

BMVA News

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

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Editor: Professor Roy Davies
Department of Physics
Royal Holloway, University of London
Egham, Surrey, TW20 0EX
Tel: +44(0)1784 443497
Fax: +44(0)1784 472794
email: e.r.davies@rhul.ac.uk

<http://www.bmva.ac.uk/>

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 1 December 2004.

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Editorial: *First Colour Edition!*

Readers may be surprised that this issue of *BMVA News* has been produced in colour. I hasten to say that this reflects a special occasion: within the last month BMVA has had two distinct successes. Not only has its national BMVC conference – this time held at the University of Kingston – been a great success, but also it has organised and hosted the ICPR conference in Cambridge, and this has been a particularly significant achievement.

In fact, we have been hoping to hold ICPR in the UK for something like 30 years. I can remember Professor Mike Duff, chair of the earliest incarnation of the BMVA – the BPRA (British Pattern Recognition Association) – planning over a period of years to undertake this event. However, sadly over this period we seemed not to have sufficient clout in the IAPR, and other venues prevailed. Thus it was until Josef Kittler took up the baton four or five years ago – with, as we now see – complete success. The main problem in the end was that of housing the huge number of international delegates. While Cambridge clearly had enough Colleges to provide accommodation, sufficiently large lecture halls were a worry, though perhaps the salvation in this respect was the availability of the Guildhall and the old Corn Exchange Building, and the fact that with so many parallel sessions the central University lecture theatres were pretty much up to the task. However, another problem was how to provide a sufficiently large venue for the Conference Banquet. The ingenious solution to this was to go out into the countryside and hire the facilities of a vineyard! This was very pleasant, and there was a great sense of occasion, as the photos below will show.

The photos taken at BMVC also point to a warm and homely occasion, with an excellent reception and Conference Dinner at Hampton Court. This is why I wanted to include colour photographs in this issue. However, given the additional cost (which is nowadays a fraction of what it would have been in earlier times) this couldn't be allowed to set a precedent: this is something for our Executive Committee to consider over the coming months. In any case, I'm not sure that unaided, even with my new digital camera, I can produce enough topical pictures to justify extensive use of colour. I have pleaded in the past for help in producing any types of illustrations for *BMVA News* – be they photos, sketches, cartoons, or indeed other types of entry such as puzzles and crosswords, but very little such material has been sent in. (Can I beg again ...?)

But I digress: there is a third success we should be celebrating at this moment, and that is the CAWS system which has been used for managing the submitted papers and the reviews. This has been used for the past four BMVCs, and now also for ICPR. However, its real success can be seen from its application by totally different outside bodies such as the IEE, in their new VIE series of conferences. This package originated in, and is still run by Professor Chris Taylor's group (is there no end to his run of successes?!). So congratulations are due on that too. Incidentally, I am amazed how flexible CAWS is proving to be: a recent innovation was its use to combine absolute quality within its paper ranking system, by the simple mechanism of allowing reviewers to inflate their ranks to cover a notional ranking scale of 100. This immediately removed my own criticism that ranking is prone to bias that can only be overcome if BMVC's Area Editors have additional absolute information to go on in making their decisions.

Finally, it should be noted that BMVC is now internationally recognised as a high quality venue. This has the consequence of an increasingly large proportion of foreign papers – so much so that our own graduate students have less chance of having their papers accepted. This is the downside of high quality, and we may well be getting to the stage that something needs to be done so that our students have a better chance of getting published during their 3–4 years of PhD study. It is not good enough to say that journals such as *Pattern Recognition Letters* should take up the slack: (a) the publication process can take significant time, and (b) graduate students need oral feedback on what they are doing, so that their further studies can be redirected and honed towards immediate high quality targets.

Professor Roy Davies
Editor, *BMVA News*
email: e.r.davies@rhul.ac.uk

A Success for Maria Petrou



Maria Petrou has achieved a rare success, being one of only two women to be elected Fellow of the Royal Academy of Engineering this summer. A past chair of the BMVA Executive Committee, she is currently Professor of Image Analysis at the University of Surrey, and is well known to a good many of the UK Machine Vision community. No doubt the electing committee were particularly impressed by the insight and high practical value of Maria's work.

Professor Roy Davies
Editor, *BMVA News*
email: e.r.davies@rhul.ac.uk

BMVC 2004 Prizes and Awards

BMVA now has a good range of prizes to offer participants who present papers, posters and demos at BMVC. BMVC is also the venue where the prizes are presented and where the Distinguished Fellow and Sullivan Thesis prize for the previous year are awarded.

Industry Prize (shared) – CRS Ltd., £600:

- John Collomosse and Peter M. Hall, University of Bath, for a paper entitled "A Mid-Level Description of Video, with Application to Non-photorealistic Animation".
- Timor Kadir, Richard Bowden, Eng Jon Ong and Andrew Zisserman, Universities of Oxford and Surrey, for a paper entitled "Minimal Training, Large Lexicon, Unconstrained Sign Language Recognition".

Science Prize – BMVA £600:

- Christopher Kemp and Tom Drummond, University of Cambridge, for a paper entitled "Multi-Modal Tracking using Texture Changes".

Model-Based Vision Prize – Image Metrics, £600:

- Toni Tamminen and Jouko Lampinen, Helsinki University of Technology, for a paper entitled "A

Bayesian Occlusion Model for Sequential Object Matching”.

Best Poster Prize – BMVA, £300:

- Duncan Robertson and Roberto Cipolla, University of Cambridge, for a poster entitled “An Image-Based System for Urban Navigation”.

Best demonstration prize – Faraday Imaging Partnership (Sira) £250:

- Andrew Davison, University of Oxford, for a demonstration entitled “Interactions between hand and wearable camera in 2D and 3D environments”.

Sullivan Thesis Prize 2003 – BMVA, £300:

- Jonathon Starck, University of Surrey, for a thesis entitled “Human Modelling from Multiple Views”

Distinguished Fellow 2003:

- Professor Chris Taylor, Manchester University

The photographs show Chris receiving his award and making his acceptance speech.

BMVC papers

For the record, the number of papers submitted to BMVC this year was 273: 42 of these were accorded oral presentation, 56 poster presentation; there were also ~6 demonstrations; in addition, there were two invited papers, by Pascal Fua and Matthew Brand (the latter appears in one of our photos).

Professor T.J. Ellis
Kingston University
email: t.ellis@kingston.ac.uk

Mementos from BMVC 2004



Rapt attention from Jan-Olaf Eklundh, Matthew Brand and John Gilby as Tim Ellis prepares to make the presentations.



Groups of delegates arriving at Hampton Court for the BMVC Conference Dinner.





Duncan Robertson accepts the Best Poster Prize on behalf of Roberto Cipolla and himself (Cambridge).



Christopher Kemp accepts the Science Prize on behalf of Tom Drummond and himself (Cambridge).



Richard Bowden accepts half of the Industry Prize, on behalf of Timor Kadir, Eng Jon Ong, Andrew Zisserman, and himself (Oxford and Surrey).



Tim Cootes performs his party trick of emerging from a mirror, to present the 2003 Distinguished Fellow Award to Chris Taylor.



Toni Tamminen accepts the Model-Based Vision Prize of behalf of Jouko Lampinen and himself (Helsinki).



Chris Taylor getting into the stride of his acceptance speech, enthusiastically drawing on his earlier successes!



Graeme Jones venting his full fury on yet another delegate who has left a bag behind at the conference!



Three well-known participants (Andrew Fitzgibbon, Christopher Bishop and Majid Mirmehdi) share a moment with the Editor (taking the photo).

Mementos from ICPR 2004



Musical entertainment at the ICPR reception ...



Chris Taylor at another high moment – receiving his Fellowship of the IEEE from Rangachar Kasturi; on the left Horst Bunke makes the announcement.



... and at the Conference Banquet.

SIGGRAPH 2004 Conference and Symposium

This year Los Angeles was the host of the 31st international SIGGRAPH conference and the newly introduced ACM SIGGRAPH Symposium on Applied Perception in Graphics and Visualisation (APGV). Both were held sequentially between 7 and 12 August, and I was fortunate to attend both after having a paper accepted in the APGV symposium – the paper being concerned with a perceptual “McGurk” test for evaluating lip synching in facial animation.

Although SIGGRAPH is traditionally associated with computer graphics, nowadays it’s almost impossible to

remove the emerging influence computer vision is having on the subject. Consequently many graphics submissions to both APGV and SIGGRAPH contained high quality vision research. This trend, of merging traditionally disjoint fields of sciences, looks set to continue. The emergence of APGV – graphics research from a perceptual angle – is evidence of this.

APGV was held from 7 to 8 August in the Wiltshire Grand Hotel, Downtown Los Angeles. The first day of APGV included oral sessions on Virtual Environments (VEs) and Rendering, followed by a poster session. A popular theme in the two Virtual Environment sessions involved studies on participant reactions in Virtual Reality (VR) compared with the real world. The first presentation of the day was a study on “spatial updating”, where subjects were asked to locate learned real-world targets in VR after rotation via a motion platform. Other VR work included the use of treadmills for navigating VEs, and how distance perception is affected in VEs – an interesting observation being that distances are commonly underestimated in such circumstances.

The rendering session also contained notable studies, including the concept of “vision-realistic rendering” – computer generation of images incorporating the characteristics of an individual’s entire optical system. Using this means it is envisaged that eyesight defects can be corrected, and understood, more sensibly.

A poster “fast-forward” proceeded the final session of the day. Personally I believe this practice to be highly valuable in obtaining a snapshot of the session – as these are often short, and may therefore be approached with a better formulated strategy. Of particular interest to myself was a study approaching the ‘Thatcher Illusion’ from a fresh perspective. One demonstration video of an animated ‘Thatcher Illusion’ face, being rotated through 360 degrees, was particularly striking.

The second day saw sessions on Rendering, Objects, and Facial Animation and Vision Realistic Rendering. The rendering session included studies on effective High Dynamic Range (HDR) image encoding, and re-rendering of colour images in new styles – these styles being based on colours in template images, such as paintings. The Object session was no less interesting, including work on haptic rendering, and the effect that texture and surface reflectance has on the perception of a virtual objects shape.

The final session contained a study on the facial areas necessary for conveying different emotions. Surprisingly almost all universally recognised facial expressions seem interpretable given motion in only a few key areas: this observation is certainly important to

facial animators and researchers alike. After the presentation of my and my colleagues work – a new perceptual test for evaluating the effectiveness of facial animation – the symposium closed, undoubtedly a success in the eyes of all who attended.

With APGV over it was on to SIGGRAPH. This was my first visit to the event, and it did not disappoint. Held in the Los Angeles Convention Centre, with reportedly 25000–30000 attendees, the atmosphere was one of constant stimulation. Given such a large event, with concurrent sessions, it is (unfortunately) impossible to attend every single event. However, the excellent conference DVD goes some way towards making up for this.

The event itself includes paper presentations, sketches, posters (new for this year), exhibitor tech talks, courses, special sessions concentrating on some of the more abstract aspects of graphics, a CG art gallery, emerging technologies, and of course the computer animation festival – a must for any attendee.

Courses on the first day included presentations on the visual effects used in the “Lord of the Rings” trilogy, and a comprehensive review of facial animation. Unfortunately, I could not attend these as they overran with APGV. Thankfully, courses on the second day were no less formidable – a session on the visual effects used in making “Shrek 2” being a personal highlight. The Art Gallery and Emerging technology events were our next port of call. The former included both static and interactive art, merging image and sound, while the latter presented a glimpse of tomorrow – including an intelligent “floor” for navigating VEs consisting of self-organising “tiles” which anticipate a subject’s walking direction. An afternoon course on Bayesian Learning brought the evening, and the advent of the highly entertaining “Demo or Die” session and Electronic Theatre – a stunning two-hour collection of CG short films, advertisements and movie/video-game trailers. This was preceded by inspired interactive audience entertainment which involved numerous inflatable balls, a time limit and a retro sound track (space forbids my elaboration!).

The third day saw the start of the exhibition, where the sale of technologies such as motion-capture suites, 3D scanners, HDR and 3D displays, and haptic devices met recruitment from prestigious companies such as Pixar, ILM and Dreamworks. The afternoon saw an insightful session on computer music, followed by a paper session of the highest quality on Data-Driven Character Animation. Presentations on “Style-Based Inverse Kinematics” and “Physically Realistic Human Motion in Behaviour Specific Spaces” were particularly

notable, and are sure to impact on the way animation is approached in future years.

On the morning of the fourth day we visited a sketch session on “Frowns, Smiles and Pouts”, where high quality work encompassed speech driven animation, bilinear face models and automatic caricature generation. This was followed by a visit to the impressive Animation Theatre and then a further sketch session, titled “Effects Omelette”. The session gave further insight into the CG techniques incorporated in Hollywood today, with talks ranging from how fire was generated in Shrek 2, to how a key-sequence for “The Matrix Revolutions” was both visualised and then implemented. The day ended with a special session on Video Jockeying (VJ) – the emerging art of incorporating visual effects with music.

The final day meant an afternoon flight back, cutting our morning’s activities short with only a return visit to the exhibition. In all the SIGGRAPH conference is unlike any other I have been to. A morning of concentration during technical talks can be balanced with a lighter afternoon of stimulating CG, artwork or new technology. Visiting the various sessions on offer is never a chore, and the only drawback is that it is impossible to visit them all. If you have even the slightest interest in graphics or computer vision, and have never been to SIGGRAPH, then I recommend a visit in 2005 – I will certainly be there!

Darren Cosker
University of Cardiff
email: d.p.cosker@cs.cf.ac.uk

Forthcoming Technical Meetings

Image Features and Statistics

One-day BMVA–AVA symposium at the Royal Statistical Society, 12 Errol Street, London, UK on 27 October 2004.

Chairs: Dr. Lewis Griffin (KCL) and Prof. Mark Georgeson (Aston University).

Remember that you should book your place in advance with Royston Parkin (BMVA@roystonparkin.co.uk). A sandwich lunch is available at a cost of £5 and should be booked in advance. When registering please enclose a cheque for the appropriate amount made payable to The British Machine Vision Association.

Optimisation problems in Computer Vision: Algorithms, Principles and Practice

One-day BMVA symposium in London, UK on 17 November 2004.

Chairs: Dr. Andrew Fitzgibbon (Oxford University) and Dr. Daniel Alexander (UCL).

The goal of this meeting is to gather researchers who are looking at the use of generic or special-case optimisation algorithms for specific vision problems; to discuss the performance and implementation of these algorithms; and to see where insights from one problem domain might help in others.

Dr. Daniel Alexander
BMVA Meetings Officer
email: d.alexander@cs.ucl.ac.uk

Pattern Recognition and Machine Learning in Machine Vision – Call for Papers

One-day BMVA symposium in London, UK on 23 January 2005.

Chairs: Dr. Richard Harvey (UEA) and Dr. Charles Taylor (University of Leeds).

Machine Learning has historically been taken to encompass automatic computing procedures based on logical or binary operations that learn a task from a series of examples. Attention initially focussed on decision-tree approaches, but later developments included genetic algorithms, neural networks, support vector machines, and inductive logic procedures that allow more general types of data. The task at hand is usually classification or pattern recognition, but can also be prediction (of real-valued outcomes) or clustering. In Machine Vision, feature selection and feature extraction are critical components for machine learning methods, since images live in very high-dimensional spaces.

The BMVA held a meeting on this topic in 2003, which brought together researchers interested in specific applications of Machine Learning in Machine Vision. Topics for the coming meeting will include those listed above as well as measures of performance evaluation, and application of recent ML advances, such as boosting.

Please submit an extended summary, no longer than two pages in length (PDF preferred), which includes links or pointers to web-based illustrations, demonstration material or papers giving more details. Send the summary by email attachment (max 1MB) to Charles

Taylor (c.c.taylor@leeds.ac.uk) by 17.00 on Friday 29 October 2004.

Dr. Richard Harvey
University of East Anglia
email: r.w.harvey@uea.ac.uk

Election of New BMVA Management Committee

During the summer, Dr. R. Bowden and Prof. J. Kittler resigned and Prof. T. Ellis and Prof. J. Illingworth were elected to replace them. As a result, the Executive Committee of the BMVA now has the following officers:

Dr. M. Chantler
Dr. A. Clark
Dr. T. Cootes
Prof. E.R. Davies
Prof. T. Ellis
Dr. J. Ferryman
Dr. A. Fitzgibbon
Dr. P. Hall
Prof. J. Illingworth
Dr. D. Marshall

with Prof. C.J. Taylor continuing to act as Company Secretary.

Professor C.J. Taylor
Manchester University
ctaylor@man.ac.uk

VIE 2005 – Call for Papers

IEE International Conference on Visual Information Engineering – *Convergence in Graphics and Vision*

4–6 April 2005, University of Glasgow, Glasgow, UK.

VIE 2005 is the second in a new series of conferences addressing the converging areas that together make the field of visual information engineering. The conference brings together researchers, developers, creators, educators, and practitioners in image processing, machine vision, computer graphics, virtual and augmented environments, and visual communications, to share their latest achievements and explore future directions and synergies in these exciting areas.



Confirmed keynote speakers:

- Professor Maria Petrou, University of Surrey
- Greg Ward, Anywhere Software, USA

Submissions are invited on topics including, but not limited to:

- Visual Communication
- Image Interpretation
- Image and Video Analysis
- Storage, Retrieval and Multimedia
- Computer Graphics
- Virtual and Augmented Environments
- Architectures and Implementation
- Applications

The submission deadline is 12 November 2004: all papers must be submitted electronically.

To submit a paper, or for further information, visit:
<http://conferences.iee.org.uk/VIE2005>

Dr. Majid Mirmehdi
Bristol University
email: majid@cs.bris.ac.uk

IEE EWIMT 2004

IEE European Workshop on the Integration of Knowledge, Semantic and Digital Media Technologies, 25–26 November 2004, Royal Statistical Society, London.

This workshop focuses on integrative research for the engineering of new knowledge-based forms of digital media systems. It intends to bring together those forums, projects, institutions and individuals engaged in research aimed at the integration of Knowledge and Content processing technologies, and to link them with industrial research and development engineers who could exploit the technology emerging from the projects.

Chairs:

- Paola Hobson, Motorola Labs (UK), Basingstoke, UK
- Ebroul Izquierdo, Multimedia and Vision Lab, Queen Mary, University of London, UK

The event is partially sponsored by the European Commission and will be held at the Royal Statistical Society in the City of London.

For further information please visit:
<http://ewimt.qmul.net/>

Dr. Paola Hobson
Motorola Labs
email: paola.hobson@motorola.com

Book for Review

The following book is still on offer for review:

F Mokhtarian and M Bober. *Curvature Scale Space Representation: Theory, Applications & MPEG-7 Standardisation*. Kluwer Academic, 2003, ISBN: 1-4020-1233-0.

Professor Roy Davies
Editor, BMVA News
email: e.r.davies@rhul.ac.uk