Ontologies for Digital Humanities

Digital Humanities

Doctoral Seminar USMB 3-4 August & 3-4 September 2020

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Summary

This doctoral seminar is an introduction to Digital Humanities defined as the application of methods and tools from Information and Communication Technologies to areas of Arts, Humanities and Social Sciences. Rather than a simple application of computer tools, Digital Humanities offer a multidisciplinary perspective that has recently led to rethinking certain practices, e.g., in the acquisition and representation of knowledge in the field, and opened up new perspectives for the disciplines concerned.

In the framework of this training, the focus will be on the digital representation of cultural objects in the form of Linked and Open Data accessible by means of standards of the Semantic Web.

To validate the acquired knowledge, the seminar includes a full day of hands-on practice on how to query and to structure data in cultural heritage collections.

Available dates

August 3-4 ☐

September 3-4 ☐

Prerequisites

No prerequisites other than basic digital literacy skills.

Workload

12 contact hours (3 hours + 3 hours morning and afternoon session) over 2 days, of which:

- Digital Humanities: 6 hours
- Ontology & Knowledge Representation: 3 hours
- LOD & Semantic Web: 3 hours

Aims

The aim of this course is to teach the concepts, skills, technologies and tools underlying the Digital Humanities in the era of Linked Open Data. It will introduce students/researchers to the standards of the Semantic Web or Web of (Structured) Data, especially those necessary to building Ontologies for the Humanities.

Learning outcomes

At the end of the course the students/researchers should be able to:

1. Understand the relationship between Ontology and Digital Humanities
2. Understand and use ontologies in the context of Digital Humanities
3. Understand and discuss fundamental concepts, advantages and limits of Ontologies for Digital Humanities
4. Reflect critically about the concept of ontological modelling, and the state of the art of research at the intersections of Ontology and Digital Humanities.
5. Explain the possibilities of digital tools for ontological modelling in the areas of the Humanities and Cultural Heritage.
6. Perform hands-on modelling with Cmap Tools, Protégé and Tedi.
7. Present their own model of ontologies on knowledge areas related to the topics of the course.

Suitable for

- Students/researchers who wish to advance their knowledge of innovative, interdisciplinary applications in the domain of the Humanities, including methods from Symbolic Artificial Intelligence (Ontology, Knowledge Representation)
- Students/researchers in the Humanities (Anthropology, Archeology, History, Languages, Linguistics, Literature, Music, Philosophy, etc.),
- Students/researchers in Cultural Heritage Studies (material culture, built environment, intangible cultural heritage), Museum studies,
- all interested in digital tools for Humanities and Cultural Heritage,
- all interested in conceptualization, classification, standardization and knowledge representation

Teaching Method & Materials

- tutorials and practical sessions
- slides provided by the lecturers

Resources

Seminar slides, worksheets

Required Software

One or more of the following tools will be used, subject to the students'/researchers' background and particular interests:

For graph diagrams with arcs and nodes, we will use CmapTools: http://cmap.ihmc.us/ A very easy to use open source tool developed at the Florida Institute for Human and Machine Cognition, USA. Downloadable from https://cmap.ihmc.us/products/

For RDFS and OWL ontologies, we will use Protégé 5.5.0, an open source tool developed at Stanford University, USA. Downloadable from: http://protege.stanford.edu/download/download.html.

For ontoterminology building we will use Tedi 1.1, a software application developed by C. Roche at the University of Savoie-Mont Blanc. A demo version will be made available for the use of those who attend.

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Programme

1st day: Digital Humanities & Knowledge Graphs

9:00 am - 12:00 am: Introduction to Digital Humanities, LOD & SW

The first half-day is an introduction to Digital Humanities, Linked and Open Data, and the Semantic Web. We will see, in particular, the different definitions and the history of Digital Humanities. This introduction will be illustrated with several examples from fields as different as virtual reality (virtual museum visits), computer processing (NLP) of text corpora, image processing, content management (cultural object databases), etc. Since the Web has become the most important medium for publishing Cultural Heritage contents, we will introduce the basic notions of Linked Open Data and the Semantic Web. We will end this first half-day with Kerameikos, a linked and open data project representing and linking different collections of ancient Greek vases.

2:00 pm - 5:00 pm: Knowledge Graphs

The second half-day will be devoted to the representation of cultural data so that they can be shared and accessed on the web. Knowledge Graph is a special kind of database which stores knowledge in a machine-readable format and provides a means for information to be collected, structured, shared, searched and utilised. We will see the W3C languages for data representation (RDF standards). We will also learn how to query such knowledge bases from the Web (SPARQL language). Participants will query the Knowledge Graphs of DBpedia, National Library of France and Condillac Research Group.

2nd Day: Ontology & Practical Works

9:00 am - 12:00 am: Ontology

The W3C recommendations for knowledge graph building are intended to be as broad as possible (RDF, SKOS, OWL). The specific knowledge of a domain will be represented as ontologies in Knowledge Engineering. An ontology defines the specific concepts and relationships of the domain that will be used to represent and organise the cultural objects.
This will be followed up with hands-on ontology building practice in three available software platforms for building domain ontologies: CmapTools (Florida Institute for Human & Machine Cognition), Protégé (Stanford Center for Biomedical Informatics Research), Tedi (Condillac-LISTIC, USMB).

2:00 pm - 5:00 pm: The case of ancient Greek kraters

The last half-day session is dedicated to an implementation of the notions, principles and tools for the construction of knowledge graphs within the framework of Digital Humanities. We will use as example the ontology of kraters, (''krater'' is a term that denotes the vessels used for the mixing of the wine with water in the Greco-Roman world.)