

SHORT TERM SCIENTIFIC MISSION (STSM) SCIENTIFIC REPORT

This report is submitted for approval by the STSM applicant to the STSM coordinator

Action number: IC1302

STSM title: Analysis and Study of Mobile Keyword-Based Search

STSM start and end date: 07/07/2017 to 13/07/2017

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PURPOSE OF THE STSM:

Recent years have witnessed a rapid growth in the use of mobile devices having Internet access. Therefore, search on mobile devices has become an area of interest in Information Retrieval (IR). Many users prefer to search for their information needs on their mobile devices no matter when or where they are. Moreover, mobile devices are equipped with many sensors such as GPS, light sensor, etc. These sensors enable a system to capture information such as user's current position and surrounding devices. Therefore, a mobile IR system can model a user's context and interest in order to personalize the retrieval model according to the her needs. The purpose of this STSM was to kick-start a research collaboration between two research groups, in Lugano and Toulouse, working on IR. This research aims at improving users experience with keyword-based search systems incorporating contextual information available through their mobile devices. To make this more clear we consider an example user searching for "pizza." Considering the time and location of the user when looking for this query is of great importance. If the user is in the city center and she searches for "pizza" at lunchtime, she is more likely to be looking for a restaurant nearby to have a quick lunch. To this end, we were interested in designing some related user studies enabling us to study users' behavior in different scenarios.

DESCRIPTION OF WORK CARRIED OUT DURING THE STSMS

During the visit, there was a series of discussions with Prof. Josiane Mothe and his colleagues and students where we analyzed different aspects of user study on mobile devices. With this analysis, we managed to have a better understanding of different aspects and tasks that can be addressed. During the visit, I have started working on a collection (CrowdSignals collection) on mobile users to get a better understanding of mobile sensor data. In particular, I studied the data to find out which sensors on a smartphone can be recorded, at what sample rate, and what are the values associated with them. The initial study was beneficial, mainly because the data collection is gathered from users of various smartphones and gives us an idea of how data can be gathered using different models of smartphones. With this initial study, we were able to discuss possible research questions in the form of a future collaboration. Furthermore, we discussed several

suitable tasks which eventually would enable us to address the research questions.

DESCRIPTION OF THE MAIN RESULTS OBTAINED

During the STSM we have started analyzing the data. Based on our initial study as well as our follow-up discussions we were able to discuss the following:

- TREC Tasks track would be a good reference for potential tasks for mobile search;
- We can determine the topic of the tasks based on the distribution of user information interests on mobile devices available in the literature;
- A questionnaire can be used to pick users who are more suitable for the defined task. For example, for the task of finding a restaurant in the city center, we would be more interested in users who are frequent location searchers. We can identify these users through pre-task questionnaires;
- The apps that users use on their smartphones reveal their information needs to some extent. For example, if a user launches a weather app, we can assume that she is interested in the weather forecast in the following days.

FUTURE COLLABORATIONS (if applicable)

The STSM has established a collaboration between the two institutions that will be continued. In fact, Prof. Josiane Mothe is an external examiner of the applicant's Ph.D. defense committee. Therefore, this collaboration is very crucial to the applicant's research future. As a result of this visit, we expect to write and submit a paper to a relevant conference that will be based on our discussions during this visit.