Using the Crowd to Boost Video Annotation Processes: a game based approach

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ABSTRACT

This short paper presents a game for collecting metadata to describe video content. Tags, introduced by registered players on a given timecode of the video, are collected and validated based on a collaborative scoring mechanism that excludes erratic annotations. The system follows a gamification approach for motivating users and includes processes for semantically relating concepts.

CCS Concepts

• Information systems→Information retrieval; Video Search

Keywords

GWAP; crowdsourcing; tagging; video annotation.

1. INTRODUCTION

Tagging systems enable new modalities of social communication and opportunities for making content available for browsing and searching. However, a great part of that user-generated annotations have no quality-control process that guarantees the effectiveness of the data collected which typically is noisy, selfish and contains misspelled words. Crowdsourcing has been gaining points as a method to collect metadata descriptors, adding extra alternative textual information to the one that already exists.

This paper presents a web-based video annotation game which relies on a collaborative process and on gamification mechanisms for engaging users on the tagging process of video content. The current system enhances a previous version described with detail in [1] by introducing new features that include better algorithms for tag validation, new scoring and motivation mechanisms and a semantic analysis of the concepts associated with tags.

2. GAME DESCRIPTION

This work proposes a solution to enhance the quality of the metadata provided by a community of users, implementing a complex scoring and validation mechanism of contributed tags.

Although tags may be freely introduced, players are only rewarded if their contributions are considered valid. Validation is performed through a crowdsourcing approach that analyses the matching opinion of users, time accuracy and semantically similar tags, as well as their opinion on other users' inputs through a voting mechanism. Players' contributions within a pre-defined timeframe are grouped into clusters that are used to validate or reject introduced tags. A detailed description of this functionality
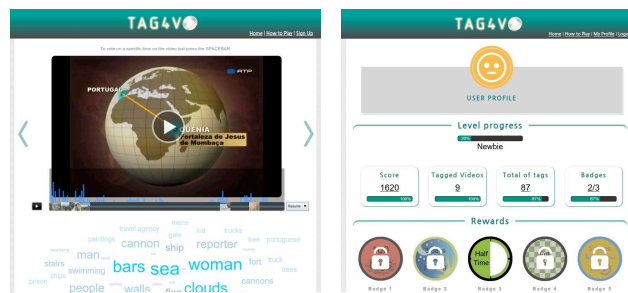
Figure 1. a) Video Player b) Player Page

can be found in [1]. A tag-based dictionary was included to help on the quality control of the tags introduced and also to bridge the semantic gap among concepts.

Different types of rewarding mechanisms for motivating good contributions, along with new visualization functionalities, were included. Video browsing and preview has been enhanced with a summarization module that produces a shorter version of the content based on the top ten most interesting moments (Figure 1a) according to the likes' bar chart created by the community of players. In the game competition mode, motivation mechanisms are important factors that contribute to increase the effectiveness of the game. Our game tries to promote fun, and then increase participation, with the attribution of different scores and progressive levels of difficulty. Given that scoring requires the match of opinions, less annotated content is considered more difficult and this content is then increasingly included in higher levels of the game. As a motivational complement, users are also encouraged to reach pre-define goals that enable them to unlock new badges and progress in new levels of difficulty (Figure 1b). Tips that try to help users and guide them on specific actions that enable additional scoring are included as well.

The introduction of a dictionary with semantically similar tags allows the system to extend the default syntactic tag matching with semantic similarity matching. By using this approach, not only is the system able to find synonymous words, as well as other tags describing concepts that frequently occur together. A context based annotation is then achieved.

3. ACKNOWLEDGMENTS

4. REFERENCES

Pinto, J.P. and Viana, P. 2013. TAG4VD: a game for collaborative video annotation. *In Proceedings of the 21st ACM International Conference on Multimedia*, 25-28. http://doi.acm.org/10.1145/2512142.251