# **BMVA** News

The Newsletter of the British Machine Vision Association and Society for Pattern Recognition Volume 15 Number 4 June 2005

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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 1 Sept 2005.

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## Editorial: Beware the Ides of March

I have often remarked that machine vision is undergoing something of an explosion of interest and progress, and this is clearly demonstrated by the proliferation of conferences and meetings. Vision journals are also generally enjoying increased coverage and readership, so it may come as a surprise that at least one - Real-Time Imaging - is terminating publication in the coming months. This is particularly sad for me, as I have been highly enthusiastic about real-time work - reflecting as it does a major facet of practical implementation - and I feel that the Journal has done sterling work to promote methodology in this area. Some would say that while computer vision represents all that can be achieved in artificial vision, including particularly the science of the subject, machine vision is involved with implementation into real applications, including necessarily all the requirements for speed, while at the same time dealing with the nasty realities of the real world: hence Real-Time Imaging has been at the very core of machine vision, if not also of computer vision.

So what has gone wrong? Certainly the situation cannot be that the demand for real-time solutions has

<sup>&</sup>lt;sup>1</sup>The British Machine Vision Association and Society for Pattern Recognition is a Company limited by guarantee, No. 2543446, registered in England and Wales. Registered Office: Granta Lodge, 71 Graham Road, Malvern, WR14 2JS. The Association is a non-profit-making body and is registered as charity No. 1002307.

<sup>&</sup>lt;sup>2</sup>Rita Cucchiara recently informed me that the distinction does not arise in Italian, in which people refer to 'Visione Artificiale'.

evaporated. With new applications of vision hitting the market at a rate of knots, and a great many more being needed, quite the opposite is the case. No, in my mind two things have happened: (1) so many applications need real-time solution and are achieving it that it is no longer news in itself, i.e. real-time techniques have become submerged among the other details of the imaging environment; (2) special hardware means for solving the real-time speed problem are now less often needed, as so much can now be achieved by software even on low-cost PC platforms. Either way, a specialist journal that deals largely with real-time techniques seems to have become an anachronism. (More accurately, however, what has happened is that a specialist journal on this topic is no longer a *marketable* proposition, which is not the same as the contents being anachronistic.)

It is odd that this situation has arisen, since in the early days of machine vision - particularly the 1970s and 1980s - many of us expended so much effort on the hardware and real-time aspects of our work that this often became an end in itself (recall for example Mike Duff's CLIP chips), and a good number of hardware designs that originated in academics' laboratories were put on the market. In my own applications I remember spending about three quarters of my time on hardware problems. Nowadays, the manpower needed to implement a typical vision system is down to less than a quarter of the overall system, while the hardware cost has likewise fallen from ~  $\pounds 20,000$  to ~  $\pounds 5,000$ . While this leaves us with much more time for developing sophisticated algorithms, it de-emphasises the real-time aspects and makes a specialist journal less relevant.

But how could all this have happened within the space of just over a decade? Interestingly, it probably didn't. More likely, the Journal was introduced too late in the day. If it had been born in the 1980s or earlier, it would have had a bonanza, and might even have become so popular that no-one would be contemplating its demise at this point in time. There are many products and inventions that hit the market too late and thus don't really take off, or else are pushed out by inferior products (Betamax v. VHS, Mac v. PC, ...). There are lessons here for all of us: it is always important to note the valid time-span of the work we are doing, and to jump off in time. In research, knowing when to stop, and what not to work on, are key. There are already intimations, by the way, that 3D vision is a 'done deal', so further work in this area may not yield that coveted Nobel Prize ...

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

## **Face and Gesture Recognition**

#### 7th IEEE International Conference on Automatic Face and Gesture Recognition, FG2006, Southampton, UK, 10–12 April 2006 – Call for Papers.

The IEEE conference series on Automatic Face and Gesture Recognition is the premier international forum for research in image- and video-based biometric recognition, and hand gesture and body movement analysis. The program will be single track with posters. The conference is sponsored by the IEEE Computer Society TC PAMI and hosted by the British Machine Vision Association in conjunction with the University of Southampton, UK. FG2006 will be held in Southampton which is in central south UK near Heathrow and many top tourist sites.

The general conference topics will include Face Recognition and Analysis; Gesture Recognition and Analysis; Technologies; and Body and Movement Analysis. We particularly welcome papers that explore links of face and gesture to psychological analysis.

#### **Important dates**

Paper submission: 1 November 2005 Notification of acceptance: 5 January 2006 Final papers due: 30 January 2006

#### Paper submission

Papers should be 6 pages max. with layout using the IEEE CS Press Style, for which guidance can be obtained from the conference web site: www.fg2006.ecs.soton.ac.uk/

#### **General Co-chairs**

Mark Nixon (University of Southampton) Josef Kittler (University of Surrey)

#### Local Organising Committee

- John Carter (University of Southampton) Proceedings Chair
- Paul Lewis (University of Southampton) Media Chair
- Steve Gunn (University of Southampton) Technology Chair
- Majid Mirmehdi (University of Bristol) Publicity Chair
- Rachel Gartshore (University of Surrey) Conference Management.

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

### ICDP 2005 – a Pictorial Record

# IEE International Symposium on Imaging for Crime Detection and Prevention

This symposium took place over 7–8 June 2005, at the IEE, Savoy Place, London, UK. I attended the meeting and found it extremely valuable in the number and variety of very interesting papers (including a good many from international speakers) and the friendly, almost workshop atmosphere. There were more than 80 delegates – enough to provide a wide range of topics, while at the same time giving one the feeling that one had talked to almost everyone and had had a chance to learn a lot about what is going on around the world in this exciting and progressive area. In spite of the inexplicable failure of my own digital camera after only 18 months (during which I probably took more



Al researchers Richard Neal and Sarah Mercer (both of HMG Communications Centre) swapping notes in a poster session.



Bob Fisher (Edinburgh University) addresses an important point to Anil Bharath (IC): both are deeply interested in the interrelation between human and computer vision.

photographs than during the rest of my lifetime), Mark Sugrue (RHUL) kindly lent me his, and I managed to fulfil what has become one of my emerging roles as Editor of BMVA News.



Charles Attwood (Thales) and Noel Brahma (Sira) reflect on how the conference touches on their respective interests.



Roy Davies's third edition attracted the attention of Rita Cucchiara, a notable visitor from University of Modena, Italy.



Graeme Jones introduces Claudio Piciarelli (University of Udine).



Ambience of the IEE's excellent lecture facilities at Savoy Place. Claudio Piciarelli is the speaker.



Rita Cucchiara makes a point about tracking people between camera views.

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

# Medical Image Understanding and Analysis 2005

University of Bristol, 19-20 July, 2005

For full details of the conference, including its committees and sponsorships, see the conference website: www.miua.org.uk

Dr R Bowden University of Surrey email: r.bowden@surrey.ac.uk

# Nominations for BMVA Executive Committee

Nominations are requested for the forthcoming election of Executive Committee members of the BMVA. Nominees must be paid-up members of the Association and agree to serve for a period of two years. A member of the Committee is expected to participate in the bimonthly committee meetings normally taking place in Oxford and London. Regrettably BMVA does not cover the travel expenses of the members participating in the committee meetings.

Completed nomination forms should be sent to the BMVA Secretary at the address below and must be received by 31 July 2005. This request for nomination must be signed by the individual standing and one other member. The nomination should also include a brief biographical statement for distribution to BMVA members.

The elected committee consists of 10 elected members, five of whom are usually elected each year. This year only four members will be elected as Dr Richard Bowden stood down from the elected committee a year early in 2004. Current members are listed on the website (www.bmva.ac.uk/admin/exco.html). The members elected in 2003, who will stand down this year, are:

- Professor R Davies,
- Dr P Hall,
- Dr A Fitzgibbon, and
- Dr J Ferryman

If more than four nominations are received for the four elected places, a postal ballot will be held.

Voting papers will be sent out in early August and will need to be returned by 2 September. Each member will be able to vote for up to 4 candidates. The results will be announced at BMVC2005 at the Oxford Brookes University and in BMVA News.

Please send a completed nomination form (enclosed with this circulation of BMVA News) to BMVA Secretary: Dr David Marshall, Cardiff School of Computer Science, Cardiff University, Queens Buildings, 5 The Parade, Roath, Cardiff, CF24 3XF.

Dr Dave Marshall Cardiff University email: dave.marshall@cs.cardiff.ac.uk

## **Promoting Computer Vision**

One of the aims of the BMVA is to publicise Computer Vision, to show people what wonders we can now perform. We want to make people more aware of what can and can't be done with computers and images. There are three broad audiences:

- The general public (who pay for much of the academic research)
- Potential users (people in industry, medicine or other areas of research, who could benefit from our algorithms, or with whom we could collaborate)
- Students (whom we may wish to entice into the area).

Our current activities include running the website, organising a stand at IPOT at which people can demonstrate their latest ideas, and the promotion of the conferences and workshops we currently organise.<sup>3</sup>

We don't do much to educate the general public, and should perhaps be doing more.

CV is beginning to affect people's lives in quite direct ways (e.g. numberplate recognition systems such as the congestion charging, the proposed biometrics in ID cards and passports, or the use of computer-aided diagnosis systems). People have a right to be informed of what the current technology is capable of, and what its shortcomings are.

The BMVA is keen to increase its promotional activity, would welcome any suggestions as to how we can further publicise Computer Vision to any of the audiences mentioned above. Please send comments or suggestions to: chair@bmva.ac.uk

Dr Tim Cootes Manchester University t.cootes@man.ac.uk

# Funding from the VVG Network of Excellence

The VVG Network of Excellence exists to assist promote UK research into the convergence of Vision, Video and Graphics. This NoE is community owned and is able to fund secondments of research staff. It can help facilitate contact between labs of various kinds, because it has representation in all three areas. There are no restrictions: researchers can be seconded from or to industry and from or to foreign labs.

Examples of current funding include exchanges between Sheffield and Surrey, Cardiff and Tsinghua, Bath and York, and Bath and University of Boston.

The VVG NoE will fund travel and accommodation as well as any loss of earnings incurred (e.g. by a PhD student who misses supervision duties). It will also fund a subsequent presentation at a VVG conference. A refereed contribution is ideal, but the conference sets aside time for presentations specifically from VVG funded secondments. Contributions to that presentation will not count as a publication; the idea is to gather people in one room.

VVG05 is to be held at Heriot Watt, 7–8 July. Andre Gagalowicz, Joern Oestermann, Hans-Peter Seidel and Demetri Terzopoulos are invited speakers; see www.ece.eps.hw.ac.uk/~mtc/vvg05. It has a full programme of papers that represent a diverse cross-section of VVG interests in the UK, Europe, and North America.

Everyone is welcome, indeed encouraged, to apply for VVG NoE funding by submitting an application of about two sides A4. The NoE will review the applications and reach a decision as soon as possible. Applications can now be made at anytime.

For more details, contact Peter Hall pmh@cs.bath.ac.uk or see the website:

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

Dr Peter Hall University of Bath email: pmh@cs.bath.ac.uk

<sup>&</sup>lt;sup>3</sup>Not to mention publishing the newsletter! – Ed.

**Face to Face – in Realistic 3D** 



Computing experts at Cardiff University are developing a super-realistic animation system that simulates the movements of a face, based on speech.

The team in the School of Computer Science has developed highly advanced software which is continually learning the facial dynamics associated with a speaker and applying this knowledge to synthesize realistic facial animations.

"Our aim is to create sophisticated facial animation through speech," explained Dr David Marshall. "The applications include a new sophistication in film, computer graphics and animation technology – not just for films and games, but also for educational, mobile telecommunications, advertising, information services and internet applications."

The team has now become the first to invest in the latest video camera technology from US company 3dMD. This latest generation "4D system" is the first commercially available product that combines the element of time with the rapid generation of medically accurate 3D surface models.

"We had exhausted the possibilities of 2D technology," said Dr Marshall. "The new camera enables us to capture high quality data at very high speed, and will provide the next level of detail to reproduce expressions and the subtle nuances that happen during speech."

Dr Dave Marshall Cardiff University email: dave.marshall@cs.cardiff.ac.uk

# Dictionary of Computer Vision and Image Processing

Robert Fisher, Ken Dawson-Howe, Andrew Fitzgibbon, Craig Robertson, Emanuele Trucco

John Wiley and Sons, June 2005

This book is a comprehensive and authoritative dictionary of the 2500 most commonly used terms in the field of computer vision, image analysis and image processing. Compiled and developed by an experienced team of authors, all key topics, terms and systems are clearly and authoritatively defined and visually enhanced with helpful illustrations. Each entry summarizes the meaning of the term and provides supporting examples. Application areas include remote sensing, surveillance, forensic science, biometrics, medicine, entertainment media and and communications.

For more details, a sample chapter and purchase details, see:

http://eu.wiley.com/WileyCDA/WileyTitle/ productCd-0470015268.html

Professor Bob Fisher email: bob.fisher@sophia.inria.fr

## Call for Expression of Interest to host BMVC 2007

The BMVA executive committee would like any interested parties to inform them of their interest in hosting BMVC2007. At this stage only an expression of interest is required pending discussion by the Executive Committee: successful expressions of interest will be asked to supply an official bid to hold the conference.

For the expression of interest please supply the following details:

- Main contact for the conference full postal address, telephone and email
- Prospective members of the conference organising committee
- Provisional dates for the conference, with a confirmation of provisional booking details of accommodation, room bookings for conference venue and meals.

BMVC is traditionally held in the first two weeks of September and runs from Monday afternoon with a tutorial session and full conference single track podium and poster sessions Tuesday through to Thursday lunch time. The main conference auditorium must be large enough to accommodate 150+ delegates and must be a tiered auditorium with adequate A/V facilities. For further information on preparing a proposal to run BMVC, please refer to:

www.bmva.ac.uk/admin/bmvc\_proposals.html

Please send expressions of interest to BMVA Secretary, Dr David Marshall.

Dr Dave Marshall Cardiff University email: dave.marshall@cs.cardiff.ac.uk

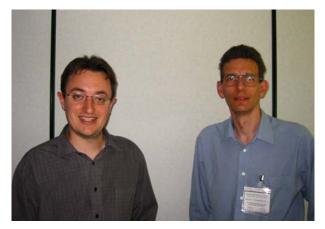
## **BMVA and IFP meet EPSRC**

On 22 June, John Gilby (representing the Imaging Faraday Partnership) and I went to visit Nicolas Guernion, the Associate Programme Manager for "People and Interactivity" at EPSRC. His remit includes "Image and Vision Computing", to which many of you may have submitted applications. The objective of the visit was to strengthen the link between EPSRC and the BMVA, and to look for ways in which the BMVA can help EPSRC. We were able to describe BMVA and the IFP, to give an overview of the field and to give examples of some of the successes of Computer Vision.

He had prepared some statistics for us. In the four years 2001-2005, 608 proposals were submitted to the Image and Vision Computing strand. Of those, 184 (30%) were funded (35% by value), which is in line with average rates across EPSRC. The total value of funded grants was £26.8m over that period.

It emerged from our discussions that it is important to the EPSRC that it be able to demonstrate that it is funding successful research – it has to justify its performance to government, and the more success stories it can point to, the better it is able to argue for more funding. The BMVA will thus begin gathering examples of UK successes in Computer Vision. If you have examples (e.g. prizes in international conferences, successful spin-outs or significant applications of computer vision), can you send them to me, and I'll begin putting together a web page. Of course, it is always good practice to acknowledge funding sources in every paper. The meeting with Nicolas was thus fruitful, and hopefully the beginning of a productive dialog between EPSRC and the computer vision community.

Dr Tim Cootes BMVA Chair t.cootes@man.ac.uk



Nicolas Guernion (EPSRC) and Dr Tim Cootes (BMVA Chair). Dr John Gilby, also at the meeting, does not appear for obvious reasons.



#### **BMVC 2005**

The British Machine Vision Conference (BMVC 2005) will take place at Oxford Brookes University on 5–8 September. This three-day single-track conference includes poster sessions and an industrial day.

The residential and conference accommodation will be at the Headington Campus of Oxford Brookes University, about one mile from Oxford city centre. The Conference Banquet will be held in the Hall of New College, founded in 1379.

For further details see the conference website:

cms.brookes.ac.uk/computing/bmvc2005

Professor W.F. Clocksin Oxford Brookes University email: wfc@brookes.ac.uk

### **Book review**

#### E. R. Davies: *Machine Vision: Theory, Algorithms, Practicalities*, 3rd edition, Morgan-Kaufman, 2005

The first two editions of Roy Davies' book have been *the* standard text among my research students for a number of years and, when the second edition went out of print, I regularly badgered Roy to produce a third edition. It seems I wasn't the only one, for the third edition has recently appeared. The vital statistics of the new tome are £50, 934 pages, 29 chapters – and 1.2 kg! The pages are nicely presented, with wide margins for notes and plenty of diagrams to illustrate the text.

The first part of the book considers low-level vision. After the usual introductory material, there is an indepth exploration of image filtering operations which covers common (mean, median) and uncommon (mode, rank) approaches. Also addressed are topics not found in most works, such as the shifts introduced by the various filters. This is typical of the material throughout the book: it covers not only the principles and mathematics but also considers the consequences of applying the technique, an important consideration in practice. Subsequent chapters consider thresholding, edge detection, binary shape analysis and morphology. All these are written in Roy's inimitable style: approachable, detailed, authoritative.

The second part of the book looks at intermediate-level vision, starting with line and circle detection, moving on to Hough transforms, and then to ellipse, hole and corner detection. The final chapter in this part considers more general pattern matching via techniques such as graph-theoretic approaches, generalised Hough transforms, and maximal cliques.

The third part of the book explores 3D vision and motion. After some introductory chapters, motion is considered, with emphasis on optical flow and tracking. There are short sections on snakes and Kalman filtering which motivate further reading. Subsequent chapters look at the use of invariants, at topics related to egomotion, and at camera calibration. These chapters are generally less detailed than those in the first two parts but give the reader a good idea of the principles involved.

The fourth part of the book is entitled *Towards realtime pattern recognition systems* and examines automated visual inspection, statistical pattern recognition, neural networks and texture. There are also chapters that consider the practicalities of acquisition and system design. In this reviewer's opinion, these chapters sit a little less well together then the earlier ones; for example I would have expected the discussion of texture to fall into intermediate vision. However, the chapters on automated inspection are excellent, combining well-principled approaches and an obvious appreciation of the practicalities involved.

Finally, there is an interesting concluding chapter and an appendix that introduces essential ideas in robust statistics.

Are there any weaknesses in the book? I found none in terms of the actual discussions of principles and algorithms. However, despite the thickness of the book, many topics are considered in less depth than others; this is almost inevitable, given the nature of the discipline. Even in the areas that are covered in depth largely low- and intermediate-level vision - some topics receive less attention. For example, there is a chapter on thresholding in the context of segmentation but little discussion of other segmentation methods; and the various watershed algorithms, currently the flavour of the month for segmentation, do not appear to be mentioned at all. Colour is also quite weakly represented: although its importance is mentioned early in the book, the majority of the algorithms are presented in the context of grey-scale images only.

Notwithstanding the above, I found this to be an excellent book, combining motivating discussions of principles with good reference material and an appreciation of practicalities. Roy is to be congratulated on walking the difficult tightrope between clarity of explanation and detailed exposition with alacrity. I shall certainly recommend the book to my research students for the image processing side of vision and as a good introduction to 3D and motion techniques. I also intend to dip into it quite a lot over the summer – I just wish it weighed less!

Adrian F. Clark University of Essex email: alien@essex.ac.uk

#### **Mechatronics Forum Conference**

The 10th Mechatronics Forum Biennial International Conference will be held 19–21 June 2006 in the USA at the Penn State Great Valley campus in the Philadelphia suburbs. For full details please check the conference website at www.gv.psu.edu/mx2006.

Authors should email original 4-page extended abstracts as Word documents using 10-point Times Roman or similar for review on or before 31 March 2006 to the conference chair at drussell@psu.edu. Please name your abstract file: "MX2006 – your name.doc" e.g. "MX2006 David Jones.doc" and use "MX2006 Abstract – your name" in the subject line. Authors of accepted papers will receive a template for complete paper submission in PDF format for inclusion in the MX2006 CD Proceedings and Book of Abstracts. Full papers will be due 1 May 2006. In order for a paper to be published, at least one author must register for the conference. The best papers will be submitted to a special edition of an internationally renowned journal.

Please accept our apologies if you receive multiple copies of this call for participation but we are broadcasting for widest participation on a worldwide basis.

Dr David Russell General Chair MX2006 email: rzn@gv.psu.edu

# THE IMAGING SCIENCE JOURNAL<sup>4</sup>

Aims and scope

The Imaging Science Journal is the official Journal of The Royal Photographic Society that covers exclusively both fundamental and applied scientific aspects of imaging. The content of the journal includes most areas of activity concerned with conventional analogue, chemical, electronic, digital and hybrid imaging systems. Within the context and scope of the journal the term imaging is taken to mean: the recording and visualisation of information recorded from radiation of any kind, emitted from, reflected by, or otherwise affected by an object. The recording media include conventional photochemical, electronic and any other media for recording, manipulation, display or transfer of images and include moving, or time-based imaging, as well as still imaging.

The main subject areas include:

Applications and display
Consumer imaging
Digitisation and storage
Forensic imaging
High speed imaging
Image acquisition

<sup>&</sup>lt;sup>4</sup>I took the liberty of including this item because 'imaging' (image acquisition and processing, and other related topics) is vitally important, and now and again people need suggestions of where to publish or read such material – Ed.

Imaging Image quality Input/output devices Machine vision Medical imaging Multispectral imaging Vision and imaging Image processing Image security Instrumentation Media life expectancy Metrology and metrics Psychometric scaling

#### Chief editor

Dr Ralph Jacobson Emeritus Professor of Imaging Science, University of Westminster, Harrow, UK

#### **Executive editor**

Dr Robin Jenkin Cranfield University, Royal Military College of Science, Shrivenham, UK

The Imaging Science Journal is published by Maney Publishing on behalf of the Royal Photographic Society. Visit the Society's website at: www.rps.org. A sample issue may be viewed on:

www.ingentaconnect.com/content/maney

#### Call for papers

Contributions should be sent to the Executive Editor. Electronic submission is strongly encouraged: the preferred format for initial submissions is a PDF file, which should be sent to isj@rmcs.cranfield.ac.uk. Submission of hard copy is also welcome: send two hard copies of the manuscript to Dr R B Jenkin, Executive Editor.

For further information, please visit:

www.maney.co.uk/journals/imagingscience

# European Workshop on Integration of Knowledge

The 2nd European Workshop on the Integration of Knowledge, Semantic and Digital Media Technologies, 30 November – 1 December 2005, IEE, Savoy Place, London – Call for Papers.

www.acemedia.org/ewimt2005

EWIMT 2005 addresses integrative research targeting 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, semantics and low-level multimedia processing, and link them with industrial research and development engineers who could exploit the underlying emerging technology. EWIMT 2005 is now asking for submission for the following subjects, including, but not limited to:

- Integration of content-based multimedia analysis for low and medium-level signal processing and natural language and speech processing
- Knowledge assisted multimedia data mining
- Relevance feedback for semantic semi-automatic annotation
- Integration of multimedia processing and Semantic Web technologies to enable automatic content sharing, processing and interpretation by machines
- Multimedia ontology infrastructures for specific application domains
- Scalable and robust content representation, adaptation and transmission
- Content, user and network aware media engineering
- Knowledge-based inference for semantic media annotation
- Multimodal techniques, high dimensionality reduction and low-level feature fusion.

Submissions can be made at:

www.acemedia.org/ewimt2005/submission.html

#### **Important Dates**

15 August 2005: submission of extended summary20 September 2005: notification of acceptance10 October 2005: submission of camera-ready papers.

EWIMT2005 is part of the Visual Information Professional Network event programme.

www.iee.org/oncomms/pn/visualinformation/index.cfm

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

# UKIVA to provide free Research Membership

The UK Industrial Vision Association is launching a Research Membership, to enable the Association to work closely with academic research institutions.

Research Membership will be free. The UKIVA will produce a Research Directory on their web site. This will consist of:

- Research Institutions providing UKIVA with a contact name and address (this should be that of the Head of the Department not individual researchers) and an agreement to put a link back to us on their web site.
- Research Members will be able to submit a short report about their work, relevant to the use of machine vision by industry, of 200/250 words, with a link back to their own research web site. (No offers, other than training courses, which would compete with trading members, can be included.)

The UKIVA web site front page will also include a link to a new category 'Courses'. This will include all types of University courses related to vision, as well as those offered by member companies. All the information needs to be kept up to date, so we would request updates at least once a year. The UKIVA would offer help through researchers being able to ask questions of our members.

Any Research Institute interested should contact the UKIVA by email at rm@ukiva.org for an application form.

Jennie Harris UKIVA email: jennie@ukiva.org www: www.ukiva.org