

# Research Coordination

James Crowley, INPG

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# Deliverables

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- TA1.1.6 Workshop & workshop proceeding/report
- TA1.2.6 Position paper
- TA1.3 Advances in computer vision
- TA1.4 Advances in artificial intelligence
- TA1.5.6 White paper on cognitive vision research
- TA1.6 Benchmark applications
- TA1.7.6 Research roadmap

# Overview of activities

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- ICVS 03
- Dagstuhl Workshop
- Research Roadmap
- Special Issue of AI Journal
- Survey of Computer Vision Groups in Europe

## ICVS 03

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Graz the 31 march to 3 April 2003

109 Papers submitted

22 accepted for podium, 30 for poster

~120 paid registrants

Sessions on Cognitive Vision, Architectures, Performance Evaluation, programming methods and video annotation

Four invited talks.

Five Workshops

Two Tutorials

## ICVS 03

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### Workshops on

- Performance Evaluation (PETS - ICVS)
- Control Architectures (VSCA)
- Attention and Performance in Computer Vision (WAPCV)
- In-Vehicle Cognitive Computer Vision Systems (IVCCVS)
- Spectral Imaging (WSI)

### Tutorials:

- Subspace Methods for Visual Learning and Recognition
- Psychological Aspects

## ICVS 03 Best Paper Prizes

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### Best Paper on Cognitive Vision

Implementing the Expert Object Recognition Pathway

Bruce Draper, Kyungim Baek, Jeff Boody

### Best Paper on Vision Systems

Dynamically Reconfigurable Vision-Based User Interfaces

Rick Kjeldsen, Anthony Levas, Claudio Pinhanez

## ICVS 05 - East Coast of US (Providence Rhode Island?)

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General Chair: Rick Kjeldsen

Local Chair: Claudio Pinhanez or Rick Kjeldsen

Program Co-chairs: Monique Thonnat

Bruce Draper

Workshops: Hillary Buxton

# Dagstuhl Workshop on Cognitive Vision



SCHLOSS DAGSTUHL  
INTERNATIONAL CONFERENCE AND  
RESEARCH CENTER  
FOR COMPUTER SCIENCE

**Dagstuhl  
Seminar  
03441**

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26.10.-31.10.2003, Seminar N° 03441, Report N° -

## **Cognitive Vision Systems**

**H. Christensen (Stockholm, S), H.-H. Nagel (Univ. Karlsruhe, D)**

### **Seminar Data**

- [List of announced participants with talks.](#)



# Dagstuhl Workshop on Cognitive Vision

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## Dagstuhl-Seminar 03441

- Date: 26 October 2003 to 1 Nov 2003
- Organised by H. Christensen and H. H. Nagel
- <http://www.dagstuhl.de/03441/>
- 40 Participants

# Dagstuhl Workshop on Cognitive Vision

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Ruzena Bajcsy , Univ. of California - Berkeley

Hilary Buxton , University of Sussex  
Learning Visual Representations for Cognitive Vision  
Systems

Heinrich Bülthoff , MPI für biologische Kybernetik -  
Tübingen  
Image-based Recognition and Categorization

Barbara Caputo , KTH - Stockholm  
Kernel Methods for Categorization  
Henrik I. Christensen , NADA KTH Stockholm

Hand-Eye Coordination

Anthony G. Cohn , University of Leeds

James L. Crowley , INRIA Rhône-Alpes  
A Research Roadmap for Cognitive Vision

Sven Dickinson , University of Toronto

Jan-Olof Eklundh , NADA KTH Stockholm  
Figure-Ground Segmentation and its Role in  
Scene Understanding

Wolfgang Förstner, Universität Bonn  
Performance Evaluation in Cognitive Vision

Gösta Granlund , Linköping University  
The Structure of Cognitive Vision Systems

Erik Granum , Aalborg University

Daniela Hall , INRIA Rhône-Alpes

Vaclav Hlavac , Czech Technical University  
Efficient SVM Approximation for Visual  
Recognition

Josef Kittler , University of Surrey  
Sports Video Interpretation using Temporal Context

Walter Kropatsch , TU Wien

# Special issue on Cognitive Vision

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Special issue of AI magazine (AAAI)

- Cognitive vision research
  - Edit by Henrik Christensen
  - To appear in Autumn 2003

# White papers

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## AI in computational vision

- Outline the potential use of AI methods in cognitive vision
- Motivate the need for AI in cognitive vision

## Computational vision in AI

- Outline the research challenges that cognitive vision offers to AI
- Motivate the involvement of AI researchers in vision

# A research roadmap for CV

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## Objective

- To define the scientific domain of Cognitive Vision
- To document current methods and problems

## Context

- A long term vision for Cognitive Vision
- Support for FP 6 call Cognitive Systems

# Research Roadmap Contents

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## Six Chapters:

1. The Domain of Cognitive Vision
2. Fundamental concepts for Cognitive Vision
3. The potential for innovation in Cognitive Vision
4. Applications and Potential Markets
5. Fundamental Research Problems
6. Recommendations

# Research Roadmap Contents

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## Six Chapters:

### 1. The Domain of Cognitive Vision

1.1 Cognitive Systems

1.2 Cognitive Computer Vision

1.3 Cognitive Vision and Computer Vision

1.4 Cognitive Vision and Artificial Intelligence

1.5 Enabling Technologies

# Research Roadmap Contents

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Six Chapters:

2 Fundamental Concepts for Cognitive Vision



# Research Roadmap Contents

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## Six Chapters:

3. The potential for innovation in Cognitive Vision
  - 3.1 The nature of innovation
  - 3.2 The virtuous cycle of innovation.
  - 3.3 The phases of innovation

# Research Roadmap Contents

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## 4. Applications and Potential Markets

4.1 Autonomous (Mobile) Systems and Robotics

4.2 Industrial Inspection and Industrial Robotics

4.3 Video Surveillance

4.4 Man-machine interaction

4.5 Smart environments and ambient intelligence

4.6 Mapping on demand

4.7 Indexing Photo databases and Content analysis of images

4.8 Film, TV and Entertainment

4.9 Aerial and Satellite Image Analysis

4.10 Aerospace

4.11 Medical imaging and life sciences

# Research Roadmap Contents

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## Six Chapters:

### 5. Fundamental Research Problems

5.1 Model Learning

5.2 Knowledge Representation

5.3 Recognition, Categorization and Estimation

5.4 Reasoning about Structures and Events

5.5 Architecture and Visual Process Control

5.6 Performance Evaluation

5.7 Self Diagnosis

(most of these remain to be written)

# Research Roadmap Contents

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Six Chapters:

6. Recommendations

# Roadmap timetable

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Invite “dreams” contributions

- Max 4 pages
- Deadline ~1 September 02

Workshop on research challenges: December 2002

Draft roadmap : January 03

Planning Meeting (Amsterdam): February 2003

Version 2.5 for distribution at ICVS 03. (April 03)

Presentation at Dagstuhl workshop on research challenges

- October 2003 (Nagel & Christensen)

## Survey of Computer Vision Groups in Europe

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List compiled by Henrik Christensen

Available at

[http://www.ecvision.info/research\\_planning](http://www.ecvision.info/research_planning)