

## Network Action Proposal

Title:	4 <sup>th</sup> International Workshop on Object Categorization in conjunction with ICCV 2007
Membership number(s)	23 (A.L.)
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Goals of the action	<p><b>To hold a one day workshop: 4th International Workshop on Object Categorization, in conjunction with ICCV 2007.</b></p> <p><b>Motivation:</b> The recognition of object categories has a rich history in computer vision. Since the 1970's, generic object recognition systems sought to model and recognize objects based on their coarse, prototypical shape. These early systems employed complex 3-D models, which offered invariance to viewpoint (including image translation, rotation, and scale), articulation, occlusion, and minor within-class shape deformation. However, despite their powerful modeling paradigms, these early systems lacked the low- and intermediate-level segmentation, grouping, and abstraction machinery to recover such prototypical shape from real images of real objects. Over the next 20 years, the recognition community began to back away from this "holy grail" of recognition, bringing the models closer to the image in an effort to reduce the representational gap between extractable image features and model features. During this time, the community passed through the CAD-based vision era, where exact 3-D geometry was specified, to the appearance-based vision era, where exact 2-D photometry was specified (either globally, or locally at interest points). Over this period, the recognition problem was reformulated from generic object recognition to exemplar recognition. For the first time, real object exemplars, with full texture and complex shape, could be recognized. However, it became apparent that these techniques for exemplar recognition did not scale up to generic objects (alternatively called classes or categories). Over the last 10 years, the mainstream object recognition pendulum has started to swing back toward object categorization. Armed with new features, new segmentation techniques, new optimization and matching techniques, and new machine learning methods, the community is far better prepared this time around to tackle this important problem. Unfortunately, since categorization was absent from the mainstream for so long, there is a tendency not to look back at earlier problem formulations, challenges, and solutions. This historical disconnect has not served the community well, and we're now navigating today's challenges, including the quests for more categorical features (shape vs.</p>

appearance), view-point invariance, articulation invariance, occlusion invariance, and invariance to within-class structural change, without the clear hindsight of the community's earlier experience.

In an effort to foster greater communication between researchers from disparate camps, and to help bridge this historical disconnect, we held international workshops on generic object recognition at CVPR 97, ICCV 99, and CVPR 04.

The workshops all had identical format: bring together 10-12 of the community's most prominent researchers, from both the human and computer vision recognition communities whose research spans the evolution of the field, to share their perspectives on the problem. To stimulate discussion, we purposely chose researchers with opposing viewpoints, in an effort to represent all perspectives on the problem, rather than favor a particular methodology. Since many of the workshop attendees were graduate students, we felt that both a broad treatment of the problem, with broad historical context, was critical. Speakers were encouraged not to simply present their latest work, but rather provide a perspective on their experience working on the problem, and talk about the challenges, successes, and failures. The workshops were a great success, with the most recent incarnation (at CVPR 04) being the most attended workshop of the conference.

**On the 10th anniversary of the first workshop we held on the topic, we propose to organize the 4th International Workshop on Object Categorization, in conjunction with ICCV 2007.** There are many reasons why we believe the time is right for such a workshop. As mentioned above, the historical disconnect continues to grow at the same time as more researchers enter the recognition community; an institutional memory refresh is especially important for today's researchers and students, if we are to maximally benefit from the community's prior work. Perhaps a more compelling reason for holding such a workshop now is an increased interest in the fields of psychology and neurophysiology to study mechanisms of human visual object categorization. We have recently seen several successful algorithms that are biologically inspired/motivated. By bringing together researchers from different vision sub-communities, we hope to increase the interdisciplinary awareness and collaboration, both of which will ultimately shed light on this important problem.

#### **Workshop Format**

Like our previous workshops, the format of the one-day workshop, to be tentatively held on October 15, 2007, will be 12 invited speakers plus a panel discussion.

#### **Organization**

The organizers of the workshop are the two authors of the EUCognition support application and Prof. Sven Dickinson from the University of Toronto and Prof. Michael J. Tarr from Brown University.

#### **Estimated Attendance**

We expect an audience of at least 100, a number which was exceeded at the last workshop we organized at CVPR 2004.

<p>Principal activity to which it contributes</p> <ul style="list-style-type: none"> <li>○ Community Outreach</li> <li>○ Scientific Outlook</li> <li>○ Education &amp; Training</li> </ul>	<p>All three</p>
<p>Concrete outcomes of the action (at least one of which should be material suitable for publication on the euCognition website)</p>	<p>We will provide a summary of the individual talks at the end of the workshop. We will also ask the speakers to provide us with their slides which will be collected and put up on the EUCognition web-server.</p> <p>Unlike the previous three workshops which yielded no proceedings or volume (but did yield websites containing speakers' slides, bibliographies, etc.), we plan on assembling an edited volume whose contributions not only include those of our 10-12 invited speakers, but include speakers from the three previous workshops as well as others we would like to include but cannot invite due to various constraints. We contacted Cambridge University Press, who encouraged us to submit a proposal, which was very favorably reviewed and accepted. We have signed a contract and are very excited about the project.</p>
<p>Effort in person-days that will be charged to the Network Action (if any)</p>	<p>None.</p>
<p>Expected start and duration in months</p>	<p>A one-day workshop, October 15, 2007</p>
<p>The requested funding, under the following headings:</p> <ul style="list-style-type: none"> <li>○ Travel Costs</li> <li>○ Other Costs (check with the Network Coordinator if you aren't sure about eligibility of these costs)</li> <li>○ Labour Costs (identify the number of person-days and the rate per day).</li> </ul>	<p>The goal of this specific action is to support the invited (primarily human-vision) speakers to come to the workshop. We would like to offer them partial support of their travel expenses, thus we request</p> <p><b>a funding of 4.000 EUR from the EUCognition under the heading: Travel Costs.</b></p> <p>The contribution would cover approximately 15% of the total expenses.</p>
<p>Please identify any other sources of funding that contribute to this Action (actions to support events such as workshop and conferences should include an outline budget identifying the total cost)</p>	<p>The EUCognition contribution would cover approximately 15% of the total expenses. The other sources of funding:</p> <ul style="list-style-type: none"> <li>- Toyota: 3000 EUR</li> <li>- Invited speakers and organizers themselves.</li> </ul> <p>Outline of the budget:</p> <p>An estimated average cost per speaker/organizer</p> <p>Travel costs: 1200 EUR  Registration: 100 EUR  Accommodation: 300 EUR (2 nights)</p> <p><b>Total: 1600 EUR * 16 = 25.600 EUR</b></p>