

SemRes: A System for Creating and Searching Semantic Documentation for Conservators.

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Abstract. Documentation is very time consuming; conservators have to categorize photos, give detailed description of the procedures and justify decisions about materials. Every conservator delivers his/her own documentation to the respective monument administrations that archive it in their shelves, without any possibility to access them digitally. In this case, the access to already conducted procedures, as well as the provision of the knowledge about the methods and materials used are very difficult, often almost impossible. The SemRes System provides conservators with semantic technologies in order to better structure and retrieve their knowledge and supports them in decision-making for conservation and conservation procedures.

Keywords: Information Retrieval, Semantic Retrieval, Linked Open Data, Digital Humanities

1 Introduction

In conservation the documentation is an integral part of the restorers work to describe their restored objects. It is important and indispensable to understand the phases of conservation and to allow decision-making for conservation and conservation procedures. The information they contain about the conducted conservation procedures, as well as the methods and the materials used are an immeasurable source of knowledge for this discipline and build the basis of the knowledge used for the conservation of a given object.

On the other hand, ontologies are the central components of semantic tools and have been present in the art and cultural area for some time. For instance, the CIDOC Conceptual Reference Model (CRM) supports the integration, communication and the exchange of differently structured information from the cultural heritage field. The field of conservation is, in this context, still underrepresented. The only semantic contribution in this domain is the Australian project The Twentieth Century in Paint¹, which investigates paint materials used in art works of the 20th Century in the Asian-Pacific region. One goal of the project

¹ <http://www.20thcpaint.org/>

is to develop a suitable ontology. This was developed for a specific sub-domain and can be reused, but represents only a very small area of conservation. To develop a generic conservation ontology, we have to consider the numerous measures and materials, as well as the damage patterns and causes of loss, which can vary greatly depending on the materiality and exposure of the object to be restored. To achieve a high acceptance in the professional world, conservation experts must be involved in this development process. Ontologies in the field of conservation documentation have not yet been developed. This is a big gap in the research infrastructure of conservation and other fields of cultural heritage.

2 The SemRes System

The presented demonstrator² bases on an own ontology for conservation documentation that includes all these semantic relations. The ontology is developed as a basis for semantic processing of documentation for conservators. The Triple-Store is based on Erlangen CIDOC Conceptual Reference Model (CRM³) and has been extended with VIAF⁴ and Geonames⁵.

This research is a joint effort of conservators, information and computer scientists in order to help conservators in organizing and retrieving their own documentation semantically. It aims to build on European initiatives and efforts that seek to free access of all cultural heritage information. The prior objective of this work is the preparation of data for the restorers that are automatically linked in the Linked Open Data Cloud. In this way, the access and reuse of scientific data on restoration is made possible not only for conservators, but also for architects, historians, archeologist and interested people. The SemRes system uses the information stored in a relational database and in a triple store that are mapped to another. The triples that have been automatically built represent the relations between artifact (object), the materials, the date of origin and the conservation phases. These semantic relations allow conservators to search and retrieve documentation about a given object that is semantically related to another one. We can find other documentations using the semantic relations through conservators, or materials that have been already used for some conservation phases or through the date of origin that could show how objects are historically related to another. The conservation phases show how documentations (that could have been written by different conservators) are related to each other and can be retrieved and semantically connected. In the final demonstration, we will show in more details how the ontology has been built and will give some more concrete examples, in order to make clear how the system uses the information stored in the relational database and in the triple store. The resources will be presented, as well as the classification of 539 material classes (related mostly to stone conservation).

² <http://semres.de/>

³ <http://erlangen-crm.org/current-version/>

⁴ <http://viaf.org/>

⁵ <http://www.geonames.org/>