MUFIN at ImageCLEF 2011: Success or Failure?

(annotation approach to photo classification task)

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Photo Annotation Task

- Annotation = set of all relevant concepts (= classification?)
- Solution A: Tailored set of classifiers

trained for specific purposes

Solution B: Transformation of free-text annotation
training data not necessary, highly scalable



- Our approach: based on solution B
 - Free-text annotation by MUFIN Annotation Tool
 - Annotation transformed into concepts via WordNet semantic

relations, verification by OWL ontology

Specific tools for selected concepts: face recognition, EXIF

tags, correlations derived from training data

Search by visual similarity in the labeled training data



MUFIN Annotation Tool

Annotation = free-text description of image

http://mufin.fi.muni.cz/annotation

- Obtained by mining the results of content-based search
 - Global visual similarity, MPEG7 descriptors
 - Nearest neighbors query
 - Lemmatization, stopwords, WordNet cleaning
 - Dataset: 20M images with rich and precise annotations
- Most frequent keywords form the annotation

Evaluation

- Overall performance of MUFIN solution
 - Rank 13 by MAP
 - 0.67 % of the best result performance (MAP)

Concept-wise performance

Overall results of the Photo Annotation Task – MAP metric

1.	Most successful group	MAP 0.443
13.	MUFIN group	MAP 0.299
•••		
18.	Least successful group	MAP 0.177

- Good performance: pictured objects, nature, scene
 - Church, airplane, water, snow
- Low performance: background objects, emotions, quality

Clouds, melancholic, overexposed

- Conclusions
 - Our approach suitable for many concepts, highly scalable
 - Future enhancement: more specialized classifiers

MAP per concept, relative to the best result for the given concept

