Filling the Gaps to Know More! About a Researcher

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Abstract. As one of its main goals, the Research 2.0 concept focuses on the improvement of the connection and collaboration between researchers. Within this short paper we present More!, a mobile social discovery tool for researchers. We describe the application itself and present some initial results obtained by using the tool on small scenarios. Later we describe the current challenges of the tool and the future developments. Finally, we state open problems of the field and the application itself.

Keywords: research2.0, web2.0, human computer interaction, mobile devices.

1 Introduction

Research 2.0 is the result of applying Web2.0 tools and approaches on regular research processes in order to improve practices and increase participation and collaboration [1,2]. The connection of researchers in order to nurture future collaboration is one of the key goals of the Research2.0 concept. To support this goal, social networking approaches used on commercial Web2.0 platforms are being applied for research purposes. Tools like Scopus, 2collab [3], ResearchGATE [4], Mendeley [5], Academia.EDU [6] are some examples of supporting tools to achieve this goal. Taking a closer look, academic communities are also spending some efforts to create such tools and encouraging participation of researchers. As an example in the Technology Enhanced Learning community, tools like TELeurope.eu [7] or Academic Experts [8] are being developed and used.

Due to the availability and heavy use of many Web 2.0 and Research 2.0 platforms, the users have to deal with the problem of keeping and sharing with others several electronic identities [9]. This digital identity problem is also observed in the scenario where a researcher is attending a conference presentation and is interested in finding more information about the topic and the speaker. We have addressed this need and bootstrap collaboration between researchers through a mobile application, called “More!” [10].

The structure of this short paper is as follows: we first present the implemented application and its current outcomes and limits. In the following sections, the proposed solutions to two different limitations are discussed. Later, we present the open problems and opportunities for further work. Finally, we include some initial conclusions of this work in progress.

2 The More! Application

More! is a mobile web application that groups relevant information about a speaker in a way that can be easily exposed and integrated in the normal workflow of the audience of an academic event. The application exposes the following information from the speaker:

- researcher: full name, photo, e-mail and affiliation;
- work: current paper, slides, and publications list;
- social tools handles from: Twitter, SlideShare, blog, Delicious, LinkedIn, and Facebook.

In this way, the attendee can access some regular information about the speaker; as well as the paper and slides of the current presentation; and his previous publications. Moreover, he can 'identify' and 'follow' the speaker on some of the more mainstream Web 2.0 social tools, to get access to previous, current and future work. The workflow of the application in a conference scenario is as follows:

1. The speaker exposes a QR code [11] (resolvable to an URL link) to the audience.
2. Attendants capture and decode the QR code by using any code reader application available on their smart phones. After decoding, they are redirected to the "More!" web application.
3. "More!" presents the data on the client tool.

After evaluating the usability and the functionality of the tool in a real life scenario, we noticed two big limitations in this workflow [10]. The first limitation is related to the metadata needed to feed the tool. The More! application requires research and social tools metadata, and relies heavily on the availability of such data. The problem encountered was related on how to obtain this metadata.

The second problem encountered is related to: how the QR code is exposed to the audience, the extra work required by the speaker to make the codes visible to the audience, and the poor image quality of photos for the QR decoding applications on mobile devices.

Finally, the backend and the frontend of the More! application required different approaches to efficiently solve the original problem for which the application was made.

3 Improving the Back-end: Research.fm

As presented in the previous section, we identified the need to have a common entry point and a unified metadata sharing approach to feed the application. Currently, More! is using a local database where this data is stored, but this approach is neither scalable nor aligned with the Research2.0 concept of open data. For this reason an initial approach is being developed to expose and share research metadata: the research.fm API.

The research.fm is a RESTful API that will give access to social networks and publications data of scientific authors in a standardized way. This service exposes common data requirements for applications by following the Cool URI approach in order to provide readable, logic and persistent endpoints. On the other hand, the

metadata will be exposed in a standardized results format, in order to be interoperable. Table 1 shows some URIs example calls to retrieve author, publication and social tools metadata.

Table 1. URI examples to retrieve research metadata.

Social Tool	/<author_id>/social_tools
Author	/<author_id> /<author_id>/publications /<author_id>/lastpublication

The URIs provide us a logic and readable URL to obtain different kind of metadata elements from a researcher, such as: list of publications, current publication, and social tools handles. Currently, there are some discussions about how to correctly identify the authors among different platforms and how to link his digital identities. On the other hand, we are also discussing which is the way to represent the metadata and the output format for the API, in order to provide the desired interoperability. For this purpose, we are revising some publications and online community ontologies such as: SWRC [13] and SIOC [14]; together with social network approaches to share data as: OpenSocial [12] and FOAF [15].

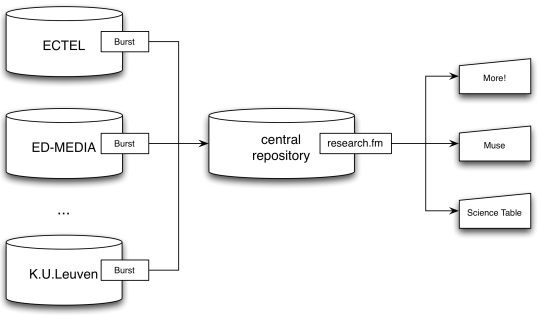

Fig. 1. Architecture where Research.fm is used.

Figure 1 presents the intended architecture to support the desired data sharing approach. Different publication sources, like publications archives and social media repositories will be included in a central repository where the metadata will be exposed through the research.fm API to different Research 2.0 tools like More! and others.

4 Improving the Front-end: Image Recognition rather than QR-Codes

The QR codes and its resolution to the More! application is crucial in order to engage the audience to use the application. As explained previously, the QR codes

became a small barrier between the researchers and the solution offered by our application. Nowadays, with the large amount of open data authored and shared by users over the Internet, new possibilities are available in order to apply different approaches for the required initial fingerprint of the speaker. To be more precise, the voluntarily shared photos and tags of users in social networks, such as Facebook; can be used to apply face recognition algorithms to identify a person [16].

In order to provide the face recognition capabilities to the More! application, an external facial recognition system will be tested. Face.com provides a face recognition service that allows the analysis of facial information from photos, and identify faces from a known set of users [17]. The site provides a REST API for detection, recognition and tagging of faces in photos. The system's algorithm can be connected to a Facebook account in order to obtain the training set of photos from predefined users.

Currently we are experimenting with the different requirements to make this a successful approach. We need to find out in average how many images an author makes available in Facebook, or how many images are necessary to be able to train the face recognition algorithm. Also, we need to find the maximum distance where a smart phone camera can provide a good quality picture that can be used to detect faces. Figure 2 presents initial results of applying the face recognition algorithm to a photo captured by a mobile device.

Fig. 2. Architecture where Research.fm is used.

5 Conclusion and Future Work

The More! web application is a working prototype that is currently on its second development cycle, where the improvements described on the previous sections are being implemented and tested. On the other hand, we need to understand how tools like More! can increase the awareness about related work, or even collaboration between researchers. Does it help the research community to perform in a more effective and efficient way? To answer these questions, we are currently planning a second evaluation in practice of More! to find answers from measurable characteristics.

Currently, there is still some work needed from the Research 2.0 community regarding automatic gathering of information from the scientific publications and researchers Web 2.0 footprints and identities. Regarding scientific publications approaches like the Stellar Scientific Portal [18], DBLP [19], Mendeley are important to the scientific community in order to obtain structured and clean publication metadata. On the other hand, there are some approaches to identify and make searchable users over the Internet, like: 123people [22], Yasni [23], zoominfo.com [24], and ArnetMiner [25]. Even though there are some efforts to solve these problems, there is still much room for improvement and a long way for a sustainable solution

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