Cognitive-Level Annotation using Latent Statistical Structure

Class is a 3 year targeted research project funded by the European Union Information Society Technologies unit E5 – Cognition.

Scientific Goals

Class will develop a basic cognitive ability for use in intelligent content analysis: the automatic discovery of content categories and attributes from unstructured content streams. The demonstrators will focus on object recognition and scene analysis in images and video with accompanying text streams. Autonomous learning will make recognition more adaptive and allow more general classes and much larger and more varied data sets to be handled.

Technically, the work will combine latent structure models and semi-supervised learning methods from machine learning with avanced visual descriptors from computer vision and state-of-the-art text analysis techniques. Three levels of abstraction will be studied: new individuals (specific people, objects, scenes, actions); new object classes and attributes; and hierarchical categories and relations between entities.

Demonstrators

The basic research results will be illustrated by three proof-of-concept demonstrators: an ***Image Interrogator*** that interactively answers simple user-defined queries about image content; a ***Video Commentator*** that automatically creates textual descriptions of the action and content of situation comedy videos for visually impaired users; and a ***News Digester*** that combines television news stories with captions from several sources to create a textual and visual digest of them.

Consortium

Class is an interdisciplinary project, combining six leading European research teams in visual recognition, text understanding & summarization, and machine learning:

- the LEAR team, INRIA and CNRS, Grenoble, France (visual recognition)
- the Visual Geometry Group, Department of Engineering Science, University of Oxford (image & video analysis)
- the VISICS team, Katholieke Universiteit Leuven (video summarization)
- the ICRI-LIIR team, Katholieke Universiteit Leuven (text summarization)
- the Intelligent Systems Group of the Computer Science Department of the Technical University of Darmstadt (latent structure models)
- Empirical Inference for Machine Learning and Perception department of the Max-Planck Institute for Biological Cybernetics, Tübingen (semi-supervised learning)

Statistics

- Class (IST project 027978) is a 3 year 6th Framework Specific Targeted Research Project running from 1 January 2006 to 31 December 2008
- Total effort: 38 person years
- Total budget: 2.9 M€ including 2.4 M€ of European Union support

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