INFORMATION SOCIETY TECHNOLOGIES
(IST)
PROGRAMME

ECVision
European Research Network for
Cognitive AI-enabled Computer Vision Systems

Thematic Network

Fourth Six-Monthly Periodic Management Report

IST 2001 Workprogramme
Section IV.2.1 – Real-Time Distributed Systems
Sub-section (ii) – Cognitive Vision Systems

Project Acronym: *ECVision*
Project Full Title: European Research Network for Cognitive
                             AI-enabled Computer Vision Systems

Proposal / Contract No.:   IST-2001-35454
Date of Preparation: 23rd June 2004
Period Covered: 1st September 2003 – 29th February 2004

TABLE OF CONTENTS

1. INTRODUCTION

This document summarizes the main activities of *ECVision* during its fourth six-month period of operation, from 1st September 2003 to 29th February 2004. It was a busy period, with some ten specific actions being approved and launched, and with the Dagstuhl workshop on cognitive vision providing a big impetus for the further development of the discipline.

The report also presents a synopsis of the main outcomes under the headings of the various deliverables identified in the contract. As always, the deliverables represent work in progress with several versions of the same deliverable developed over the lifetime of the project. The versions reported on in this document represent current progress in the achievement of the overall goals.

Finally, we review the current financial standing of the network. Even though it is achieving all its goals, the network is continues to spend less than was originally budgeted, due mainly to lower than expected expenditure on travel.

2. NEW MEMBERS

Three new members joined ECVision in this semester. These are as follows:

September 2004   **Peter Auer**,
                      University of Loeben, Austria.

November 2004   **Filiberto Pla**,
                      Universitat Jaume I, Spain.

January 2004   **James Ferryman**,
                      University of Reading, United Kingdom.

3. HIGHLIGHTS OF THE SEMESTER

The following highlights of activities have been abstracted from the announcements and news sections on the *ECVision* website (see http://www.ecvision.info/news/News.htm for full details).

September 2003   A Specific Action (39-1) was announced to support a **Cognitive Computer Vision Colloquium** being organized by the Czech Technical University in Prague on the 12 and 13 January 2004. The Colloquium website is at: http://cmp.felk.cvut.cz/cmp/events/colloquium-12-Jan-04/
                      A report on the outcome of the Colloquium can be found at: http://www.ecvision.org/research_planning/SA_39-1_Cognitive_Vision_Colloquium.htm

                      The **Mid-Term Review** and the third ECVision six-monthly meeting were held in Frankfurt on the 13th September. The presentations and review documents can be accessed on-line at: http://www.ecvision.org/information/Third_Six-Monthly_Meeting_and_Review.htm.
                      The Commission report on the **mid-term review** was released. It may be accessed at http://www.ecvision.org/information/Mid-Term_Review.htm

October 2003   A very successful workshop on Cognitive Vision was held in Dagstuhl on the 27-31 October. This workshop, **Dagstuhl Seminar 03441**, was organized by Henrik I. Christensen, KTH and Hans-Hellmut Nagel, University of Karlsruhe. The official report and a list of participants with copied of their talks is available at http://www.dagstuhl.de/03441/

November 2003	A Specific Action (7-3) was launched to **strengthen the impact of industrial activities**, to support ECVision member projects (especially those without industrial participation) and their technologies, and to promote the use of resources developed by TA4 (Industrial Liaison). This action is being undertaken by Patrick Courtney, PB Consulting. Details of the current status of the action can be found at: http://www.ecvision.org/information/Specific_Action_Status.htm#7-3
	A Specific Action (13-2) on **Software Frameworks for use in Cognitive Vision** was launched. The objective is to summarize, compare and evaluate middleware, software frameworks, and architectures that are used or can be used for developments in CV. The action is being undertaken by the Technical University of Vienna and the University of Bielefeld. Details of the current status of the action can be found at: http://www.ecvision.org/information/Specific_Action_Status.htm#13-2
December 2003	A Specific Action (8-3) was launched to develop course material on **Probabilistic Graphical Models for Cognitive Computer Vision**.. This action is being undertaken by Hilary Buxton, University of Sussex. Details of the current status of the action can be found at: http://www.ecvision.org/information/Specific_Action_Status.htm#8-3
	A Specific Action (8-2) was launched to support the organization of **ECCV 2004 Workshop on "Real World Issues in Animate Vision**". Unfortunately, due to unforeseen circumstances, this workshop had to be cancelled.
January 2004	A Specific Action (37-2) was launched to support the organization of **ECCV 2004 Workshop on Attention and Performance in Computer Vision - WAPCV 2004**. For more information, see http://dib.joanneum.at/wapcv2004
	An open **Call for Proposals** for specific actions to sponsor **student and staff exchanges** was launched. Further details can be found on the ECVision website at: http://www.ecvision.org/information/Funding_for_Specific_Actions.htm
	Joanneum Research announced the availability of its **MPEG-7 library**. In the course of a series of projects, partially funded by the European Commission and by national research programs, Joanneum Research has developed a C++-implementation of the full MPEG-7 standard ISO/IEC 15938:2001. It is available for download at: http://iis.joanneum.at/MPEG-7
	Patrick Courtney organized an industrial liaison workshop with the members of the LAVA consortium in Grenoble on the 19th and 20th January.
February 2004	A Specific Action (2-2) to support the **2nd Summer School on Cognitive Computer Vision** was launched. The Summer School is again being organized by Wolfgang Förstner and will be held over a 5-day period, from August 16th to August 20th, 2004 at the Activotel, Much, Germany. For more details see: http://www.ipb.uni-bonn.de/events/summerschool04/summerschool04.html The lecture notes for the **First ECVision Summer School on Cognitive Vision** were made available on-line at: www.ecvision.org/education/Summer_School_on_Cognitive_Vision_2003.htm

A Specific Action (33-1) was launched to support the organization of **ECCV 2004 Workshop on Statistical Learning for Computer Vision**.
For more details please see http://slcv.icg.tu-graz.ac.at/

The **Cognitive Computer Vision Colloquium** was held at the Czech Technical University in Prague on the 12 and 13 January 2004 and a report on the implications for cognitive vision can be found at:
http://www.ecvision.org/research_planning/SA_39-1_Cognitive_Vision_Colloquium.htm

A Specific Action (25-1) was launched to support **CVPR 2004 Workshop on Generic Object Recognition and Categorization**. The workshop website can be accessed at
http://www.vision.ethz.ch/cvpr04-gorc/

A Specific Action (13-3) to support a **staff/student exchange** was awarded to Walter Kropatsch, Vienna University of Technology. The action is to fund a ten-day visit by Zygmunt Pizlo to the Vienna University of Technology in June 2004. The aim of the visit is to initiate collaboration on the study of pyramid algorithms as models of human cognition.

4. SUMMARY OF ACTIVITIES BY AREA

4.1 Research Planning

This was a very important semester for the research planning area.   The central event was the Dagstuhl seminar on Cognitive Vision, organized by Henrik Christensen and Hans-Hellmut Nagel. Although originally conceived outside the framework of ECVision, it quickly became apparent that it had much to offer in the definition and development of the discipline. Indeed, the majority of the participant were members of the ECVision network.

The Dagstuhl meeting was important for several reasons. It provided a forum which encouraged intense and vigorous debate, it forced us to look hard at the evolving discipline of cognitive vision, and it clarified exactly what each scientific constituency expects of cognitive vision. Without doubt, every participant left the week-long meeting with a much clearer idea of where they were coming from in the context of cognitive vision and, more especially, where they were going.

The most immediate outcome of the meeting was the creation of a new definition of cognitive vision systems:

> A cognitive vision system can achieve the four levels of generic computer vision functionality of detection, localization, recognition, and understanding (in the sense of comprehending the role, context, and purpose of a recognized entity and its categorization into meta-level class on some basis other than visual appearance alone.)

> A cognitive vision system can engage in purposive goal-directed behaviour, adapting to unforeseen changes of the visual environment, and it can anticipate the occurrence of objects or events.

> It achieves these capabilities through learning semantic knowledge (*i.e.* contextualized understanding of form, function, and behaviour); through the retention of knowledge about the environment, the cognitive system itself, and the relationship between the system and its environment; and through deliberation about objects and events in the environment, including the cognitive system itself.

This definition has now replaced the one that was used in ECVision since the outset and it represents a significant move forward in out thinking.

The second significant outcome was the decision to abandon the current draft of the ECVision research roadmap. It was acknowledged that we need a more broadly-based roadmap, that provides space for a diversity of approaches, whilst still not shying away from the fundamental scientific difficulties that face us in the development of visually-enabled cognitive systems. In fact, it was at Dagstuhl that it first became clear that cognitive vision was not so much a discipline concerned with cognitively-enabled computer vision (as we had envisaged at the outset of the ECVision project) but rather with visually-enabled cognitive systems. This is a fundamental and important shift in emphasis, one that provides researchers with new way of approaching the discipline.   As a result, it was agreed to begin the creation of the ECVision Research Roadmap from the beginning and this was to be the focus of the efforts of the network in the coming semester.

The final outcome of the Dagstuhl is still being worked upon. It is the publication of a book on cognitive vision based on the contributions of the participants. However, this book will be far more than a simply anthology of distinct chapters: it will have a single integrated index and a single consistent bibliography, and it is being edited by Hans-Hellmut Nagel and Henrik Christensen to form a coherent and structured snapshot of the current stage of evolution of the discipline.
The official report and a list of participants with copied of their talks is available at
http://www.dagstuhl.de/03441/

One other activities in the area of research planning has already been noted in the Highlights section. These is the Cognitive Computer Vision Colloquium, held in Prague on the 12th and 13th January, and organized by the Czech Technical University. The Colloquium website is at:
http://cmp.felk.cvut.cz/cmp/events/colloquium-12-Jan-04/
and a report on the outcome of the Colloquium can be found at
http://www.ecvision.org/research_planning/SA_39-1_Cognitive_Vision_Colloquium.htm

4.2 Education and Training

The Education and Training activities, coordinated by Wolfgang Förstner and Bob Fisher, have had another productive semester.

Given the outstanding success of the Summer School next year, it was agreed to fund a second summer school in 2004 (under Specific Action 2-2). The Summer Schools is again being organized by Wolfgang Förstner and will be held over a 5-day period, from August 16th to August 20th, 2004 at the Activotel, Much, Germany. It is expected that there will be 60 participants. The summer school modules will be given by acknowledged experts in each key area. Confirmed lecturers at the time of writing include:

- Bob Fisher, UK
- Martin Giese, Germany
- Ales Leonardis, Slovenia
- Markus Vincze, Austria
- Monique Thonnat, France

As with last year's event, the objective is to provide post-graduate students with a comprehensive introduction to all of the constituent areas of cognitive vision. This will help create a new generation of researchers in the area and will help maximize the impact of the ECVision network in the long run. In addition, it will provide practising researchers with an opportunity to learn about areas outside their main specialization and, hence, foster the cross-fertilization of ideas that is essential for real progress in the area. For more details see:
http://www.ipb.uni-bonn.de/events/summerschool04/summerschool04.html

Three specific actions were launched to support workshops and tutorial in forthcoming conferences. These include:

– ECCV 2004 Workshop on Attention and Performance in Computer Vision - WAPCV 2004;
  see http://dib.joanneum.at/wapcv2004
  The goal is to provide an interdisciplinary forum to present and communicate methodologies and concepts from computer vision, cognitive psychology, autonomous systems research, and neuroscience with respect to theory and application of visual attention. The action is being undertaken by Lucas Paletta, Joanneum Research.

– ECCV 2004 Workshop on Statistical Learning for Computer Vision;
  see http://slcv.icg.tu-graz.ac.at/
  The goal of this workshop is to promote information exchange and technical interaction among researchers working on methods for visual learning, focusing on robust and adaptable techniques, capable of operating in unconstrained environments. The workshop will be held on May 15th. The specific action will contribute towards the travel costs of invited speakers. The action is being undertaken by Horst Bischof, Graz University of Technology.

– CVPR 2004 Workshop on Generic Object Recognition and Categorization;
  see http://www.vision.ethz.ch/cvpr04-gorc/
  This workshop aims to bring together the leading researchers in the field of generic object recognition and appearance-based object categorization in order to discuss and consolidate the state of the art in the field. The workshop is being organized by

    o Bernt Schiele, ETH Zurich, Switzerland,
    o Ales Leonardis, Computer Vision Laboratory, University of Ljubljana, Slovenia, and
    o Sven Dickinson, University of Toronto, Canada.

  The workshop will take place on Sunday, June 27, 2004 Washington DC.

On the educational front, two initiatives were launched.

A Specific Action (8-3) on Probabilistic Graphical Models for Cognitive Computer Vision was funded with the goal of enhancing the new Sussex level 3 (and future Masters) spring term courses for the CCV community and making available extra teaching materials from related projects. The specific action will involve the systematic development of the tutorial examples, graphical model visualisation software and Matlab exercises. This action is being undertaken by Hilary Buxton, University of Sussex. Details of the current status of the action can be found at:
http://www.ecvision.org/information/Specific_Action_Status.htm#8-3

An open Call for Proposals for specific actions to sponsor student and staff exchanges was launched. Further details can be found on the ECVision website at:
http://www.ecvision.org/information/Funding_for_Specific_Actions.htm
Unfortunately, the response to this call was very disappointing, with just one response: Specific Action (13-3) was awarded to Walter Kropatsch, Vienna University of Technology. The action is to fund a ten-day visit by Zygmunt Pizlo to the Vienna University of Technology in June 2004. The aim of the visit is to initiate collaboration on the study of pyramid algorithms as models of human cognition.

4.3 Information Dissemination

This area has seen progress on a number of fronts this semester. Some of these are developments of ongoing work, others are new initiatives.

Among the ongoing activities, indexed and annotated bibliography of publications (Specific Action 8-1) continues to be updated. It can be found at
http://www.ecvision.org/bibliography/Indexed_and_Annotated_Bibliography.htm

The issue of common platforms to facilitate the sharing of software and algorithms is one of the recurring themes in the endeavour to build the discipline of cognitive vision. With this in mind, a Specific Action (13-2) on Software Frameworks for use in Cognitive Vision was launched early this semester. The objective is to summarize, compare and evaluate middleware, software frameworks, and architectures that are used or can be used for developments in CV. It will contribute the Deliverable TA2.10 "Identification of Common Development Environments". The action is being undertaken by the Technical University of Vienna and the University of Bielefeld. Details of the current status of the action can be found at: http://www.ecvision.org/information/Specific_Action_Status.htm#13-2

In the same vein, Joanneum Research announced the availability of its **MPEG-7 library**. In the course of a series of projects, partially funded by the European Commission and by national research programs, Joanneum Research has developed a C++-implementation of the full MPEG-7 standard ISO/IEC 15938:2001. It is available for download at: http://iis.joanneum.at/MPEG-7

In terms of dissemination in the published literature, the two significant developments this semester were the preparation of the Dagstuhl book on cognitive vision and the announcement of a special issue of Image and Vision Computing on cognitive vision. Members are actively contributing to these activities. The review process for a special issue of *Machine Vision and Applications* devoted to the best papers of ICVS '03 is now almost complete.

4.4 Industrial Liaison

The Industrial Liaison coordination team, Patrick Courtney and Monique Thonnat, have perhaps one of the toughest jobs in ECVision. As the discipline itself becomes better defined and the problems of achieving true cognition in a vision system become more apparent, thanks to the work of the Research Planning and Education & Training teams, the relative immaturity of the discipline presents significant difficulties when trying to attract the interest of industrial concerns. That said, industrial liaison is still a crucial component of ECVision because it continually grounds us and keeps a necessary focus on what one might be able to do commercially in the near future. Whilst the scientific challenges of cognitive vision are many, the industrial challenge is to keep the research focus directed and, at the same time, keep an eye out for cognitive technologies that can be exploited: early spin-offs, if you like. The best way to achieve these goals is to involve industry in whatever way is possible and to ensure that the communication channels are open on both directions. This is exactly what was intended when the third specific action (7-3) in the industrial liaison area was launched this semester to strengthen the impact of industrial activities, to support ECVision member projects (especially those without industrial participation) and their technologies, and to promote the use of resources developed by TA4 (Industrial Liaison). This action is being undertaken by Patrick Courtney, PB Consulting. Details of the current status of the action can be found at:
http://www.ecvision.org/information/Specific_Action_Status.htm#7-3
In the context of this specific action, Patrick Courtney organized an industrial liaison workshop with the members of the LAVA consortium in Grenoble on the 19th and 20th January.

Finally, it is worth remarking that a winner for the ECVision Best Application Development in Cognitive Vision Systems was identified. The winner will be announced at the forthcoming ECCV 2004 awards ceremony in Prague in May. Also, the creation of a database of vision vendors is also on-going. The working version can be found at
http://www.ecvision.info/industrial_liaison/Database_of_Vision_Vendors.htm

4.5 Information Infrastructure

The big news this semester is that we managed to regain the ECVision.org domain name. This followed a lengthy period of negotiation with a company that clearly is devoted to grabbing valuable domain names and selling them back to the relative partners at much inflated prices. In the case of ECVision.org, the registrar would not allow the .org name to be re-registered despite repeated communications over a six week period. When it lapsed, it was immediately registered by the company in question, and then upon the first anniversary of its registration (when renewal was due) it was offered back to the coordinator for $1500. The coordinator refused the offer and when the company renewed the registration, he then made an offer of $250. After considerable haggling, we settled on a price of $450 and the domain was returned. Although much more than the original cost of the domain, it was certainly worth this amount to regain it and remove the unsavoury material that the company had located at ECVision.org. The .info and .org sites were run in parallel for a short period to ensure no unexpected problems, and now they are run in tandem but with all references to .info being automatically redirected to .org. By the end of the semester, the website has had approximately 7000 hits and it is the first page returned by Google when one searches for 'cognitive computer vision'.

In addition, the mailman distribution lists to the executive committee and to members now operates for both .info and .org sites.

members@lists.ecvision.info	This address targets all members of the network.
executive@lists.ecvision.info	This address targets all members of the Executive Committee.
everymember@lists.ecvision.org	This address targets all members of the network.
exec@lists.ecvision.org	This address targets all members of the Executive Committee.

All four of these lists are actively used, with members slowly migrating back to the .org versions. All four are moderated on a daily basis by the coordinator.

Throughout all this, the website has been regularly maintained and updated. Apart from the considerable amount of time it took to recreate the .org site, the majority of the effort expended has been devoted to developing and enhancing the website and moderating the email from the two four email distribution lists.

Guidelines for contributors to the website can be found at:
www.ecvision.org/informationGuidelines_for_Web_Authors.htm

4.6 Management

The Management activity at network level continues to be handled cooperatively by the Coordinator, David Vernon, and the Executive Committee, with the bulk of the work being handled by the Coordinator. The Executive Committee plays an important role in vetting all proposals for specific actions. No specific action can be sent to the Commission for approval without a majority of the Executive Committee being in favour. Since there is an even number of members on the Executive Committee, the Coordinator has the casting vote. In practice, it has been difficult to get the views of all members of the committee in good time so quite often a specific action is sent for approval when four members of the Committee, including the Coordinator, are in favour (this counts as five votes, including the Coordinator's casting vote, and is therefore a majority).

In order of the amount of time and effort each requires, the management tasks for which the Coordinator is responsible are:

– Processing and reimbursement of members' costs
– Preparation of cost statements
– Processing of applications for funding of specific actions
– Collation and preparation of 6-monthly management reports
– Organization of six-monthly Network Workshops
– Organization of six-monthly Executive Committee meetings (normally held jointly with the six-monthly Network Workshops)
– Collection and distribution of deliverables

All of the management work required to coordinate specific areas (*e.g.* research planning, education and training, etc.) is devolved to the two area leaders in each area:

Research Planning: Henrik Christensen & James Crowley
Education and Training: Bob Fisher & Wolfgang Förstner
Information Dissemination: Hilary Buxton & David Vernon
Industrial Liaison: Patrick Courtney & Monique Thonnat

Two management issues are worthy of note.

First, it has proved very difficult to extract six-monthly cost statements from members in good time, even though they are alerted to the need to provide these by the coordinator at least one month before they are due and even though the cost statements only include personnel costs. In the current period, the final cost statement was received over three months late. In future, any cost statement that is sent to the coordinator / prime contractor more than a month after the end of the relevant accounting period will not be included in the integrated cost statement.

On a related issue, the contractual requirement to keep monthly time-sheets of effort expended has caused some members difficulties, mainly due to the problems associated with keeping accurate records of the intermittent and often small amounts of time devoted to the coordination activities. Article 18.1 (a) paragraph 3 in Annex II of the contract states:

"All the working time charged to the contract must be recorded throughout
the duration of the project, or, in the case of the coordinator, within a
maximum period of two months from the end of the duration of the project,
and be certified at least once a month by the person in charge of the work
or by the duly authorized financial officer of the participant."

In light of this, and following a series of detailed communications on the matter between the Coordinator and the Commission Project Officer, it was agreed that for members claiming one person-month of effort or less per year, an aggregate time-sheet for each member wherein the member lists the activities she or he has been working on and the estimated/approximate hours devoted to each task each month.

For example, an estimate of the amount of time members spend on each of the following activities should be recorded every month (these are just suggestions):

– Email correspondence
– Reviewing applications for specific actions
– Reviewing membership applications
– Organizing area meetings
– Attendance at six-monthly meetings
– Contribution to area / network documents
– Coordination of area activities
– Specific Action activities (specify which specific action)

If more than one person at a member's site is charging personnel costs to ECVision, then one aggregate time-sheet must be submitted for each person.

5.   SPECIFIC ACTIONS

As noted in Section 3 – Highlights – ten specific actions were launched during the semester. These are:

1. Specific Action 2-2: 2nd Summer School on Cognitive Computer Vision
    Wolfgang Förstner**,** Universität Bonn**,** Germany

2. Specific Action 7-3: Industrial Activity – Project Liaison
    Patrick Courtney, PBConsulting, Germany

3. Specific Action 8-2: ECCV 2004 Workshop on "Real World Issues In Animate Vision"
    Hilary Buxton, University of Sussex, United Kingdom

4. Specific Action 8-3: Probabilistic Graphical Models for Cognitive Computer Vision
    Hilary Buxton, University of Sussex, United Kingdom

5. Specific Action 13-2: Overview of Software Frameworks for Use in Cognitive Vision (CV) Approaches
    Markus Vincze, Christian Bauckhage, Gerhard Sagerer, Wolfgang Ponweiser, Sebastian Wrede, Technical University of Vienna and University of Bielefeld.

6. Specific Action 13-2: Student Exchange
    Walter Kropatsch, Vienna University of Technology, Austria

7. Specific Action 25-1: Workshop on Generic Object Recognition and Categorization
    CVPR 2004; IEEE Conference on Computer Vision and Pattern Recognition
    Bernt Schiele, ETH Zurich, Switzerland
    Ales Leonardis, University of Ljubljana, Slovenia

8. Specific Action 33-1: ECCV 2004 Workshop on Statistical Learning for Computer Vision
    Horst Bischof, Graz University of Technology, Austria

9. Specific Action 37-2: WAPCV 2003 - Workshop on Attention and Performance in Computer Vision
    Dr. Lucas Paletta, Joanneum Research, Graz, Austria

10. Specific Action 39-1: Cogntive Computer Vision Colloquium
    T.Pajdla, J.Matas, V.Hlavac , Czech Technical University in Prague (CTU)

Complete details of these actions are contained in Appendix I of this report.

A total of ten specific actions have now been funded since the launch of the network.
A summary of the current status of each specific action can be accessed on the website at:
http://www.ecvision.info/information/Specific_Action_Status.htm

For ease of reference, this information is reproduced in Appendix II.

6. DELIVERABLES

Most ECVision deliverables reflect work in progress and are reported on over the lifetime of the project. These deliverables are distinguished by a delivery month and are denoted *TAx.y.n; x* denoting the target areas (see below), *y* the deliverable number, and *n* denoting the month at which the current version is to be delivered. Any outstanding work in one of these deliverables is automatically carried forward to the next period.

The Target Areas are:

1   Research Planning
2   Education and Training
3   Information Dissemination
4   Industrial Liaison
5   Information Infrastructure
6   Management

Some deliverables identified in the contract are due to be undertaken and completed in a given semester. If they are not completed, they are either be formally removed from the work-plan, with the agreement of the Commission, or explicitly carried forward to the next period for completion. To date, only the periodic distribution of web-site content on CD has been formally removed.

In this section, we report on all the deliverables identified in the work-plan. In this context, note that this is month 24. Updates and/or amendments since the previous report are noted in bold face type.

6.1 Research Planning

TA1.1.n   Workshop proceeding/report; n = 6, 12**,** … **24**, … 36
                  Status: The **Dagstuhl Seminar 03441 was held from 27-31 October. The official report and a list of participants with copied of their talks is available at site listed below.**

                  A Cognitive Computer Vision Colloquium was held in Prague on the 12 and 13 January 2004.

                  Action: None*.*
                  On-line Documents: http://www.dagstuhl.de/03441/
                  http://cmp.felk.cvut.cz/cmp/events/colloquium-12-Jan-04/
                  http://www.ecvision.org/research_planning/SA_39-1_Cognitive_Vision_Colloquium.htm

TA1.2.n   Position paper; n= 6, 12**,** … **24**, … 36
                  Status: Several short position papers were written for Dagstuhl Seminar 03441; see site below.
                  Action: None.
                  *On-line Documents:*http://www.dagstuhl.de/03441/

TA1.3   Advances in computer vision (due month 6)
                  Status: **This work has is being subsumed into the forthcoming Dagstuhl book on cognitive vision which, among other things and in various forms, will include surveys of the current state-of-the-art in computer vision, set specifically against the backdrop of required functionalities for cognitive vision. To a lesser extent, the forthcoming reearch roadmap will also contain a similar review.**
                  Action: carry forward to next period.

TA1.4   Advances in artificial intelligence (due month 6)
                  Status: This work is on-going. Bernd Neumann has written a summary of cognitive vision and artificial intelligence for the original (and now abandoned) version of the research roadmap
                  (see: http://www.ecvision.info/research_planning/ECVisionRoadMapv2.5.pdf).
                  Another paper is being drafted by Hilary Buxton.
                  Action: carry forward to next period.

TA1.5.n   White paper on cognitive vision research; n= 6, 12**,** … **24**, … 36
                  Status: **This activity is being subsumed under the Research Roadmap.**
                  Action: Carry forward to next semester.
                  On-line Documents: N/A.

TA1.6   Benchmark applications (due month 6)
                  Status: **Some progress has been made on this activity in the context of the new Research Roadmap.**
                  Action: carry forward to next period.

TA1.7.n   Research Roadmap; n= 6, 12**,** … **24**, … 36
                  Status: **The original version (v. 5) has been abandoned and the new, more broadly-based, approach is being adopted. The first draft will be released before then end of the next semester.**
                  Action: The fourth six-monthly meeting, scheduled for 26th March, is being devoted entirely to this task..
                  On-line Documents:

http://www.ecvision.info/research_planning/Working_Documents.htm

TA1.8.n   Database of European research; n= 6, 12**,** … **24**, … 36
               Status: A database of active research groups in Europe, ordered by country, has been
               developed by KTH. A supplementary list of groups with specific interest in cognitive
               vision is also available.
               Action: Continue to maintain and update.
               On-line Documents:
                http://www.ecvision.info/research_planning/EU_Computer_Vision_Groups.htm
               http://www.ecvision.info/information/Research_Groups.htm

6.2 Education and Training

TA2.1   Survey of existing courses on cognitive computer vision
               Status: Complete: an email survey and web searching has been done for existing
               courses that present material linked to Cognitive Computer Vision. About 8000
               requests were sent, 100 replies received and about 50 relevant web-based pieces of
               information obtained. Most of the surveyed materials were presented as a part of a
               broader course, that range from 1-60 hours of lectures, with about 20 as average. The
               survey results have been categorised according to a developing ontology of cognitive
               vision, which will feed into the encyclopedia and model curriculum activity of the
               project second half-year.
               Action: continue to maintain and update.
               On-line Documents: http://www.dai.ed.ac.uk/homes/rbf/CCVO/CCVOentry.htm

TA2.2   Web-based repository of existing courseware and/or course slides
               Status: Complete: this has been created as a subset of CVonline.
               **A Specific Action (8-3) was launched to develop course material on Probabilistic
               Graphical Models for Cognitive Computer Vision.**
               Action: Continue to maintain and update.
               On-line Documents: http://www.dai.ed.ac.uk/CVonline/
               http://www.ecvision.org/information/Specific_Action_Status.htm#8-3

TA2.3   Web repository of MSc and PhD project proposals
               Status: Complete (but unpopulated!) Concerns over the protection of valuable
               intellectual property rights inherent in the ideas involved in a good proposal are
               inhibiting this activity.
               Action: continue to maintain and update.
               On-line Documents: http://www.dai.ed.ac.uk/homes/rbf/CCVO/projects.htm

TA2.4   Model curriculum for cognitive computer vision
               Status: This is under development and is evolving well. The classification of
               techniques has proved very useful in a number of contexts.
               Action: Continue to maintain and update.
               On-line Documents: http://www.dai.ed.ac.uk/homes/rbf/CCVO/cvsyldraft.htm

TA2.5   Web-based encyclopedia of cognitive computer vision
               Status: This is under development and is evolving well. It is currently being
               developed under the heading of an ontology of cognitive computer vision. As a
               separate but complementation action, CVOnline has been re-structured to allow
               cognitive vision topics to be integrated transparently.
               Action: Continue to maintain and update.
               On-line Documents:
               http://www.dai.ed.ac.uk/homes/rbf/CCVO/CCVOentry.htm
               http://www.dai.ed.ac.uk/CVonline/

TA2.6   Web-based listings of available positions and people seeking positions
               Status: Complete.
               Action: Continue to maintain and update.
               On-line Documents:
               http://www.dai.ed.ac.uk/homes/rbf/CCVO/joblist.htm

TA2.7.n   Annual Best Ph.D. prizes in Cognitive Vision Systems; n = 12, **24**, 36
               Status: None awarded in this semester.
               Action: None.
               On-line Documents: None.

TA2.8.n   Annual summer school on Cognitive Vision Systems; n = 7, 19, 31
               Status: The 1st Summer School was held in Much, Germany, 25th-29th August 2003.
               The 2nd Summer School will be held at the same venue from 16th-20th August 2004.
               Action: None.
               On-line Documents:
               http://www.ecvision.info/education/Summer_School_on_Cognitive_Vision_2003.htm
               http://www.ipb.uni-bonn.de/events/summerschool04/summerschool04.html

TA2.9.n   Organization of tutorials; n = 12, **24**, 36
               Status: Complete; this action was subsumed into the five-day summer schools above.
               Action: None.
               On-line Documents:
               http://www.ecvision.info/education/Summer_School_on_Cognitive_Vision_2003.htm
               http://www.ipb.uni-bonn.de/events/summerschool04/summerschool04.html

TA2.10.n   Identification of common development environments; n = 12, **24**, 36
               Status: A list of general computer vision environments is available at CVOnline.
               A new specific action (13-2) has been launched to address this specific issue.
               Action: None.
               On-line Documents: http://www.dai.ed.ac.uk/CVonline/environ.htm
               http://www.ecvision.org/information/Specific_Action_Status.htm#13-2

TA2.11.n   Contribution of code to the VXL and/or OpenCV; n = 12, **24**, 36
               Status: No progress yet on this activity.
               Action: Carry forward to the next semester.
               On-line Documents: N/A.

TA2.12.n   Short-term exchange/visits of research staff; n = 12, **24**, 36
               Status: No exchanges or visits have been funded to date.
               An open Call for Proposals for specific actions to sponsor student and staff exchanges was launched
               Action: None.
               On-line Documents:
               http://www.ecvision.org/information/Funding_for_Specific_Actions.htm

TA2.13.n   Short-term exchange/visits of post-graduate students; n = 12, **24**, 36
               Status: One student exchange has been approved (SA 16-1) to support an extended visit from University of Bielefeld to the University of Surrey.
               A second exchange has been approved to allow Zygmunt Pizlo to visit the Vienna University of Technology in June 2004.
               An open Call for Proposals for specific actions to sponsor student and staff exchanges was launched
               Action: None.
               On-line Documents:
               http://www.ecvision.org/information/Funding_for_Specific_Actions.htm

TA2.14   Textbook on cognitive computer vision (due month 36)
               Status: **Bob Fisher and Wolfgang Förstner are currently soliciting contributions and authors for this project.**
               Action: None.
               On-line Documents: N/A

6.3 Information Dissemination

TA3.1.n   Electronic newsletter, published quarterly; n = 3, 6, …, 36
                      Status: Complete.
                      Action: None.
                      On-line Documents: http://www.ecvision.info/information/news/News.htm

TA3.2.n   Database of existing relevant publications**;** n = 6, 12**,** … **24**, … 36
                      Status: Complete. This activity has effectively been merged with TA3.3.n (indexed and annotated bibliography). This deliverable accounts for the indexing and dissemination via the website; 3.2 accounts for the creation of the source material.
                      Action: Continue to maintain and update..
                      On-line Documents:
                      http://www.ecvision.info/bibliography/Indexed_and_Annotated_Bibliography.htm

TA3.3.n   Annotated bibliography of literature; n= 6, 12**,** … **24**, … 36
                      Status: A considerable amount of work has been done on this deliverable as part of Specfic Action 8-1. An initial database of approx 350 citation has been assembled, indexed, and annotated. A website generation utility has also been developed (by the network coordinator).
                      Action: Continue to maintain and update.
                      On-line Documents:
                      http://www.ecvision.info/bibliography/Indexed_and_Annotated_Bibliography.htm

TA3.4.n   Database of research results; n = 12, **24**, …, 36
                      Status: As yet, a distinct repository of research results has not yet been created. Instead, the website is being used as an access point for these resources, with links now being directly embedded in the menu structure.
                      Action: Continue to maintain and update.
                      On-line Documents: http://www.ecvision.info

TA3.5.n   Periodic distribution of web-site content on CD; n = 12, **24**, 36
                      Status: Cancelled. Since much of the material referenced from the website is hosted by other sites, it was agreed that an off-line resource such as this had less value than originally anticipated and, consequently, it was decided to drop this deliverable.
                      Action: None.
                      On-line Documents: None.

TA3.6.n   Special sessions at conferences; n = 12, **24**, 36
                      Status: ICVS 2003 was devoted to the topic of cognitive vision and is being funded by ECVision (Specific Action13-1). ECCV now has a specific section for cognitive vision (& visual learning).
                      Action: None.
                      On-line Documents: http://dib.joanneum.at/ICVS03/

TA3.7.n   Sponsorship of best paper prizes in cognitive vision; n = 12, **24**, 36
                      Status: Two prizes have been awarded to date, one at ECCV '02 and one at ICVS '03. **It was agreed to sponsor a best paper prize at ECCV '04.**
                      Action: None.
                      On-line Documents: Previously-awarded prize papers
                      http://link.springer.de/link/service/series/0558/bibs/2353/23530097.htm (ECCV'02)

TA3.8.n   Thematic workshops; n = 12, **24**, 36
                      Status: In addition to the research roadmap meetings in Nov. 2002 and Feb. 2003, organized by James Crowley, a Cognitive Vision Workshop in Zurich on the 19th and

20th September 2002 was organized by Bernt Schiele and Luc Van Gool.
Several specific actions were approved to support forthcoming workshops:
CVPR 2004 Workshop on Generic Object Recognition and Categorization
ECCV 2004 Workshop on Statistical Learning for Computer Vision
ECCV 2004 Workshop on Attention and Performance in Computer Vision -
WAPCV 2004.
Action: None.
On-line Documents: http://www.vision.ethz.ch/cogvis02/
http://www.vision.ethz.ch/cvpr04-gorc/
http://slcv.icg.tu-graz.ac.at/
http://dib.joanneum.at/wapcv2004

TA3.9.n   Special issues in journals; n = 12, **24**, 36
Status: Four special issues are planned (or have been produced). These are:

      IVC – Understanding visual behaviour 2002
      IVC – Generative model-based vision 2003
      IVC – Cognitive computer vision systems 2004
      AI Magazine special issue 2003

Action: None.
On-line Documents: None.

TA3.10.n   Focussed review papers in journals; n = 12, **24**, 36
Status: Two review papers have been written: one in CVIU in 2004, and the other to
be published in IVC in 2003.
Action: None.
On-line Documents: None.

6.4 Industrial Liaison

TA4.1.n   Database of research profiles and application experience, indexed by application,
               R&D topics, industrial sector; n = 12, **24**, 36
               Status: No progress has been made yet on this activity.
               Action: Carry forward to the next semester.
               On-line Documents: None.

TA4.2.n   Directory of vision vendors, indexed by application, product type,
               deployed technology, industrial sector; n = 6, 12**,** … **24**, … 36
               Status: The first version is now complete.
               Action: Maintain and update.
               On-line Documents:
               http://www.ecvision.info/industrial_liaison/Database_of_Vision_Vendors.htm

TA4.3.n   Database of application-motivated R&D problems and information on
               successful and unsuccessful approaches to solutions; n = 6, 12**,** … **24**, … 36
               Status: **Although no progress has yet been made on an explicit database or
               information repository, a Specific Action (7-3) was launched to strengthen the
               impact of industrial activities, to support ECVision member projects (especially
               those without industrial participation) and their technologies, and to promote the
               use of resources developed by TA4. In this context, an industrial liaison
               workshop with the members of the LAVA consortium in Grenoble on the 19th
               and 20th January.**
               Action: Carry forward to the next semester.
               On-line Documents:
               http://www.ecvision.org/information/Specific_Action_Status.htm#7-3

TA4.4.n   List of techniques and their usefulness in certain classes of problems;
               n = 6, 12**,** … **24**, … 36
               Status: No progress has been made yet on this activity.
               Action: Carry forward to the next semester.
               On-line Documents: None.

TA4.5.n   Sponsorship of Best Application Development prizes in Cognitive Vision Systems; n
               = 12, **24**, 36
               Status: **A winner has finally been identified, a prize agreed, and a plaque created.
               The winner will be announced at ECCV '04 in Prague in May.**
               Action: Award prize.
               On-line Documents:
               http://www.ecvision.info/industrial_liaison/Application_Prize.htm

6.5 Information Infrastructure

SA1.1   CSCW Infrastructure operational
               Status: Complete.
               Action: None
               On-line Documents:
               http://www.ecvision.info/contacts/Executive_Committee.htm
               http://www.ecvision.info/contacts/Members.htm

SA1.2   Website core structure implemented
               Status: Complete.
               Action: None
               On-line Documents: http://www.ecvision.info

6.6 Management

SA2.1.n   Periodic management report; n = 6, 12**,** … **24**, … 36
               Status: Complete.
               Action: None
               On-line Documents: Project Management Reports

SA2.2   Final report from ECVision (due month 36)
               Status: Pending.
               Action: None
               *On-line Documents:*N/A

7.   BUDGETARY STATUS

The network continues to spend less than the planned budget. The cost statements for the two year total approximately €503,000.   The budget for the same period is €811,000. The under-spend is therefore €308,000, or approximately 25% of the total budget. This represents an improvement vis-à-vis the previous semester where the under-spend was approximately 45%. It is likely that this will drop further as there are some extraordinary costs to be incurred in the fifth and penultimate six-month period, such as the 2nd summer school in Bonn which has a budget of approx. €56,000, and the several specific actions that were launched in this semester but which won't incur any costs until the next semester.

One of the criticisms of ECVision in the mid-term review report concerned the financial reporting. It was stated that 'The reporting of the budget is scattered about the management report and should be presented succinctly with a breakdown by category and time period.' (see www.ecvision.info\information\Mid-Term_Review.htm)

There follows a one-page summary of the financial position of ECVision, detailing the expenditure (*i.e.* costs) *vs.* budget for each cost category (travel, computing, other, labour) and for each of the 11 activity areas (research planning coordination, research planning activities, education & training coordination, education & training activities, etc.).   Note that the total of €417,170 is less than the €503,000 cited above because personnel costs for members have not yet been accepted by the Commission and therefore are not included.

An up-to-date summary of costs (and status) of specific actions is kept on the website at www.ecvision.info\information\Specific_Action_Status.htm

ECVision
Budget vs. Actual Cost by Target Area

Semester 4

Area		Travel	Computing	Other	Labour	Overheads	Total
Research Planning Coordination	*Budget:*	6000.00	0.00	2000.00	31200.00	7840.00	47040.00
	Cost:	128.00	0.00	0.00	18611.75	3127.56	18765.35
Research Planning Activities	*Budget:*	6000.00	0.00	6000.00	36000.00	9600.00	57600.00
	Cost:	18213.32	0.00	4193.35	0.00	4481.33	26888.00
Education and Training Coordination	*Budget:*	6000.00	0.00	2000.00	31200.00	7840.00	47040.00
	Cost:	0.00	0.00	0.00	13900.00	2316.67	13900.00
Education and Training Activities	*Budget:*	6000.00	0.00	6000.00	36000.00	9600.00	57600.00
	Cost:	5732.42	0.00	35370.44	13788.37	10518.63	63111.80
Industrial Liaison Coordination	*Budget:*	6000.00	0.00	2000.00	31200.00	7840.00	47040.00
	Cost:	0.00	0.00	152.31	18769.36	3158.69	18952.13
Industrial Liaison Activities	*Budget:*	6000.00	0.00	6000.00	36000.00	9600.00	57600.00
	Cost:	5133.18	0.00	1412.10	10764.00	3103.06	18618.34
Information Dissemination Coord.	*Budget:*	6000.00	0.00	2000.00	31200.00	7840.00	47040.00
	Cost:	0.00	0.00	309.00	21946.37	3950.36	23702.17
Information Dissemination Activities	*Budget:*	6000.00	0.00	6000.00	36000.00	9600.00	57600.00
	Cost:	6550.87	0.00	3460.00	6123.97	3022.84	18137.01
Network Coordination	*Budget:*	15000.00	2000.00	5000.00	91200.00	22640.00	135840.00
	Cost:	1124.18	325.96	1383.30	93425.00	19251.69	115510.13
Information Infrastructure	*Budget:*	0.00	6000.00	0.00	27000.00	6600.00	39600.00
	Cost:	0.00	6802.49	164.30	33450.00	8083.36	48500.15
Six-Monthly Meetings	*Budget:*	158000.00	0.00	23000.00	0.00	36200.00	217200.00
	Cost:	37815.30	0.00	5205.89	0.00	8604.24	51625.43
Total	*Budget:*	**221000.00**	**8000.00**	**60000.00**	**387000.00**	**135200.00**	**811200.00**
	Cost:	**74697.27**	**7128.45**	**51650.69**	**214615.68**	**69618.42**	**417710.51**

Note: budget amounts are for the period to the end of the current semester; actual cost amounts reflect exact expenditure to date and do not include all labour costs (with the exception of coordinator costs, those labour costs submitted by members but not yet accepted by the Commission are not included).

Wednesday, June 23, 2004

8. CRITICAL ANALYSIS OF ACTIVITIES

The network continues to operate effectively, with almost all of the expected outcomes being realized. There has been significant growth in the number of specific actions approved, up from three in the previous semester to ten in this semester. This is a very positive indicator for the remainder of the network's lifetime.

9. CONCLUSIONS AND EXPECTATIONS FOR THE COMING SEMESTER

The ECVision network is actively pursing its aims in all of the four target areas, Research Planning, Education & Training, Industrial Liaison, and Information Dissemination. In the coming six months, there are two key goals which will heavily influence the ultimate impact of the network, one in the research arena, one in the education arena:

1. The development of the first draft of the new ECVision Research Roadmap

2. The 2nd ECVision Summer School.

Both will have a significant knock-on effect on other goals in information dissemination and industrial liaison through the contributions they make toward the continued development and exploitation of this embryonic discipline.

APPENDIX I – SPECIFIC ACTIONS FUNDED IN THIS SEMESTER

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 2-2

2nd SUMMER SCHOOL ON COGNITIVE COMPUTER VISION

WOLFGANG FÖRSTNER
UNIVERSITÄT BONN
GERMANY

1.   Action Area

Education and Training.

2.   Goals of the Action

The goal of the proposed summer school is to provide an intensive and challenging introduction to the area of cognitive computer vision. The summer school modules will be given by acknowledged experts in each key area.

3.   Concrete Outcomes of the Action

A summer school in cognitive computer vision will be held over a 5-day period, from August 16th to August 20th, 2004. The summer school will be held at the Activotel, Much, Germany. It is expected that there will be 60 participants and 8 lecturers.

4.   The Benefits to the Network from Carrying out the Action

The objective is to provide post-graduate students with a comprehensive introduction to all of the constituent areas of cognitive vision. However, as different speakers will be invited, the content will significantly differ and be complementary to the that in 2003.

The course will help create a new generation of researchers in the area and will help maximize the impact of the ECVision network in the long run. In addition, it will provide practising researchers with an opportunity to learn about areas outside their main speciality and, hence, foster the cross-fertilization of ideas that is essential for real progress in the area.

We will accept participants, who have not participated in the first summer school, with higher priority.

5. Effort

No funding is requested for effort associated with the organization and running of the summer school. Lecturers are being asked to give freely of their time, although it may be possible to provide them with an honorarium if finances allow.

6. Start and Completion Dates

August 16th – 20th, 2004.

7. Funding

Travel and Subsistence

Lecturers	*Number*	*Individual Cost*	*Sub-Total*
Subsistence (Food and Accommodation)	8	485	3880
Travel (estimated)	8	750	6000
Participants			
Subsistence (Food and Accommodation)	60	420	25200
Local Travel			1000
Sub-total			*36080*

Labour

Not applicable	0

Computing

Network charges, multimedia equipment	1500
Sub-total	*1500*

Other Specific Costs

Class Room Rental (5-day charge: 100 euro / person)	68	100	6800
Production of course notes, sundry costs			2500
Sub-total			*9300*

Total   **46880**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 7-3
INDUSTRIAL ACTIVITY – PROJECT LIAISON

PATRICK COURTNEY
PBCONSULTING GMBH
GERMANY

1. Action Area

Industrial Liaison

2. Goals of the Action

To strengthen the impact of industrial activities. To support ECVision member projects (especially those without industrial participation) and their technologies. To promote the use of resources developed by TA4.

3. Concrete Outcomes of the Action

Output is a plan for industrial activities dissemination for the remainder of the ECVision project.

4. Methodology

- Meeting with research roadmap group TA1 and external experts in EU–project developed vision technology
- Write up on brainstorm ideas and formation on draft plan
- Meetings with (4-5) selected active cognitive vision projects to assist in their dissemination (excl scientific publications) and/or demo to encourage take-up of cognitive vision technology (using cognitive vision ontology)
- Promote use of materials already developed (information on industrial needs collected during white paper workshop, vendor database and examples from data base and prize activity)
- Refinement of dissemination plan

Note that a further specific action is envisaged to implement the dissemination plan. This is expected to include development of easy to understand materials and a common demo day accessible to external players. External support may be required (press campaign, PR, demo organisation).

5. Plan

1. internal network meeting bringing together TA4 and TA1 (HIC and JLC) with external parties (Mark Sawyer from EPCC/Univ Edinburgh and Massimo Busuoli ENEA/Univ Bologna - coordinators of EU-funded technology transfer activities since before 1997). Provisional date set to 19 or 20 or 21 November. Expected output is brainstorm notes and outline action plan for rest of project. Cost 5 x €800 = 4000. Effort 2 person days
2. write up brainstorm ideas and draft plan. Effort 2 person days
3. propose bilateral meetings with individual projects to cover objectives, materials to be presented, potential outcomes. Effort already within ECVision TA4
4. validate proposal with CAVIAR project organisers. Effort already within ECVision TA4
5. refine materials especially prize presentation. Effort 2 person days
6. run meeting (estimated 2 person x 2 day) with CAVIAR targeting project participants including partners, researchers, associates not normally aware of ECVision. Utilise cognitive vision ontology. Cost travel €1000 Effort 4 person days
7. evaluate outcome. Refine methodology and materials.
8. Approach further projects. Aim for 4 additional project meetings. Costs travel €1000 x 4. Effort 4 visits of 2 days + 1 follow up = 12 days
9. Refine dissemination plan. Effort: already within ECVision TA4

6. The Benefits to the Network from Carrying out the Action

- better understanding of industrial interest by ECVision project participants
- better understanding of cognitive vision projects by TA4
- better use of industrial activities resources
- progress in project dissemination to industry

7. Effort

1.1 man month total (22 days at 450/day)

Subtask	effort
Internal meeting	2 person days
Draft plan	2 person days
Refine presentations incl. prize	2 person days
Initial (pilot) project meeting	4 person days
Project 2 meeting	3 person days
Project 3 meeting	3 person days
Project 4 meeting	3 person days
Project 5 meeting	3 person days
TOTAL	22 days

8. Start and Completion Dates

1st October 2003 – 28th February 2005

9. Funding

Travel Cost	€9,000 (workshop 4,000 + visits 5 x 1,000)
Computing Costs	€0
Other Project-Specific Costs	€0
Labour Costs (including overheads at 20%)	€11,880 (22 man days total at 450/day)
Total Cost	**€20,880**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 8-2
ECCV 2004 WORKSHOP ON "REAL WORLD ISSUES IN ANIMATE VISION"

PROF. HILARY BUXTON
UNIVERSITY OF SUSSEX
UNITED KINGDOM

1. Action Area

Information Dissemination

2. Goals of the Action

This workshop is to attract papers from the Cognitive Sciences and Neuroscience to complement the CCV research issues and widen dissemination and information gathering to these related disciplines.

3. Concrete Outcomes of the Action

1 Invited speakers and programme committee -3 disciplines: visual cognitive science, visual neuroscience and cognitive computer vision.

   2 Workshop website and call for papers.

   3 Printed proceedings and CD.

   4 Report of interdisciplinary emerging themes.

4. The Benefits to the Network from Carrying out the Action

The main benefit is to increase links with members of the biologically motivated computer vision community, with specific themes on ecological and emergent approaches to computation.

5. Effort

Hilary Buxton to give time under ECVision general dissemination area leader funds, with help from Sussex local CASA organization (administrative support). 6 days area leader + 6 days support.

6.   Start and Completion Dates

start: 1/1/04 and end: 30/6/04

7. Funding

Travel Cost: Invited Speakers	€2000
Computing Costs	€0
Other Project-Specific Costs: Printing	€600
Labour Costs: 6 days x 150 euros for administrative assistance	€900
Total Cost	**€3500**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 8-3
PROBABILISTIC GRAPHICAL MODELS FOR COGNITIVE COMPUTER VISION

PROF. HILARY BUXTON
UNIVERSITY OF SUSSEX
UNITED KINGDOM

1. Action Area

Education and Training

2. Goals of the Action

The new Sussex level 3 (and future Masters) spring term courses can be significantly enhanced for the CCV community and extra teaching materials made available from related projects with the investment of ECVision funds for systematic development of the tutorial examples, graphical model visualisation software and Matlab exercises.

3. Concrete Outcomes of the Action

- Invited lectures from ACTIPRET, COGVIS, VAMPIRE and CAVIAR projects.

- Course website with readings, links and lecture series with tutorial examples:

  Introduction to Cognitive Computer Vision
  Graphical Models as a unifying framework
  Bayes Rule and Inference in Bayesian Belief Networks
  Gaussian Mixtures and Hidden Markov Models
  Dynamic Bayes Nets for visual behaviour
  Dynamic Decision Nets for task control
  Learning in HMMs
  Learning in BBNs
  Active vision, attention and future challenges

- Matlab code and exercises for BBN inference and HMM learning.

- Visualisation tools for the graphical models.

4. The Benefits to the Network from Carrying out the Action

The main benefit is to increase course material for teaching of probabilistic graphical models for CCV. In particular, there is no current integrated course available on this topic in Europe. In addition, the visualization tools support effective learning as well as being a useful research tool for the community.

5. Effort

Hilary Buxton to give time under ECVision general funds to supervise development and local seminar support funds to sponsor invited lectures on CCV projects are also given. Funded help is requested for extra time required by postdoctoral researchers, postgraduate students and the programmer team at Sussex as detailed above.
10 days area leader + 60 days programming support.

6.   Start and Completion Dates

start: 1/1/04 and end: 30/9/04

7. Funding

Travel Cost	€0
Computing Costs: computer access	€1,000
Other Project-Specific Costs	€0
Labour Costs: 60 days x 300 euros for programming support	€18,000
Total Cost	**€19,000**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 13-2

OVERVIEW OF SOFTWARE FRAMEWORKS FOR USE IN
COGNITIVE VISION (CV) APPROACHES

Markus Vincze, Christian Bauckhage, Gerhard Sagerer,
Wolfgang Ponweiser, Sebastian Wrede
Wien, Bielefeld

1. Action Area

Education and Training and as support to Research Planning and Information dissemination

2. Goals of the Action

The objective of this specific action is to summarise, compare and evaluate middlewares, software frameworks and architectures that are used or can be used for developments in CV. It will contribute the Deliverable TA2.10 "Identification of Common Development Environments". It will go beyond this deliverable in listing and evaluating middleware, frameworks and architectures that can be used as on-line environments to link the different functions expected to be seen in a cognitive vision system.

3. Concrete Outcomes of the Action

1. Assemble and list functional (e.g., dynamic reconfiguration, debugging support, logical separation of data and control) and non-functional (e.g., simplicity, stability, portability, reusability, scalability) requirements encountered when researching and implementing CV Systems: evaluating the ongoing projects in CV and other related work, the attempt is to outline typical demands and the, sometimes conflicting, goals depending on specific applications.

2. List existing middleware, software frameworks and architectures that can help the researcher and developer to develop CV techniques and CV systems: this includes a short description of the approach, software, present application area, state of development, prospects, and an evaluation of the pros and cons of each software package.

3. Summarize the installation experience and use analysis for the most promising software found in item 2.

CV includes techniques for attention, detection, prediction, recognition and classification, goal-orientation, control of processes, active vision systems and information flow, cognitive functions and many other functions. Coordination of these functions requires to study architectures and to provide software frameworks to enable this coordination. The goal is to closely investigate existing middleware and frameworks that can support this goal. Relevant work that will be investigated spans disciplines such as robotics (e.g., [Schlegel, Wörz 1999]), AI and agent-based

systems (e.g., [Bianchi, Rillo 1997]). Middlewares investigated will be RPC, Corba, ACE, ICE, Dacs, and others. Frameworks comparison will include developments from EU projects such as OROCOS, ActIPret, Vampire, Caviar and Visatec. Both middleware and frameworks applicability to the specific requests of Cognitive Vision (see item 1). This includes aspects known from software engineering such as design patterns, connectors and components.

References:
Schlegel, C., Wörz, R.: "The Software Framework SmartSoft for Implementing Sensormotor Systems", IEEE/RSJ International Conference on Intelligent Robots and Systems, IROS '99 1610-1616, Kyongju, 1999.

Bianchi, R.A.C., Rillo, A.H.R.C.:"A Purposive Computer Vision System: a Multi Agent Approach", Workshop Korea, on Cybernetic Vision, Sao Carlos, 1996, IEEE Computer Society Press 225-230, Los Alamitos, CA, 1997

4. Partners executing the work

Work will be split between BU (Bielefeld University) and VUT (Vienna University of Technology).

BU already investigated several frameworks for robotics as well as cognitive vision. The OROCOS@KTH framework has been explored for robotics tasks. For the Cognitive Vision project VAMPIRE possible tools for linking the vision functions have been investigated and a framework (XCF) is being built.

At VUT a framework for the CV Project ActIPret has been built up. During building the framework several options have been shortly investigated. This experience with CV frameworks and the difficulties one encounters will lead to a comparative and in-depth study of related work and will not only help to improve the framework or design a completely new version, it will also provide the CV community with a graded summary (including an qualitative and partly quantitative analysis) of existing middleware and frameworks.

5. The Benefits to the Network from Carrying out the Action

- State-of-the-Art overview of a technique and software, which is of great value to many CV projects and CV systems.

- Contribution to deliverable TA2.10 "Identification of Common Development Environments".

- Publication of the results with acknowledgement of ECVision.

6. Effort

VUT (Vienna University of Technology): 2.5 PM (1PM of additional VUT resources will be contributed without charge)

BU (Bielefeld University): 2.5 PM (1PM of additional BU resources will be contributed without charge)

7.   Start and Completion Dates

Start date: November 1, 2003
Completion date: March 31, 2004

8.   Funding

Labour Costs:
Research assistant at VUT: 2.5 PM (= 50 PD, person days) for 7200 Euro (144 Euro/PD)
Research assistant at BU: 2.5 PM (= 50 PD, person days) for 7200 Euro (144 Euro/PD)
Sub-Total: €14400
Overheads: €2880
Total: €17280

Travel Costs:
Travel between BU and VUT to test software
Two exchanges: €1500
Visit to INRIA: €750

Summary:

Item Costs	
Travel costs	€2250
Labour costs BU and VUT	€14400
Overhead on Labour costs	€2880
Total	**€19530**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 13-2

STAFF EXCHANGE: COGNITIVE VISUAL PROBLEM SOLVING WITH GRAPH PYRAMIDS

WALTER KROPATSCH
VIENNA UNIVERSITY OF TECHNOLOGY
AUSTRIA

1. Action Area

Education and Training

2. Goals of the Action

Zygmunt Pizlo (see http://bigbird.psych.purdue.edu/~pizlo/) studies pyramid algorithms as
models of human cognition (see paper Pizlo03.pdf attached). PRIP has developed the concept
of graph pyramids (see our Dagstuhl contribution). We propose to start a collaboration which
can be beneficial from the psychological side to compare performances of our pyramidal
structures with humans, and from the cognitive vision side to check in which respects human
visual strategies correlate with the structure of a pyramid.

The GOAL is to bring Zygmunt for 10 days to Vienna, planned period is May/June 2004.

3. Concrete Outcomes of the Action

During this visit we want to set up a few specific research topics of common interest.
In addition a topic would be to plan a future workshop in which we could bring together
researchers from psychology and vision. This activity will also be synchronized with the
Austrian Joint Research program on Cognitive Vision. Of course Zygmunt will give one or
two talks during his visit in Vienna.

4. The Benefits to the Network from Carrying out the Action

Benefits: The exchange will foster exchange with perceptual psychology.
During the short term visit future research projects will be discussed which
can contribute ideas for master and PHD projects on collaboration between
perceptual psychology and cognitive vision. Initiating contacts to the community
of perceptual psychology may be highly benefitial to the network and may lead to
a joint research workshop of both communities.

5. Effort

None

6. Start and Completion Dates

May 2004 - June 2004

7. Funding

We request to refund Zygmunt's travel costs for the trip and the stay of 10 days in Vienna.

Travel Cost	€ 2,173
Computing Costs	€0
Other Project-Specific Costs	€0
Labour Costs	€0
Total Cost	**€2,173**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 25-1

WORKSHOP ON GENERIC OBJECT RECOGNITION AND CATEGORIZATION
CVPR 2004
IEEE CONFERENCE ON COMPUTER VISION AND PATTERN RECOGNITION

Bernt Schiele	Ales Leonardis
ETH Zurich	University of Ljubljana
Switzerland	Slovenia
schiele@inf.ethz.ch	alesl@fri.uni-lj.si

1. Action Area

Information Dissemination

2. Goals of the Action

2.1 Topic and Motivation for the Workshop
The capacity to categorize objects plays a crucial role for a cognitive and autonomous visual system in order to compartmentalize the huge numbers of objects it has to handle into manageable categories. Quite interestingly, for humans it was shown that entry-level categorization (*i.e.* is this a dog/cat?) is much faster in human vision than recognition or identification (is this my dog/cat?). These findings suggest that humans do a sort of coarse to fine categorization and recognition of objects. Evolution probably also developed the ability to categorise, *e.g.* food, prey, shelter, before the ability to identify individuals, which for many organisms is not a requirement.

Even though generic object recognition and classification have been one of the goals of computer vision since its beginnings, we are still far from achieving this goal. On the other hand, the identification of known objects in different poses and under novel viewing conditions has made significant progress recently. At the same time, impressive results have been achieved for the detection of canonical views of individual categories, such as faces, cars, pedestrians, and horses. While the more general task of multi-class object categorization is still unsolved, we have seen at recent conferences such as CVPR 2003 and ICCV 2003 that research in the area regains momentum and new approaches emerge.

It has been five years since the 2nd IEEE workshop on generic object recognition was held in conjunction with ICCV 99. So we think that not only is this the right time to hold a third such workshop on generic object recognition and visual object categorization, but that there also will be a significant interest in this workshop at CVPR 2004.

Generic object recognition endeavors to recognize objects based on their coarse, prototypical shape. Although a popular topic in the 1970's, generic object recognition has given up the recognition spotlight over the years to such schemes as alignment, geometric invariant-based indexing, and appearance-based recognition. More recently, using local object appearances

has shown remarkable success not only to identify previously seen object but also to categorize objects such as cars, faces and even articulated objects such as cows. While all of those approaches have their advantages and disadvantages it is not clear what the roles of different visual cues (such as contour, shape, color, texture, etc.) are, and what the roles of different object models are for generic object recognition. Traditionally, contour- and shape-based methods are considered most adequate for handling the generalization requirements needed for categorization tasks, even though most current object recognition and detection systems are appearance-based.

So the workshop aims to bring together the leading researchers in the field of generic object recognition and appearance-based object categorization in order to discuss and consolidate the state of the art in the field. We will also encourage participants to test and report results on recently emerging object categorization databases, such as the one put together by ETH Zurich (this databases contains 80 objects of 8 different categories, taken from 41 different viewpoints).

2.2.   Organization and Workshop Format

The organizers of the workshop are the 2 authors of the ECVision support application and Prof. Sven Dickinson from the University of Toronto:

- – Sven Dickinson, University of Toronto, Canada
  sven@cs.toronto.edu
- – Ale¡s Leonardis, Computer Vision Laboratory, University of Ljubljana, Slovenia
  alesl@fri.uni-lj.si
- – Bernt Schiele, ETH Zurich, Switzerland
  schiele@inf.ethz.ch

In order to achieve the most stimulating discussions around the theme of generic object recognition and visual object categorization, we will invite 12 presentations by well-known researchers in the field with a record in the area of generic object recognition and visual object categorization. The workshop day will be concluded by a general discussion by all workshop participants about current and future trends in the field.

2.3   Relationship to previous workshops

This workshop will be the third in a series of workshops which have been organized around the theme of generic object recognition. The first workshop has been held in conjunction with CVPR 97 in Puerto Rico and the second in conjunction with ICCV 99 in Greece. Sven Dickinson was involved in the organization of both of these workshops.

- – IEEE Workshop on Generic Object Recognition, organized by Sven Dickinson and Navatia, June 1997 (associated with CVPR 1997)
- – 2nd IEEE Workshop on Generic Object Recognition, organized by Sven Dickinson and Gerard Medioni, September 26, 1999, (associated with ICCV 1999)

2.4   Estimated Attendance

The first workshop (@CVPR 97) had about 80 paid registrants and the second workshop had approximately 60. So we would expect to have at least the same order of attendance at the 3rd workshop @CVPR 2004.

2..5   Motivation for ECVision support

Object recognition and categorization are central problems and challenges for cognitive systems, in general, and for cognitive vision systems, in particular. So the topic of the workshop is highly relevant and related to the research agenda of the ECVision network. As stated before, and like the 1st and 2nd such workshops, held in 1997 and 1999, respectively, the format of the workshop will be a set of invited talks (and panel discussion) by leading object recognition researchers who have addressed the problem of categorization.

The reason to run this workshop with invited speakers only is that we'd like the workshop to be less of a mini-conference, where people present only their recent results. Rather, we'd like to see presentations of well-known researchers that include a retrospective of their past research, highlights of their current research, as well their vision for future research. More specifically, we ask each of the invited speakers to give us a perspective on their approach. In particular they should discuss to what extent the object representations the researchers have worked with scale up to categories? Which representations suit the task of generic object modeling? How much attention should be devoted to perceptual grouping? How should we address the problems of indexing and matching? What is the role of learning in solving these problems? What are the major challenges facing generic object recognition and categorization?

We plan to take a broad view on the problem, including speakers from both computer vision and human vision. Furthermore, while traditional work in generic object recognition assumed higher level object descriptions (whether 2-D viewer-centered or 3-D object-centered), recent work closer to the appearance level has suggested that some lower level features may be su_cient for at least some categorization problems. On this representational spectrum, we also want a balance, including speakers from different camps. We're not promoting a particular methodology, but trying to solicit feedback from the broadest collection possible of those working in generic object recognition and categorization, including those from the human vision community, who can bring psychophysical and neuroscience arguments to the table.

The goal of this specific action is to support the invited speakers to come to the workshop. In order to treat everybody in an equal manner, we would like to over the invited speakers partial support of their travel and registration fees expenses in the order of €750 per person. Taking the number of 12 invited speakers plus the 3 organisers of the workshop, this yields a total of 750 EURO × 15 = 11250 EURO.

3. Concrete Outcomes of the Action

We will provide a summary of the individual talks, as well as a summary of the panel discussion at the end of the workshop, to the ECVision community, in particular, and to the computer vision community, as a whole. We will also ask the speakers to provide us with their slides which will be collected and put up on the ECVision webserver. Since the speakers are asked to give a historical as well as a future perspective of their respective work and approaches, we strongly believe that this outcome will be of interest to many other researchers in the field.

4. The Benefits to the Network from Carrying out the Action

Since we will invite well-known researchers, their respective views and perspectives will be of interest to a large portion of the computer vision community. Since CVPR is one of the premier conferences in computer vision, in general, and for object recognition, in particular, we also see this workshop to be an interesting addition to the overall conference.

Also, since many ECVision members will be present at the conference, we expect that those present might take advantage of the workshop and will join the workshop as participants.

5. Effort

Not Applicable.

6. Start and Completion Dates

The workshop itself will take place on Sunday, June 27, 2004 Washington DC.

Deadline for reimbursement of the invited speakers will have to be done after the workshop: August 31, 2004.

7. Funding

Travel Cost	€11,250
Computing Costs	€0
Other Project-Specific Costs	€0
Labour Costs	€0
Total Cost	**€11,250**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 33-1
ECCV 2004 WORKSHOP ON STATISTICAL LEARNING FOR COMPUTER VISION

HORST BISCHOF
GRAZ UNIVERSITY OF TECHNOLOGY
AUSTRIA

1. Action Area

Information Dissemination and Research Planning

2. Goals of the Action

The goal of this workshop is to promote information exchange and technical interaction among researchers working on methods for visual learning, focusing on robust and adaptable techniques, capable of operating in unconstrained environments. Statistical methods have been carried over from the statistical pattern recognition to computer vision and have successfully been used in many applications. However, it is still to be determined how these methods can be used and adapted for multi-modal, continuous, robust learning. Several issues need closer investigation e.g., representations, types of learning (supervised, unsupervised, reinforcement), relations between generative and discriminative methods, etc. For more details please see http://slcv.icg.tu-graz.ac.at/ These topics fall clearly within the scope of cognitive vision.

3. Concrete Outcomes of the Action

The output of the action will be a workshop, proceedings and a CD-ROM.

4. The Benefits to the Network from Carrying out the Action

The benefits for the network are on the one hand input for the research planning and on the other hand additional activities for the dissemination of information.

5. Effort

The whole organization of the workshop requires a substantial amount of work our estimate is about 2 man month, but we will ask ECVision only for contribution to the travel costs of the invited speakers.

6. Start and Completion Dates

The workshop will be held on May 15th.

7. Funding

Travel Cost	€2000
Computing Costs	€0
Other Project-Specific Costs	€0
Labour Costs	€2000
Total Cost	**€2000**

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 37-2
WAPCV 2003 - Workshop on Attention and Performance in Computer Vision

DR. LUCAS PALETTA
COMPUTATIONAL PERCEPTION GROUP
INSTITUTE OF DIGITAL IMAGE PROCESSING
JOANNEUM RESEARCH
WASTIANGASSE 6, A-8010 GRAZ
AUSTRIA

1. Action Area

Information Dissemination

2. Goals of the Action

Motivation

"Visual attention" is a topic that has been selected by many European Cognitive Vision Projects as a research topic (e.g., COGVIS, DETECT, CAVIAR, etc.), being in close relation to many of the key capabilities that were originally stated to define a cognitive vision system. E.g., attention is mandatory to make reasonable use of computational resources not only to make real-time processing possible, but also to enable efficient learning - making relevant information explicit for storage and further use – and to exploit contextual relations, to simplify a task by reduction of complexity.

In the last decades, numerous computational models for visual attention have been proposed, within different communities such as, computer vision [Tsotsos97, Tagare01], cognitive psychology [Scholl01, Zemel01], and computational neuroscience [Ocraven99, Itti01]. Various viewpoints on attention can be identified, with the focus being on 'information based' attention opposed to 'action based' attention, different experimental domains, such as discrete stimuli that can be well segmented for psychophysical experiments, as opposed to images captured in real world environments, under changing illumination conditions.

WAPCV Workshop

The objective of this specific action is to provide an interdisciplinary communication platform with the common theme of 'computational modelling of visual attention', and the goal to achieve a common understanding of attention, to compare between different, possibly competing hypotheses on architectures, functionalities, and methodologies, eventually in order to enable progress in the field. The association of the workshop to the "European Conference on Computer Vision" was chosen to enable discussions with fertilization across the European Computer Vision Community, in particular, the ECVision initiative, and to attract people that would be most likely interested in this topic.

The title of the workshop is "Workshop on Attention and Performance in Computational Vision" to stress the utility of the topic for the science of machine vision, short title, "WAPCV 2004". The workshop is a direct "successor" of the WAPCV 2003 workshop held in Graz in conjunction with the ICVS 2003.

Specific Motivation for 2004

WAPCV 2003 has been funded by ECVision, and been reported to be a success. In 2004, we try to reinforce the interdisciplinary character of the workshop, to foster discussion among scientists from disciplines, such as, computer vision, robotics, AI, psychology, neuroscience, and philosophy. To attract researcher from other disciplines to submit papers, we have considered, (i) to change parts of the title, i.e., "computer vision" to "computational vision", in order to avoid a single focus on machine vision and invite life science researchers, (ii) to nominate specific representative scientists from neuroscience, psychology, and robotics in the Program Committee (PC; see below), and (iii) to have invited talks from world class scientists that are active in a kind of "interdisciplinary" research, such as, John K. Tsotsos (confirmed), and Jochen Braun (not confirmed). In 2004, we specifically invited scientists from outside Europe, such as, US, Japan and Israel, hoping that they contribute by submitting papers, and by this to get informed about a broader view about the targeted research topic.

Goals

Recently, cognitive psychology has discovered attention mechanisms to play a key role in object recognition and scene interpretation, resulting in innovative computational attention architectures modelling human perception. The development of enabling technologies such as video surveillance systems, miniaturised mobile sensors, and ambient intelligence systems involves the real-time analysis of enormous quantities of data. Knowledge has to be applied about what needs to be attended to, and when, and what to do in a meaningful sequence, in correspondence with visual feedback. Concurrently, the fundamental need for cognitive vision methodologies has been broadly recognised. Methods on attention and control are mandatory to render computer vision systems more robust.

This workshop will provide an interdisciplinary forum to present and communicate methodologies and concepts from computer vision, cognitive psychology, autonomous systems research and neuroscience with respect to theory and application of visual attention. We expect investigations to focus on computational models of attention, to outline relevant objectives for performance comparison, to document and to investigate promising application domains, and to discuss it with reference to other aspects of cognitive vision. However, contributions to computational models of visual attention - machine or human perception based - must be the central theme of successful submissions.

The intention of the organiser is to foster a new series of workshops on this central them of cognitive vision, providing a truly (!) interdisciplinary platform, to provide communication opportunities between the computer vision, robotics, cognitive psychology, and AI communities.

The workshop organisation is outlined as follows:

Organising Committee:

    Lucas Paletta, Joanneum Research, Austria
    John K. Tsotsos, York University, Canada
    Erich Rome, AIS Fraunhofer, Germany
    Glyn W. Humphreys, Univ. Birmingham, UK

Program Committee (preliminary):

    James J. Clark, McGill University, Canada
    Bruce A. Draper, Univ Colorado, CO
    Robert B. Fisher, University of Edinburgh, UK
    Fred Hamker, University of Muenster, Germany
    Laurent Itti, University of Southern California, CA
    Christof Koch, California Institute of Technology, CA
    Bastian Leibe, ETH Zurich, Switzerland
    Michael Lindenbaum, Technion, Israel
    Sajit Rao, University of Genova, Italy
    Antonio Torralba, MIT, MA
    Jeremy Wolfe, Harvard University, NJ
    Hezy Yeshurun, Tel-Aviv University, Israel

(in addition, other scientists have been asked for review and are still under consideration)

3. Concrete Outcomes of the Action

The outcome of the specific action are:

- WAPCV workshop meeting organised on May 15, 2004
- Workshop proceedings, edited by L. Paletta, John K. Tsotsos, E. Rome, and G.W. Humphreys
- CD-ROM of the proceedings distributed to all participants
- WAPCV 2004 homepage opened at http://dib.joanneum.at/wapcv2004

4. The Benefits to the Network from Carrying out the Action

The research network ECVision is taking advantage by several means.

Firstly, ECVision is a research initiative that understands machine vision in relation to interdisciplinary research, i.e., robotics, psychology, etc. This workshop is exactly in line with this concept, trying to emphasise the relevance of communication between the communities, and providing a platform for the convergence of attempts towards very similar goals, i.e., finding computational models that represent the selection of visual information at multiple levels of abstraction.

Secondly, the workshop at Prague will most probably involve a large part of the ECVision community. Since the workshop is targeted towards an international, interdisciplinary

audience, including experts from robotics, psychology, neuroscience, and philosophy, we believe that this workshop will provide an platform to discuss characteristic ECVision topics.

5. Effort

Personal resources are required to organise the workshop, and to maintain the homepage for up-to-date information. We are planning to print the workshop proceedings by a local at print service at Graz that has already proven to provide first class quality for the WAPCV 2003 proceedings. In addition, we will provide to registrated people a CD-ROM with all PDFs of the accepted papers, and information on invited talks.

The Organising Committee is planning 2 invited talks. The first one would be given by John K. Tsotsos, who was invited for WAPCV 2003 but could not attend due to the SARS epidemy at Toronto, his home town, end of March 2003. Tsotsos has impacted research on computational attention since more than a decade, and takes part in any serious event on visual attention. The second invited talk should be given by a European researcher, and with focus on "non-"computer vision topic in order to stress the interdisciplinary character of WAPCV. Most probably, we will invite Jochen Braun (Univ. Plymouth, UK) to give this talk, who is not only involved in a EC project on visual attention within the FET program, but is author of numerous publications in Nature,etc., and co-editor of the influential book "Visual Attention and Cortical Circuits" (MIT Press, 2001).

In total, the requested resources are as follows,

- Personal resources to organise the event WAPCV 2004
- Printing of the WAPCV 2004 workshop proceedings & CD-ROM
- Funding of invited speakers at WAPCV 2004 (flight, hotel)

6. Start and Completion Dates

Paper submission   January 31, 2004
Acceptance notification   March 15, 2004
Final paper due   April 16, 2004

7. Funding

Travel Costs

Invited speaker: John K. Tsotsos	€1,400.00	
Invited speaker: Gustavo Deco	€1,100.00	
Workshop Chair: Lucas Paletta	€700.00	
Sub-Total		€3,200.00

Computing Costs   €0.00

Other Project-Specific Costs
Printing WAPCV proceedings   €1,600.00

Labour Costs
WAPCV organisation   €1000.00

Total Cost   **€5800.00**

References

[Tsotsos97] Tsotsos, J.K., "Intelligent Control for Perceptually Attentive Agents", Robotics and Autonomous Systems 21-1, p5-21, July 1997

[Tagare01] Tagare, H.D., Toyama, K., & Wang, J.G., A maximum-likelihood strategy for directing attention during visual search, IEEE Transactions on Pattern Analysis and Machine Intelligence, 23(5):490-500, 2001.

[Scholl01] Scholl, B.J., Objects and attention: the state of the art, Cognition, Vol. 80, pp. 1-46, 2001.

[Zemel01] Zemel, R.S., Behrmann, M. , Mozer, M.C. , & Bavelier, D., Experience-Dependent Perceptual Grouping and Object-Based Attention, Journal of Experimental Psychology: Human Perception and Performance, to appear 2001.

[Itti01] Itti, L., & Koch, C., Computational modelling of visual attention, Nature Neuroscience Review, 2, pp. 194-204, 2001.

[Ocraven99] O'Craven, K., Downing, P., & Kanwisher, N., fMRI Evidence for Objects as the Units of Attentional Selection, Nature, 401, pp. 584-587, 1999.

ECVISION SPECIFIC ACTION DESCRIPTION, WORKPLAN, & BUDGET

SPECIFIC ACTION 39-1
COGNTIVE COMPUTER VISION COLLOQUIUM

T.PAJDLA, J.MATAS, V.HLAVAC
CZECH TECHNICAL UNIVERSITY IN PRAGUE (CTU)
CENTER FOR MACHINE PERCEPTION (CMP)
JANUARY 12-13, 2004
PRAGUE
CZECH REPUBLIC

The Cognitive Computer Vision Colloquium will focus on results and problems related to Cognitive Computer Vision. We expect an audience will consists of about 70 participants from Europe as well as from USA, Asia, and Australia. Many of them are members of ECVision, e.g.

Jan-Olof Eklundh (KTH Stockholm),
Luc Van Gool (KU Leuven, ETH Zurich),
Vaclav Hlavac (CTU Prague),
Ales Leonardis (University of Ljubljana),
Jose Santos-Victor (Instituto Superior Tecnico, Lisbon),
Cordelia Schmid (INRIA Rhone-Alpes, Grenoble)
Andrew Zisserman (University of Oxford),

or are respected researchers from, as well as outside of, EU, e.g.

Dmitry Chetverikov (MTA SZTAKI, Budapest)
Kostas Daniilidis (University of Pennsylvania, Philadelphia)
Rachid Deriche (INRIA Sophia Antipolis)
Richard Hartley (Australian National University, Canberra)
Michal Irani (Weizmann Institute of Science, Rehovot)
Sing Bing Kang (Microsoft, Redmond)
Stan Li (Microsoft Research China, Beijing)
David Lowe (University of British Columbia, Vancouver)
Mads Nielsen (IT University of Copenhagen)
Long Quan (INRIA Grenoble)
Steven Seitz (University of Washington, Seattle)
Amnon Shashua (Hebrew University of Jerusalem)
Stefano Soatto (UCLA, Los Angeles)
Joachim Weickert (Saarland University, Saarbrucken)

1. Action Area

The event will primarily contribute to research planning and education and training activities.

2. Goals of the Action

The goal of the colloquium is to present and discuss results achieved by partners of ECVision and other outstanding researchers. Open problems related to computer vision and cognitive sciences will be discussed in order to support research planning and education within ECVision as well as with respect to computer vision research outside ECVision.

3. Concrete Outcomes of the Action

The outcome of the action will be an event reviewing and stimulating new research in cognitive vision and related areas.

In addition, the organizers undertake to produce a short summary of the meeting, setting out the key research challenges that are posed by cognitive vision and proposing possible avenues of enquiry for each one.

Also, the organizers undertake to advertise the event to the members of ECVision.

4. The Benefits to the Network from Carrying out the Action

The ECVision network will benefit from

1. Dissemination of results of its members. Presentation and discussion of results in front of eminent researchers will generate very valuable feedback.

2. The attendance will be free to any ECVision member. Attending ECVision members will get up-to-date information about cutting edge research both in and outside Europe.

3. Increasing its visibility and gaining credit for supporting an reputation event attended by very respected researchers in the field.

5. Effort

None.

6. Start and Completion Dates

January 12-13, 2004. We plan 7 talks per day.

Preliminary Programme per day:

 9:00 - 10:30 2 talks at 45 minutes
10:30 - 11:00 Coffee break
11:00 - 12:30 2 talks at 45 minutes
12:30 - 14:00 Lunch & CMP visit
14:00 - 15:30 3 talks at 30 minutes
15:30 - 16:00 Coffee break
16:00 - 17:00 Panel Discussion

7. Funding

Travel Cost	€6000
Computing Costs	€0
Other Project-Specific Costs	€0
Labour Costs	€6000
Total Cost	**€6000**

Travel funding will cover travel costs of the researchers who will be invited to give talks on their specific topics. We expect to support travel costs of 3 researchers at 1000 EUR and of 6 researchers at 500 EUR.

APPENDIX II – STATUS OF SPECIFIC ACTIONS

Specific Action 1-1: Best Paper Prize in Cognitive Vision at ECCV'02

Responsible	David Vernon, Computer Applied Techniques Ltd. (Coordinator)
Area	Information Dissemination
Goals	Promotion of the discipline
Amount (euro)	800
Start Date	26/5/2002
End Date	31/5/2002
Status	Complete
Links to Associated Documents	Winning Paper

Specific Action 2-1: 1st Summer School on Cognitive Computer Vision 2003

Responsible	Wolfgang Foerstner, University of Bonn
Area	Education and Training
Goals	Provide an intensive and challenging introduction to the area of cognitive computer vision.
Amount (euro)	33,980
Start Date	1/3/2003
End Date	31/8/2003
Status	Complete
Links to Associated Documents	Summer School

Specific Action 2-2: 2nd Summer School on Cognitive Computer Vision 2004

Responsible	Wolfgang Foerstner, University of Bonn
Area	Education and Training
Goals	Provide an intensive and challenging introduction to the area of cognitive computer vision.
Amount (euro)	46,880
Start Date	16/8/2004
End Date	20/8/2004
Status	In preparation
Links to Associated Documents	1st Summer School 2003

Specific Action 6-1: Cognitive Vision Education Survey

Responsible	Bob Fisher, University of Edinburgh
Area	Education and Training
Goals	Survey of what is already taught worldwide in the area of cognitive computer vision
Amount (euro)	5133.34

Start Date	1/5/2002
End Date	30/5/2002
Status	Complete
Links to Associated Documents	[Model Curriculum on Cognitive Computer Vision](#)

Specific Action 6-2: Restructuring of CVOnline

Responsible	Bob Fisher, University of Edinburgh
Area	Education and Training
Goals	Restructuring CVonline to make the vision concept structure more transparent, as a preparation for linking in the cognitive vision syllabus that ECVision will be developing
Amount (euro)	2.333.33
Start Date	1/5/2002
End Date	30/6/2002
Status	Complete
Links to Associated Documents	[CVOnline](#)

Specific Action 6-3: Enclyclopedia of Cognitive Computer Vision

Responsible	Bob Fisher, University of Edinburgh
Area	Education and Training
Goals	To take the developing "ontology" of Cognitive Computer Vision and add web links to tutorial materials for each of the topics.
Amount (euro)	5,000
Start Date	1/10/2002
End Date	28/2/2005
Status	On-going
Links to Associated Documents	[Cognitive Vision Ontology](#)

Specific Action 7-1: White Paper on Applications of Cognitive Vision Systems

Responsible	Patrick Courtney, PBConsulting
Area	Industrial Liaison
Goals	To collate knowledge of existing systems and opinion on future trends in cognitive system systems in the EU
Amount (euro)	11,500
Start Date	1/5/2002
End Date	30/9/2002
Status	Complete
Links to Associated Documents	[White Paper on Applications of Cognitive Vision Systems](#)

Specific Action 7-2: Prize for Best Application Development in Cognitive Vision Systems

Responsible	Patrick Courtney, PBConsulting
Area	Industrial Liaison
Goals	To recognize exploitation of cognitive vision technology, to raise the profile for the ECVision network within the application community, and to raise the profile of cognitive vision as a distinct domain
Amount (euro)	7,000
Start Date	1/5/2002
End Date	31/12/2003
Status	On-going
Links to Associated Documents	Application Prize Website

Specific Action 7-3: Industrial Activity - Project Liaison

Responsible	Patrick Courtney, PBConsulting
Area	Industrial Liaison
Goals	The goals are to strengthen the impact of industrial activities, to support ECVision member projects (especially those without industrial participation) and their technologies, and to promote the use of resources developed by TA4.
Amount (euro)	20,880
Start Date	31/10/2003
End Date	28/2/2005
Status	On-going
Links to Associated Documents	

Specific Action 8-1: Keyword Indexed Bibliography with Abstracts of Papers

Responsible	Hilary Buxton, University of Sussex
Area	Information Dissemination
Goals	Development of keyword indexed bibliography with abstracts of papers
Amount (euro)	19,000
Start Date	1/10/2002
End Date	28/2/2005
Status	On-going
Links to Associated Documents	Indexed and Annotated Bibliography

Specific Action 8-2: ECCV 2004 Workshop on "Real-World Issues in Animate Vision"

Responsible	Hilary Buxton, University of Sussex
Area	Information Dissemination
Goals	To attract papers from the Cognitive Sciences and Neuroscience communities to complement the CCV research issues and widen dissemination and information gathering to these related disciplines.
Amount (euro)	3,500
Start Date	1/1/2004
End Date	30/6/2004
Status	Cancelled due to unforseen circumstances
Links to Associated Documents	

Specific Action 8-3: Probabilistic Graphical Models for Cognitive Computer Vision

Responsible	Hilary Buxton, University of Sussex
Area	Education and Training
Goals	Enhance the new Sussex level 3 (and future Masters) spring term courses for the CCV community and to make available extra teaching materials from related projects. The specific action will involve the systematic development of the tutorial examples, graphical model visualisation software and Matlab exercises.
Amount (euro)	19,000
Start Date	1/1/2004
End Date	30/9/2004
Status	On-going
Links to Associated Documents	

Specific Action 13-1: ICVS'03 - 3rd International Conference on Computer Vision Systems

Responsible	Markus Vincze, Technical University of Vienna
Area	Information Dissemination
Goals	- Document the emergence of an engineering science of Computer Vision Systems and Cognitive Vision Systems - Discuss the embedding of complete machine vision systems within the real world - Increase the visibility of Cognitive Vision internationally
Amount (euro)	5,010
Start Date	1/2/2003
End Date	30/4/2003
Status	Complete
Links to Associated Documents	ICVS 2003 Website

Specific Action 13-2: Overview of software Frameworks for Use in Cognitive Vision Approaches

Responsible	Markus Vincze, Technical University of Vienna Gerhard Saegerer, University of Bielefeld
Area	Eductation and Training
Goals	- Summarise, compare and evaluate middlewares,software frameworks and architectures that are used or can be used for developments in CV. - Contribute to deliverable TA2.10 "Identification of Common Development Environments" - Go beyond this deliverable in listing and evaluating middleware,frameworks and architectures that can be used as on-line environments to link the different functions expected to be seen in a cognitive vision system.
Amount (euro)	19,530
Start Date	1/11/2003
End Date	31/3/2004
Status	On-going
Links to Associated Documents	

Specific Action 13-3: Staff/Student Exchange Vienna University of Technology

Responsible	Walter Kropatsch, Technical University of Vienna
Area	Eductation and Training
Goals	To fund a ten-day visit by Zygmunt Pizlo to the Vienna University of Technology in Technology in May/June 2004. The aim of the visit is to initiate a collaboration on the study of pyramid algorithms as models of human cognition.
Amount (euro)	2,173
Start Date	1/5/2004
End Date	30/6/2004
Status	On-going
Links to Associated Documents	

Specific Action 16-1: Student Exchange: University of Bielefeld and University of Surrey

Responsible	Member: Gerhard Sagerer, University of Bielefeld Student: Nicolas Gorges, University of Bielefeld
Area	Education and Training
Goals	- Effect a student exchange between the University of Bielefeld and the University of Surrey. - During the visit, the student will work on his diploma thesis dealing with image mosaicing. In essence, the problem is to build a mosaic of a scene and use this mosaic to extract foreground objects.
Amount (euro)	2715.58

Start Date	1/8/2003
End Date	31/1/2004
Status	On-going
Links to Associated Documents	

Specific Action 21-1: Cognitive Computer Vision Ontology Development

Responsible	Isabelle Bloch, Ecole Nationale Superieure des Telecommunications, France
Area	Education and Training
Goals	To create new material on imprecise knowledge representations for the Cognitive Computer Vision Ontology
Amount (euro)	6,000
Start Date	1/1/2003
End Date	30/4/2003
Status	Complete
Links to Associated Documents	Draft Report on Imprecise Spatial Information in Cognitive Vision

Specific Action 21-2: Imprecise Knowledge Representations in Cognitive Vision

Responsible	Isabelle Bloch, Ecole Nationale Superieure des Telecommunications, France
Area	Education and Training
Goals	To create new material on imprecise knowledge representations for the Cognitive Computer Vision Ontology focussing on imprecise spatial information, fuzzy sets, belief functions, and fusion problems.
Amount (euro)	6,000
Start Date	1/5/2004
End Date	31/8/2004
Status	On-going
Links to Associated Documents	

Specific Action 25-1: CVPR 2004 Workshop on Generic Object Recognition and Categorization

Responsible	Bernt Schiele, ETH Zurich, Switzerland Ales Leonardis, Computer Vision Laboratory, University of Ljubljana, Slovenia
Area	Information Dissemination
Goals	To sponsor invited speakers.
Amount (euro)	11,250
Start Date	27/6/2004
End Date	31/8/2004
Status	On-going

Links to Associated Documents	[Workshop Website](#)

Specific Action 33-1: ECCV 2004 Workshop on Statistical Learning for Computer Vision

Responsible	Horst Bischof, Graz University of Technology, Austria
Area	Information Dissemination
Goals	To sponsor invited speakers.
Amount (euro)	2,000
Start Date	15/5/2004
End Date	15/5/2004
Status	Complete
Links to Associated Documents	[Workshop Website](#)

Specific Action 37-1: WAPCV 2003 - Workshop on Attention and Performance in Computer Vision

Responsible	Lucas Paletta, Joanneum Research, Austria
Area	Information Dissemination
Goals	To sponsor invited speakers and proceeding printing costs for WAPCV 2003, held in conjunction with ICVS '03.
Amount (euro)	3,808
Start Date	1/1/2003
End Date	31/6/2003
Status	Complete
Links to Associated Documents	[Workshop Website](#)

Specific Action 37-2: WAPCV 2004 - Workshop on Attention and Performance in Computer Vision

Responsible	Lucas Paletta, Joanneum Research, Austria
Area	Information Dissemination
Goals	To sponsor organization, invited speakers, and proceeding printing costs for WAPCV 2004, held in conjunction with ECCV 2004.
Amount (euro)	5,800
Start Date	1/1/200
End Date	31/5/2004
Status	Ongoing
Links to Associated Documents	[Workshop Website](#)

Specific Action 39-1: Cognitive Computer Vision Colloquium

Responsible	Vaclav Hlavac, Tomas Pajdla, Jiri Matas, Czech Technical University

Area	Research Planning
Goals	To sponsor invited speakers Note: attendance at the colloquium is free to members of ECVision
Amount (euro)	6,000
Start Date	12/1/2004
End Date	13/1/2004
Status	Complete
Links to Associated Documents	Colloquium Website , Cognitive Computer Vision Colloquium Report

Specific Action 39-2: Statistical Pattern Recognition Toolbox

Responsible	Vaclav Hlavac, Czech Technical University
Area	Research Planning
Goals	To enhance an existing Statistical Pattern Recognition Toolbox to make it more easily accessible by users: (a) researchers, (b) teachers, and (c) students, and to focus examples and demos on application to cognitive vision.
Amount (euro)	3,180
Start Date	19/4/2004
End Date	18/6/2004
Status	On-going
Links to Associated Documents	http://cmp.felk.cvut.cz/~xfrancv/stprtool/index.html