INTERNATIONAL ASSOCIATION FOR PATTERN RECOGNITION

# IAPR Newsletter

Volume 32, Number 3
July 2010

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SCIA 2011
*17th Scandinavian Conference on Image Analysis*
Ystad Saltsjöbad, Sweden
Deadline: December 15, 2010
May 23-27, 2011

MVA 2011
*12th IAPR Conference on Machine Vision Applications*
Nara City, Japan
Deadline: December 15, 2010
June 13-15, 2011

DGCI 2011
*16th IAPR International Conference on Discrete Geometry for Computer Imagery*
Nancy, France
Deadline: September 6, 2010
April 6-8, 2011

GbR 2011
*TC-15 Workshop on*
*Graph-based Representations in Pattern Recognition*
Münster, Germany
Deadline: January 10, 2011
May 18–20, 2011

ICDAR 2011
*11th International Conference on*
*Document Analysis and Recognition*
Beijing, China
Deadline: March 1, 2011
September 18-21, 2011

IJCB 2011
*IEEE/IAPR International*
*Joint Conference on Biometrics*
Washington, DC, USA
Deadline: ?
Late September 2011

# Call for Submissions

## *IAPR Newsletter*

*Articles, announcements, book reviews, conference and workshop reports*

Contact the editor:
Alexandra Branzan Albu, *aalbu@ece.uvic.ca*

**Deadline: September 20, 2010**


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# Feature

# Looking back at 20 years of ICPR conferences

**By Alexandra Branzan Albu (Canada) and David Kerr (Canada)**

As the 20th ICPR conference approaches fast, I hope that this article finds you in the midst of travel preparations for Istanbul. Pre-ICPR time is always loaded with anticipation, setting expectations, selecting which presentations to attend, and of course making sure that you will make the most out of your trip. This time, ICPR is even more special: our conference has reached an important milestone in its history via its 20th edition. To celebrate this, let's have a look at how our conference has evolved during the last 20 years.

Our analysis covers the ICPR proceedings from 1988 to 2008. Although it would have been extremely interesting to look at all twenty conferences, we have been limited by the unavailability of web-based electronic records for years preceding 1988. An excellent historical overview on the early years of ICPR can be found in the Detailed History of the IAPR, written by Herbert Freeman, IAPR Fellow, and available on the IAPR web site.

Our analysis focuses on a series of characteristics like the number of published papers, the number of authors, patterns of collaboration, distribution of papers per author or community, etc. These characteristics are studied by the fields of Bibliometrics and Scientometrics.

## Growth of the ICPR Conference

*"The More, the Merrier"*

We study the growth of the ICPR conference via the simple measure of accepted papers. Other measures that could be considered include the number of conference attendants, and the number of tutorials and satellite workshops; however, such measures cannot be retrieved from web-based information for the entire period of interest. As we can see from Table 1, the number of papers has been steadily increasing from one year to the next, with two exceptions. ICPR 2000 (Barcelona), and ICPR 2006 (Hong Kong) have both registered more accepted papers than their successors. The overall trend shows however an increasing pattern: since 1988, the number of accepted papers has almost tripled.

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**Table 1.** Number of Accepted Papers for ICPR 1998-2008

| Year | Location | Number of accepted papers |
|---|---|---|
| 1988 | Rome, Italy | 333 |
| 1990 | Atlantic City, USA | 315 |
| 1992 | The Hague, Netherlands | 591 |
| 1994 | Jerusalem, Israel | 437 |
| 1996 | Vienna, Austria | 698 |
| 1998 | Brisbane, Australia | 495 |
| 2000 | Barcelona, Spain | 973 |
| 2002 | Quebec City, Canada | 805 |
| 2004 | Cambridge, UK | 946 |
| 2006 | Hong Kong, China | 1168 |
| 2008 | Tampa, USA | 1006 |

The growth of the ICPR conference needs to be discussed in correlation with the selectivity of the conference. Indeed, a quantitative growth in the number of accepted papers would not mean much without maintaining or increasing the quality of these papers and implicitly the selectivity of the conference. The acceptance rate is a widely used measure for the selectivity of academic conferences; however, one needs to be aware of the skews introduced by the self-selection effect. Self-selection occurs when authors submit their work to more selective venues only if they think that they can have some chance of being accepted.

Table 2 summarizes data on the acceptance rates for 2000 onwards; this data was collected from the Welcome Messages of the conferences co-chairs [1-5]. Welcome messages for conferences prior to 2000 were not retrievable from web-based electronic resources. As one can see from Table 2, the selectivity of the ICPR conference can be considered stable, with fluctuations between 65% and 53% for the past four conferences. There is a wide gap between acceptance rates for oral presentations and poster presentations, which is consistent with the rates measured for other reputable venues in similar fields (CVPR, ICCV, ECCV).

**Table 2.** Acceptance Rate Statistics for ICPR 2000-2008

| Year | Submissions | Accepted oral presentations | Accepted poster presentations | Acceptance rate (orals) | Acceptance rate (posters) | Acceptance rate (overall) |
|---|---|---|---|---|---|---|
| 2000 | 1438 | 973 | | not retrievable | not retrievable | 67.7 % |
| 2002 | 1240 | 250 | 555 | 20.2% | 44.8% | 65% |
| 2004 | 1781 | 321 | 625 | 18.0% | 35.1% | 53.1% |
| 2006 | 2029 | 311 | 857 | 15.3% | 38.8% | 54.1% |
| 2008 | 1631 | 295 | 711 | 18.0% | 43.6% | 61.6% |

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## Collaboration Patterns

*"Coming together is a beginning. Keeping together is progress. Working together is success." Henry Ford*

In order to discover collaboration patterns that characterize the ICPR community, data mining methods were used for performing authorship and co-authorship analysis. These data mining methods will be briefly discussed at the end of this article.

**Authorship analysis** involves statistics about the number of papers contributed to ICPR per author. This gives us an idea about the openness of the ICPR community to newcomers and new ideas. Via data mining, we have found that from a total number of 11,776 authors at ICPR1988-2008:

8,382 have one paper, or 71.18 % of the total number of papers

1,775 have two papers, or 15.07 % of the total number of papers

646 have three papers, or 5.49 % of the total number of papers

973 have four or more, or 8.26 % of the total number of papers

From these percentages, it is easy to see that the influx of newcomers is an important feature of ICPR.

We were also interested in performing authorship analysis at a national level, i.e. in determining for a given country the total number of papers that have at least one author from that country. Table 3 summarizes these results in the form of a Top 20 of the most productive countries.

**Table 3.** Papers contributed to ICPR per country from 1988 to 2008 – top 20

| Rank (ICPR) | Rank (ISI) | Country | Number of Papers |
|---|---|---|---|
| 1 | 1 | USA | 1352 |
| 2 | 2 | Japan | 779 |
| 3 | 6 | China | 636 |
| 4 | 5 | France | 496 |
| 5 | 3 | Germany | 292 |
| 6 | 7 | Canada | 281 |
| 7 | 4 | United Kingdom | 236 |
| 8 | 11 | Australia | 196 |
| 9 | 8 | Italy | 188 |
| 10 | n/a | Hong Kong* | 174 |
| 11 | 10 | Spain | 156 |
| 12 | 18 | Taiwan | 148 |
| 13 | 14 | South Korea | 141 |
| 14 | 12 | Netherlands | 135 |
| 15 | >20 | Singapore | 132 |
| 16 | >20 | Israel | 130 |
| 17 | 13 | India | 127 |
| 18 | >20 | Finland | 101 |
| 19 | 15 | Sweden | 101 |
| 20 | 16 | Switzerland | 89 |

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*One should note that Hong Kong's contributions were counted separately from China and UK since Hong Kong's transfer of sovereignty to China occurred on July 1 1997, roughly in the middle of the analyzed time interval (1988-2008). Therefore, an ISI ranking for Hong Kong is not available either.

As one may see from Table 3, USA ranks first with a significant advance from the runner-up. The next most productive countries are Japan, China, and France. This uneven distribution of papers per country is not unique to ICPR. According to the Essential Science Indicators of the ISI Web of Knowledge (In-cites.com, 2008) USA produces around 30% of the total number of academic publications worldwide, followed by Japan, Germany and UK with approximately 6-8% each. One may conclude that there is a good correlation between the ICPR ranking of the most productive countries and the ISI ranking.

**Co-authorship analysis** focuses on examining the collaborative relationships that are expressed as co-authored papers at ICPR. These relationships are examined at individual levels. We were interested in finding out the percentage of ICPR papers that are co-authored (2 authors, 3 authors, and more). Table 4 summarizes this study.

| No of authors per paper | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 and more |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No of papers | 736 | 3067 | 2365 | 1044 | 357 | 82 | 30 | 12 | 5 | 6 | 4 |

As one may see from Table 4, the dominant pattern of ICPR co-authorship consists in having 2 co-authors per paper (39.27% of the total number of papers in 1988-2008). This is followed by the patterns consisting in 3 co-authors (30.66%), 3 co-authors (13.53%), and single-authored papers (9.54%).

These collaborative patterns are not surprising. Our hypothesis is that numerous ICPR papers are produced as a result of collaboration between a graduate student and their supervisor, hence the most popular pattern consisting in 2 co-authors per paper. Papers involving 3 or more authors involve either more complex projects with more than one graduate student or interdisciplinary research. More research needs to be done to validate our hypothesis. It would also be interesting to look at how collaboration patterns evolve from one conference to the next, and whether these patterns vary by tracks or research topics within ICPR.

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## Scientific Impact of ICPR

*"If I have seen further, it is by standing on the shoulder of giants." Isaac Newton*

The field of pattern recognition is an extremely active area of research with numerous links to other disciplines. Therefore, we are interested in determining how ICPR articles are influencing the evolution of this field. We have assembled the Top 10 of the most cited ICPR papers in Table 5. This data was gathered using Google Scholar.

| Paper Title | Year | Citations |
|---|---|---|
| A modified Hausdorff Distance for object matching | ICPR 1994 | 365 |
| UNIPEN project of online data exchange and recognizer benchmarks | ICPR 1994 | 295 |
| Fingerprint minutiae matching based on the local and global structures | ICPR 2000 | 256 |
| FVC 2002: Second fingerprint verification competition | ICPR 2002 | 210 |
| Pichunter: Bayesian relevance feedback for image retrieval | ICPR 1996 | 205 |
| Motion regularization for model-based head tracking | ICPR 1996 | 202 |
| Euclidian reconstruction from constant intrinsic parameters | ICPR 1996 | 179 |
| The combining classifier: to train or not to train? | ICPR 2002 | 171 |
| Ghost: A human body part labeling system using silhouettes | ICPR 1998 | 162 |
| Tracking human motion using multiple cameras | ICPR 1996 | 143 |

## Our methodology for data analysis

In order to complete our analysis of the ICPR conference, a comprehensive index of all papers needs to be created. The IEEE Xplore database contains all ICPR proceedings since 1988. It is then possible to create the necessary index list by parsing the html documents from IEEE Xplore. It has been determined that XML is the best solution for storing this index data because of its data layout structures and portability between programming languages.

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An initial XML index structure was manually created as follows:

```
<icpr url="http://ieeexplore.ieee.org.ezproxy.library.uvic.ca/xpl/tocresult.jsp?">
        <conference num="9" year="1988">
                <vol isnumber="1164" num="1"/>
        </conference>
        <conference num="10" year="1990">
                <vol isnumber="3400" num="1"/>
                <vol isnumber="3418" num="2"/>
        </conference>
        ...
        ...
</icpr>
```

With the above structure it is possible to automatically query the IEEE Xplore site for indexing articles included in each proceedings. Information about authors, affiliation, countries, etc. is recorded as meta-data associated with the article. Errors occur when the affiliation data is not presented in a standard format. These errors are handled as exceptions. Technical information about error handling is available on demand. The index structure that we have generated allows for more advanced analysis of conference proceedings, such as retrieval and grouping of articles that cite common references, analysis of international collaborations in ICPR etc. This is future work, which will be submitted for publication in a peer-reviewed journal.

## References

[1] "Message from the ICPR2000 Local Organizing Committee Co-Chairs," icpr, pp.xxiii, 15th International Conference on Pattern Recognition (ICPR'00), 2000

[2] "Message from the General Chairs," icpr, pp.xxii, 16th International Conference on Pattern Recognition (ICPR'02), 2002.

[3] "Message from the Chairs," icpr, pp.xix, 17th International Conference on Pattern Recognition (ICPR'04), 2004.

[4] “Message from the ICPR 2006 General Co-Chairs,” icpr, 18th International Conference on Pattern Recognition (ICPR'06), 2006.

[5] “Welcome Message”, icpr, 19th International Conference on Pattern Recognition (ICPR’08), 2008.

[6] “Most cited ICPR,” http://scholar.google.ca/scholar?hl=en&q=&as_publication=international+conference+on+pattern+recognition&as_ylo=&as_vis=1, retrieved July 2, 2010.

## About the authors

*Alexandra Branzan Albu* is the IAPR Newsletter Editor since January 2009. She has attended all ICPR conferences since ICPR 2002. She has contributed papers to ICPR 2004, 2006, 2008, and 2010. She is looking forward to attending ICPR 2010.

*David Kerr* is a Master’s student with the ECE Department at the University of Victoria. He currently works under Dr. Branzan Albu’s supervision on Content-Based Image Annotation.

# Getting to Know...
# Gabriella Sanniti di Baja, IAPR Fellow

## Image analysis with discrete tools

**By Gabriella Sanniti di Baja, IAPR Fellow (Italy)**

I started to work in pattern recognition in 1972 when I was an undergraduate student and had to find a suitable topic for my dissertation. I was a student in Physics, thus a reasonable topic would have been, for example, elementary particles, but my scientific interests had already been "contaminated" by the research activity of some of my teachers, who were moving to this *new* field within computer science. A quite simple problem (this is what I thought at the beginning!) was suggested to me: given a set of partially overlapping cells, separate them and reconstruct for each cell the missing part. It was then that I realized how tasks trivial for human beings are indeed rather difficult to be solved automatically. And, since I have always loved challenges, it was then that I decided that research in pattern recognition would have to be my future working life. It was difficult at that time, when the field of pattern recognition was still quite young, to explain to friends and relatives what the topic of my thesis was. And I admit that also now, even if we live in a world where digital images are at least as frequent as bread and butter for breakfast, I have some difficulties in explaining to friends and relatives outside the field what my job is concerned with. Did you experience the same problem? Anyway, I'm relieved since the readers of this article definitely don't need explanations on what pattern recognition means.

My research interests are in the general fields of image processing, pattern recognition, and computer vision, and, in particular, regard discrete geometry and topology, image segmentation, shape representation and analysis for 2D and 3D objects, and multiresolution systems.

Gabriella Sanniti di Baja is Director of Research at the Institute of Cybernetics "E.Caianiello", of the Italian National Research Council (CNR), Naples, Italy, where she started to work when she was still an undergraduate student. Her research interests include discrete geometry and topology, image processing, pattern recognition, and computer vision, and are mainly focused on shape representation and analysis. She has been a member of the IAPR Executive Committee (1994-2004), is an IAPR Fellow (2000), and has been Co-Editor-in-Chief of Pattern Recognition Letters since 2000. She received (2002) the PhD Honoris Causa from Uppsala University, Sweden. She has authored a number of book chapters, conference papers and journal articles and has edited a few books. Since 2008, she has chaired the Italian IAPR Member Society GIRPR (Group of Italian Researchers in Pattern Recognition).

Discrete geometry is concerned with the introduction of appropriate definitions of geometric properties in the digital space and with the design of algorithms for their computation. Discrete topology is concerned with the definition of properties, such as connectedness and adjacency, and the implementation of algorithms to

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compute them, or to preserve them during image processing. Neither discrete geometry nor discrete topology are immediate extensions to the digital space of geometry and topology in the continuous space. They are of great importance for researchers in pattern recognition and computer vision and play a key role especially for those designing discrete methods, i.e., methods where images are processed by means of local operators and the results are directly obtained in the form of discrete images. Notions of discrete geometry and topology are also of great importance for researchers interested in the development of mathematical tools to treat images (e.g., the design of visualization techniques able to produce tunnel-free surfaces). An important achievement that I got in discrete geometry and topology was the introduction of a local criterion to decide whether a digital curve is simple. Other activity I have done in this field is concerned with the computation of the Voronoi Diagram and of the Convex Hull in 2D and 3D.

As concerns segmentation, my research activity has focused on histogram thresholding and watershed based methods and, in particular, on the suggestion of criteria adequate to reduce over-segmentation. I also used Case-based-reasoning to improve the performance of segmentation. A comparison in terms of statistical and texture features between the image to be segmented and each image included in a case base, allows retrieval of the most similar case. Thus, under the hypothesis that similar images can be satisfactorily segmented by using the same setting of the segmentation parameters, segmentation can be done without interaction with the user for fine tuning of parameters.

My favorite topic is shape representation. In this framework, my research has been definitely influenced by the work done by Blum in the sixties (H. Blum “A transformation for extracting new descriptors of shape. MIT Press, Cambridge, 1967). Blum defined the medial locus of a 2D object by introducing the notion of a symmetry point and a growth process. For a 2D object, a symmetry point is a point that is center of a disc, bitangent two distinct sections of the boundary of the object, and entirely contained in the interior of the object. A symmetry point can be associated with the radius of the corresponding disc. In turn, the disc can be built via a growing process that, starting from the symmetry point, incorporates all of the object’s points whose distance from the symmetry point does not exceed the radius associated to the symmetry point itself. The envelope of the discs coincides with the object and the medial representation of the object is the locus of the centers, associated with the corresponding radii. In the discrete space, an approximation of the so defined medial representation can be obtained in terms of the centers of maximal balls in the distance transform of the object as well as of other suitably detected object’s elements, allowing a fast and reliable computation of a topologically correct representation for 2D and 3D objects.

As concerns shape analysis, my research activity has mainly followed the structural approach. The object at hand is decomposed in a number of parts, characterized by simple shape, and the description of the object is given in terms of the description of the parts as well as of the spatial relations among the parts. The underlying theory is that of human object understanding based on recognition-by-component.

After so many years, I still enjoy a lot playing with pixels and voxels. I have the good fortune of doing exactly what I want to be doing. In fact, my job to

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me is more than just a job (I never have the Monday blues!) and even if I could already retire, I want to keep going because I love what I do. Research activity and IAPR gave me the possibility to be in touch with so many people around the world and to learn a lot from them, both scientifically and from the human point of view. IAPR also allowed me to get important achievements. I'm proud to be an IAPR Fellow. I'm even more proud that I had the possibility to serve as IAPR President in the term 2000-2002. The first and, until now, the only woman to chair the association. Though there are still fewer women than men in our field, I sincerely hope that we don't need to wait for the next millennium before another woman becomes IAPR President!

## Other articles in the Getting to Know...Series:

*Has the time for telepresence finally come?* by Larry O'Gorman
April 2010 [html] [pdf]

*Biometrics: The key to the gates of a secure and modern paradise* by Nalini K. Ratha
January 2010 [html] [pdf]

*Recognition of Human Activities: A Grand Challenge* by J.K. Aggarwal
October 2009 [html] [pdf]


# Pattern Recognition in the Media: Fingered and Fingerless Fingerprints

**by Linda J. O'Gorman (USA)**

The idea of using a fingerprint as a means of identification is ancient. Literally.

> "There is archaeological evidence that fingerprints as a form of identification have been used at least since 7000 to 6000 BC by the ancient Assyrians and Chinese. Clay pottery from these times sometimes contain fingerprint impressions placed to mark the potter. Chinese documents bore a clay seal marked by the thumbprint of the originator. Bricks used in houses in the ancient city of Jericho were sometimes imprinted by pairs of thumbprints of the bricklayer. […]
>
> In the mid-1800's scientific studies were begun that would established two critical characteristics of fingerprints that are true still to this day: no two fingerprints from different fingers have been found to have the same ridge pattern, and fingerprint ridge patterns are unchanging throughout life. These studies led to the use of fingerprints for criminal identification, first in Argentina in 1896, then at Scotland Yard in 1901, and to other countries in the early 1900's.
>
> Computer processing of fingerprints began in the early 1960s with the introduction of computer hardware that could reasonably process these images. Since then, automated fingerprint identification systems (AFIS) have been deployed widely among law enforcement agencies throughout the world." [1]

You get the idea. Because fingerprints have been used for identification for so long, the definition of the term has expanded to include "any unique or distinctive pattern that presents unambiguous evidence of a specific person, substance, disease, etc." [2]

They've been used for millennia and studied for centuries, yet there are still things to be learned about the kind of fingerprints that are at the tips of your fingers. And so, I will first look at some research related to the human biology of fingerprints.

**A finger pad fingerprint: what is its purpose?**
Identification is a "use" of fingerprints, but not necessarily a "purpose". Is there a biological purpose for fingerprints? It has long been supposed that the ridges on the tips of our fingers help us to grip things by increasing the friction between the finger and the object.

There are two aspects of that statement worthy of exploration: that fingerprints help grip and that they do so by increasing the friction between the objects. Dr. Roland Ennos and his student Peter H. Warman of the University of Manchester, UK, looked at the latter: do fingerprints increase friction?.

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The amount of friction between two objects is related to the surface area in contact and to the amount of pressure between the objects. For hard objects, friction increases with increased pressure between them. For rubbery objects, friction increases with the amount of area in contact.

For their experiments, Ennos and Warman designed equipment that would move a piece of acrylic glass along the finger pad. Pressure was varied as was the width of the piece of glass. Counter to expectation, fingertip friction was higher when more fingertip area was in contact with the glass, more similar to the way a rubbery object would behave. The ridges themselves reduced the contact area as compared with flat skin. So, if the fingerprint ridges do help us grip things, the researchers concluded that it is unlikely to be because of increased friction.

**A fingerless fingerprint: the community of bacteria on your hand**

I guess it comes as no real surprise that along with your fingerprint, the tip of your finger also contains a community of bacteria. What may be a bit surprising is that the bacterial composition of that community remains fairly constant over time and that it is highly individualized.

Dr. Noah Fierer (Colorado University at Boulder, USA) and his colleagues conducted a series of studies of hand bacteria left behind on surfaces (like computer keyboards and mice). They showed that you can collect skin-associated bacteria from these surfaces, that the bacteria are there for up to two weeks after the objects have been touched, and that the bacterial community is fairly unique to individuals.

Areas of further research include validating the method and retrieving and testing the longevity of bacteria on different surfaces, e.g., fabric, plastic, and metal.

Another important issue brought up by this kind of research is that of bioethics. Since this is a new technique, there are currently no laws governing its use, so there is a privacy concern regarding the identification of individuals via their hand bacteria. .

**A body-less fingerprint: the chemical composition of an oil spill**

The recent oil spill in the Gulf of Mexico has led to a series of news stories on oil spills, clean-up techniques, and the like. The report that relates to the theme of this article was about chemical fingerprinting of oil spills.

“Chemical fingerprinting is matching certain chemical characteristics in oil to a known standard or to a suspected standard. Just for example, it’s almost like matching scratches in a gun barrel when forensic people look at bullets and where they come from. So, some of the same sort of techniques used to be used and now they’re becoming much more chemical and perhaps much more mathematical,” explains Dr. Merv Fingas, former Chief of the Emergencies Science Division of Environment Canada and leading expert in oil spill research.

He went on to explain that all oil spills are quite unique and that oil from particular wells is unique. Even though they change somewhat over time, the “chemical signature will be much more unique than even a neighboring well and definitely much more unique than crude oil from a distant well.”

The field of oil fingerprinting began 40 or more years ago as an outgrowth of studies of oil chemistry for refinery purposes, when it was discovered that the gas chromatography of different wells had different patterns. These patterns could then be used to distinguish pipeline contents, for example. Modern uses of the oil fingerprint include determining the source and nature of spills, and predicting and measuring environmental damage.

Source determination is useful, for example, if there is a spill along a particular shipping lane. Samples are taken from that spill and compared to

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the contents of vessels that had passed through that lane. A match is nearly always found.

The fingerprint can also be used to follow the pattern of the spill, its nature. With the recent gulf spill, tar balls will come ashore a few weeks before the main spill comes. Matching the tar back to its originating spill can help determine which way the spill is travelling.

Knowing the source of oil that washes up on shore enables scientists to measure long-term environmental damage from a spill. The most commonly cited case is the 1979 Ixtoc blowout in the Gulf of Mexico near the Yucatan Peninsula. It has been reported that tar balls from this spill are still coming up on beaches in Texas. If that is indeed the case, then it is easy to see how oil spill fingerprinting could help predict the behavior and environmental impact of more recent spills.

## References:

[1] L. O'Gorman, "Fingerprint Verification," in *Biometrics: Personal Identification in Networked Society*, edited by Anil Jain, Ruud Bolle, Sharath Pankanti, Kluwer Press, The Netherlands, Nov. 1998, pp. 43-64.
[2] Dictionary.com based on the Random House Dictionary.

## For more information:

***A fingerpad fingerprint***

"Fingerprints are unlikely to increase the friction of primate fingerpads," by Peter H. Warman and A. Roland Ennos, *Journal of Experimental Biology* 2009 212.

***A fingerless fingerprint***

"Forensic identification using skin bacterial communities," by Noah Fierer, Christian Lauber, Nick Zhou, Daniel McDonald, Elizabeth Costello, and Rob Knight, *Proceedings of the National Academy of Sciences*

"New CU-Boulder Hand Bacteria Study Holds Promise for Forensics Identification," by Noah Fierer, Rob Knight, Jim Scott, University of Colorado at Boulder News Center, March 15, 2010.

## Sources:

***A fingerpad fingerprint***
"Getting a grip on fingerprints," The Week Magazine, July 3-10, 2009.

***A fingerless fingerprint***
"Given away by your bacteria," The Week Magazine, April 2, 2010.

***A body-less fingerprint***
"Underreported: Chemical Fingerprinting of Oil Spills", *The Leonard Lopate Show*, WNYC, New York, June 24, 2010

# News from the
# IAPR EXECUTIVE COMMITTEE

**By Denis Laurendeau (Canada)**

By the time you receive this newsletter, members of the IAPR community will be preparing for the 20th Edition of the International Conference on Pattern Recognition (ICPR), to be held in Istanbul, Turkey, on August 23-26, 2010. ICPR is IAPR's main event and, for its 20th anniversary, is attracting a large number of papers in the conference's six tracks. We all look forward to an exciting scientific program and to the opportunity to exchange ideas with colleagues and friends from all around the world. Visit the website of the conference at *www.icpr2010.org/* for updates on conference activities.

This year, the Governing Board has approved the recommendation of the K.S. Fu Prize Committee that this prestigious prize be awarded to Professor Horst Bunke from the University of Bern. The citation for the prize is: "For pioneering work on syntactic and structural pattern recognition." The ExCo extends its warmest congratulations to Prof. Bunke.

This ICPR will be the third time that the J.K. Aggarwal Prize will be awarded to a young scientist who has brought a substantial contribution to a field that is relevant to the IAPR community and whose research work has had a major impact on the field. This year, the Governing Board has approved the recommendation of the J.K. Aggarwal Prize committee that the prize be awarded to Professor Antonio Torralba from the Massachusetts Institute of Technology. The citation of the prize is: "For algorithms and representations to exploit context in computer vision." The ExCo also extends its warmest congratulations to Professor Torralba.

Both Prof. Bunke and Torralba will present invited lectures at the ICPR. Please consult the Conference Program for the dates and times of these talks.

We remind GB members to check the GB reserved area of the IAPR website, where info on the GB meeting will posted. GB members will be informed by email of when the documents will be available in the GB reserved area of the website. No mailing of the document will be done, and GB members are kindly requested to download the material relevant for the GB meeting directly from the IAPR website. The GB meeting will be held on Tuesday August 24, 2010, and will start early in the afternoon (2:00 p.m.).

This is the last "From the ExCo" column written by the outgoing Executive Committee. We all feel that it has been a pleasure and an honour to serve the IAPR community these last two years, and we wish all the best to the new committee, which will be elected at the Governing Board meeting.

We look forward to meeting many of you in Istanbul.

# BOOKSBOOKSBOOKS

## Book reviews previously published in the IAPR Newsletter

*Algebraic Geometry and Statistical Learning Theory* by Sumio Watanabe *(reviewed in this issue)*

*Statistical Learning and Pattern Analysis for Image and Video Processing* by Nanning Zheng and Zianru Xue *(reviewed in this issue)*

*Augmented Vision Perception in Infrared: Algorithms and Applied Systems* by Riad Ibrahim Hammoud, editor, Apr '10

*Handbook of Texture Analysis* by Majid Mirmehdi, Xianghua Xie, and Jasjit Suri, editors, Oct '09

*Markov Random Field Modeling in Image Analysis* By Stan Z. Li, Oct '09

*Pattern Recognition and Neural Networks* by B.D. Ripley Apr '09

*Close Range Photogrammetry: Principles, Methods, and Applications* by Luhmann, Robson, Kyle, and Harley, Oct '08

*Classification and Learning Using Genetic Algorithms: Applications in Bioinformatics and Web Intelligence* by Bandyopadhyay and Pal, Oct '08

*Learning Theory: An Approximation Theory Viewpoint* by Cucker and Zhou, Oct '08

*Character Recognition Systems—A Guide for Students and Practitioners* by Cheriet, Kharma, Liu, and Suen, Oct '08

*Geometry of Locally Finite Spaces* by Kovalevsky, Oct '08

*Machine Learning in Document Analysis and Recognition* by Marinai and Fujisawa (Editors), Oct '08

*From Gestalt Theory to Image Analysis—A Probabilistic Approach b*y Desolneux, Moisan, and Morel, Oct '08

*Numerical Recipes: The art of scientific computing, 3rd ed.* by Press, Teukolsky, Vetterling and Flannery, Jul '08

*Feature Extraction and Image Processing, 2nd ed.* by Nixon and Aguado, Jul '08

*Digital Watermarking and Steganography:Fundamentals and Techniques* by Shih, Jul '08

*Springer Handbook of Speech Processing* by Benesty, Sondhi, and Huang, eds., Jul '08

*Digital Image Processing: An Algorithmic Introduction Using Java* by Burger and Burge, Jul '08

*Bézier and Splines in Image Processing and Machine Vision* by Biswas and Lovell, Jul '08

*Practical Algorithms for Image Analysis, 2 ed.* by O'Gorman, Sammon and Seul, Apr '08

*The Dissimilarity Representation for Pattern Recognition: Foundations and Applications* by Pekalska and Duin, Apr '08

*Handbook of Biometrics* by Jain, Flynn, and Ross (Editors), Apr '08

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*Advances in Biometrics – Sensors, Algorithms, and Systems* by Ratha and Govindaraju, (Editors), Apr '08

*Dynamic Vision for Perception and Control of Motion* by Dickmanns, Jan '08

*Bioinformatics* by Polanski and Kimmel, Jan '08

*Introduction to clustering large and high-dimensional data* by Kogan, Jan '08

*The Text Mining Handbook* by Feldman and Sanger, Jan '08

*Information Theory, Inference, and Learning Algorithms* by Makay, Jan '08

*Geometric Tomography* by Gardner, Oct '07

*"Foundations and Trends in Computer Graphics and Vision"* Curless, Van Gool, and Szeliski., Editors, Oct '07

*Applied Combinatorics on Words* by M. Lothaire, Jul '07

*Human Identification Based on Gait* by Nixon, Tan and Chellappar, Apr '07

*Mathematics of Digital Images* by Stuart Hogan, Apr '07

*Advances in Image and Video Segmentation* Zhang, Editor, Jan '07

*Graph-Theoretic Techniques for Web Content Mining* by Schenker, Bunke, Last and Kandel, Jan '07

*Handbook of Mathematical Models in Computer Vision* by Paragios, Chen, and Faugeras (Editors), Oct '06

*The Geometry of Information Retrieval* by van Rijsbergen, Oct '06

*Biometric Inverse Problems* by Yanushkevich, Stoica, Shmerko and Popel, Oct '06

*Correlation Pattern Recognition* by Kumar, Mahalanobis, and Juday, Jul. '06

*Pattern Recognition 3rd Edition* by Theodoridis and Koutroumbas, Apr. '06

*Dictionary of Computer Vision and Image Processing* by R.B. Fisher, et. Al, Jan. '06

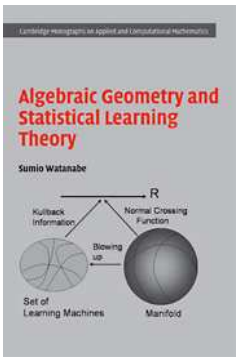
*Kernel Methods for Pattern Analysis* by Shawe-Taylor and Cristianini, Oct. '05

*Machine Vision Books* Jul. '05

*CVonline: an overview,* Apr. '05

*The Guide to Biometrics* by Bolle, et al, Jan. '05

*Pattern Recognition Books,* Jul. '04




# *Algebraic Geometry and Statistical Learning Theory*

**by Sumio Watanabe**
Cambridge University Press
Monographs on Applied and Computational Mathematics Series

Reviewed by
Nicolas Loménie (Singapore)

The monograph is mainly dedicated to the mathematical proof of a few new theorems the author found along with a new mathematical framework useful for statistical learning: algebraic geometry. I need to say that my review will not be done from the point of view of an expert, but from the one of a practitioner in the pattern recognition field. However, the part of the book that deals with applications for real pattern recognition systems is not explicitly illustrated in the book. I would mostly recommend the book to mathematicians that want to get involved in the pattern recognition world or formalize ideas about convergence or singularity issues of their algorithms.

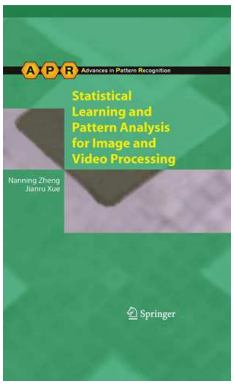
The author is an experienced researcher in the field and developed an original theory about singularity detection and handling in the course of machine learning processes. This theory aims at analyzing together zeta function, Schwartz distribution, empirical process, and statistical learning by the means of algebraic geometry. Basically, the outcome of the book is the demonstration of four new theorems in this field. Doing that, the author extends the scope of regular machine learning towards the foundations of an innovative singular learning theory.

In this new framework, linear algebra is replaced by ring and ideal algebra, the parameter estimation by probability distribution estimation, the information criterion AIC by an equation of state, and, above all, the differential geometry by algebraic geometry. Likewise, the central limit theorem and the maximum likelihood estimator do not apply anymore. And in a sense, almost all machine learning systems like artificial neural networks, mixture models, hidden Markov models behave as singular machines. This is the reason why this theory might be of utmost importance even for mere practitioners.

The book is organized into eight chapters. Chapter 1 is a brief overview of classical statistical learning concepts and methods. The four main formulas related to the new theory Sumio Watanabe is elaborating are introduced based on algebraic geometry. For instance the log density ratio function of any statistical model can be written by a common standard form based on resolution of singularities and also the generalization and training errors in the maximum likelihood method are symmetrical. Chapter 2 lays down the foundations of the singularity theory, and Chapter 3 draws a brief description of algebraic geometry tools. Chapters 4 and 5 cope with the zeta function analysis and the convergence in law of empirical processes in order to end up in Chapter 6 with the thorough proofs of the four formulas. Applications of singular learning theory to information science are presented over the last two chapters.

It is interesting to note that the regular statistical theory was constructed by R.A. Fisher in 1925 but its extension to singular statistics remains still to be accepted in our community. I believe that this monograph can contribute to this effort. However, despite all the efforts to make it accessible to non-mathematician readers, it will ask a lot of time for common practitioners or researchers in the field of pattern recognition to go through all the demonstrations and manage to master the new theory. To me, the real asset for practical applications remains to be proved. To sum up, I suspect that this book could be of utmost importance to predict the behavior of an information system but will need a thorough investigation by a small, dedicated team worldwide.

# BOOKSBOOKSBOOKS




## *Statistical Learning and Pattern Analysis for Image and Video Processing*

**by Nanning Zheng and Zianru Xue**
Springer, Advances in Pattern Recognition Series, 2009

Reviewed by
Gavin Powell, EADS Innovation Works (UK)

Chap 1 Pattern Analysis and Statistical Learning

Chapter 1 sets out the basics of how a pattern recognition system will operate. This discusses the key elements that systems need and how they are related to image processing/classification. Classical statistical classification methods are mentioned and pitfalls such as the '*curse of dimensionality*' are highlighted. This introduction that sets the tone for the book. The means to teach and educate a classification type system are covered, which is often overlooked in books. This gives a gentle introduction to readers of various levels of knowledge.

Chap 2 Unsupervised Learning

Unsupervised learning gives an indication as to how the reader can automatically find the classes and distributions needed for classification to take place. The authors show the different techniques that can be used depending on the number of classes you are using. They cover various techniques including Gaussian Mixtures for modelling the underlying class probabilities whose clusters are discovered through some form of unsupervised learning. Included in this chapter is the ever interesting clustering based on the Gestalt principle. This principle is based on the human visual system and how it perceives what are commonly known as optical illusions, or tricks on the eye.

Chap 3 Component Analysis

Often we find in classification and analysis tasks that the number of dimensions of the space that we are working in is large, and directly effects performance of our system. Zheng and Xue take us through the practice of Component Analysis to reduce this dimensionality while retaining information. Here, the usual suspects of Independent Component Analysis, Principle Component Analysis, etc. are found. This is a key feature of systems, and it is good to see a detailed description of the method and its implementation, pointing out to the reader problems that can occur and how they can be overcome.

Chap 4 Manifold Learning.

Modern advances in dimension reduction have lead to the domain of Manifold Learning, it is good that this has been included. The authors take care in not only describing the method but also in providing an introduction to the necessary supporting methods and maths. This provides the reader with the tools that they need to build up an understanding of Manifold Learning. Care was taken to remember that the book will be read by people of varying levels of understanding and, as such, that some of the supporting work is included. This can accelerate a novice reader's rate of learning.

Chap 5 Functional Approximation

Wavelet Transforms and filters are a useful tool for image compression. Importantly the authors discuss the usefulness of 'motion compensation' for use

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within video codecs which is soon to be a part of the SVC standards.

Chap 6 Supervised Learning for Visual Pattern Recognition

When the training data have class labels applied, the learning becomes a question of how best to model that class representation, looking at distributions and class boundaries. This is generalised to a classification function. The authors discuss how this can be attained using a variety of learning methods but focus is provided on the popular support vector machine and boosting algorithm. These remain active areas of useful research and the authors do well by adding more depth of discussion on these two techniques. I feel that there are some other even more basic supervised learning techniques that could be included to keep with the theme of the book to include material for the more novice readers.

Chap 7 Statistical Motion Analysis

Motion analysis is necessary for a variety of image and video processing tasks. It allows for a better understanding of what is occurring within the images over time. Zheng and Xue bring to our attention the concepts of optical flow and the various methods available for calculation. They describe well how this can be used at the pixel level or at a higher level with model based motion analysis. This is then extended to cover how motion based segmentation is used to extract moving objects from a sequence of images.

Chap 8 Bayesian Tracking of Visual Objects

Tracking of objects in Computer Vision is needed for many real world applications. There are some very well used and robust trackers available that are tried and tested. So long as you understand your problem well you should be able to track within its constraints. Zheng and Xue provide the standard approaches which many are familiar with such as the Kalman, Monte Carlo (Particle Filters). These filters are well described providing enough information to implement and work with these. It also serves as a good source of reference for those more familiar with these topics. I think it should be noted that these techniques are heavily covered in other texts as well, and although an important technology, nothing new is given by this description.

Chap 9 Probabilistic Data Fusion for Robust Visual Tracking

The only chapter that approaches fusion methods is for Visual Tracking schemes. This looks at how multiple trackers are used to fuse at different levels within a tracking system that receives data from a number of sensors. This is a very real world problem and this chapter attempts, along with the following multi target trackers, to shed some light on what is a highly complex problem. The level of prior knowledge needed is quite high, but it would be naïve to expect anything less. A whole book could be written on this subject. All of the facts are laid out in a thoughtful and well explained manner for the more experienced reader.

Chap 10 Multitarget Tracking in Video-Part I

The human perception and visual system is looked at in the final chapter. This discusses how we can learn from ourselves and better educate computational methods. AI has long been an area of research and has a huge impact on the processing of images by computers. This is something that I find interesting and think that more reference can be made to this with respect to other techniques covered in the book. It gives a slightly different angle and can help novices get a better understanding, or capture their imagination a little better.

Overall I felt that a very broad subject area was covered by the book. In some chapters it was obvious that the level for which the text was aimed was quite introductory, giving a well executed explana-

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tion of not just the technique, but also the supporting techniques. This would serve the book well as a tool to someone learning the technique from new, such as material to support a taught course. But other chapters were definitely aimed at a more educated reader, this maybe puts the book at cross purposes? Is it covering all of the basics for newcomers, or is it looking at advances in technology, or both? Due to the nature of the subject area there needs to be complex and technical chapters. There is a lot of information that is placed within a single book, which I think it does quite well.

Personally I would prefer to see some more assistance with the setting up and implementation of the areas covered by the book, this would be really helpful for newcomers. Also some more discussion on fusion and how vision/AI techniques are related to our own visual perception systems. These are areas where image/video processing will move to in the future as we try to gain a better understanding of the content. This could provide a more interesting read and make it less of a reference book, which it does appear to be trying to do.

Overall I enjoyed the book, and learned some things I didn't know, but should have! I found that the subjects were well discussed and at a level that suited my knowledge. I would recommend it as a general purpose book for image and video analysis, but would probably then look for something more focussed if I were working on a particular area.

# Conference Report: CIARP 2009

## 14th Iberoamerican Congress on Pattern Recognition

**14-18 November 2009**
**Guadalajara, Mexico**

**Conference Co-Chairs:**

**Eduardo Bayro-Corrochano, IAPR Fellow (Mexico)**
**Jan Olof Eklundh, IAPR Fellow (Sweden)**

**Report prepared by Eduardo Bayro-Corrochano (Mexico)**

The 14th Iberoamerican Conference of Pattern Recognition, CIARP'2009 was organized by the Mexican Association for Computer Vision, Neural Computing and Robotics (MACVNR) and sponsored by the International Association for Pattern Recognition (IAPR), the Cuban Association for Pattern Recognition (ACRP), the Mexican Association for Computer Vision, Neural Computing and Robotics (MACVNR), the Portuguese Association for Pattern Recognition (APRP), the Spanish Association for Pattern Recognition and Image Analysis (AERFAI), the Special Interest Group on Pattern Recognition of the Brazilian Computer Society (SIGPR-SBC), and the Chilean Association for Pattern Recognition (AchiRP).

As with previous conferences in the series, CIARP'2009 attracted participants from around the world, who presented state-of-the-art mathematical methods and computing techniques for the areas of computer vision, pattern recognition, signal and image analysis, neural computing, as well as a wide range of their applications.

There were 197 submissions; after a serious review process, 108 papers were accepted: 60 for oral and 48 for poster presentations. All of the papers had a scientific quality above the overall mean rating. Since 2008, the conference has been almost single-track, and therefore there was no real grading in quality between oral and poster papers. As an acknowledgment of a well-established conference, since 2005, the CIARP'2009 papers were published in Springer's LNCS 5856, entitled *Progress in Pattern Recogtion, Image Analysis, Computer Vision and Applications*, Eduardo Bayro-Corrochano and Jan-Olof Eklund (Eds.). In addition, the visibility of the CIARP'2009 conference is further enhanced as the best 20 papers were selected for a special issue of the *Journal of Pattern Recognition Letters* that will appear by the end of 2010.

CIARP 2009 Organizers in good spirits.
From left: Eduardo Bayro-Corrochano, Jan Olof Eklundh, Maria Petrou, and Ioannis Kakadiaris

The conference had 120 registered participants. We had only seven absences from 110 expected presentations, but three of them announced that they had late difficulties which hampered their participation.

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The conference program was highlighted by four internationally leading scientists who delivered the following invited lectures:

- Prof. Maria Petrou, IAPR Fellow, Imperial College, London, UK, "A new imaging architecture and a challenge to the neuro-physiologists"
- Prof. Walter Kropatsch, IAPR Fellow, TU Wien, Austria, "When pyramids learned walking"
- Prof. Ioannis Kakadiaris, Computational Biomedicine Lab. Depts. of CS, ECE, and Biomedical Engineering, U. of Houston, "Challenges and opportunities for extracting cardiovascular risk biomarkers from non-contrast CT data"
- Prof. Peter Sturm, INRIA Grenoble, Rhone Alpes, France, "3D and appearance modeling from images"

Before the main conference, successful tutorials were held by:

- Prof. Maria Petrou, "Texture analysis methods and applications"
- Prof. Peter Sturm, "An overview of research in the computer vision area"
- Prof. Eduardo Bayro-Corrochano, IAPR Fellow, CINVESTAV, Campus Guadlajara, Jalisco, Mexico, "Applications of geometric algebra in robot vision, graphics and medical imaging" together with
- Dr. Dietmar Hildebrand, Technische University of Darmstad, Germany, "Efficient implementations of geometric algebra applications"
- Prof. Walter Kropatsch, "We are building a topological pyramid"

Between 30 to 40 participants attended each tutorial.

On Sunday, November 15, 2009, the one-day CASI'2009 Workshop on Computational Advances of Intelligent Processing of Remote Satellite Imaginary chaired by Prof. Yuri Shkvarko, CINVESTAV, Unidad Guadalajara, Jalisco, Mexico, was held. It had 10 oral presentations and around 30 attendees.

Based on article quality and the respective oral or poster presentation, the following papers were selected and awarded.

The best award with the CIARP'2009 trophy, a diploma and 500 €

- Germán Capdehourat, Andrés Corez, Anabella Bazzano, and Pablo Musé, "Pigmented skin lesions classification using dermatoscopic images."


Honorable mentions with a diploma:

- Tetsuji Takahashi , Mineichi Kudo (IAPR Fellow), and Atsuyoshi Nakamura, "Classifier selection in a family of polyhedron classifiers."
- C. Cassisa, S. Simoens, and V. Prinet. "Two-frame optical flow formulation in an unwarping multiresolution scheme."
- Andrés Álvares Mesa, Juliana Valencia Aguirre, Genaro Daza Santacoloma, and Germán Castellanos Domínguez, "Automatic choice of the number of nearest neighbours in locally linear embedding."

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Most of the attendees were accommodated in the conference hotel. The fees included lunches. Due to the ambiance and social setting, participants could meet for interesting discussions and look for academic and scientific cooperation. In addition, on the first conference day, a tour to the colonial area was organized that ended in a nice salsa club. The "crown of the conference" featured a free-of-charge guided tour to the downtown and a banquet in a colonial garden accompanied by superb mariachi music and a spectacular representation of local folk dances. The security for all the attendees during the conference and tourism activities was excellent as no incident was reported.

The next CIARP 2010 conference will be held in Sao Paulo, Brazil, organized by Prof. Roberto M. Cesar Jr. of the Sao Paulo University (USP) and Prof. Isabelle Bloch, Telecom Paris-Tech., France, as General Chairs.

**Proceedings of the conference have been published by Springer in the series Lecture Notes in Computer Science (Volume 5856)**

# Conference Report: MCS 2010

# 9th International Workshop on Multiple Classifier Systems

**7-9 April 2010**
**Cairo, Egypt**

**Conference Co-Chairs:**

**Neamat El Gayar (Egypt)**
**Josef Kittler, IAPR Fellow (UK)**
**Fabio Roli, IAPR Fellow (Italy)**

**Report prepared by Neamat El Gayar (Egypt)**

MCS 2010 is the ninth workshop in a well-established series of meetings providing an international forum for the discussion of issues in multiple classifier system design. The aim of the workshop is to bring together researchers from diverse communities concerned with this topic, including neural networks, pattern recognition, machine learning, and statistics. A special focus of MCS 2010 was the application of multiple classifier systems in data mining, medical imaging, and bioinformatics.

MCS 2010 was endorsed by the International Association for Pattern Recognition (IAPR) and sponsored by the Information Technology Industry Development Agency (ITIDA), the Microsoft Innovation Laboratory in Cairo (CMIC).

MCS 2010 was at held at the at the Smart Village Club close to the Nile University Smart Village Campus at the Smart Village; which is a unique IT industry environment with excellent conference facilities and an exquisite landscape.

From more than 50 submissions, the program committee selected 31 high quality papers to create an interesting scientific program. Papers were organized into sessions dealing with classifier combination and classifier selection, diversity, bagging and boosting, combination of multiple kernels, and applications. During the three days of the workshop, the attendees presented their papers, and the presentations were followed by vivid discussions that were

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continued during coffee and lunch breaks. Top re-

Dr. Terek Khalil, President of the Nile University, (far left) welcomes MCS 2010 participants (from left: Josef Kittler, Lucy Kuncheva, Neamat El-Gayar, and Fabio Roli) at a reception at Nile University Campus.

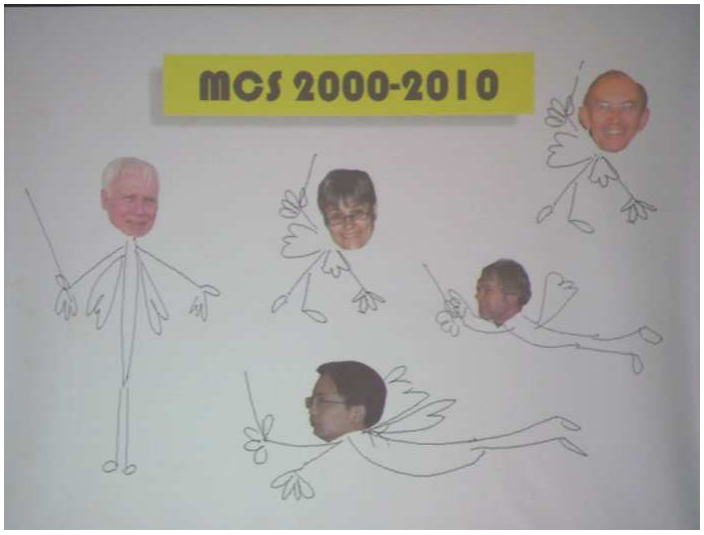
searchers of the field participated in the workshop and added great contributions to the event. Many graduate students also attended the workshop and the audience ranged from different parts of the world like Canada, China, Germany, Spain, France, Switzerland, UK, USA, Iceland, Russia, Netherlands, Italy, and of course Egypt.

The scientific program was enriched with two very interesting invited talks. The invited talk by Gavin Brown (University of Manchester, UK) entitled "Some Thoughts at the Interface of Ensemble Methods and Feature Selection" presented the view of importing/exporting ideas from the fields of "Multiple classifier Systems" and "feature selection".

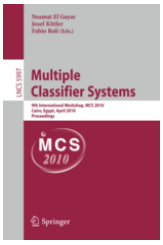
The second invited talk was given by Friedhelm Schwenker (Ulm, Germany) on the topic :"Multiple classifier systems for the recognition of human emotions". The presentation provided an overview on recent developments in multimodal pattern recognition of emotions in Human Computer Interaction, MCS for facial expression recognition, and Audio-visual laughter detection using ensemble methods.

The workshop was closed with a panel session organized and moderated by Prof. Fabio Roli, on the following subject "Back to the past: a speech from 2010 at MCS 2000". In this session panellists were asked to "magically fly back" to the past, from MCS 2010 in Cairo to MCS 2000 in Cagliari and report on what their message would be to MCS 2000 participants, if they would give a keynote speech from 2010?

The panellists—Horst Bunke, Bob Duin, Lucy Kuncheva, Terry Windeatt and Zhi-Hua Zhou—gave very interesting and inspiring presentations summarizing progress and research developments of the field in the last 10 years and also presenting recommendations and promising future directions.




A rich social program was also a main focal point of the workshop. A welcome reception was organized on the first afternoon at the new Campus at the Nile University where participants were greated by the Nile University president. The banquet was held in the second evening at an oriental restaurant at the Al-Azhar Park located in one of Cairo's most authentic parts overlooking main monuments of the old Cairo quarter. After the scientific program of the third day participants joined an excursion to the Great Pyramids of Giza and to the Sphinx followed by attending the famous Light-Sound show at the Giza Plataux area.




**Proceedings of the conference have been published by Springer in the series Lecture Notes in Computer Science (Volume 5997)**

# Conference Report: ANNPR 2010

# 4th IAPR TC3 Workshop on Artificial Neural Networks in Pattern Recognition

**11-13 April 2010**
**Cairo, Egypt**

**Program Chair:** Friedhelm Schwenker (Germany)

**Program Chair:** Neamat El Gayar (Egypt)

**Report prepared by Neamat El Gayar (Egypt)**


The fourth IAPR TC3Workshop on Artificial Neural Networks in Pattern Recognition, ANNPR 2010, took place at the Smart Village Club close to the Nile University Smart Village Campus at the Smart Village, Cairo, Egypt.

ANNPR 2010, provided a forum for international researchers in all areas of neural network based pattern recognition to present and discuss their results and to exchange their knowledge and ideas. ANNPR 2010 was sponsored by the Technical Commitee on Neural Networks and Computational Intelligence (TC3) of the International Association for Pattern Recognition (IAPR). The scope of TC3 includes computational intelligence approaches, evolutionary computing and artificial neural networks and their pattern recognition applications.

For ANNPR 2010, a total of 42 papers were submitted from which 23 high-quality papers were selected for oral presentation. The ANNPR 2010 proceedings was published in the Springer LNCS/ LNAI series.Participants from different parts of the world (Europe, Asia, North America, and Africa) attended the workshop. Like previous editions of ANNPR that were held in Paris (France 2008), Ulm (Germany, 2006), and Florence (Italy, 2003), this fourth workshop edition was very successful.

During three days, the attendees presented their papers organized in multiple sessions including Supervised Learning, Application, Unsupervised Learning, and Visual Pattern Recognition. For each oral session the allotted time was 30 minutes to present the paper and for discussions. The attending researchers were very interested and had

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indeed plenty of questions and suggestions that lasted up into or even during the breaks or lunch.

Additionally, three splendid invited talks were given during the program. The invited talk “Clustering very large dissimilarity data sets,“ which addressed the highly complicated task to cluster data sets that cannot be clustered at once due to their massive size, was given by Prof. Dr. Barbara Hammer (University Bielefeld, Germany). Prof. Dr. Horst Bunke (University Bern, Switzerland) gave an excellent talk titled “Classification and clustering of graphs based on dissimilarity space embedding,“ where he emphasized combining the graphy theory and kernel methods for clustering and classification as well.  In the talk “Gaussian Processes for Classification,“ Prof. Dr. Amir Atiya (Cairo University, Egypt) suggested that the fitting of a multivariate gaussian distribution to the data is an experimentally-proven good way for classifying.

The participants enjoyed a friendly welcome reception to the new Campus at the Nile University on the first day. As for the social program, there was a delightful banquet during a cruiser tour on the Nile. There was also a trip to the Great Pyramid of Giza and to the Sphinx, which was followed by the Light- and sound show. Furthermore an introduction to the Smart Village was given in 6th of October City.

**Proceedings of the conference have been published by Springer in the series Lecture Notes in Artificial Intelligence (Volume 5998)**

# See you at...


ICPR 2010 is the twentieth conference of the International Association for Pattern Recognition (IAPR).

ICPR 2010 will be an international forum for discussions on recent advances in the fields of Computer Vision; Pattern Recognition and Machine Learning; Signal, Speech, Image and Video Processing; Biometrics and Human Computer Interaction; Multimedia and Document Analysis, Processing and Retrieval; Bioinformatics and Biomedical Applications.

ICPR 2010 will be held during August 23-26, 2010 at the Istanbul Convention & Exhibition Centre (ICEC), Istanbul, Turkey.

## Call for
# Expressions of Interest to organise S+SSPR 2012

Although the submission deadline has only just past for S+SSPR 2010, it is time to think ahead to S+SSPR2012.

S+SSPR is traditionally held in the week preceding ICPR at a location that is convenient for easy transportation between the two meetings. The maximum distance between recent editions of ICPR and S+SSPR has been 1000km, and they are typically less than 300km apart.

ICPR 2012 is in Tsukuba Science City, Japan, 11-15 November 2012, and so S+SSPR 2012 would be expected to take place 7-9 November 2012.

At this stage the chairs of TC1 (Terry Windeatt - email T.Windeatt@surrey.ac.uk) and TC2 (Edwin Hancock - email erh@cs.york.ac.uk), would like to hear expressions of interest to hold S+SSPR 2012.

Please submit a rough outline giving the proposed location and the names of the potential General Chair, Statistical Pattern Recognition Strand Co-Chair, and Structural/Syntactic Pattern Recognition Strand Co-Chair.

Traditionally, the chairs of TC1 and TC2 act as Programme Co-Chairs for the two strands of the meeting (statistical and structural/syntactic).

A full bid will be required later with details of the venue, estimated costs, and the PC structure. If there are multiple bids, these will be put to an open vote at S+SSPR 2010.

# Also of interest...

# Free Books!

The *IAPR Newsletter* is looking for reviewers for the books listed below.

If you have interest and some knowledge in the topic, email us with your mailing address. We will send you a copy of the book—which you may keep—and will expect in return a review for the *Newsletter*.

*Arjan Kuijper*, IAPR Newsletter *Associate Editor for Book Reviews*

*The following titles are available to be reviewed:*

***Bayesian Nonparametrics***
Nils Lid Hjort, Chris Holmes, Peter Müller,
and Stephen G. Walker, eds.
Cambridge University Press, 2009
www.cambridge.org/catalogue/catalogue.asp?isbn=9780521513463

***Grammatical Inference: Learning Automata and Grammars***
Colin de la Higuera
Cambridge University Press, 2010
www.cambridge.org/catalogue/catalogue.asp?isbn=9780521513463

***Geometric Computing: for Wavelet Transforms, Robot Vision, Learning, Control and Action***
Eduardo Bayro-Corrochano
Springer, 2010
www.springer.com/computer/image+processing/book/978-1-84882-928-2

***Geometric Algebra Computing: in Engineering and Computer Science***
Eduardo Bayro-Corrochano and Gerik Scheuermann (Eds.)
Springer, 2010
www.springer.com/computer/information+systems+and+applications/book/978-1-84996-107-3

***Symbol Spotting in Digital Libraries: Focused Retrieval over Graphic-rich Document Collections***
Marçal Rusiñol and Josep Lladós
Springer, 2010
www.springer.com/computer/image+processing/book/978-1-84996-207-0?changeHeader

***Computer Vision: Detection, Recognition, and Reconstruction***
Roberto Cipolla, Sebastiano Battiato,
and Giovanni Maria Farinella, (Eds.)
Springer, 2010
Series: Studies in Computational Intelligence, Vol. 285
www.springer.com/engineering/book/978-3-642-12847-9

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# Conference Planner: 2010

*NOTE: This is not an exhaustive list of conferences. It is a list of conferences sponsored or endorsed by IAPR plus additional conferences that have been brought to the attention of the editor (these non-IAPR events are denoted with an *). The IAPR web site has more up-to-date information about IAPR conferences and a link to USC's Institute for Robotics and Intelligent Systems list of Computer Vision Conferences (A. Branzan Albu, ed.)*

| Highlighting indicates that paper submission deadline has not yet passed.<br>An asterisk * denotes a non-IAPR event. | | | |
|---|---|---|---|
| **2010** | | | |
| **CRV 2010** | *Seventh Canadian Conference on Computer and Robot Vision* | Ottawa, Ontario, Canada | 31 May-2 Jun 10 |
| **DAS 2010** | *Ninth IAPR International Workshop on Document Analysis Systems* | Cambridge, MA, USA | 9-11 Jun 10 |
| **CIP 2010** | *2nd International Workshop on Cognitive Information Processing* | Elba Island (Tuscany), Italy | 14-16 Jun 10 |
| **ICMB 2010** | *International Conference on Medical Biometrics* | Hong Kong | 28-30 Jun 10 |
| **PAR2010 *** | *Workshop on Pattern Analysis and Recognition* | Caen, France | 28 Jun-2 Jul 10 |
| **ICISP 2010** | *International Conference on Image and Signal Processing 2010* | Trois-Rivieres, Quebec, Canada | 30 Jun-2 Jul 10 |
| **S+SSPR 2010** | *Joint IAPR International Workshops on Structural and Syntactic Pattern Recognition (SSPR2010) and Statistical Techniques in Pattern Recognition (SPR2010)* | Cesme, Izmir, Turkey | 18-20 Aug 10 |
| **PRRS 2010** | *6th IAPR Workshop on Pattern Recognition in Remote Sensing* | Istanbul, Turkey | 22 Aug 10 |
| **ICPR 2010** | *20th International Conference on Pattern Recognition* | Istanbul, Turkey | 23-26 Aug 10 |
| **DAGM 2010 *** | *32nd Annual Pattern Recognition Conference of the German Association for Pattern Recognition* | Darmstadt, Germany | 22-24 Sep 10 |
| **MCPR 2010** | *2nd Mexican Conference on Pattern Recognition* | Puebla, Mexico | 27-29 Sep 10 |
| **IIH-MSP 2010 *** | *6th International Conference on Intelligent Information Hiding and Multimedia Signal Processing* | Darmstadt, Germany | 15-17 Oct 10 |
| **AND 2010** | *4th Workshop on Analytics for Noisy Unstructured Text Data* | Toronto, Canada | 26 Oct 10 |
| **CIARP 2010** | *15th Iberoamerican Congress on Pattern Recognition* | São Paulo, Brazil | 8-11 Nov 10 |
| **ACCV2010 *** | *10th Asian Conference on Computer Vision* | Queensland, New Zealand | 8-12 Nov 10 |
| **IWCF 2010** | *4th International Workshop on Computational Forensics* | Tokyo, Japan | 11-12 Nov 10 |
| **ICFHR 2010** | *12th International Conference on Frontiers in Handwriting Recognition* | Kolkata, India | 16-18 Nov 10 |
| **DICTA 2010** | *International Conference on Digital Image Computing: Techniques and Applications* | Sydney, Australia | 1-3 Dec 10 |

# Conference Planner: 2011

| Highlighting indicates that paper submission deadline has not yet passed.<br>An asterisk * denotes a non-IAPR event. | | | |
|---|---|---|---|
| **2011** | | | |
| MMM 2011 * | *17th International Conference on Multimedia Modeling* | Taipei, Taiwan | 5-7 Jan 11 |
| DRR 2011 * | *Document Recognition and Retrieval XVIII*<br>*Part of the IAS&T/SPIE International Symposium on Electronic Imaging* | San Francisco, California, USA | 23-27 Jan 11 |
| DGCI 2011 | *16th IAPR International Conference on Discrete Geometry for Computer Imagery* | Nancy, France | 6-8 Apr 11 |
| GbR 2011 | *TC-15 Workshop on Graph-based Representations in Pattern Recognition* | Münster, Germany | 18-20 May 11 |
| SCIA 2011 | *17th Scandinavian Conference on Image Analysis* | Ystad Saltsjöbad, Sweden | 23-27 May 11 |
| MVA 2011 | *12th IAPR Conference on Machine Vision Applications* | Nara City, Japan | 13-15 Jun 11 |
| ICDAR 2011 | *11th International Conference on Document Analysis and Recognition* | Beijing, China | 18-21 Sep 11 |
| **IJCB 2011** | *IEEE/IAPR International Joint Conference on Biometrics* | Washington, DC, USA | Late Sep 11 |