

BMVA News

The Newsletter of the British Machine Vision Association and
Society for Pattern Recognition

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<http://www.bmva.org/>

BMVA News¹ is published every three months. Contributions on any activity related to machine vision or pattern recognition are eagerly sought. These could include reports on technical activities such as conferences, workshops or other meetings. Items of timely or topical interest are also particularly welcome; these might include details of funding initiatives, programmatic reports from ongoing projects and standards activities. Items for the next edition should reach the Editor by 10 March 2011.

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Editorial: *Progress or Breakthroughs?*

Just as this is the time of year when we look forward and make our New Year resolutions, so also it's the time when I feel I ought to be making pronouncements about progress in our field. This is no easy thing to do, even if I chicken out of making predictions for the future. In fact, getting a good perspective on past developments is quite difficult. It would be a nice start if I could list all the breakthroughs that have been made in the subject over the past year amid the many hundreds of papers that have been published. Then we could at least read them thoroughly and keep up with the subject with minimal effort. Unfortunately, it's hard to know which are the breakthrough papers. Really, it often only becomes clear much later that paper X was a breakthrough and that paper Y really helped people to leapfrog whole tranches of anticipated work. In general I like the idea that mathematical developments are the more important, as they often allow one to move to a new hitherto unexpected place – or even one which was counter-intuitive: theory of this sort can be incredibly formative, and can lead to a lot of work that one would otherwise not have contemplated. (Take $E = mc^2$ as an example, which alas doesn't seem to have any analogue in machine vision: in fact the closest instance I can think of is Haralick et al.'s penetrating 1987 paper which unified the study of morphology and removed much of the mystique from that area.)

In fact, on trying to model its development I get the feeling of a subject moving forward in quantum steps rather than quantum leaps, through a great number of valuable contributions by many individual workers and groups rather than via major breakthroughs. This isn't meant to be a collective personal attack on my respected colleagues, or on the readership of BMVA News, but just a gut feeling. Furthermore, it is backed up by a

survey of surveillance techniques that I have recently been undertaking, in which many ideas are followed up by many people, and these have been progressing in a fairly complex way for upwards of a decade, achieving improved levels of performance at each stage – though one hesitates to mention the word “breakthrough”.

The closest I have come to identifying a breakthrough in that area during 2010 is the work of Pflugfelder and Bischof for tracking pedestrians between *non*-overlapping fields of view. This required some smart enabling mathematics, and it allowed 4m of clear space on the ground plane between camera views. It is discernibly a breakthrough since no-one had ever done this before. Let us next look at the different example of digital cameras that could (around 2005) identify 3 faces in the viewfinder, and the current claim of a staggering 35 faces being identifiable: actually, the important claim is the one made in 2005, because 3 is infinity times 0, but 35 is only ~12 times 3 and it therefore represents only a small advance, not worthy of the term ‘breakthrough’. (Nevertheless, I find it ‘gob-smacking’ if not absolutely ‘amazing’!).

At this point I see that I’m out of space, so I’ll end by wishing you all a Happy New Year, and every success in achieving breakthroughs (though if you all succeed, they obviously won’t be ...).

Professor Roy Davies
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BMVA Distinguished Fellow 2011 – Call for Nominations

The BMVA Executive Committee seeks nominations for the *Distinguished Fellow 2011* award. This prestigious award is given to one person only each year in recognition to his/her services to the British Machine Vision community. The nominees must be distinguished researchers, based in the UK, who have contributed significantly to the field of research and the reputation of the British Machine Vision Community both nationally and internationally. Nominations, *with a few lines of rationale*, should be sent to Professor Roy Davies, Chair of the Distinguished Fellow Award Panel, by [20 January 2011](#).

Professor Roy Davies
Chair, Distinguished Fellow Award Panel
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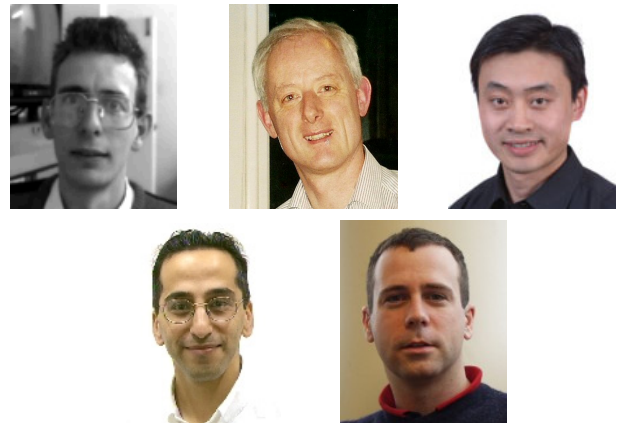
IAPR Fellowship Awards 2010

The IAPR Fellow Award was introduced in 1994 and since then is biennially conferred to acknowledge distinguished contributions to the field of pattern recognition and to IAPR activities. The election process is made over the two years which precede each ICPR and awards are made at the ICPR conference banquet. According to the IAPR Constitution and Bylaws, the number of fellows elected every two years must not exceed 0.25% of the total IAPR membership. Both service to IAPR and scientific contributions to the field of pattern recognition are taken into account in the selection process.



Those who were awarded this year, and work within the UK, together with their citations, are:

- Timothy Cootes (Manchester University) “*For contributions to the development of statistical models of shape and appearance*”
- John Illingworth (Univ. of Surrey) “*For contributions to image processing and computer vision*”
- Xuelong Li (Birkbeck College, University of London) “*For contributions to pattern recognition and image analysis*”
- Majid Mirmehdi (University of Bristol) “*For contributions to image understanding and computer vision and services to IAPR*”
- Richard Wilson (University of York) “*For contributions to structural pattern recognition*”



Given that there were 17 recipients of this prestigious award in 2010, internationally, the UK representation was extremely high and is reflected in the sustained achievements of these new Fellows. They will all now wear a rather smart new lapel pin, pictured above, which is new this year. Well done to all!

Professor Mark Nixon
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Bernard Buxton – BMVA Distinguished Fellow 2009

Professor Bernard Buxton's web page is a modest affair, belying the powerhouse of activity that is its author. He has one of the UK's largest academic portfolios as UCL's Dean of Engineering, with responsibility for hundreds of staff, and with accounts resembling a telephone directory. Under his deanship, UCL has moved from being an internationally highly respected Engineering school to being in the very top international league.



Bernard Buxton – *BMVA Distinguished Fellow 2009*

He started as a physicist, studying at the Cavendish laboratory in Cambridge, and then at the H.H. Wills laboratory at the University of Bristol, and worked at both institutions before joining the Long Range Research Laboratory at GEC in 1981. While there he authored some very important papers, including early work with Steve Jones in what would become bioinformatics, as well as with David Murray on Markov random fields (MRFs), one of the key tools in modern computer vision. While researching diverse areas from cabbage counting to energy optimisation, from biological perception to tangling with the trifocal tensor, he was also a keen enthusiast for the promulgation of computer vision, playing key roles in the founding of BMVC, ICCV, and in the early running of ECCV. It is in no small part thanks to Bernard that these conferences represent the pinnacle of our field, and indeed have prestige matching the best journals.

His international collaborations continued through large EU projects, both at GEC and beyond, notable among these being "VOILA" and "FIRST". In 1994, Bernard became Professor of Information Processing Systems in the Department of Computer Science at UCL, where he

led the Vision, Imaging and Virtual Environments research group, which grew to become the largest in the Department, with over £5M of funded research at that time. What is perhaps most notable about Bernard, however, is the enthusiasm with which he mentors young researchers. His founding of the vision and graphics masters at UCL, now in its 15th year, has contributed hundreds of highly trained and highly motivated alumni to the world computer vision community, further enhancing the international reputation of UK computer vision. Furthermore, his PhD students are academics throughout the world, and indeed we are lucky in the UK when we are able to retain some of them, so great is the value of a Buxton education. As chairman of the British Machine Vision Association, an organisation of which he was one of the founding fathers, it therefore gives me very great pleasure to announce that Bernard Buxton is our 2009 Distinguished Fellow.

Dr Andrew Fitzgibbon
BMVA Chair
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BMVA Sullivan Thesis Prize – Call for Nominations

The BMVA annually awards a Best Thesis prize (to commemorate the contribution made by the late Professor Geoff Sullivan) to the best doctoral thesis submitted to a UK University, in the field of computer or natural vision. Recommendations for the prize are considered by a Selection Panel appointed annually by the BMVA Executive Committee, and the prize is presented at the British Machine Vision Conference, held annually during September.

The BMVA Executive Committee now seeks nominations for the Sullivan Prize for theses examined during the calendar year 2010. Please send any nominations to the BMVA Secretary, Dr Neil Thacker (secretary@bmva.org) by 1 March 2011. Nominated theses should be made publically available through the BMVA thesis archive prior to nomination. For further information, see <http://www.bmva.org/sullivan>.

Dr Andrew Fitzgibbon
BMVA Chair
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BMVC 2011 – Call for papers

Dundee, Scotland, 29 August–2 September 2011

The British Machine Vision Conference is one of the major international conferences on machine vision and related areas. Organised by the BMVA, the 22nd BMVC will be held in Dundee. The conference is single-track, allowing easy access to all presentations, poster and oral.

Invited speakers

- David Fleet, University of Toronto, Canada: *Tracking and Understanding Human Motion*
- Nikos Paragios, École Normale Supérieure, Paris, France: *Shape Grammars and Procedural Modeling towards Large Scale 3D Modeling and Reconstruction*

Pre-conference tutorial

- Matthew Blashcko, University of Oxford: *Structured prediction and inference in computer vision*

Paper submissions and topics

Authors are invited to submit full-length, high-quality papers on image processing and machine vision. Topics include, but are not limited to:

Biomedical applications
 Document processing and recognition
 Image processing techniques and methods
 Model-based vision
 Motion, optic flow and tracking
 Person, face and gesture tracking
 Segmentation and features
 Statistics and machine learning for vision
 Stereo, calibration and geometry
 Texture, shape and colour
 Video analysis
 Vision for visualisation and graphics.

Important dates

Paper submission deadline: 15 April
 Notification of acceptance: 28 June
 Camera ready papers: 1 August
 Pre-conference tutorial: 29 August
 Main conference: 30 August–1 September
 Computer vision PhD workshop: 2 September

Computer Vision PhD Workshop

The BMVC Postgraduate Workshop will take place on Friday 2 September. This workshop has now become a regular feature of BMVC. It gives PhD students in computer vision an opportunity to network and start collaborations at an early stage in their research careers. A separate call for papers will be circulated.

Further information

- BMVC 2011 website:
<http://www.computing.dundee.ac.uk/bmvc2011/>
- Contact email: bmvc2011@computing.dundee.ac.uk
- Conference Chairs: Manuel Trucco, Stephen McKenna, Jesse Hoey

Stephen McKenna
 University of Dundee
 email: stephen@computing.dundee.ac.uk

Travel Bursaries for International Conferences

In order to encourage UK postgraduate students to present work at international conferences, the BMVA issues bursaries to help cover the travel and conference costs. A number of such bursaries, of up to £750 each, are issued annually. In return, the recipient is expected to write a report on the conference for inclusion in the newsletter, or do equivalent work for the BMVA website as agreed with the bursaries officer.

To be eligible, you must be:

- a student at a UK university;
- a BMVA member;
- presenting work at a major conference within the BMVA's remit.

For further details including method of application, see the following BMVA website at:

<http://www.bmva.org/w/bursaries>

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 University of Essex
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BMVC 2010 Student Workshop Prize

Unfortunately, our coverage of the BMVC Student Workshop was limited, and I did not receive word for some time either than a prize was awarded or who it was awarded to. Now that I do have the crucial information, I would like to congratulate Vijay John, winner of the best paper at the PhD Student Workshop!

Professor Roy Davies
 Editor, BMVA News
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Reports on ICPR 2010

The 20th International Conference on Pattern Recognition (ICPR 2010) was held at the Istanbul Convention & Exhibition Centre in Turkey on 23–26 August 2010. The city of Istanbul, historically known as Constantinople, has been the cultural, economic, and financial centre for Roman, Byzantium and Ottoman Empires. It is attractive both for the beauty of the surrounding landscape and for its historical treasures. Moreover, it is the only bi-continental city in the world, forming a bridge between Europe and Asia divided by the Bosphorus. As a result, at every corner of this fascinating capital you can experience a unique mixture of European and oriental culture.

Prior to the main conference, one day of tutorials, workshops and contests took place at the Military Museum just next to the conference centre. Since my research tackles the problem of action recognition from videos, I found the contest “Semantic Description of Human Activities” (SDHA2010) and workshop “Human Behaviour Understanding” of especial interest. In particular, the keynote talk of Ivan Laptev about recognising human actions in the wild was really impressive and engaging.

The four days of the main conference were fully packed with 6 parallel tracks including “Computer Vision” and “Pattern Recognition and Machine Learning” tracks which were the most relevant to my research. In total there were 77 oral and 14 poster sessions. From an outstanding 2140 submissions, 385 papers were accepted for oral presentation (18%) and 762 as posters (36%) with an overall acceptance rate of 54%. The main conference attracted around 1250 delegates from 53 different countries. The first day was quite difficult for everyone, since people were not familiar with the layout of the conference building. People found it quite tricky to hop between sessions even though the building was well signposted. However, in the following days the initial panic came under control and people were able to change between sessions smoothly.

At the conference a number of awards were announced including the K.S. Fu Prize for Professor Horst Bunke, who gave an excellent plenary speech “Towards the unification of structural and statistical pattern recognition” and show how to make algorithmic tools originally developed for feature vectors applicable to symbolic data structures. Dr Antonio Torralba was awarded the J.K. Aggarwal Prize and gave the last plenary talk of the conference about “Scene and object recognition in context”. In his presentation, he explained the advantages of using contextual relationships between objects in detecting and recognising these objects in complex and realistic

images. Finally, the best scientific and IBM student awards were given in each track separately. While all these papers were impressive and high quality, I found the work of Sternig et al. entitled “Inverse multiple instance learning for classifier grids” particularly interesting. The paper deals with the problem of object detection from static surveillance cameras and demonstrates state of the art pedestrian detection results on challenging publicly available datasets. This was achieved by adapting ideas from Inverse Multiple Instance Learning within a boosting framework.

Although many papers were really appealing, I memorised especially two papers which address the problem of recognising human interactions in videos which has been of very limited interest by the research community until now. These papers are the winner of SDHA2010 contest “Variations of a Hough-voting action recognition system” by Waltisberg et al. and the poster “Group activity recognition by Gaussian processes estimation” by Zhongwei et al.

Fortunately, I gave my oral presentation about “Temporal extension of Laplacian eigenmaps for unsupervised dimensionality reduction of time series” on the first day of conference in the dimensionality reduction session, so afterwards I could relax and enjoy the rest of the conference with a clear mind. My talk went quite well and I had extremely useful and positive feedback from the audience.



Traditional Turkish performance at the banquet

The conference was accompanied by two social events, i.e. a welcome banquet at Bogazici University and an official gala dinner at Ciragan Palace Kempinski where the award ceremony took place. The conference participants could enjoy a variety of Turkish cuisine as well as traditional dance and music performances. In my opinion, the first event was superior since we were free to walk around and socialise with different people, whereas the gala dinner was overcrowded and in practice we had to sit at the same table for most of the evening.



Blue Mosque (Sultan Ahmed Mosque), Istanbul

In my view, the conference was very well organised and the quality of the convention centre infrastructure was remarkable. The poster boards were carefully located, so it was easy to move around and speak to researchers. The conference staff was very friendly and always willing to help. Moreover, Istanbul itself is an extraordinary city with unforgettable attractions such as Blue Mosque (Sultan Ahmet Mosque), Topkapi Palace, Dolmabahçe Palace, Hagia Sophia and the Grand Bazaar.

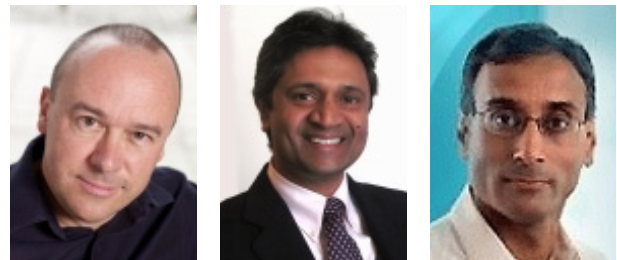
Overall, I really enjoyed the conference and my stay in Istanbul. I would like to thank the BMVA for giving me the opportunity to take part in this event which was an extremely valuable experience and I will definitely benefit from it in my scientific career.

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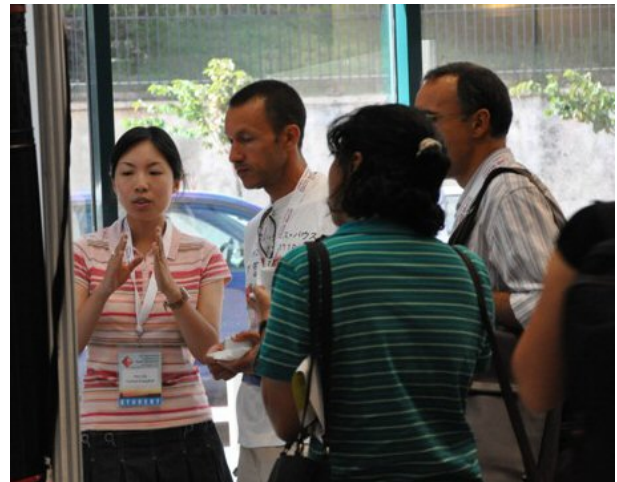
The 20th IEEE International Conference on Pattern Recognition (ICPR) 2010 was held in Istanbul, Turkey during 23–26 August 2010. The conference was organised at the Istanbul Convention & Exhibition Centre (ICEC). This prestigious pattern recognition conference received 2140 submissions, of which 1162 papers were accepted (385 for oral and 777 for poster presentation). The main conference had a very strong technical program, with technical sessions of six parallel tracks on computer vision, pattern recognition and machine learning, signal, speech, image and video processing, biometrics and human computer interaction, multimedia and document analysis, processing, and bioinformatics and biomedical applications.

On the first day in the opening session, Horst Bunke, from Computer Vision and Artificial Intelligence IAM, University of Bern, Switzerland gave us the K.S. Fu Prize lecture “Towards the Unification of Structural and Statistical Pattern Recognition”. This talk gave an overview of the development of the field of structural

pattern recognition and shows various attempts to bridge the gap between statistical and structural pattern recognition. The conference tracks are parallel, after the lecture, I went to the Image Analysis oral sessions, and found Chen’s talk “Minimizing Geometric distance by iterative Linear Optimization” was very interesting. In the afternoon, Christopher Bishop from Microsoft Research Cambridge gave us the plenary talk entitled “Embracing Uncertainty: The New Machine Intelligence”. He described a new paradigm for machine intelligence, based on probabilistic graphical models, which has emerged over the last five years and allows strong prior knowledge from domain experts to be combined with machine learning techniques to enable a new generation of large-scale application.



Invited speakers: Christopher M. Bishop (left), Shree K. Nayar (middle) and Prabhakar Raghavan (right)



Wei Jia explains the details of her work.

I was given the opportunity to present my work on “Classifying Textile Designs using Bags of Shapes” during the poster session after the invited talk. I very much enjoyed explaining my work, as I answered many interesting questions and obtained the valuable feedback and suggestions. At last, I also make new contacts with many researchers who are working on similar topics. The long plenteous day ended with a welcome reception dinner in the Bogazici University.

On the second day, Shree K. Nayar from Columbia University, USA, gave a plenary talk entitled

“Computational Cameras: Redefining the Image”. He demonstrated that the computational camera uses optics to select rays from the scene in unusual ways, and an appropriate algorithm to process the selected rays which make us experience the visual world in rich and compelling ways. After the keynotes, I went to the Object Detection and Recognition oral sessions, and found some of the talks very fascinating, such as Jiang in his paper proposed a new biologically inspired feature for scene image classification, and Su in his paper used an RST-tolerant shape descriptor for object detection.



Welcome dinner



The K.S. Fu Prize was awarded to Horst Bunke.

On the third day, Prabhakar Raghavan from Yahoo gave a plenary talk entitled “The quantitative analysis of user a behaviour online data, models and algorithms”. They use a concrete technical example from image search results presentation, developing in the process some algorithmic and machine learning problems of interest in their own right, and then use the example to motivate the kinds of studies that need to grow between computer science and the social sciences. The talk was very impressive. After lunch break, I went to the Graphical Models and Bayesian Methods oral sessions. I found

Paiva’s presentation “Using sequential context for image analysis” particularly interesting.



The J.K. Aggarwal Prize was awarded to Antonio Torralba.

The conference banquet was held in Ciragan palace after all the sessions finished that day. It was announced at the banquet that the next ICPR will be held in Tsukuba International Congress Center, Tsukuba Science City, Japan, in 2012. At the banquet, the K.S. Fu prize was awarded to Horst Bunke, and the J.K. Aggarwal prize was awarded to Antonio Torralba. In addition, the Piero Zamperoni Best Student Paper Award (PZBSPA), the Best Biometrics Student Paper Award (BBSPA), the IBM Best Student Paper Awards, the Best Industry Related Paper Award (BIRPA), and the Best Scientific Paper Awards were presented.

The final day of the conference kicked off with oral sessions in different tracks. I went to the classification oral sessions, and found the topic “Data Classification on Multiple Manifolds” and “Unsupervised Ensemble Ranking: Application to large-Scale Image Retrieval” interesting and impressive. After the coffee break, Antonio Torralba gave the J.K. Aggarwal Prize Lecture “Scene and Object Recognition in Context”. He described his recent work on visual scene understanding that tried to build integrated models for scene and object recognition, emphasising the power of large database annotated images in computer vision.

More information about the 20th ICPR can be found on the conference website, <http://www.icpr2010.org/>.

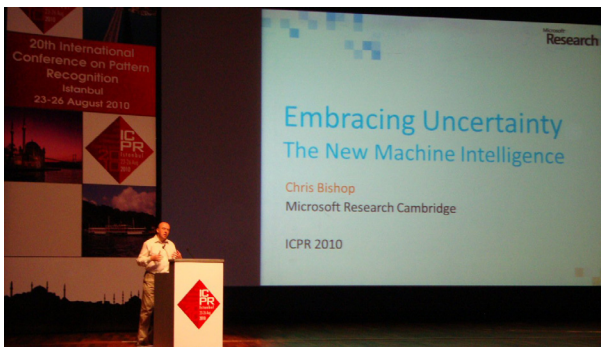
Finally, I would like to thank the BMVA for a generous travel bursary which made it possible for me to attend this conference.

Wei Jia
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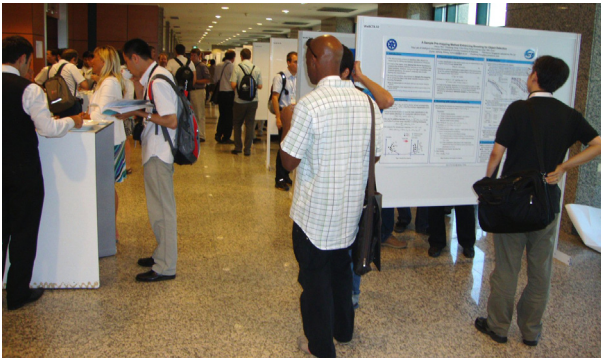
Gallery of Pictures Taken at ICPR 2010



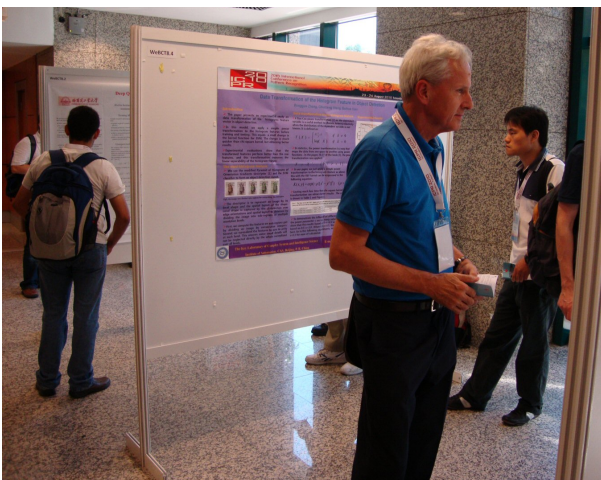
Istanbul is home to some unique, elegant architecture.



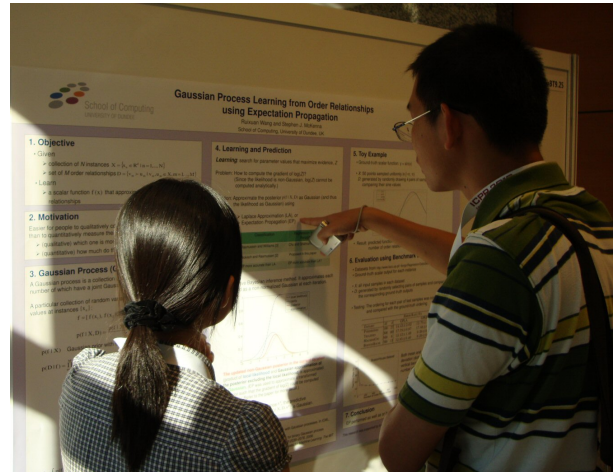
Presentation by invited speaker Chris Bishop



Posters receding into the distance ...



Josef Kittler takes time over an interesting poster.



Delegates studying the details



Traditional dancing at the banquet



The outdoor atmosphere was especially attractive.

Thanks are due to Majid Mirmehdi (Bristol University) and Hui Fang (Swansea University) for taking a wealth of interesting photographs while at ICPR – from which this selection was made. I am also indebted to Hui Fang for taking the excellent picture of Majid Mirmehdi and Tim Cootes, who received their IAPR Fellowship awards at ICPR (see page 8 of the last issue).

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Report on ITAB 2010

The 10th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB) was held in Corfu, Greece, on 2–5 November 2010. ITAB 2010 aimed to cover the state of the art of information technology applications in biomedicine, targeting how to offer patients specific health services. The theme of the conference was “Emerging Technologies for Patient Specific Healthcare”. 217 papers were accepted for publication out of ~300 submissions.

The conference was opened on 2 November by Professor Dimitrios I. Fotiadis (Conference Chair, University of Ioannina), after which Professor Metin Akay (University of Houston) was given an honourable award for his worldwide contribution in the field of Biomedical Engineering, and he gave a keynote speech.



Delegates discussing posters



Wenda He (Aberystwyth University) receiving a best student paper prize

ITAB 2010 covered a large range of topics from Biomedical Signal and Image Processing and Analysis to Virtual Reality in Medicine and Surgery. The technical programme of the conference was impressive,

with three oral sessions running in parallel. I was struggling to choose one from so many interesting sessions. The conference was organised in 2 poster sessions and 30 oral sessions.

Some highlights of the conference were 7 keynote speeches. Professor Metin Akay gave a talk entitled “Advances in Neural Engineering Research and Education”, devoted to neural engineering and informatics related research including recent advances in neural engineering, cognitive engineering, and neural informatics. Professor Bruce Wheeler (University of Florida) presented “Brain on a Chip: Can We Build One?”. Professor Yuan-Ting Zhang (Chinese University of Hong Kong) discussed “Cardiovascular Health Informatics: Opportunities and Challenges”. Professor Paolo Bonato (Harvard University) gave a talk on “New Frontiers in Wearable Technology and its Medical Applications”. Professor Sergio Cerutti (Politecnico di Milano) showed their work on “Cardiovascular variability signals: towards a quantitative assessment of the complexity of autonomic nervous system”. Professor Jose Principe (University of Florida) gave a talk on “Cognitive Integration of Prosthetic Devices: Is it Feasible?” to discuss several key technological and scientific developments. Professor Paolo Dario (Scuola Superiore Sant’Anna) showed his point of view on “Frontiers of Biomedical Robotics”.

I presented my paper entitled “A Modified Fuzzy C-Means Algorithm for Breast Tissue Density Segmentation in Mammograms” in the third oral session on Biomedical Signal and Image Processing Analysis. My presentation went well and I answered several questions from the audience and the chair. I am very grateful to my supervisor, Professor Reyer Zwiggelaar, for his guidance and encouragement to overcome my nervousness on my first oral presentation at an international conference.



Traditional Greek dance performance at the gala dinner

The conference was organised successfully, and everything ran well. Traditional Greek food was served at the welcome cocktail and the conference banquet.

The banquet began with traditional Greek dance performances and was accompanied by local music and song. Everyone had a good time. Best Student Paper Prizes were awarded at the banquet. Six finalists were selected from 97 papers with the paper entitled “Mammographic Parenchymal Pattern Segmentation: A Clinical Evaluation” presented by Wenda He (Aberystwyth University) receiving one of the best student paper awards.



Delegates dancing at the banquet

This was the first international conference that I had ever attended. It was beneficial and invaluable to me, as I got feedback on my research from the international community. Moreover, it provided me with a precious opportunity to meet people with similar research interests and to know the state of the art of information technology and applications in biomedicine.



A view of Corfu island

Finally, I would like to thank BMVA and the Gooding Fund for providing me with financial support and the opportunity to attend ITAB2010 and present my research.

Zhili Chen
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Report on Uncertainty in AI 2010

The conference on uncertainty in artificial intelligence (or UAI) is entering its 26th year. With a strong emphasis on graphical models, UAI is a cross discipline conference that provides the opportunity for machine learning and AI researchers from many fields to learn from one another.

I had been excited to learn that the conference at was to be held in a casino on Catalina Island, off the coast of LA. I set off expecting sunny beaches and professors gambling away graduates' stipends. I arrived to find thick fog, and that the 'casino' was in fact an old theatre, so named because a bowdlerised translation of 'casino' from the Italian is 'place of entertainment'.²

Including the workshops, UAI was a one track, 4-day conference. These workshop provided welcome perspectives from outside computer vision on some of the more exciting problems we are currently facing, including learning from incomplete data, and use and predictive power of crowd sourced data.

While many of the talks and posters were interesting, it was often hard to find suitable vision applications that would benefit from these different approaches. A notable exception was Approximating Higher-Order Distances Using Random Projections by Ping Li et al. This work showed that the performance of simple nearest neighbour classifiers could be reliably improved by moving to a higher order distance such as the L_6 , or L_8 norms rather than using an L_2 norm. It also proposed efficient techniques for the calculation of these norms.

David Storke's banquet talk provided fascinating insights into the use of computer vision techniques to understand how, and what, the old masters were really painting. In particular, he demolished my belief that many of the old masters needed projection techniques – such as the camera obscura – to produce their most realistic works.

Unquestionably, the star of the show was Judea Pearl, who, after a hiatus, has resumed his work on causality, with three publications at UAI this year alone.

I would like to thank BMVA and UAI for their generous support, which made it possible for me to attend this conference.

Chris Russell
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²I am reliably informed by my colleagues that a more idiomatic translation would be 'brothel'.

Reports on ICIP 2010

The 17th International Conference on Image Processing (ICIP) was sponsored by the IEEE Signal Processing Society and held in Hong Kong on 26–29 September 2010. ICIP has a world-renowned reputation within the image processing community. This year, the total submissions reached a record high (over 2600), of which only ~45% were accepted for the scientific sessions.

The conference host, Professor Wan-Chi Siu (HK Polytechnic University), welcomed all delegates at the reception, and thanked the delegates for their contribution to the conference in developing novel techniques for image processing, and for their willingness to participate.

Three keynote speakers shared their understanding of the past and current achievements in the field of image processing, as well as their visions of future trends. Professor T.F. Chan (HK University of Science and Technology) discussed “Continuous Convex Relaxation Methods for Image Processing: Optimal Solutions and Fast Algorithms”. Professor T.N. Pappas (Northwestern University) gave a talk on “Visual Signal Analysis and Compression: Rethinking Texture”. Professor K.J. Ray Liu (University of Maryland) showed his vision on “Multimedia Social Networking: A New Paradigm for Signal and Image Processing”.

ICIP is intended to have a broad scope, including advances in fundamental image processing techniques, new algorithms and/or technologies for image processing, analysis of specific applications etc. Areas of coverage include biometric, pattern recognition, medical image processing etc. Key concepts of the fundamentals of image processing were thoroughly explained in some outstanding papers. Many theories are complemented and consolidated with numerous practical examples and code fragments. This practice will be further encouraged as ICIP 2011 will introduce a “Reproducible code available” label, where authors will make their code available (e.g. Matlab, Java, online applications) along with their papers and a best code prize will be awarded. It was estimated that over 1,000 participants joined in the combined technical program and product exposition, as well as other special events.

The cultural exhibition had fifteen booths demonstrating aspects of traditional Chinese culture (e.g. egg roll making, Chinese knotting, floor doll making). This was followed by the conference banquet where Chinese delicacies were served; and the Huawei Best Student Paper Awards were announced at the conference banquet. The 18th ICIP (11–14 September 2011) will be

hosted by Professor Benoit Macq, from the Université Catholique de Louvain, Belgium.

I had many rewarding experiences by attending ICIP 2010, where world leading researchers presented technological advances and research results in the fields of theoretical, experimental, and applied image and video processing. What’s more, it was an opportunity for me to gain constructive feedback on my presented paper, to network with other researchers, and to branch out my research interests and enrich my experience.



Hong Kong Victoria peak view

I would like to thank BMVA and RIVIC (the Research Institute of Visual Computing) for their funding and supporting me to attend ICIP 2010 in Hong Kong.

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This year, **the IEEE International Conference on Image Processing (ICIP)**, the seventeenth in the series that has been held annually since 1994, took place at the spectacular Convention and Exhibition Centre in Hong Kong. The event was held over 4 days, 26–29 September, during which 1,185 papers were presented (46.6% of the total submissions), organised into 57 lectures and 58 poster sessions.

The conference began on Sunday with a day of tutorials. There were 10 sessions of 4 hours each, and they covered topics ranging from video tracking to human behaviour, from the use of sparse matrices to the new techniques for the 3D television.

I attended the tutorial Video Processing Techniques for 3D Television, presented by Yo-Sung Ho from Gwangju Institute of Science and Technology (GIST), Korea. After a brief overview of stereo systems and some state-of-the-art techniques for producing 3D

movies, the talk focused on the up-coming technology for 3D screens, which will allow the user to see a projected scene from different points of view, depending where one sits, and essentially without 3D glasses. Although the talk did not go into too many details, it was interesting to realize the problems that have arisen for the use of these new techniques and the solutions that have been taken until now. Indeed, many problems, especially about video compression, are still open problems.

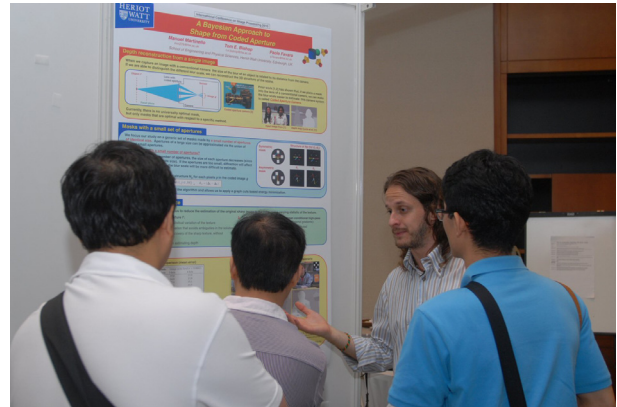
Each of the three days of the main conference was opened with a plenary talk, given by a top scientist in the field of Image Processing, such as Tony F. Chan, president of Hong Kong University of Science and Technology, who discussed Continuous Convex Relaxation Methods for Image Processing: Optimal Solutions and Fast Algorithms, on the first day. The talk described the idea of making a non-convex problem into a convex one, in order to produce more robust and faster algorithms for real-world applications.

Although this is a complex topic and one needs to have a fair mathematical background to clearly understand it, the presentation was enjoyable, comprehensible, and surprisingly easy to follow.



People attending the plenary talk of Tony F. Chan

I tried to absorb as much as possible of the incredible and vast amount of work on display at the conference, by attending many presentations, even if they were not directly related to my research area. The talks were delivered very well, and some were even inspirational. If I had to select one talk amongst all of them, I would be drawn to the stimulating talk given by Peter Hillman from Weta Digital Ltd, a New Zealand based company which became very famous recently for the visual effects in the movie Avatar. The title of the presentation was Issues in Adapting Research Algorithms to Stereoscopic Visual Effects, and Mr. Hillman described the main issues the company has found during the production of the movie. I think it is very beneficial for researchers to attend at such talks, as this allows one to establish the interests of companies and the types of challenges they are trying to solve.



Manuel Martinello during the presentation of his work at the conference

During Wednesday 29, the last day of the conference, I presented my work as a poster presentation. My paper, entitled "A Bayesian Approach to Shape from Coded Aperture", describes a novel method to extract depth information from just a single image. If one places a known mask on the camera lens when taking a picture, it is possible to establish the distance of each object in the scene from the camera by just post-processing the captured picture. The presentation was successful and many people stopped and asked questions about the work; others were interested in the hardware I brought with me to show the camera prototype and some more results on screen. I also received some constructive suggestions to improve my work.



A performance during the banquet at ICIP 2010

This was the first conference I have attended during my PhD and overall it was a very beneficial experience for me and my research. During my poster presentation and the organised social events on Sunday and Tuesday evening I had the chance to network with experts in my field. I also gained valuable feedback on my work. Moreover, since I am in the last year of my PhD, it was very useful to meet others working in the same area, in terms of establishing contacts that may develop into future collaborations or placements.

Finally, after attending a considerable number of varied talks I was also able to learn some valuable communication and presentation skills.

Although, in my opinion, there was limited amount of time to truly absorb the huge amount of work that was presented, I would strongly suggest attendance at future ICIP conferences. The event as a whole leaves some inspirational ideas that may one day evolve into something significant!

Finally, I would like to thank the Royal Academy of Engineering and the BMVA for generous contributions which gave me the opportunity to travel and present my research.

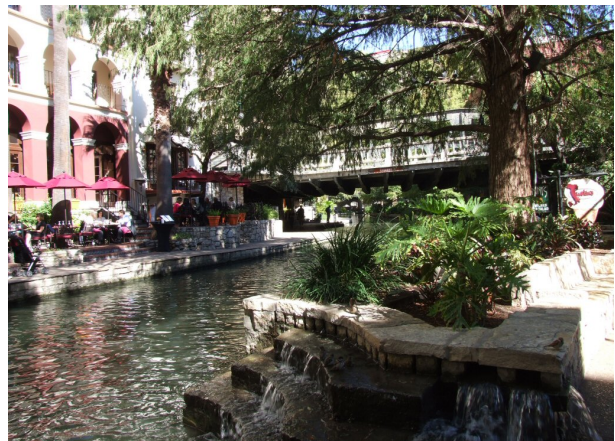
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Report on 18th Colour Imaging Conference 2010

The eighteenth Color Imaging Conference (CIC), organised by the Society for Imaging Science and Technology (IS&T), took place on 8–12 November 2010 at the Sheraton Gunter Hotel in San Antonio, Texas. San Antonio is the second largest city in Texas, not far away from the capital Austin and from the border between the United States and Mexico. While it may not be very famous abroad, the place is a symbol for the independence of Texas, which was a country for about 10 years before joining the United States. Downtown San Antonio develops in two levels, connected by staircases and lifts around the city. Riverwalk, at the bottom, is a few miles long and accessible only by pedestrians, although the main area is perhaps only a mile and features bars, restaurants and an open air theatre with the stage on one side of the river and the auditorium on the other. Street level is at the top, where most of the shops and hotels are located. The weather is sunny and warm throughout the year, and despite the chilly evenings, it was perfect for a break from the impending British winter (I am not sure why San Antonio was chosen as a venue for the conference but this may well have played a part).

The CIC is the world leading conference in colour science and has a biannual cousin in Europe called the CGIV conference (Color in Graphics, Imaging and Vision). While imaging is an important part of its program, the topics covered span from printing technologies to psychophysics. The organisation also normally offers various courses, which this time took place on the first two days. On Monday, the whole day was dedicated to the “Introduction to colour science and imaging short course”, held by Professor Robert Hunt

and Rob Buckley, then on Tuesday, several two and four-hour courses took place concurrently in the morning and afternoon. I attended the courses on “computational photography” and “spectral imaging workflow”. The technical program developed in the remaining three days on nine presentation sessions and one poster session. Lighter and social activities were also organised – one evening lecture looked at holograms and a conference reception was held at the Southwest School of Art and Craft of San Antonio, followed by a visit to the buildings of the school and a guided boat tour on the river in downtown San Antonio.



Riverwalk



Open air theatre

Wednesday’s keynote was a thorough overview on the latest advancements on computational photography. The speaker, Dr Ramesh Raskar, went through what he and the rest of the community would like to be possible: full control of the image after capture (focus, exposure, aperture, etc), blur removal, and full lighting control with a single flash. All these technologies are far from being fully accomplished, but ongoing research has been able to achieve incredible results. Also covered was the fascinating field of photography “around the corner”, which is still in its very early stages. This technology (“femtosecond transient imaging”) was

presented at ICCV 2009, and at the moment is only able to capture some photons of light coming from around a corner, but this is still a very promising result.



A presentation in progress

After the lunch break, some time was dedicated to a discussion on how to attract young students to colour science and to science in general. At the opening, Dr Mark Fairchild presented his work on a textbook and website (www.whycolor.org) that are aimed to be of interest to students of all ages, from primary school to undergraduate level. The talk was followed by a discussion led by a panel of six prominent colour scientists, who told how they were brought at some point in their life to the job they are doing now, and shared their own thoughts on how to raise the interest of students in basic sciences. The key message of the discussion was that a lot should be done in terms of arranging visits to schools or school trips to research laboratories. Two particularly pertinent observations came up during this session. First, Dr Sabine Süssstrunk (EPFL Lausanne, Switzerland) had strong views on the fact that a lot of work should be done to nurture the interest of children below the age of 12 in primary school, because later they will start to have social pressure on what is ‘cool’ and what is ‘uncool’ (and we all know in which category science usually falls). Second, someone pointed out that the School of Forensic Science of Lausanne has been overwhelmed by student applications in the past few years, in practice since the TV show CSI and its spin-offs became popular. Therefore, as Dr Patrick Emmel put it, to grow the popularity of sciences “we need our own CSI”.

On Thursday, the opening keynote by Dr Stephen Palmer was about “Ecological Valence and Human Colour Preference”. The presented study tries to understand which colours human beings tend to prefer and why, and the maybe unsurprising result is that we tend to like colours that we associate to ‘good’ things (e.g., people like blue because it reminds them of the sky in a sunny day). What is more interesting though is the bias that the subjects have in the same experimental setup after they are shown ‘bad’ things having colours

that are normally preferred. Additionally, the study introduced a model for colour preference that predicts quite accurately the average preference over a group of people (the individual preference varies too much to be predicted by means of such a model).

In the session “Capturing colour”, Dr Mark Fairchild presented an informal comparison between digital and film photography. The leading question was “Do we use digital photography only because it is more practical or because it is actually better than film photography?” The answer to this question is probably the first. His case study involved only two digital and two film cameras, and its outcome is that prints of film photos seem to be preferred to prints of digital photos; on the other hand, when displayed on a screen the result is inverted.



San Fernando Cathedral

Friday, the last day, had maybe the tightest schedule: four of the nine presentation sessions took place, plus a “late breaking news” session to conclude the conference. In the session, “A spectrum of clever colour curiosities”, an interesting talk by Dr Peter Morovič proposed the use of scrambled ICC profiles to distribute photos, with the intent of safeguarding the ownership and copyright of digital photos.

Most of the talks were recorded and should soon appear on <http://river-valley.tv/category/conferences/>. The next CIC conference will take place in San Jose, California, in November 2011.

I would like to thank the BMVA for funding my attendance to this event.

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Report on 2nd CIE Expert Symposium on Appearance 2010

The 2nd CIE Expert Symposium on Appearance (subtitle: "When appearance meets lighting ...") was held in Gent, Belgium on 8–10 September 2010. CIE is the French title of the International Commission on Illumination, which is devoted to worldwide cooperation and exchange of information on all matters relating to the science and art of light and lighting, colour and vision, photobiology and image technology. This conference was held in Catholic University College Sint-Lieven, organised by the Light & Lighting Laboratory. The conference took two and a half days. There were seven oral sessions and two poster sessions. Nearly one hundred people from world-wide attended this conference.

On the first day, after the introduction, the keynote speaker Monica Billger (Chalmers University of technology, Sweden) gave a talk about the aim of the conference which is to bridge over the gap between different research fields that all deal with light and colour. There were two sessions on the first day. The session "Colour Appearance" chaired by Ronnier Luo (University of Leeds, UK) was the first one and had the most speakers. This session was divided into two parts and eleven speakers gave their oral presentations on topics of colour and light. The second session "Measurement & Instrumentation" was chaired by Mike Pointer (University of Leeds, UK) and had five speakers. In this session, measurement of scales for visual appearance is studied in two different components: physically using suitable instruments and psychophysically obtained from human observers. After the oral sessions, the poster exhibition was held. A visit to the Light & Lighting Laboratory was also organised.

On the second day, the session "Gloss & Texture" was held first, chaired by F. Vienot (France). Our Lab concentrate on surface textures and we had three papers accepted to give oral presentations in this session. The first two papers were presented by my supervisor Professor Mike Chantler. One of them was about human's subjectivity to apparent randomness on surface textures and the other was about human's perception of

surface directionality. After these two papers about surface texture, the following three are about gloss. James Ferwerda gave a talk about gloss perception on the synthetic high dynamic range images. Then I gave my presentation, how mesoscale surface roughness affects perceived gloss. At the end of this session, Frederic Leloup, from the organising university, talked about their recent work on gloss perception with illumination geometry and luminance contrast. The sessions "Luminance & Glare" and "Luminance based Design" were held afterwards, in which several interesting talks were given on luminance experimental studies and applications in designing. There was another poster session at the end of the day.

On the third day, the last session "Lighting Comfort" included some works on lighting and visual comfort. They studied how light affects people in different atmospheres. Dr Mike Pointer, the chairman of 'CIE TC 1-72 Measurement of Appearance Network', gave summaries and interactive discussions in the closing session.

In general, the symposium was successful in every aspect. The talks, presentations and posters gave the attendees a great opportunity to communicate and get inspired. Moreover, the city of Gent is a nice place for academic research and conference: it is a historic city, peaceful and beautiful. Finally, thanks to BMVA for awarding me a student bursary for attending this conference.

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Vision meets Graphics: Sketch, Photography and Depiction

Call for Participation

<http://www.bmva.org/meetings>

One-day BMVA technical meeting in London, to be held on 30 March 2011.

Chairs: Paul Rosin and Yukun Lai (Cardiff University), John Collomosse (University of Surrey), Peter Hall (University of Bath)

Recent years have seen the convergence of computer graphics and computer vision. In particular, image processing and computer vision techniques provide

computer graphics with the means to create richer models and renderings than is practically possible when using purely synthetic models. Three (overlapping) streams of this convergence have become dominant:

- Image based rendering: instead of requiring a priori 3D scene models or 3D model reconstruction, image based rendering generates photorealistic new images from other images, often using large collections of captured photos or pre-rendered images.
- Expressive rendering and depiction: when applied to photographs the aim is to re-render imagery in an artistic style, e.g. painting, drawing, cartoon. Studying this process yields insights into visual structure that transfer to computer vision tasks such as sketch parsing and multimedia retrieval.
- Computational photography: aims to overcome limitations of traditional cameras with functions such as high dynamic range imaging, all-focus imaging, relighting, synthesising new views or impossible photos, motion magnification, etc.

This new area of computer graphics/computer vision convergence has many possible applications, such as augmented environments, videoconferencing, post-production of films, computer games, interactive TV, education and training, video-based consumer electronics and scientific imaging.

Topic areas of the meeting include but are not limited to:

- Computational photography
- Expressive rendering
- Graphics models for vision applications
- Image and video editing with semantic analysis
- Image synthesis using sketches/database
- Model acquisition from images and video, for graphics and visualisation applications
- Non-photorealistic rendering from images/video
- Non-traditional camera models
- Sketch models and sketch input
- Style transfer
- Vision for scientific visualisation
- Visual composition.

Please submit an extended summary (1-page A4: PDF) by email attachment (5Mb max please) to Paul Rosin (Paul.Rosin@cs.cf.ac.uk) by 24 January 2011.

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Medical Image Understanding and Analysis (MIUA) 2011

Call for Papers

MIUA 2011 will take place at King's College London on 14–15 July 2011. The conference website is:

<http://www.miua.org.uk>

Chairs: Bill Crum and Graeme Penney

Submission deadline: Monday 28 March 2011

MIUA is the principal UK forum for communicating research progress in image analysis applied in the medical and biomedical sciences. MIUA 2011 is the 15th in the series of successful annual meetings and will be held on the Guy's Hospital campus of King's College London. The meeting prides itself on attracting papers on a wide range of topics from a variety of viewpoints, offering many opportunities for discussion and inspiration.

Contributions from across the spectrum of medical image analysis – from technical advances to novel practical applications – are welcome. Imaging modalities of interest include, but are not limited to, MRI, CT, ultrasound, SPECT, PET, microscopy and video. Imaging applications of interest include but are not limited to cardiology, oncology, dermatology, ophthalmology, neurology and neuroscience, psychiatry, dentistry, fetal and neo-natal imaging, cellular imaging and microscopy. Analysis techniques of interest include but are not limited to registration, segmentation, classification, machine learning, tracking and guidance, augmented reality, image reconstruction and artefact removal. Contributions from both inside and outside the UK are welcomed and encouraged.

MIUA is a single-track conference with oral and poster presentations as well as eminent keynote speakers. All accepted contributions will be published and the full ISBN proceedings will be available at the conference and on-line. Please see the web-site at www.miua.org.uk for the latest news.

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