xLiMe – crossLingual crossMedia knowledge extraction

2ND PROJECT YEAR

xLiMe proposes to extract knowledge from different media channels and languages and relate it to cross-lingual, cross-media knowledge bases. By doing this in near real-time we intend to provide a continuously updated and comprehensive view on knowledge across media.

In the first year we focused our research efforts on implementing an initial processing pipeline for extracting machine-readable knowledge from multilingual, multimedia and social media content. By integrating it with cross-lingual, cross-media knowledge bases we could search this knowledge with structured and unstructured queries in near real-time.

In the second year we started our development with three concrete business cases in mind, namely *News article with TV-stream enrichment*, *Entity-based and event-based cross-modal media monitoring* and *Social media based product recommendations*. From those we derived requirements for improving the Y1 pipeline. The main technical and scientific advancements needed to realize those business cases in terms of content analytics were:

- The automated speech recognition in TV-streams was supported by another system for faster transcription and better coverage of more channels. In addition, subtitles were exploited to complement the extractable knowledge from TV-streams
- We researched specialized methods for processing social media text in three languages, including vector representation, named entity recognition and sentiment detection
- We developed an online visual annotation tool to address the bottleneck of scalable logo and object recognition for the media domain
- We improved object detection and localization in complex video scenes
- More robust entity linking methods were devised which also enable salient entity linking
- Methods for knowledge-poor corpora with little alignment information for crosslingual entity disambiguation were proposed and a new knowledge-based approach for fast similar document retrieval was developed
- Initial event extraction capabilities were achieved based on semantic role labelling methods

To make this knowledge accessible to the user interactive keyword disambiguation and near-real-time filtering of query terms on the multimodal data stream was developed. And initial approaches for monitoring sentiment diffusion and usage, trends and popularity of content were implemented

This allowed not only building demonstrators for the above mentioned business cases but also resulted in a system which won the 2nd prize at this year's Semantic Web Challenge. By showcasing the listed functionalities in a semantic search system we could compete with commercial products.

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