

Modelling Context Relations to Discover Hidden Contexts

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Recommender systems or even more general information retrieval systems have been deeply researched over the past decade. Almost every system, which works with documents, images, videos, music or different products had to adapt to new technologies, since there is a huge market competition and only the best stays and profits. Day by day we are inventing new technologies, which help us to live our lives comfortably. Searching the Web seems to be very easy task nowadays. We cannot even remember how it would be without indexed items over the whole Web and how long would a simple user spend by searching for a book he would find interesting. But there is always something new what will be invented and would make our lives even more pleasant. Current evolution of mobile devices indicates our need to be equipped by something smart always and everywhere. Smart devices are becoming our companions what also bring advantages we had never thought about. These devices are learning and adapting. They know who we are, what we do, where we are and even what we need.

Situational attributes like location, time, weather etc. are available now for devices whose only goal is to help us. We call these situational attributes simply *contexts*. Contextual information is not a new topic for researchers [2]. It has been already explored in many different areas of interdisciplinary research, but it all started with monitoring users in the scope of the Web. Nowadays this research around contexts rises again because of aforementioned computing power around us (generally called *pervasive computing*). Context is a new dimension in information retrieval as it is in recommending. Contexts such as location or part of the day are widely used to personalize systems. Contexts, and not only simple as location and time, are becoming more and more available what bring the research in the field of *user modelling* to the new and attractive perspective.

In this work we want to focus on the context and research, which has been done in this area. We want to bring an overview of the context and put it in constraints of new

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technologies, recent works. We want to show theoretical state-of-art approaches and link them with modern approaches, trends and perspectives. Our intention is to show new field and reveal possible research interests, which are summed up in the laid theses.

Web is a very specific place for contexts. We are able to recognize user interests by monitoring their interaction with websites. We could easily obtain information about current location (IP address), but there are more contexts which are not so visible. For now, we should abstract from tools of pervasive computing, since we are not able to determine low level contexts using computer. Hence there is new trend to browse the Web using smart devices, but still, we are never sure about complete set of current contexts of the user.

There has been some work done in classifying sentiment or opinion mining e.g., by Bermingham et al. [1]. It takes us to the idea of Web as storage of the users opinions. Furthermore, people spend many hours by contributing to Web what opens a new possibilities. By monitoring their contribution we could even discover contexts of their current state in general. To be more specific our intention is to extract emotion from the contributions. People use Twitter, Facebook or different tools to express their emotions or also other contexts, like what is new for them, where they are, what are they doing and what they feel. People are writing blogs, tweets, they do comment and like. This is all about nature language processing and learning the computer to understand humans. So far, we are introducing the *Web of Emotions*. Here we want to start the new approach in understanding emotions and how they affect user behaviour or interests on the Web. For instance, sad person would possibly like to watch a comedy or play a game to forget about the sadness.

Our goals here could be summed up as:

- Extract emotions from microblogs and social activities on the Web.
- Context of Emotion affecting interests.
- Reveal relations among emotions and other contexts.

Acknowledgement. This work was partially supported by the Scientific Grant Agency of Slovak Republic, grant No. VG1/0675/11.

References

- [1] Bermingham A, Smeaton AF.: Classifying sentiment in microblogs: is brevity an advantage? In *Proc. of the 19th ACM Int. Conf. on Information and Knowledge Management*, pp. 1833-1836, 2010.
- [2] Kantor P., Ricci F., Rokach L., Shapira B. (Eds.): *Recommender Systems Handbook*. Springer, 2010.