

# Towards Community Browsing for Shared Experiences: The WeBrowse System<sup>\*</sup>

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**Abstract.** We introduce the new concept of *community browsing*: a group of people browsing the web together and *simultaneously*. Community browsing is part of the broader notion of *shared experience*, where individuals share the experience of an event. We have developed a prototype of a mobile application that enables community browsing, and involves new technologies such as a peer-to-peer Electronic Institution and bipolar preference aggregation.

## 1 Introduction

Cultural institutions such as museums have been placed under financial pressure by the current European economic crisis [6], making it more difficult to physically visit them. It is therefore interesting to see whether we can exploit mobile devices and social networks to enrich and encourage the experience of cultural artifacts *online*.

In this paper we report on ongoing work on enabling community browsing. We describe an application for community browsing that uses intelligent agents to aggregate the preferences of the individual users into community decisions, and an electronic institution to enforce the norms of the community onto the agents.

## 2 The WeBrowse Application

Community browsing means that members of a community browse the web simultaneously in a **synchronised** way. All users see the same things at the same time and know they are doing so. Actions impacting the community need to be agreed upon

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by the community members and individual decisions are aggregated into **community decisions**.

We have developed an iOS application called *WeBrowse* that allows community browsing of an image database. Each member of the community starts an instance of WeBrowse on its own mobile device and joins the community session. During the session images from a database are displayed to the users, one by one. All users always see the same image at the same time. Each image is accompanied by a set of tags describing the image. Every user can express his opinion about the displayed image, by indicating for each tag whether he likes it or not. An intelligent software agent then collects the opinions of every user for every tag of the image, and aggregates them into a ‘collective opinion’ about the image. This information is then used by the database to select the next image to display.

We have implemented WeBrowse around an Electronic Institution (EI) [1, 5]. Electronic Institutions make it possible to develop programs according to a new paradigm, in which tasks are executed by independent agents. The EI ensures that the agents behave according to the *norms* that are defined for the application. A difference with the existing work on EI however, is that our EI is implemented as a peer-to-peer system rather than a centralized system.

In order to aggregate the opinions of the users and determine which image to display next, we apply a possibilistic bipolar representation model as described in [2, 3]. This aggregation function assigns a weight to each tag associated with the current image. These weights are then used to rank the images in the database, according to their tags. The image with highest rank is returned as the next image to the community [4].

We have performed some initial user trials with the application, which indicated that the system indeed enhances the social experience of its users.

### 3 Acknowledgments

This work is supported by CHIST-ERA project ACE.

### References

1. Arcos, J.L., Esteva, M., Noriega, P., Rodríguez-Aguilar, J.A., Sierra, C.: Engineering open environments with electronic institutions. *Engineering Applications of Artificial Intelligence* 18(2), 191–204 (2005)
2. Benferhat, S., Dubois, D., Kaci, S., Prade, H.: Bipolar possibility theory in preference modeling: Representation, fusion and optimal solutions. *Information Fusion* 7(1), 135–150 (2006)
3. Casali, A., Godo, L., Sierra, C.: A graded BDI agent model to represent and reason about preferences. *Artificial Intelligence* 175(7-8), 1468–1478 (2011)
4. De Calmès, M., Dubois, D., Hullermeier, E., Prade, H., Sedes, F.: Flexibility and fuzzy case-based evaluation in querying: an illustration in an experimental setting. *Int. Journal Uncertainty, Fuzziness and Knowledge-Based Systems* 11(1), 43–66 (2003)
5. d’Inverno, M., Luck, M., Noriega, P., Rodríguez-Aguilar, J.A., Sierra, C.: Communicating open systems. *Artificial Intelligence* (In Print, 2012)
6. Newman, K., Tourle, P.: The Impact of cuts on UK museums A report for the Museums Association (July) (2011)