Video Information Retrieval using Objects and Ostensive Relevance Feedback

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The thesis discusses and evaluates a model of video information retrieval that incorporates a variation of Relevance Feedback and facilitates object-based interaction and ranking. Object-based feature search for video IR is one of the main novel aspects of this work.

Video and image retrieval systems suffer from poor retrieval performance compared to text based information retrieval systems and this is mainly due to the poor discrimination power of visual features that provide the search index. Relevance feedback for video retrieval can help overcome the poor discrimination power of the features with user essentially pointing the system in the right direction based on their judgements.

The **ostensive** relevance feedback approach explored in this work weights user judgements based on the **order** in which they are made with newer judgements weighted higher than older judgements.

A user experiment has been developed in which **three** video retrieval system variants are evaluated on a corpus of video content. All three systems offer the following features for query search: character objects, closed caption text, colour and edge histogram and user sketch. The first system applies standard relevance feedback weighting while the second and third apply ostensive relevance feedback with variations in order weight. In order to evaluate effective object retrieval animated video content provides the corpus content for the evaluation experiment.

The main findings in this thesis:

- Exploring the benefit of ostensive relevance feedback for video retrieval the work demonstrated that ostensive RF provided a performance boost for narrow query topics where few valid results are contained in the evaluation corpus.
- Examining the effectiveness of object retrieval the main finding was that the usage and performance of the object feature was high but tended to be topic specific.
- Users interaction approach was also explored. The main results demonstrate that users RF iterations tend to be small (typically 8 or less), text was the most popular search feature and objects were used in over 50% of query searches