

DIVERSITY RANKING FOR VIDEO RETRIEVAL FROM A BROADCASTER ARCHIVE



Departament de Teoria del Senyal i Comunicacions

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Goal

Text-based video asset retrieval displaying:
 → Relevant keyframes
 → Diversity of assets

Challenge

Determine keyframe relevance when annotation is only available at the asset scale.

Assumptions

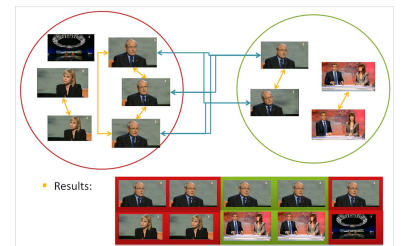
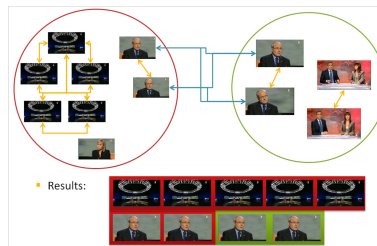
Relevant keyframes are:
 → Visually similar
 → Near duplicates in multiple assets.

Similarity Graph Filtering

The **Random Walk** algorithm can estimate the relevance of every keyframe according to its visually weighted edges in a Similarity Graph [Hsu'07].

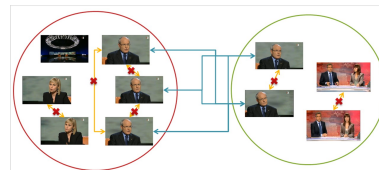
PROBLEM:

Visual redundancy generates multiple connections (intra- & inter-asset) that increase relevance.

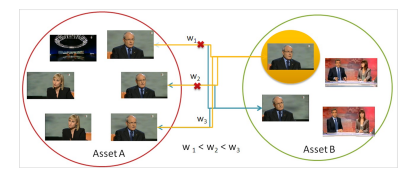


SOLUTION:

Filter intra- and inter-asset edges.



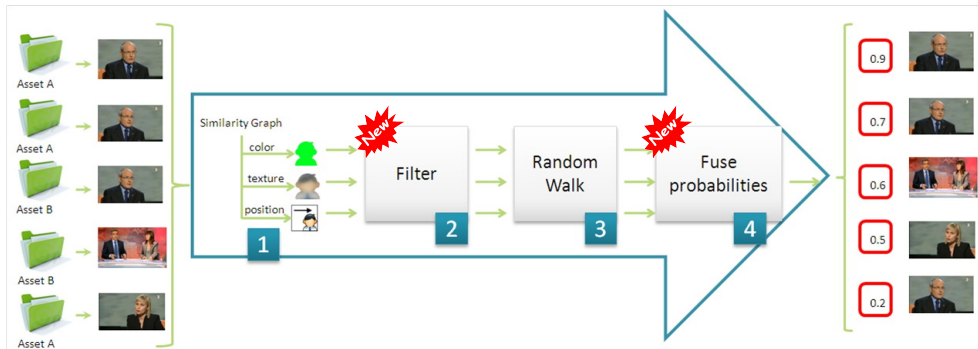
Intra-asset filter



Inter-asset filter

The filters and random walk are applied separately for every considered visual feature before fusion.

Architecture



Experiments show that asset diversity is increased without significant degradation of the precision.

Results

Query	# assets	# KFs
Table tennis	3	1,116
Formula 1	6	3,441
Parliament	12	2,816
Accident	8	66
Football	16	416

Diversity at k $D(k) = \frac{d(k)-1}{k-1}$ (where $d(k)$ is the number of different assets at k)

Average Diversity $AD = \frac{1}{m-1} \sum_{k=2}^m D(k)$



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