Web-based concept detection systems retrieve training samples for concept learning by formulating a query to platforms like YouTube or Flickr. This parameter, usually predefined by a human operator, determines strongly the quality of the retrieved training data and therefore the performance of the resulting system.

To support the user with the process of such a concept-to-query mapping, we present lookapp, a system for an interactive construction of web-based concept detectors. The system provides mechanisms to find a proper query formulation for a given concept by offering two key features:

1. **Interactive Concept-to-Query Mapping**: The core of our system is a retrieval analysis component providing tag and category suggestions. These are based on metadata statistics and the ImageNet Ontology and can be improved further by relevance feedback provided by the user.

2. **Instant Detector Construction**: The second feature is the construction of a concept detector based on the retrieved training data. This is realized using the cloud computing platforms Google AppEngine and Google Prediction API.

The system can be deployed on common cloud computing services providing training data acquisition, storage, parallel feature extraction and distributed classifier training.

**System Overview**

For the current query (1), the performed retrieval analysis displays a mosaic of retrieved keyframes (2), tag occurrences (3) and category distribution (4). Additionally, further tag and category suggestions (5+6) related to the current query are made.

An overview of the created concept detector, summarizing the used query (1), retrieved datasets (2), time consumption (3) and performance evaluation (4) on a user provided test set.

**Training Data Retrieval**: The system uses web video as a source for visual learning by querying YouTube for potential training material via the provided API.

**Parallel Feature Extraction**: Videos are represented by keyframes directly fetched from YouTube servers. Lookapp offers color histograms, auto correlograms and SIFT based bag-of-visual-word features, which are extracted for every keyframe.

**Classifier Training**: Google Prediction API is used for classifier training. The Prediction API is built as a distributed system on Google's infrastructure and offers model training in the timespan of minutes. As a result the detector can be used directly by requesting predictions for unseen videos by the given Prediction API URL.

**Web Demo**

Retrieve Analysis

Concept Detector Construction

For the current query (1), the performed retrieval analysis displays a mosaic of retrieved keyframes (2), tag occurrences (3) and category distribution (4). Additionally, further tag and category suggestions (5+6) related to the current query are made.