Subject: **AudioVisual clustering and classification by means of statistical methods**

**Problem Area:**
Multimedia Content Analysis (MCA) refers to computerized understanding of the semantic meaning of audiovisual documents such as a suspense scene in a movie. In particular, MCA, as an enabler of Content Based Retrieval (CBR), has become an important topic for future consumer devices. Various research results have shown that the combination of audio and video content analysis, based on statistical methods such as Neural Networks and Fuzzy Logic, improves the efficiency of state-of-the-art audiovisual content management solutions.

**Work Assignment:**
The student is expected to conduct research under the direction of senior project members in the area of statistical-based multimedia content analysis techniques. Specifically the following set of tasks is part of the assignment:

- Literature review of relevant multimedia content analysis techniques relevant for semantic audiovisual clustering 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 new techniques to improve audiovisual segmentation, clustering and classification algorithms for semantic audiovisual indexation.
- 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
- 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. 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.