

# Towards a Socially-Enhanced Web Navigation Experience

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## 1. Introduction

Nowadays, the web is becoming more and more a social ecosystem, represented by three main pillars: (i) users, (ii) user generated content and (iii) resources. Users now create a huge amount of social content in the form of annotations (e.g. tags, social updates etc.) on different kinds of resources. As an illustration of this social layer on the web, we can cite the fact that almost every website has now a container for adding comments or opinions and the existence of gateways to social networking websites for sharing the resource with friends. Our proposal is a gateway from a web site to a social network that recommends the user similar people. The user can thus interact with these people by asking or answering questions. The demonstration will illustrate this gateway with the following scenario. A user, say Cathy navigates on different websites related to cinema, as she wants to watch a movie. She selects the title of a movie and the system recommends her people who have recently shared about topics related to that movie (e.g. the movie itself, actors or the scenario). In this way, Cathy can contact these people who she knows and ask for more information related to the movie. This work is positioned to the observation that recommendations from personal acquaintances or opinions posted by consumers online are the most trusted forms of advertising <sup>1</sup>. The main contributions of this work are the following : (i) a framework for the construction of dynamic user profiles from social content and (ii) a people recommendation strategy based on the dynamic user profile similarity.

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<sup>1</sup><http://blog.nielsen.com/nielsenwire/consumer/global-advertisingconsumers-trust-real-friends-and-virtual-strangers-the-most>

## 2. System description

The system collects content that users shared on different social systems and for which they gave authorisation for access. From each shared content, the system extracts the entities and the underlying sentiment. The following step is to build a dynamic user profile from the shared content. For this purpose, we associate to each extracted entity a set of statistical and semantic measures, which are: an adapted tf-idf for measuring the frequency and importance of the entity in the user profile and the sentiment score, measuring whether the user liked or disliked something related to the given entity.

In order to build rich user profiles from relatively few data, we use Linked Data for profile expansion. More concretely, for each entity, we retrieve from DBpedia <sup>2</sup> entities that are semantically related. In the case of a movie, this can be for example the actors, the producers etc. The underlying assumption is the fact that people use different vocabularies to share about the same concepts. Thus, two persons who watched the same movie, might express opinions about the movie or the actors. Also, if a user is interested in an entity, this interest generally propagates to semantically related entities. The similarity of user profiles is computed using the cosine similarity measure. For each recommended user, we generate also an explanation of the recommendation, i.e. a visual representation of the set of common entities between their corresponding profiles. For each user query, the top k most similar users are shown in a sidebar extension of the navigator. Each user is represented by her name, the sentiment she expressed related to the given entity and a button allowing to contact the user (e.g. send an IM,

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<sup>2</sup>[www.dbpedia.org](http://www.dbpedia.org)

call, send a mail etc.). We also show a summarized view of the similar users in the form of a graph that show each similar user in a colour corresponding to her sentiment about the query entity. This allows the user to have an overview of the average sentiment expressed by people she knows about her query concept and this can help her in making a decision (e.g. watch the movie or not?). Thus, the proposed system allows to even better bridge the gap between the user's daily activities and social networks and to leverage the social networks for decision making. The main scientific

challenges of this work are the extraction of sentiment and entities from very short messages, the user profile similarity construction and computation and the visual representation of the results in a user-friendly way. Also, we are investigating the important issue of privacy, which is an important problem in any application that builds user profiles. We consider this demonstration interesting for the industrial session in the workshop as it shows a new recommendation strategy and can generate interesting discussions about privacy issues.