

BMVA News

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

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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 March 2005.

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Editorial: *Tempus Fugit*

As most scientists will know, this is the centenary of the year in which Einstein published five rather disparate epoch-making papers, which bade goodbye to the classical era of physics. Curiously, Einstein himself never really believed in his quantum theory and later, in relation to the probabilistic aspects of quantum mechanics, he was to make his famous assertion that “God does not play dice”. Most modern scientists have no qualms in accepting these ideas about quanta and probability, and it tends to be the case that the people who don’t believe in certain ideas (even the inventors or discoverers themselves) die, and their opposition dies with them. Natural selection operates as much in the realm of philosophy as in the biological world.

At the beginning of the year we lost Professor Aziel Rosenfeld, who many including myself regarded as the father of the field of image processing (and many of its developments). Interestingly he did not fall at all into Einstein’s trap of not believing in his own ideas: indeed, I was always impressed by his bold, cavalier, pioneering attitude – if there’s a topic to be worked on, don’t be negative, try *all* the methods, and of course test them all scientifically, and write a paper on each! No space for self-doubt there! His sad passing at the age of 73 could have given plenty of chance to run into the Einsteinian bottleneck, but fortunately never did.

More recently, closer to home, we have tragically lost two stalwarts at the heights of their powers – Mark Bradshaw and Barry Thomas. Tributes to both appear on the ensuing pages. In losing such colleagues well before their retirement ages, we can only mourn, reminisce and think about what might have been – of opportunities lost and colleagues, students, friends and loved ones left behind. But their loss in the full train of

their research and scholarship again betrayed not even a hint of an Einsteinian bottleneck. Neither should it, or could it – as I shall now try to explain.

First, psychological problems must be most evident in new ‘divergent’ subjects, which have not yet settled down, and where the theory is rudimentary. However, machine vision is, apparently, a mature subject where people are confident of what can and will be done, and everyone is busy making substantial claims about what they expect to achieve. Moreover, new aspects and applications are appearing daily, and the only cast-offs seem to be the need to worry about expensive hardware designs for real-time implementation.

Nowhere is the rate of progress and expansion clearer than on the editorial boards of journals and conferences: it is also plain that a sea change is under way regarding the numbers of conferences and meetings. So much so that any editor is hard pressed to find referees to cover all the papers that are submitted. In my own editorial work I find increasing difficulty finding referees able and willing to undertake this duty. For it is a duty. How can people’s expectations of publishing refereed papers (the ones that are so desirable, or should I say necessary or even crucial) be entertained if they in turn are unwilling to respond to the call to do some refereeing? Of course, we all have times at which we are busy and have to meet deadlines, times at which the pressure builds up, and then it is either impossible to do extra refereeing, or alternatively impossible to do it *conscientiously*, providing the necessary careful, reasoned suggestions for improvement. One should, however, *make* time to do one’s bit for the community: but again some will say that they serve the community in other ways, and this can be a valid excuse. In fact, the decision about whether and how often to take part in the process is necessarily one of conscience, commitment, and being known as one who will devote time to this important task. Word gets about in this way too of who is an expert on a variety of topics. Perhaps the only valid excuse for not accepting a request to referee a paper is when it is far from one’s area of interest and expertise. In this respect I find a good signal is when I haven’t read any of the papers in the list of references, and have little idea of the real provenance (a very interesting and useful word to describe the situation!) of the work under consideration.

I won’t belabour the point further here: instead I’d like to invite comment that I can include in later issues: this is, after all, a topic that is not going to go away.

Professor Roy Davies
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ECCV 2004

The Eighth European Conference on Computer Vision (ECCV 2004) was held at Zofin Palace in Prague on 11–14 May this year, together with additional programs including 5 tutorials and 10 workshops on 10 May and 15–16 May. The biannual conference is the premier conference in Europe in the field of computer vision. ECCV 2004 received 555 submissions and 190 of them were accepted. The influence of the conference is also far beyond Europe; ECCV 2004 was attended by over 600 people all over the world.

Apart from the high quality of the papers, the other main attraction of ECCV lies in its single-track presentation. The room for oral presentations was enormous and there were two huge screens in the front showing the speakers’ presentations. 41 papers were presented orally within 12 sessions and the remaining 149 papers were presented at 4 poster sessions.

Oliver Faugeras opened ECCV 2004 with a tribute to Christopher Longuet-Higgins for his outstanding achievements in many different areas including computer vision. Immediately following the speech was the first oral session on tracking. The topics of the oral sessions covered a wide variety of research activities in computer vision; traditional ones as well as newly emerging ones, including tracking, geometry, texture, 2D/3D shape representation and reconstruction, object detection and recognition, learning and recognition, information-based image processing, scale space, flow, restoration. Illumination, reflectance and reflection were also chosen as topics for an oral session to highlight the close relationship between the vision and graphics communities. Poster sessions weren’t sorted by topics; but covered an even wider range of research in vision, image processing and graphics.

My presentation was on “Interpolating Novel Views from Image Sequences by Probabilistic Depth Carving”. The paper contained the latest results from my PhD work. The poster presentation was well attended and I found it worthwhile to talk to a wide range of people with good knowledge in the field who were genuinely interested in my work.

As a tradition, ECCV 2004 committee members selected several of the best papers presented in the conference. This year’s Best Paper Award was named after Longuet-Higgins and was awarded to the paper on ‘High Accuracy Optical Flow Estimation Based on a Theory for Warping’ by Thomas Brox et al. from Saarland University, Germany. The Best Paper Honourable Mention went to Rene Vidal and Yi Ma’s paper ‘A Unified Algebraic Approach to 2-D and 3-D Motion Segmentation’. Finally the Best Paper in

Cognitive Vision was awarded the paper entitled 'A Boosted Particle Filter: Multi-target Detection and Tracking' by Kenji Okuma et al. from University of British Columbia, Canada.

Compared with the proceedings of ECCV 2002, there were more papers on content-based image retrieval in this year's conference, indicating a surge of interest in managing image databases motivated by applications such as image archiving in recent years. I would definitely recommend ECCV to anyone working in the computer vision area; it is the place to find out the latest developments and emerging trends; and to expose your work to an international audience and get valuable feedback.

Finally I would like to thank the Royal Academy of Engineering and the British Machine Vision Association for contributing towards my conference costs and thus allowing me a great opportunity.

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Forthcoming Technical Meeting

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

One-day BMVA symposium in London, UK on 26 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.

Keep your eye on the BMVA website to find out the final programme: <http://www.bmva.ac.uk/meetings/>

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VIE 2005

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.

Conference topics include the following:

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

Confirmed keynote speakers:

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

Papers are currently under review. The final programme should be available during February 2005.

For further information about the conference, visit: <http://conferences.iee.org.uk/VIE2005>

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A Tribute to Mark Bradshaw



Mark Bradshaw, Professor of Psychology at the University of Surrey, died on 11 October 2004.

Mark had a short but highly productive life. Born in Larne, Northern Ireland he joined the Merchant Navy when he was 17 and earned a Distinction for his OND in marine engineering at Glasgow College of Nautical Studies. This allowed him to gain an entry to the University of Glasgow where he gained a first in his MA in psychology and was awarded the Henry Watt Prize for Experimental Psychology. He then moved to Sheffield Psychology Department's Artificial Intelligence Vision Research Unit to read for a PhD on the combination of stereo and motion information with John Frisby and John Mayhew. After receiving his PhD in 1989 he spent five months working with Barbara Gillam at NSW University in Sydney.

Between 1990 and 1995 Mark was employed as a post-doctoral researcher in the Department of Experimental Psychology at the University of Oxford. This involved working in Brian Rogers' world-leading vision group on an EC Esprit Initiative funded programme of work on "vision in a natural environment". During this time Mark was involved in the development of Brian's new laboratory including the design and development of all the software and devices at the cutting edge of stereoscopic research.

Mark was originally appointed to Surrey on 1 September 1995 under the University of Surrey 'New Blood' foundation lectureship scheme. Mark's outstanding contribution to the field of computational and psychophysical aspects of human visual perception led to a promotion to Reader in April 1999 and to Professor in April 2003. We were also fortunate to have had Mark as a warden during his time at Surrey.

Mark's main line of research, which he began in Sheffield and continued in Oxford and Surrey, was into the cues by which we see the three-dimensional structure of objects and surfaces. The information from

stereoscopic disparity and that from the observer's own motion were shown to interact, and moreover to do so in ways that depend on the visual systems' own internal estimate of the absolute viewing distance. These conclusions were derived from a series of complex and highly technical experiments, which required precisely calibrated equipment and sophisticated programming techniques. The expertise with which Mark carried them out perhaps demonstrates the beneficial effects of having a qualification in marine engineering as well as in psychology, as much as to Mark's own skill and perfectionism. The results were presented in a series of classic and highly cited papers, and contributed to the reputation of Mark's lab for producing reliable data at the cutting edge of research.

His next pioneering and technically demanding research was on the role of vision in guiding hand movements towards objects in order to grasp them. Again, the complex interplay of cues from stereopsis and motion in constraining action within a multi-parametric response space was demonstrated with care and mastery. As if this was not enough, Mark then went on to study the development of these abilities in middle childhood, with implications for developmental dyslexia, and to apply the findings to practical situations such as the optimal operation of telepresence systems. He also extended his range of investigations to cognitive studies of attention, the perception of emotion in biological (point-light) motion stimuli, visual illusions, eye movements and the perception of objects in natural scenes.

The way Mark ran his own lab and worked with his students was a model of team working and productivity. He had strong views on how research students should be managed and a very clear idea about the need to have all his students working as a team and supporting each other. He even forewent the offer of a larger office so that it could be used to keep his students and researchers together. He wanted, and expected them to share ideas and expertise and was concerned to see a coherent team emerge from his lab. Many of his students have gone on to good jobs in some of the best departments of psychology in the country like Cardiff, Bangor and St. Andrews.

He favoured a direct, data driven approach to his research. He counselled his students to do experiments rather than spend too much time reading about other people's work. While he was no fan of bureaucracy he maintained a rigorous system of lab books and encouraged his students into such good practices from the outset of their research careers. He had numerous collaborations with Ian Davies, John Groeger, David Rose and others at Surrey as well as with Andrew Glennerster (Oxford) and Keith Langley (UCL) among other key researchers in the field. In 2002 alone he

produced 14 high quality refereed journal articles mostly with students or former students.

Socially Mark was a very friendly and easy person to be with. He loved to tease his friends and he had a wicked sense of humour. Sometimes you had to lever him out of his lab to go for a drink but once this had been achieved the effort was always rewarded by a convivial evening. He met people on their own terms and despite spending long hours worrying about the minutiae of his highly specialised area he could talk to anyone about almost anything. Leave him alone in a pub for 5 minutes and he'd strike up a conversation with a complete stranger and the chances were he would find he had something in common with them.

Sport was a great passion both watching and playing. An avid supporter of London Irish and a vice president of the Oxford Union RUFC, he was keen golfer and had just taken up sailing when his illness curtailed some of his activities. He also loved horse racing and acquired a considerable background knowledge of the sport.

Mark died of complications associated with his cancer at home on the 11 October. He had been ill for some time and had been through the full panoply of treatments. Although he had known that the outlook was not good he retained his sense of humour and was fun company. He never lost his enthusiasm for vision research and continued to publish prodigiously to the end. He was working on several new papers in the last week of his life. He was 43.

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A Tribute to Barry Thomas

Very sadly, Professor Barry Thomas passed away on 23 November 2004 after a short illness.

Barry was born in 1949 in London. He started his studies at Imperial College in 1967, completing a BSc in Physics and then a PhD in Space Physics. Following a period as a Postdoc at Imperial College, he went to the US in 1978 to work for NASA Jet Propulsion Laboratory, while holding a joint appointment to teach at the California Institute of Technology in Pasadena. In 1985 he returned to England and took up a lectureship post at Bristol University, quickly getting involved in computer vision and for those who remember, the Alvey Programme. He was promoted to a Chair in 1994.

Barry was no "ivory tower" academic. He very much wanted to apply his research to the real world and he constantly sought out opportunities to work with people in industry, in addition to publishing his work in numerous journals and conferences. He was prolific in gaining grants from both industrial and government sources. Companies such as Hewlett-Packard, British Aerospace, Rolls-Royce and Philips readily sponsored Barry's research. He also needed no encouragement to become involved in inter-disciplinary research and established strong links with people in Psychology, Physics, Robotics, and Medicine. From 1990 Barry was the Director of the Advanced Computing Research Centre in Bristol, which was founded to encourage synergy between research projects from different departments.



Many of you will remember Barry from meeting him at conferences, particularly through his regular presence at BMVC. He was always ready with an insightful question or to relate a hilarious anecdote. Barry's gregarious nature, sense of humour, and friendship will be sadly missed by those who knew him. He leaves a wife and two sons.²

Andrew Calway, Neill Campbell, Eric Lewis,
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²I can echo these sentiments from my recent personal experience, when I went to examine a PhD candidate at Bristol in October. In spite of his by then very serious illness, Barry made a huge effort to come to lunch and make me feel welcome: I felt honoured by this experience and will always remember his sincere and warm way of combining collegiality and friendship – Ed.

CVMP 2005 – Call for Papers

The second European Conference on Visual Media Production will be held at the IEE, Savoy Place, London WC2R 0BL, 30 November – 1 December 2005.

Introduction

CVMP 2005 is the second in a series of events bringing together practitioners in media production from film, broadcast and games with researchers in imaging and graphics. CVMP provides a European forum for discussion of the latest research advances and state-of-the-art industry practice in content production and post-production.

Visual media production commonly makes use of developments that are at the convergence of image and video analysis with computer graphics. Image analysis has widespread application in visual media production including editing, annotation and special effects. New techniques in visual scene analysis are now commonplace in media production to combine synthetic and real elements. Emerging new delivery platforms, like e-cinema, high-resolution displays for the home and interactive media are asking for new approaches. The aim of the conference is to show how these techniques are used in current media production and to discuss their future influence on common practice.

Call for Papers

Papers are invited presenting novel research and practical applications related to media production. Topics include:

Image and Video Analysis

- Motion estimation
- Spatio-temporal analysis and modelling
- 3D-modelling from images and video
- High-dynamic range imaging
- Illumination and reflectance modelling
- Image and model based scene representations
- Integration of graphics and video
- Image and video synthesis
- Segmentation
- Object detection and recognition
- Image classification and annotation
- Image enhancement and restoration
- Photo-realistic rendering & animation of people

System architectures

- Real-time imaging systems
- Post production using 3D and motion
- Multiple camera systems
- Novel capture devices

Applications

- Special effects for post-production
- Visualisation
- Interactive media and games
- 3D-TV, stereo systems
- TV, film and e-cinema
- Content management systems

Authors of prospective contributions are asked to submit a complete paper of up to 10 A4 pages in length, including any figures, to the organisers by 12 May 2005. All papers should be produced in 2-column format and typed in 10-point Times New Roman font. Final versions will be published by the IEE, and copies of the proceedings will be provided to all conference delegates. All submissions should be submitted electronically. See the web-site for details.

Deadlines³

Submission deadline: 12 May 2005
 Notification of Acceptance: 31 July 2005
 Final Camera-ready submission: 16 Sept 2004
 Date of Conference: 30 Nov– 1 Dec2005

Organising Committee

Oliver Grau, BBC R&D, UK (General Conference Chair)
 Bill Collis, The Foundry, UK
 Adrian Hilton, University of Surrey, UK
 Paul Mathews, The IEE, UK
 Roderick Snell, Snell & Wilcox, UK
 Andrew Stoddart, 2D3 Ltd., UK
 Graham Thomas, BBC R&D, UK
 Paul Walland, Snell & Wilcox, UK

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 fax: +44 (0) 1438 765 659
 email: cvmp@iee.org
 (see also: <http://conferences.iee.org/CVMP>).



³Readers should always check any conference information provided in good faith on these pages. It often happens that deadlines are changed or specifications for camera ready copy are altered. It is quite impossible for me to keep up with such eventualities: for this reason I try to provide websites and contact information which readers may appeal to when they are considering making a submission – Ed.

ICDP-05 – Call for Papers

The International Symposium on Imaging for Crime Detection and Prevention will be held at the IEE, Savoy Place, London, UK, 7–8 June 2005. It is organised by the IEE Visual Information Engineering Professional Network.

Aims and scope

Crime and anti-social behaviour have a significant cost for society. In the UK anti-social behaviour alone accounts annually for around £3.3 billion of taxpayers' money with incidents of graffiti and vandalism estimated to cost around £600 million/p.a. Surveillance systems are thus being increasingly deployed in public and private locations. 9/11 and 11/March have also highlighted the vulnerability of public spaces to terrorist attacks.

However, there are serious limitations to the use of conventional CCTV systems where human operators are asked to survey a large number of cameras with a wide geographical coverage. On the other hand, digital technologies are increasingly becoming adopted in CCTV systems (IP cameras, digital video transmission, digital video recorders) which make the infrastructure amenable to the necessary intelligence (computer vision, cognitive systems) to support and significantly enhance the monitoring task. It is only with such developments that video surveillance technologies can have a major impact in society.

This event follows two successive annual one-day symposia, "Intelligent Distributed Surveillance Systems (IDSS)". Both events were well attended by delegates from many fields including industry, academics, police and local authorities.

The symposium will deal with the latest development in intelligent surveillance systems, in terms of technical advances, practical deployment issues and wider aspects such as implications on personal security and privacy. It will bring together presentations from researchers and engineers working in the field, system integrators and managers of public and private organisations likely to use such systems.

Call for papers

Full papers are invited on all aspects of Imaging Surveillance technologies, from academia and industry, to be selected for presentations/posters through a peer-review system. An indicative, though not exclusive, list of the most relevant topics is:

- Surveillance Systems (system architecture aspects, operational procedures, usability, scalability)
- Robust computer vision algorithms (24/7 operation under variable conditions, object tracking, multi-camera algorithms, behaviour analysis and learning, 3D X-Ray scanning)
- Compression, authentication, watermarking, metadata generation and indexing
- Gesture and posture analysis and recognition
- Biometrics (including face recognition)
- Forensics and crime scene reconstruction
- Wireless and location-dependent services
- Nano technologies
- Case studies
- Data protection, civil liberties and social exclusion issues

Key dates

- Receipt of full papers (up to 6 pages, approx. 4,000 words excluding references, tables and illustrations, in PDF or Word format): 15 February 2005
- Notification of acceptance: 15 March 2005
- Receipt of camera-ready papers: 30 April 2005

Technical Committee

Sergio Velastin (co-chair), Kingston University, UK
 Noel Brahma (co-chair), Sira, UK
 Antonis Argyros, FORTH, Greece
 Richard Bowden, University of Surrey, UK
 François Bremond, INRIA, France
 Rita Cucchiara, Università degli Studi di Modena, Italy
 Roy Davies, Royal Holloway, Univ. of London, UK
 Gian Luca Foresti, University of Udine, Italy
 Louahdi Khoudour, INRETS, France
 Paolo Remagnino, Kingston University, UK

For further information, please contact:

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 Event Services
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 email: events1a@iee.org.uk

(see also: <http://conferences.iee.org/icdp/>).



VVG-05 – Call for Papers

The 2nd International Conference on Vision, Video and Graphics (VVG-05) will be held on 7–8 July 2005 at Heriot Watt University, Edinburgh. The General Chair is Emanuele Trucco.

VVG-05 is the second event in a series promoting high-quality, interdisciplinary research on computer vision, computer graphics and video engineering. The convergence of these disciplines keeps attracting new interest from both academy and industry, and generating exciting applications in the fields of communications (immersive videoconferencing, adaptive scalable image coding), entertainment (video and film production, post-processing, virtual studios), interactive visualisation and distributed gaming.

The conference is sponsored by the IMA and run under the auspices of the BMVA and of the EPSRC Network of Excellence on Video, Vision and Graphics:

www.bath.ac.uk/~maspmh/VVGwebsite/index.html

Important dates

- 4 March: 2005 Paper submission deadline
- 15 April: Notification of acceptance to authors
- 6 May: Submission of camera-ready copies
- 7–8 July: VVG-05

For further information contact E.Trucco@hw.ac.uk

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Corrigendum

The award made to Professor Chris Taylor at ICPR 2005 was for Fellowship of the IAPR – not IEEE as announced in the last issue of BMVA News. My apologies for this error – Ed.

Forthcoming BMVA Technical Meetings

- 26 January: Pattern Recognition and Machine Learning in Machine Vision
- 30 March: The design and construction of vision systems (submission deadline 1st February)
- 20 April: Neural Computation: Advances in the State of the Art in Methods and Tools (submission deadline 28 February)

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STOP PRESS

3rd edition of book on Machine Vision

The third edition of *Machine Vision: Theory, Algorithms, Practicalities*, by E.R. Davies, is shortly (28 January) to be published by Morgan Kaufmann, an imprint of Elsevier Science. The volume contains 29 chapters and an appendix, and is organised in five parts:

- Low-level vision
- Intermediate-level vision
- 3-D vision and motion
- Toward real-time pattern recognition systems
- Perspectives on vision

The ISBN is 0-12-206093-8. For further details, refer to the book's website, which will shortly be available at:

<http://www.mkp.com/companions/0122060938/>