

Ph.D. Thesis Proposals (1) on formal Language Processing (MAPi)

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Personalized Information Access to virtual museum Repositories annotated with semantic descriptions

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Abstract:

We want, in this PhD thesis, to exploit the creation of virtual context-aware museums with intelligent information search. In the back-office interface, information resources are structured and described by semantic annotations (XML and RDF) and thus information search is based on XQuery+Sparql query languages; query-by-example paradigm is highly desirable to facilitate the development of queries. In the front-office interface, information is deployed and searchable within semantic virtual galleries (described by ontologies). In both interfaces, information is filtered depending on the user context (user profile, geographic and time situation, social environment, ..). Moreover, during the information retrieval process, recommendations can be made by the system, also based in the user context. The personalized information is returned to the user according to his profile (preceding actions, preferences, level of knowledge on the topics), type of activity carried out (training, teaching, leisure), or other interesting context descriptors to be identified along the project. Information to be taken into account and internally represented must be modeled through ontologies.

An interesting case study for this thesis is the Museum of the Portuguese Emigration (MPE) with its vast and diversified information. MPE is a virtual museum under development in the context of SIME project ("Sistema de Informação do Museu da Emigração"). SIME was born from the collaboration between Fafe Town Hall ("Câmara Municipal of Fafe") and University of Minho. SIME aims at creating a set of virtual galleries to display thematic information about the phenomenon of emigration from Portugal to Brasil (and other European countries). The information resources, i.e. the museum repository, is annotated in XML and galleries are built according to a formal description using ontologies. Each gallery is seen as the implementation of a "semantic network", allowing a conceptual navigation over the information. In this thesis, we propose to develop a new component (an IR system) to access directly (in "back-office") the information resources.

The Ph.D. is planned to be divided into the following tasks: analyze and write the state of the art; model the information repositories and the structured and semantic information access; model the context and the user profile; design the system architecture; implement the system; choose case studies and make the system experimental validation.

Conferences (in ranks A to C, according to ERA2010) where the intermediate or final results should be published: VL&HCC, ICALP&WIT, MW, JC DL/EC DL.