BMVA News

BMVA News [1] 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 7 June 2009.

Contents

Editorial: *How Should the BMVA Meet the Needs of the Community?*

Now and again it is useful to have a review of what one is doing, plus a 'radical rethink' of the situation if this seems to be called for. This can ensure that one is not wasting one's time and effort ploughing the same old furrow long after the topsoil has blown away or after people have decided to eat porridge for breakfast instead of cornflakes or toast. Perhaps it should be the same with the BMVA: are we doing the right things and satisfying our members, and above all adapting to their needs? This sort of question is always a difficult one, as it implies what is absolutely untrue – that the 'members' act as a monolithic body and that all have the same needs at any one time, if only one could identify them. However, we only have to consider industrialists, postgraduate students, postdocs, academics – and in the latter category a ragbag of people ranging over lecturers, senior lecturers, readers and professors – to realise how difficult it is to please all the people some of the time, let alone all the people all of the time.

Perhaps the best way forward is to see if there are any disadvantaged groups amongst these people. Maybe over time the postgraduate student is the loser here. The BMVA Annual Conference has become so prestigious that it has become more difficult to publish papers there, and to this end we instituted the Annals (at least that was one of its aims) in order to provide an additional outlet for papers produced by postgraduates. There was also the introduction of student papers meetings amongst our Technical Symposia; and lately some consideration has been devoted to a postgraduate workshop attached either (but now unlikely) to the BMVA Summer School or to the Annual Conference. So in fact the BMVA is thinking carefully about the

situation and acting on it. Of course, it is difficult to find exactly the right mechanisms or to get these right in a single iteration.

Looking at the Contents of this issue, it will be clear that the BMVA has a high degree of activity in a good many areas: in particular, the twelve main items include one call for nominations, one call for organisers, two calls for participation and six calls for papers (four from within the BMVA), as well as two reports on highly successful innovative meetings. (Interestingly, I felt I had to re-label some calls for participation as calls for papers: it seems that the term 'participation' is somewhat ambiguous in people's minds, some interpreting it as *presenting papers* and others as *attendance*.)

Finally, the call for papers for the Annals represents a relatively new direction. Of the three special issues coming up, the first will actually be a set of individual papers stemming originally from a whole series of technical meetings: within this first batch, medical papers were easily in the majority, probably because of the lack of good outlets for such papers. So here again, the BMVA is adapting to members' needs – though in accordance with the BMVA's mission of serving the vision *community*, the Annals will not be restricted to members but will be a more general organ. In fact, as the article on page 3 indicates, it is already seeking wider submission.

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

BMVA Distinguished Fellow 2010: Call for Nominations

The BMVA Executive Committee seeks nominations for the *Distinguished Fellow 2010* 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 Dr Andrew Fitzgibbon by 10 May 2009.

> Dr Andrew Fitzgibbon
> BMVA Chairman
> email: chair@bmva.ac.uk

BMVC 2009 – 2nd Call for Papers

7–10 September 2009

The British Machine Vision Conference is one of the major international conferences on machine vision and related areas. Organised by the British Machine Vision Association, the 20th BMVC will be held at Queen Mary, University of London.

The conference will include keynote presentations by Rama Chellappa (University of Maryland) and Alexei Efros (Carnegie Mellon), and a tutorial by Andrew Fitzgibbon (Microsoft Research).

Papers covering theory and/or application areas of computer vision are invited for submission. Submitted papers will be refereed on their originality, presentation, empirical results, and quality of evaluation. All papers will be reviewed *doubly blind*, normally by three members of our international programme committee. Please note that BMVC is a single track meeting with oral and poster presentations.

Topics include but are not limited to:

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

General chairs: Andrea Cavallaro (Queen Mary, University of London), Simon Prince (University College London)

Technical programme chair: Daniel Alexander (University College London)

Local organising committee: Lourdes Agapito, Shaogang Gong, Peter McOwan, Ioannis Patras, Tao Xiang.

Important dates:

Submission deadline: 27 April 2009
Notification of acceptance: 22 June 2009
Camera ready papers: 21 July 2009
Conference: 7–10 September 2009

Further information:

Conference website: http://bmvc2009.cs.ucl.ac.uk
Contact email: bmvc2009@cs.ucl.ac.uk

Conference venue: Queen Mary, University of London, Mile End Road, London, E1 4NS. The Mile End campus is located a mile to the east of the City of London.

Dr Simon J.D. Prince
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EPSRC Summer School 2009

The EPSRC sponsors an annual Summer School on computer vision, which is managed, arranged and publicised by members of the BMVA. Speakers on the Summer School are academic researchers or experienced practitioners from industry.

This year's Summer School will be held at the Digital Imaging Research Centre in Kingston University during 5–10 July 2009. The course is residential and is free to EPSRC-sponsored students, except for travel. For others, the Summer School will cost *about* £500.

The course is intensive and is aimed at postgraduate students in the fields of Computer Vision, Pattern Recognition and Digital Imaging. The Summer School has been running for over a decade and is updated every year to ensure it covers the state of the art, broadens awareness of related research fields, and develops research skills.

Places are limited, so apply soon to avoid disappointment. For further details and the application form, please point your web browser at:

http://bmvaschool.kingston.ac.uk/

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Annals of the BMVA: Call for Papers

The Annals is an online journal for disseminating research in computer vision and related disciplines. It aims to provide rapid publication of new techniques and developments in this fast-moving field, with a publication time measured in weeks rather than months or years.

Individual submissions

Originally, the Annals were targeted as Special Issues resulting from BMVA Technical Meetings. More recently, it has been decided to allow individual submissions to be made, irrespective of any Technical Meeting. To this end, anyone may submit a paper at any time.

Anyone who is thinking of submitting a paper can write to the Editor-in-Chief for advice. We are already welcoming individual submissions as well as Special Issues, and are looking forward to receiving many more such papers in future months and years.

Special Issues and Guest Editors

Prospective Guest Editors should contact the Editor-in-Chief regarding the particular arrangements for producing a Special Issue, whether or not this is related to a particular BMVA Technical Meeting or other conference. Special Issues will normally be published with a Guest Editorial outlining the papers and giving the motivation for the Special Issue.

Lengths of papers and supplementary material

Papers are subject to revision in the usual way and will be reviewed by a minimum of two experts. Authors are encouraged to submit clear, concise papers, which will typically be 10–12 pages in length, though it is understood that some works may have to be considerably longer than this. Likewise, short papers (~6 pages) of the *Electronics Letters* type, which can be refereed and published more quickly, will be welcomed. In addition, it will be appropriate for some papers to refer to supplementary material, which may be published with, and electronically linked to, the submitted paper. The supplementary material may take the form of 3D models, movie clips, source code, and so on: it will have to be approved by the Editor.

Formatting of papers

Published papers will need to comply with the required format for Annals papers, using the Latex and Word templates available on the BMVA website at:

http://www.bmva.org/annals/index.html

The above templates are deliberately kept short: for further details, particularly relating to the citation and reference format, prospective authors should look at sample papers already on the Annals website – e.g. the following:

http://www.bmva.org/annals/2008/2008-0002.pdf

At the *submission* stage, strict adherence to all details of the required format will not be necessary, though papers should use the supplied templates so that some element of uniformity can be achieved and so that the length of the final paper can be estimated easily.

At the *proofs* stage (after the paper has been formally accepted), more care will be needed regarding formatting: see the proofs section of this article, which will shortly appear on the BMVA website. Authors are advised to read the proofs section carefully when revising the paper, to save time later on in the process.

Scope of the Annals

The Annals will consider papers on any topic that falls within the normal remit of the BMVA, BMVC or any of the Technical Meetings run by the BMVA. The editors are anxious to keep the scope fairly wide so that authors are not discouraged from submitting papers. However, if authors have any doubts about the scope, they can obtain advice from the Editor-in-Chief: for this purpose

a title and a 3-line abstract, together with a few keywords, would be particularly useful.

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BMVA Technical Meetings 2009–10

The BMVA organises a series of one-day technical meetings (symposia) mainly in London. Each meeting is chaired by a member of the UK academic computer vision community and addresses a specific topic in Computer Vision. The meetings usually have 6–10 speakers and are attended by 30–100 people.

We are currently SEEKING VOLUNTEERS to chair meetings for the academic year 2009–2010. This is not an onerous task and involves (a) organising a program of speakers (by call for paper or invitation), and (b) chairing the meeting on the day. All other arrangements (finances, food, registration, room-booking, etc.) will be taken care of by the BMVA.

Dr Dimitrios Makris
BMVA Meetings Organiser

Please contact the technical meetings organiser, Dimitrios Makris (d.makris@kingston.ac.uk) if you are interested in chairing one of the future meetings. For up-to-date information on scheduled meetings, programmes, CfPs and detailed instructions for meeting chairs, please visit the BMVA meeting webpage:

http://www.bmva.org/meetings

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Report on Vision Systems for Perception and Action

This one-day BMVA Technical Meeting was held on 6 March at the BCS in London and was organised by Neil Thacker (University of Manchester) and Charles Leek (University of Bangor): it had around 40 attendees, which matches similar levels of interest to previous meetings in this cross-over area between computer vision and psychophysics.

Dr Neil Thacker
BMVA Secretary

The day started with a short presentation by myself which outlined the motivation Charles and I had for organising the meeting. This centred on the challenges still facing those who wish to construct vision systems which provide semantic descriptions of the world. In particular, I tried to make a distinction between measurement (such as extraction of 3D information from a scene) and use of 3D data for scene understanding. Later that day Charles showed how psychophysics results could give insights into the representations we build when interpreting scenes. Glyn Humphreys (University of Birmingham) covered the distinction which needs to be made between object recognition and the use of vision to select particular 'categories' of actions. This talk was echoed later in the day by Rob Ellis (University of Plymouth), who presented results from experiments which illustrate the way that practical aspects (such as how humans position their hands) influence the processing of visual data.

Gareth Rees (MBDA UK Ltd) illustrated how the process of building a working system, which must make practical decisions in the real world, must be guided by statistical factors relating to evaluation and design. This approach was echoed by Simon Watt (Bangor University) who used an assumption of optimal use of data in the interpretation of experiments which quantify the precision with which humans use tools. Other talks covered the construction of analogues of the human

vision system, such as the stereo camera rig in Paul Siebert's group (University of Glasgow), Mike Chantler's model for texture recognition, and Tim Cootes' model of face recognition, as used in the research of Nick Costen (Manchester Metropolitan University).

The presentations expressed (and provoked) a wide range of views, which were the stimulus for further comment and debate. The overall feeling at the end of the meeting seeming to lean in the direction of 'affordances' as the preferred way to think about perception and action. I like to think that this accorded with my initial comments that complete and reliable extraction of dense 3D data from images should not be set as a requirement for a working robotic system – a comment which Paul Siebert rose to during his presentation by showing that he could get very good dense 3D results from stereo (at least on faces). However, the affordance approach does not yet take the field much further with regard to specification of a functioning computational model. I think it was clear to everyone that much more must be done to bring the computer vision approaches and psychophysics experiments into a closer, hopefully beneficial, relationship.

I noticed that while I debated with Andrew Stoddart the validity or otherwise of Bayesian approaches to algorithm design, others were busy exchanging emails and setting up possible projects. The meeting concluded with a decision to try to pro-actively engage these two communities further, with the aim of identifying joint research goals for future collaboration. We also decided to conduct this process via email and used the time at the end of the meeting to construct an initial mailing list. If anyone reading this article is interested in this topic and wishes to be added to this list, you should send me an email expressing your interest.

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STOP PRESS

VS 2009 – Call for Papers. 9th IEEE International Workshop on *Visual Surveillance*, to be held on 3 October 2009 in Kyoto, Japan in conjunction with ICCV. Submission Deadline: 12 June 2009. Conference website: http://dircweb.king.ac.uk/vs2009/.

Professor Graeme A. Jones
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Vision for Automotive Applications

Call for Papers

This one-day BMVA technical meeting is to be held at the BCS, Southampton Street, London, on 20 May 2009.

Chair: Toby Breckon (Cranfield University)

Automotive vision is a growing area of computer vision research for on and off vehicle applications. Whilst improved driver awareness is an obvious way forward, the greater potential for enhanced sensing within the wider road transport system offers numerous benefits for safety, security and the environment.

Within this domain, the potential comes at the cost of hard constraints in terms of the need for reliability and real-time performance. However, the ever-reducing cost of computation coupled with increasing low-cost sensor capabilities now help drive both research and commercial systems for on and off vehicle vision systems.

The aim of this meeting is to bring together researchers and practitioners, from both industry and academia, who are interested in all aspects of automotive vision and potential applications of their work in this domain. Submissions are invited in the following areas:

- Automotive data fusion
- Driver monitoring
- Highway monitoring and reporting
- Improved driver awareness
- Novel on-vehicle sensing
- On-vehicle recognition and classification
- Pedestrian and vehicle detection
- Real-time obstacle detection
- Roadside asset detection and cataloguing
- Terrain/road classification
- Vision as a navigation aid
- Vision for post-incident forensics.

Other topics within the broadly applicable domain of automotive vision will also be considered for inclusion. For further details of the conference, see the following websites:

http://www.cranfield.ac.uk/~toby.breckon/bmva_
symp_automotive09.pdf

http:/www.bmva.org/meetings

Please submit an extended summary of about one page A4 (max 2 pages), PDF preferred. Send contributions by email attachment (1Mb max please) to Toby Breckon (toby.breckon@cranfield.ac.uk) by 17 April 2009.

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MIUA 2009

Call for Participation

14–15 July 2009, Kingston University, London

Medical Image Understanding and Analysis 2009 (MIUA 2009), the 13th in the series, is the principal UK forum for communicating research progress in image analysis applied to medicine and the biological sciences. It aims to encourage the growth and raise the profile of this multi-disciplinary field by bringing together the various communities involved. The scope of the meeting extends from analysis of medical and biological images to imaging physics and clinical studies.

A keynote entitled "The Frontier between Radiology and Image Processing" will be given by Prof Andrew Todd-Pokropek from the Department of Medical Physics & Bioengineering, University College London.

Kingston University lies close to both Hampton Court and Richmond Park, is a few minutes away from the River Thames, and is 20 minutes by train from London.

Further details about the conference are available on the conference website at:

http:// www.miua.org.uk

Please register with the website to ensure that you are kept up to date.

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Facial Analysis and Animation

Call for Papers

This one-day BMVA symposium will be held at the School of Informatics, University of Edinburgh, UK on 10 June 2009.

Chairs: Darren Cosker (University of Bath), Michael Berger (University of Edinburgh), Gregor Hofer (University of Edinburgh), Nataliya Nadtoka (University of Surrey).

Facial animation is a broad and exciting area of research drawing on multiple disciplines: computer graphics and animation provide the means to render and display a face; computer vision can be used to measure, interpret and decode facial actions; while psychology can help provide the emotive human element of animation. However, creating convincing facial animation is an exceptionally difficult task, each one of us being an expert judge in deciding whether an animation is realistic or not.

In today's world, facial animation has more applications than ever before: from video game characters to movie actor doubles, from machine facial displays to psychological research stimuli.

The aim of this meeting is to bring together researchers and practitioners interested in all aspects of facial animation and related analysis. Submissions are invited in the following topic areas:

- Animation of non-linguistic behaviours and vocalisations
- Facial animation using example based synthesis and motion graph based techniques
- Image-based acquisition of facial shape, motion and texture
- Perception of facial animation and the 'uncanny valley'
- Performance driven animation and expression mapping
- Photo and non-photorealistic facial rendering
- Visual speech synthesis.

Please submit an extended summary of about one page A4 (max 2 pages), PDF preferred. Send contributions by email attachment (1Mb max please) to Darren Cosker (d.p.cosker@cs.bath.ac.uk) by 30 April 2009.

A website for the symposium, including information on travel to the venue and accommodation in Edinburgh, may be found at http://www.cstr.ed.ac.uk/faa

Note that the meeting is free to BMVA members, but a charge of 20 GBP is payable by non-members.

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Report on Group Theory, Invariance and Symmetry in Vision

This meeting, held at the British Computer Society on 21 January 2009, was organised and chaired by Lewis Griffin.

The meeting concentrated on specific consideration of Group Theory in Vision – a fairly niche subject. Yet, as we soon learnt, Group Theory and symmetry go hand-in-hand, and symmetry more obviously pervades vision and is apparent at many levels of description and application. The talks at the meeting reflected this diversity, ranging from a talk on aligning brain scans to symmetries in the statistics of images and colour.

The first speaker was John Ashburner (Functional Imaging Laboratory, UCL) who described a method of warping brain scans so that they are aligned. Ashburner explained how the warps that he was finding were elements of the continuous group of diffeomorphisms. He explained how by using the concept of the exponential map, developed for such groups, he was able to search the space of diffeomorphisms for the best one, without encountering ill-formed warps that folded over themselves.

Gert Kootstra (AI Institute, Groningen, the Netherlands) discussed the importance of symmetry in human attention and proposed filters for detection of symmetries in images. In the experimental data that he showed, subjects' fixations on free-viewing of natural images was better predicted when symmetry was taken into account as well as more standard local contrast measures. He also presented data on the use of symmetrical landmarks in object recognition systems.

The next talk, by Risi Kondor (Gatsby Institute for Computational Neuroscience, UCL), promoted the use of the bispectrum as an image analysis tool. This frequency-domain transformation has the advantage of allowing recovery of stereotyped image features. He also showed that it was invariant under transformations in the group SO(3), when applied to images projected onto a small portion of a sphere. The purpose of this projection is to transform translations and rotations of a plane into rotations of a sphere. He demonstrated his

algorithm on a set of handwritten characters taken from the US postal service.

The last talk before lunch was by the Chair, Lewis Griffin (Computer Science, UCL), who showed how linear image filters, such as derivatives-of-Gaussians, are very well suited to the detection of image symmetry. He described a system of 'Basic Image Features' that he claimed arose naturally as a classification of local image structure into qualitatively different symmetry types.

After lunch, the focus turned to colour. David Foster (Electrical & Electronic Engineering, Manchester) talked about metamerism,[2] colour constancy and how these relate to invariances. Using hyperspectral images of natural scenes, the frequency of metamerism in a set of images was calculated, and was found to be much higher than in other studies: between 1% and 10% of pairs of surfaces that are indistinguishable under one phase of daylight are distinguishable under another.

The second talk on colour, by Reiner Lenz, discussed the geometry of conical spaces, i.e. spaces of vectors whose components are all positive. The talk was aimed at human colour vision – considered as a conical space of dimension three. He demonstrated that the appropriate colour space, once projected onto a unit disk, allowed colour constancy to be defined as invariance to the group $SU(1,1)$.

After the tea break, the focus was on local image structure. Alexey Koloydenko discussed the distribution of 2×2 templates of pixels drawn from binarised natural images. He showed results that demonstrated that the distribution was highly symmetric (for example by exchanging black and white in the pixel templates). He expanded on this to a discussion of approaches to the statistics of highly symmetrical distributions.

The final talk, given by Martin Lillholm, gave a thorough description of the SIFT algorithm for describing image patches. He suggested that the first stage – feature detection – could be improved by adding second order structure information as calculated by the application of derivative-of-Gaussian filters. This information can be incorporated easily into subsequent levels of processing, with only minor changes. The new algorithm was tested against standard SIFT and showed increased performance.

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[2]Metamerism is the phenomenon that colours may match each other under one source of illumination but not under another. It arises because colour sensors in the eye integrate a range of wavelengths and appearance can therefore be deceptive – Ed.

AVSP 2009 – Call for Papers

The 8th International Conference on Auditory–Visual Speech Processing (AVSP) 2009 will be held at the University of East Anglia, Norwich, UK, on 10–13 September 2009.

As with previous meetings in this series, AVSP 2009 will run as a satellite conference to Interspeech 2009, which will be held in Brighton, UK. The conference is also convenient for those delegates attending BMVC 2009 in London. For those wishing to combine attendance at AVSP and Interspeech, we expect to organise transport between Brighton and Norwich.

Since the inception of AVSP in Bonas in 1995, AVSP workshops have attracted an interdisciplinary audience of psychologists, engineers, scientists and linguists. This conference will consist of a mixture of regular presentations (both posters and oral), and lectures by invited speakers.

Topics include but are not limited to:

- Cross-linguistic studies
- Developmental studies
- Human and machine models of integration
- Machine recognition of audiovisual speech
- Modelling, synthesis and recognition of facial gestures
- Multimodal processing of spoken events
- Neurophysiology and neuro-psychology of audition and vision
- Prosody
- Role of gestures accompanying speech
- Scene analysis
- Speech synthesis.

Conference website: http://www.avsp2009.co.uk

Important dates:

Paper submission: 1 May 2009
Notification of acceptance: 1 July 2009
Camera ready papers: 1 August 2009

Chairs: Barry-John Theobald, Richard Harvey

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