larbi Tebessi University, Tebessa, Algeria, with collaboration with Sm@rt laboratory Digital Research Center of Sfax, Tunisia, and the Artificial Intelligence and Knowledge Engineering Research Labs, Ain Sham University. The goal was to provide an interdisciplinary forum for discussion of recent advances in different areas of artificial intelligence and pattern recognition. It was endorsed by the International Association of Pattern Recognition (IAPR).

Due to the COVID-19 pandemic and travel restrictions, ISPR 2022 was held fully online.

We received 96 submissions, 5 were withdrawn before review. All submitted papers were reviewed by at least 3 members of the international program committee. 36 papers were accepted and 32 were presented during the conference.

Four keynote talks were delivered at the conference ([bios and slides](#)):

- "Augmented Reality and Serious Games for Educational

Purposes" presented by Dr. Amirrudin Kasin, University of Malaya, Kuala Lumpur, Malaysia.

- "Adaptive learning: An Introduction, and Its Effects on Students' Learning Outcomes" delivered by Prof. Sean Eom, Southeast Missouri State University, USA
- "Intelligent Computing Techniques for Smart Digital Healthcare Systems" delivered by Prof. Abdel-Badeeh M. Salem, Computer Sciences Department, Faculty of Computer and Information Sciences, Ain Shams University, Cairo, Egypt
- "Probabilistic Computing and Quantum Machine Learning" presented by Dr. Tolga Ensari, Department of Computer and Information Science, Arkansas Tech University, USA.

Three awards were announced at the conference as "IAPR Best Paper Awards" and were presented to the following papers:

- Fayçal Abbas, Mehdi Malah and Mohamed Chaouki Babahenini. "Attentional conditional generative adversarial network for ambient occlusion approximation"
- Runwu Shi, Shichun Yang, Yuyi Chen, Rui Wang, Jiayi Lu, Zhaowen Pang and Yaoguang

Cao. "Road Recognition for Autonomous Vehicles Based on Intelligent Tire and SE-CNN"

- Hicham Bellafkir, Markus Vogelbacher, Jannis Gottwald, Markus Mühling, Nikolaus Korfhage, Patrick Lampe, Nicolas Frieß, Thomas Nauss and Bernd Freisleben. "Bat Echolocation Call Detection and Species Recognition by Transformers with Self-Attention"

All accepted papers will be published by Springer in their Communications in Computer and Information Science series. CCIS is abstracted/indexed in DBLP, Google Scholar, EI-Compendex, Mathematical Reviews, SCImago, Scopus. CCIS volumes are also submitted for the inclusion in ISI Proceedings. Extended versions of the IAPR Best Papers will be recommended for possible publication in the Pattern Recognition Letters Journal, Elsevier, which has an impact factor of 3.756, indexed & listed in more than 11 leading indexes and databases.

Moreover, selected authors will be invited to elaborate on their research topic and submit the results for review and [potential publication in several international indexed journals](#).





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



## **Pattern Recognition Letters**

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

### **Upcoming Special Issue**

#### **Advances and New challenges in Document Analysis, processing and Recognition at the Dematerialization Age (VSI:ANDARDA)**

Guest Editors: Donato Impedovo, University of Bari, Italy - Byron Leite Bezerra, University of Pernambuco, Brazil - Alejandro H. Toselli, Northeastern University, Boston, USA - Giuseppe Pirlo, University of Bari, Italy

**Submission period: July 1 - July 20 2022**

**More information at:** <https://www.journals.elsevier.com/pattern-recognition-letters/call-for-papers/advances-and-new-challenges-in-document-analysis-processing-and-recognition-at-the-dematerialization-age>

### **Call for Special Issues**

We invite researchers in Pattern Recognition and related fields to submit proposals for new Special Issues. Special Issues are a unique occasion to collect high-quality papers that pertain to topics not strictly related to the journal, and therefore to expand the scientific offer for our readers.

Proposals are submitted about one year in advance with respect to the requested submission slot (i.e., the period in which submissions will be uploaded). Our current policy is to divide the year in 4 quarters (January-March, April-June, July-September, October-December). We collect the proposals for a given quarter of a given year (e.g., April-June 2023) during the first month of the quarter of the year before (e.g., April 2022), take the decision in the second month of the quarter of the year before (e.g., May 2022), and notify the prospective GEs in the third month of the quarter of the year before (e.g., June 2022). In this way, our decision can be taken by comparing all proposals for the same quarter.

Selection criteria include the following:

1. The VSI must be well focused on a current relevant topic, which has to be of interest for the international scientific community and, in particular, for researchers in Pattern Recognition; too wide topics such as “Deep Networks for image understanding” or “Advances in Pattern Recognition for image understanding” will not be taken into account.
2. The candidate GEs’ scientific production must testify sufficient experience in the proposed topics, in order to better evaluate the overall quality of both papers and reviews.
3. If more GEs participate in the proposal, a wide geographic distribution will be preferred, to assure a wider submission population; these proposals will be preferred.
4. GEs must underline in their CVs their engagement with PRL, as either authors or reviewers; proposals from such GEs will be preferred.
5. Rotation of GEs is preferred, both in groups or individually.

For candidate GEs’ convenience, a proposal template with all requested information is available.

For further information, please contact the EiC for Special Issues  
Prof. Maria De Marsico ([demarsico@di.uniroma1.it](mailto:demarsico@di.uniroma1.it))

# 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	
2022	MAY	<a href="#">IbPRIA 2022</a> : 10th Iberian Conf. on Pattern Recognition and Image Analysis	Portugal	
		<a href="#">DAS 2022</a> : 15th IAPR Intl Workshop on Document Analysis Systems	<a href="#">DAS 2020</a> France	
	JUN	<a href="#">ICPRAI 2022</a> : 3rd Intl. Conf. on Pattern Recognition and Artificial Intelligence		France
		<a href="#">IGS 2021</a> : 20th Conference of the International Graphonomics Society		Spain
		<a href="#">ICPRS 2022</a> : 12th Intl. Conference on Pattern Recognition Systems	<a href="#">ICPRS 2021</a>	France
		<a href="#">MCPR 2022</a> : 14th Mexican Conference on Pattern Recognition	<a href="#">MCPR 2021</a>	Mexico
		<a href="#">ICPR 2022 Workshops</a> : workshops that have been accepted as part of the ICPR 2022 Program	<a href="#">ICPR 2020</a>	Canada
	AUG	<a href="#">ICPR 2022</a> : 26th International Conference on Pattern Recognition	<a href="#">ICPR 2020</a>	Canada
		<a href="#">S+SSPR 2022</a> : 2022 Joint Intl Wksp on Statistical Techniques in PR (SPR) and Structural and Syntactic PR (SSPR)		Canada
		<a href="#">IJCB 2022</a> : 2022 IAPR/IEEE International Joint Conferenct on Biometrics	<a href="#">IJCB 2021</a>	UAE
	OCT	<a href="#">ICCPR 2022</a> : 11th Intl. Conference on Computing and Pattern Recognition		China
		<a href="#">DGMM 2022</a> : 2nd Intl. Conference on Discrete Geometry and Mathematical Morphology	<a href="#">DGMM 2021</a>	France
		<a href="#">CVIP 2022</a> : 7th Intl Conference on Computer Vision & Image Processing	<a href="#">CVIP 2021</a>	India
	NOV	<a href="#">ANNPR 2022</a> : 10th IAPR Workshop on Artificial Neural Networks in PR	<a href="#">ANNPR 2020</a>	UAE
2023	SEP	<a href="#">Gbr 2023</a> : 13th IAPR TC15 International Workshop on Graph-based Representations in Pattern Recognition	Italy	
2024	DEC	ICPR 2024: 27th International Conference on Pattern Recognition	India	

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