

# 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** News<sup>1</sup> 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 30 April 2001.

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## Editorial

**B**MVA News has been well known to a great many members ever since the Association was formed in the late 1980s. For a good proportion of that time, Paul Rosin has been its editor, and he has maintained an impressive record in bringing out each issue on time, with interesting articles, reports and news. This has indeed been an important service to the machine vision and pattern recognition community. It now falls on me to take over the task of bringing out the newsletter, and keeping everyone up to date with details of meetings, conferences and relevant information. To say I am apprehensive would be something of an overstatement. It is always difficult taking over a task that someone has carried out successfully for some time; and what was apparently achieved effortlessly before might now be achieved only with superhuman effort! However, an editor is an editor: he can only achieve what he does through the help and submissions of others. So my plea is, keep the material coming. I will do my best to get each issue published punctually, and to ensure fairness in the space allotted to each article. I look forward to hearing from you with items of general interest: I also look forward to ideas on any changes in presentation or content, and on how to develop and adapt this newsletter for the future.

So it's over to me, and it's over to you ...

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

## Report on DAS2000

The 4th IAPR International Workshop on Document Analysis Systems (DAS2000) was held in Rio de Janeiro from 10–13 December 2000. The Document Analysis Systems workshops were introduced aiming to provide an event where applications of document analysis techniques could be presented. This year's workshop included 2 invited papers, 1 tutorial, 40 full papers and 6 abstract papers.

Prof Rangachar Kasturi opened the workshop with a very comprehensive tutorial entitled "Text Recognition in video images". Prof Kasturi gave a detailed overview of the techniques used nowadays for text recognition in video images, and also presented the outcome of a recent performance evaluation that his research group performed, of text detection and localization algorithms. One more tutorial was programmed for the same day, but unfortunately, Prof G Toussaint couldn't make it for health reasons.

Of special interest were the two invited talks, one from Henry Baird entitled "The state of the art of Document Image Degradation Modeling", and the second from Rejean Plamondon about "The design of an electronic Penpad to edit and correct errors in scanned accounting documents". In his talk Henry Baird listed the degradations that appear to be most important in document image analysis and described the degradation models that have been proposed together with methods for estimating their parameters. In the second invited talk, Rejean Plamondon described an on-line system which recognizes gestures and alphanumeric characters, and which allows an OCR user to correct recognition errors using an electronic penpad.

The remainder of the workshop was divided into eight sessions, with papers grouped into five areas: Document Analysis and Recognition, Recognition Techniques, Systems and Architectures, Performance Evaluation and Improvement, and Emerging Technologies. The material presented in the workshop was of a very high standard. I particularly enjoyed the presentations of Horst Bunke, Larry Spitz and Robert Haralick. Horst Bunke presented a very interesting approach for OCRing in compressed images, Larry Spitz illustrated that Character Shape Coding can be as effective as OCR for duplicate document detection, and Robert Haralick described the improvements in their zone content classification method. Two of the most eye-catching presentations were Daniel Lopresti's, about a system for understanding and reformulating tables, and our presentation about our new method for extracting text from WWW images.

The most interesting part of the workshop, though, was the Panel Discussion and Working Groups session, which took place on the last day of the workshop. The participants had the opportunity to form three discussion groups, in order to address issues that they consider to be important for modern document analysis. I participated in the Web Document Analysis discussion group, in which we tried to assess the current state of the WWW and web documents, and to comment on the possibilities of using current document analysis methods on web documents and on the future of document analysis in conjunction with the wide spread of the WWW. The outcome of all the three discussion groups will appear in the post-workshop book which is to be published in the Springer Verlag Lecture Notes in Computer Science.

Overall, DAS2000 was a very successful workshop, which addressed most of the open problems of the document analysis field, provided the opportunity to converse with top researchers of the field, and played an active role in identifying problems and proposing solutions through the panel discussion session. I found my participation to the workshop a most enjoyable and rewarding experience.

Dimosthenis Karatzas  
email: karatzas@csc.liv.ac.uk

## Report on IMBC2000

The International Marine Biotechnology Conference was organized by the Australian Institute of Marine Science (AIMS) and held in Townsville, Queensland from 29 September to 4 October 2000. The conference was jointly sponsored by Queensland Government State Development (Australia), James Cook University (Australia), Department of Primary Industries (Queensland) and AIMS.

This tri-annual conference proved to be very popular, with over 320 delegates. A broad range of speakers of which most were internationally recognized investigators attended. The topics covered research disciplines ranging from basic marine biology to marine microbiology, biochemistry, medicine, aquaculture, genetic engineering, bioactive compounds and marine biodiversity. Entwined within these topics were many of the engineering principles and methodologies relevant to reaction designs. In addition, a diverse array of poster presentations (mine included) highlighted much of the emerging data relevant to each of the above topics.

The conference was structured into a number of workshop sessions:

- Aquaculture I, II, III, IV chaired by Vernon Coyne (South Africa), Roger Foxall (Canada), Wayne Knibb (Australia) and Jay Parsons (Canada).
- Bioactive Compounds I, II, III chaired by Yeol Kashman (Israel), Chris Battershill (Australia) and Valentin Stonik (Russia).
- Extremophiles chaired by Jennie Hunter-Cevera (USA).
- IUBS/SCOPE sponsored by the International Union of Biological Sciences and SCOPE chaired by Theresa Bert (USA) and Joe Baker (Australia).
- Cell and Molecular Biology I, II, III chaired by Shirley Pomponi (USA), Michelle Kelly (New Zealand) and Jennie Hunter-Cevera (USA).
- Transgenic Organisms chaired by Daniel Chourrout (Norway).
- Symbiosis chaired by Russell Hill (USA).
- Molecular Tools and Markers chaired by Yonathan Zohar (USA).
- Marine Policy chaired by Harlyn Halvorson (USA).
- Marine Microbiology chaired by Russell Hill (USA) and Vernon Coyne (South Africa).

The conference was opened by the Honourable Henry Palaszczuk MLA, (Minister for Primary Industries and Rural Communities, Queensland Government) describing Queensland as having a strong institute-based research network, a deep pool of intellectual talent, a supportive government and abundant natural marine resources. This was followed by plenary lectures by Barry Jones on “Science and Australia” and John Bell on “An Australian Perspective to Marine Biotechnology”, tracing the history of the progress of marine biotechnology from its early days to the present.

With a background in medical biochemistry, the sessions in “Bioactive Compounds” provided the most stimulating materials giving an overview of much of the current work on isolated marine bioactive chemicals and pathogens, both academically- and industrially-based. Many of the other presentations in other sessions, although not directly relevant to

my research, provided many insights into basic marine science and technology associated with genetically altered organisms.

An exciting approach to screening antioxidant activity in extracts of marine organisms was presented by Jason Doyle (Australia). The method utilizes microtitre – plate technology, based on the determination of peroxy radical – trapping abilities of extractable antioxidants by measuring the kinetic rate of substrate oxidation inhibition. Absorption of the coloured dyes produced is measured at maximum wavelength over a period of time using a kinetic microplate reader.

Prof Valentine Stonik (Russian Academy of Sciences) discussed the main pathways of bio-oxidation, taking place in different taxa of the phylum Echinodermata. Homogenates from some parts of Far Eastern Russia may be used for the transformation of available sterol precursors generating oxidized sterols, prospectively as intermediates in the synthesis of some novel steroid drugs.

Prof Elyakov’s (Russia) presentation discussed the development of a new drug, HistoChrome, from the sea urchin. The new drug was created based on naturally occurring quinoid antioxidants from sea urchins. HistoChrome has been confirmed by Russian medical establishments to have high performance in curing ischemia and acute myocardial infarction (AMI). Furthermore, in ophthalmologic practice, histoChrome is said to be an effective cure for the treatment of inflammatory diseases of the cornea, vascular shell and retina of an eye. Elyakov went on to give a more detailed account of histoChrome uses in proliferative processes and in curing contusions and penetrating wounds of the eye. The drug has been patented in Russia for medical application and industrial issues.

Dr Anne Kapuscinski (USA) started the IUBS – SCOPE session on “Impacts of Aquacultured, Genetically Modified Organisms (GMOs) on Native Populations”. GMOs, also collectively known as a brood or group, are created by manipulation of the natural genome of individuals. Careful management of cultured organisms is required because any that are released or escape and subsequently interbreed with wild species can contribute foreign genes to, or alter the genetic diversity of, wild individuals. Dr Bill Muir followed with a description of a mathematical model that provides for an assessment of the environmental risks that transgenics would have if they escape or are released.

The conference ended with a farewell “bush dance” which to my utmost surprise took place outside a

pub. The next IMBC will take place in Japan in September 2003.

From a personal perspective, the conference laid bare the excitement felt with the industry of, and the new and rapid progresses made in, the areas of marine biotechnology with particular reference to genetic engineering. IMBC2000 was an excellent opportunity to present my data at a major international conference, well suited to the inter-disciplinary nature of my research. It also provided the chance to share new knowledge of marine science and its diversity.

Finally, I would sincerely like to thank The University of the Highlands and Islands (Inverness), The British Machine Vision Association, Scottish Association for Marine Science (Oban), The Highland Psychiatric Research Foundation (Inverness), and Integrin Advanced Biosystems (Oban) for the financial support that made it possible to the part of IMBC2000.

Oluwakemi Obajimi  
email: olob@dml.ac.uk

## BMVA Scottish Chapter

After a break of too many years, the Scottish Chapter of the BMVA is active again and has produced a programme of three half-day seminars for 2000/2001.

The first of these seminars was held at the University of Glasgow on 22 November 2000. The subject of this technical meeting was "3D Human Imaging & Applications". We had over 40 people in attendance, coming from four companies and various departments (computing science, math, statistics, biology, human genetics, engineering and medicine) of five Scottish Universities (Heriot-Watt University, University of Glasgow, University of Edinburgh, Strathclyde University and Abertay University).

Our first three speakers described the full body scanners or imagers they are using and/or developing. These are based on two different technologies: photogrammetry (TCTi and 3D-MATIC) and Moiré fringe technique (Wicks and Wilson). Our guest speaker Laura Dekker from TCTi told us that their imager is now a mature technology used in many applications: animation, computer games, medical applications and e-commerce. She explained that the key advantages of photogrammetry are the very short capture time (few ms) and the accuracy ( $\sim 1$

mm). Moreover she presented the new generation of imagers on which TCTi is currently working: a full body 3D dynamic imager able to capture as many as 25 3D models per second! Tim Niblett from Virtual-Mirrors Ltd described his experience of working with a Wicks and Wilson scanner. This scanner appears to be very compact, easy to use and low cost. However its main drawbacks are its capture time (7 s) and the constraints regarding the position of the model scanned and a body coverage which does not include hair, hands and feet. Therefore it is only suitable for applications such as body measurement surveys. Finally Don Whiteford from the University of Glasgow presented the full body imager developed by 3D-MATIC whose characteristics are very similar to those of the TCTi one.

The second part of the seminar was focused on applications based on these 3D human imaging technologies. Naoufel Werghi presented techniques for automatic body segmentation to animate 3D human scans. Paul Siebert described the 3D techniques developed by June Mao (who was unfortunately unavailable through illness) to measure facial soft tissue change and to extract useful 3D shape information. Finally J-C Nebel presented a method to fit 3D models of soft tissue in 3D body data in order to generate realistic soft tissue deformation.

This seminar was also an opportunity for workers and users of 3D imaging technologies to meet each other and exchange views about 3D human imaging and hopefully start new collaborations. The next meeting for the Scottish vision community will be organised by Dr Steve Marshall (s.marshall@eee.strath.ac.uk) on 14 March 2001 at the University of Strathclyde, Glasgow, to talk about "Non Linear Image Processing & Applications".

Further Information: [www.faraday.org/bmvasc](http://www.faraday.org/bmvasc)

How to find us: [www.faraday.gla.ac.uk/findus.htm](http://www.faraday.gla.ac.uk/findus.htm)

Contacts: Paul Siebert ([psiebert@dcs.gla.ac.uk](mailto:psiebert@dcs.gla.ac.uk)) or Jean-Christophe Nebel ([jc@dcs.gla.ac.uk](mailto:jc@dcs.gla.ac.uk)), 3D-MATIC Laboratory, Department of Computing Science, University of Glasgow, tel: 0141 330 3131, fax: 0141 330 3119.

Jean-Christophe Nebel  
email: [jc@dcs.gla.ac.uk](mailto:jc@dcs.gla.ac.uk)



## Report on BMVC2000

The Department of Computer Science at the University of Bristol was host last September to BMVC2000, the 11<sup>th</sup> British Machine Vision Conference, organised and co-chaired by Dr Majid Mirmehdi and Prof Barry Thomas. The conference managed to survive the fuel crisis with no delegate cancellations. There were around 150 delegates from all over the UK as well as 18 other countries – namely Australia, New Zealand, Singapore, China, Japan, France, Germany, Netherlands, Belgium, Czech Republic, Sweden, Greece, Italy, Portugal, Brazil, Mexico, USA and Canada.

Other events at the conference included a one-day Workshop organised by the United Kingdom Industrial Vision Association (attended by about 70 delegates) and an Industrial Exhibition including stands from Intel, Vortex Vision, and National Instruments.

149 original papers were submitted to the conference for double-blind refereeing. A total of 38 oral papers and 42 poster papers were accepted. In addition to the contributed papers at BMVC2000, there was a pre-conference tutorial presented by Prof Andrew Blake on “Probabilistic Inference and Learning in Computer Vision” and Invited Talks by Prof Eric

Grimson, from MIT, USA “Computer Vision Methods for Image Guided Surgery”, and Prof Luc Van Gool, from KTH, Belgium “Wide Baseline Stereo Matching based on Local, Affinely Invariant Regions”.

The conference dinner was held at the Ashton Court Mansion just outside Bristol. At the dinner, as well as a number of conference prizes, the first BMVA Distinguished Fellow prize was awarded to Prof Mike Duff by the BMVA Chairman Prof Maria Petrou (see photo).<sup>2</sup>

Details of other prizes and some further photographs can be found at the conference WWW site: <http://www.cs.bris.ac.uk/events/bmvc2000/>

The conference proceedings was published in two volumes and on CD-ROM. The CD-ROM contains the proceedings of the last five BMVCs. Both hardcopy and CD-ROM proceedings are available at very reasonable costs from the organisers!

Dr Majid Mirmehdi  
email: [m.mirmehdi@compsci.bristol.ac.uk](mailto:m.mirmehdi@compsci.bristol.ac.uk)

<sup>2</sup>The cut-glass vase presented to Prof Duff is just visible behind the certificate in this picture – Ed.

## Royal Statistical Society Conference

Sponsored by the Royal Statistical Society, the conference will be held in the Department of Statistics, University of Glasgow: its theme will be *Spatial Modelling*, and it will include invited talks and organised sessions on the following topics:

Spatial epidemiology, Spatio-temporal modelling, Stochastic geometry, Environmental modelling, Ecological modelling, Combining data at different resolutions, Image analysis, Medical imaging.

Invited speakers include C Donnelly (UK), S Richardson (UK), D Hogg (UK), H Rue (Norway), R Fewster (New Zealand), E Renshaw (UK), R Haining (UK), N Cressie (USA), J Haslett (Eire), V Isham (UK), K Mardia (UK), C Wikle (USA), A Baddeley (Australia), J Moeller (Denmark), G Sebastiani (Italy), M Berman (Australia), J Besag (USA).

There will be two short courses on Tuesday 3 July on Model-based Geostatistics by Peter Diggle and Paulo Ribeiro (UK) and Shape Analysis by Ian Dryden (UK).

Authors are invited to submit a single A4-page abstract, deadline 19 February. Abstracts may be submitted by email to [rss2001@statistics.glasgow.ac.uk](mailto:rss2001@statistics.glasgow.ac.uk).

For full details of the conference, including the registration form, and information on the submission of contributed and invited papers, visit the conference website (<http://www.rss2001.glasgow.ac.uk>). Alternatively information and registration forms can be obtained from the conference organisers: RSS2001, Dept of Statistics, University of Glasgow, Glasgow, G12 8QW (tel: 0141 330 5024, fax: 0141 330 4814, email: [rss2001@statistics.glasgow.ac.uk](mailto:rss2001@statistics.glasgow.ac.uk)).

## Ordinary Meeting of the Royal Statistical Society

The meeting<sup>3</sup> will be held on Wednesday 14 February 2001 at 5 pm in the Royal Statistical Society, 12 Errol Street, London EC1Y 8LX (tel: 0171 638 8998). The main business of the meeting will be the following paper:

C Glasbey (BioSS) & K Mardia (University of Leeds)  
"A penalised likelihood approach to image warping".

<sup>3</sup>Unfortunately, this issue will probably appear after the meeting: however, this notice may still be of value to those who wish to obtain a copy of the printed paper for the talk - Ed.

Warping functions, which deform images by mapping between image domains, are a key component of imaging technology. We estimate these functions by maximising a penalised likelihood, strategically constructed through a new image model to measure similarity between images and new distortion criteria to penalise warpings. The power of the method is illustrated through registering a remotely-sensed image, aligning microscope images, and discriminating between species of fish.

Proofs of the paper are available as postscript from: <http://www.maths.soton.ac.uk/staff/jjforster/rs/> or hard copy from Val Evans at the RSS ([v.evans@rss.org.uk](mailto:v.evans@rss.org.uk)).

## Special Announcements

### BMVA Distinguished Prize 2001

The BMVA Executive Committee seeks nominations for the Distinguished Fellow 2001 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 the Chairman of the Prize Committee, Prof Roy Davies ([e.r.davies@rhul.ac.uk](mailto:e.r.davies@rhul.ac.uk)), by the end of April 2001.

### The Sullivan Doctoral Thesis Prize 2001

The BMVA Executive Committee seeks nominations for the Sullivan Doctoral thesis prize. The 2001 prize will be awarded to the best thesis nominated which was submitted and examined during the calendar year 2000. Thesis examiners and supervisors may act as nominators, but the committee would like to receive an accompanying report and endorsement of the nomination from the thesis external examiner.

Please send any nominations to the secretary of the Association, Dr Paul Rosin ([paul.rosin@cs.cf.ac.uk](mailto:paul.rosin@cs.cf.ac.uk)) by the end of April 2001. The theses nominated should be made available through a web page. In addition, two hard copies (not necessarily bound) should be sent to Dr Paul Rosin, Department of Computer Science, Cardiff University, Queen's Buildings, Newport Road, Cardiff, CF24 3XF.

## BMVC2002

The BMVA Executive Committee looks for expressions of interest by University groups active in research in the field of Machine Vision and Pattern Recognition, to organise BMVC2002. The Committee will consider all expressions of interest that arrive by 15 March 2001. A short list of offers to organise the conference will be formed by the committee during its meeting on 21 March. The short-listed groups will then be asked to produce full proposals that will be considered by the committee during its meeting in May. The full proposals should include a full budget and organisational details. Please send your expressions of interest by email either to Prof Maria Petrou ([m.petrou@eim.surrey.ac.uk](mailto:m.petrou@eim.surrey.ac.uk)) or to Dr Paul Rosin ([paul.rosin@cs.cf.ac.uk](mailto:paul.rosin@cs.cf.ac.uk)).

## BMVC2001 – Call for Papers

The British Machine Vision Conference (BMVC) is the main UK conference on Machine Vision and related areas. Organised by the British Machine Vision Association, the 12<sup>th</sup> BMVC will be held in September 2001 at the University of Manchester, Manchester, UK. Papers will be refereed on their originality, quality of evaluation, presentation and empirical results.

Conference topics include:

- Image Features and Coding
- Multi-View and Stereo Vision
- Grouping and Segmentation
- Texture, Shading and Colour
- Object Recognition
- Real-Time and Active Vision
- Shape and Surface Geometry
- Medical and Industrial Applications

Deadline for paper submission: 13 April 2001

Conference dates: 10–13 September 2001

For contact details and instructions for paper submission, see: <http://www.bmvc2001.man.ac.uk>

Dr Tim Cootes  
email: [t.cootes@man.ac.uk](mailto:t.cootes@man.ac.uk)

See the BMVA website for further up-to-date information on BMVA activities:

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