Subject: Face-based audiovisual content segmentation and classification

Problem Area:
Multimedia Content Analysis (MCA) refers to computerized understanding of semantic meaning of audiovisual content. In particular, MCA, as an enabler of Content Based Retrieval (CBR), has become an important topic for consumer networks and video search services. In the past a broad range of audio and video analysis features have been developed and combined into state-of-the-art audiovisual content management solutions. Future MCA solutions will aim to exploit the knowledge of artistic rules such as film grammar. In particular available face-detection and classification algorithms provide semantic valuable information, which in combination with artistic rules will provide semantic meaningful information about content item instances and segments.

Work Assignment:
The student is expected to conduct research under the supervision of a senior project member in the area of multimedia content analysis. The following set of tasks is part of the assignment:
• Study of artistic (film grammar) rules and a literature review of related face-related audiovisual content analysis techniques relevant for content segmentation and classification.
• Research and development of novel content analysis techniques and/or augmentation of the existing methods developed under related projects (e.g. CASSANDRA, www.extra.research.philips.com/cassandra).
• Develop (stochastic/statistic-based) techniques for the segmentation and classification of face-related content instances.
• Implement a prototype (e.g. in software) and write a final report of the work done.

The student is expected to have (reasonable) working knowledge and strong affinity for the following topics:
• Programming in C, C++ and MatLab
• Signal Processing, with application to Audio/Video Signal Analysis
• Knowledge about AudioVisual standards (optional)
• Pattern Recognition (optional)

It is expected that the student will work in Philips Research, NatLab, Eindhoven, The Netherlands for a minimum of 9-10 months and would begin January/February 2005. If the student desires, the work could be used as part of his/her Master’s thesis/project. In case the student has no prior knowledge about audio signal analysis, Machine Learning, it is expected that he/she will study literature about this topic before coming to the Netherlands and/or the student is eager to learn about them. Suitable URL links and literature will be provided.

Documents required:
• A short CV (1-2 pages)
• A short accompanying letter providing us with a brief description of why you are interested in the topic and would like to work at Philips Research – not more than 10 lines.
• A list of courses completed in the past 3 years including marks achieved at the exams.
• Optional extra: A short recommendation from your professor – preferably the Philips contact person.