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# Interpretative e-learning personalization: Methodology, formal aspects and generic scenarios of individual/group dynamics.

A case of a course in art history

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## 1 Introduction

Most of today's e-learning development focus on knowledge formats and production, supposing perhaps that reception can be seen as the symmetric case of production in a courseware. In other words, that the point of view of the teacher may be transposed towards the learner. Nevertheless, understanding is an interpretation-dependent process, lying mainly on reading strategies adopted by the learner. We may thus wonder whether it is yet possible to conceive systems whose architecture is driven by hermeneutical principles (i.e. where the interpretational activity is considered as a priority, and the role of the receptor of the course in the very constitution of the course is at least as important as this of the teacher) inherited from [3]. A reading strategy may be represented as a *knowledge path* built up from information put at disposal in the framework of a course. The aim of our work is to furnish some modeling issues in such a direction, using as case study academic course in art history. In collaboration with the Art Diagnosis Centre of Ormylia (Greece), some of us contributed, in the framework of various projects, to the setting up of a fine art ontology (over 30 000 concepts) able to cover the knowledge of large range iconographic corpora (see, for instance, [1]).

## 2 Designing a personalized course in Art History

### 2.1 Methodology

The design of the system follows a progressive three-steps methodology:

- Level 1 (data): a reservoir of images (reproductions of paintings), texts (liturgical, the Bible, patristic texts, critical), audio and video files etc. given by different resources.
- Level 2 (information): the ontologies and points of view ([2]) associated to the data of the first level. Information is managed following a point-of-view split, and available under alternative versions: local ontologies form non-extensional spaces [5].
- Level 3 (knowledge): the path constitution itself. A path is the result of a choice operated over parts of ontologies of the second level. Ready-to-use paths can be defined by teachers, corresponding to typical (normative) learning itineraries, they may be suggestive or prescriptive, depending on the type of the course. Paths represent (not yet a course but) the acquisition result of a reading progression.

On the basis of this structure, we define *intensional identity* between paths (same components, same order), *extensional identity* (same components, not specially same order), *intensional* and

*extensional variation* (not the same components, but the same references to ontologies), *partial* and *total completion*, *saturation*, *extension* and *reduction*, *union* and *intersection*, *proximity* and *similarity*. We suppose that to each path  $P_i$  is attached an assessment method,  $A_{P_i}$ .

## 2.2 Personalization at individual level

Some scenarios are of recurrent interest in individual personalization:

*Upgrading and improvement*: The objective is to improve the responses to the assessment. The system makes explicit the list of failed parts of a given  $A_{P_c}$  and suggests paradigmatic solutions.

*Deepening and refinement*: With or without failure in assessment, it is always possible to analyze the answers of a learner and suggest refinements. They are given by alternative courses and completions/extensions of the paths they involve.

*Erudition and expertise*: They are the upper stages one can envisage following the previous scenario. By successive completions and extensions, the erudition learning objective tends to cover the whole knowledge at disposal in the local ontologies.

*Pleasure reading and discovery*: The learner is driven by a personal desire to discover. Starting from initial data (not even from a  $P_c$ , nor under the obligation of an  $A_{P_c}$ ) she/he navigates through resources and associated knowledge, visiting parts of interest for her/him and configuring her/his path dynamically.

## 2.3 Issues in individual/group learning dynamics

Here, we study in particular three different adaptive group learning scenarios, set up by three types of group learning contextual cooperation forms (we draw our inspiration from [4]):

*Augmentative learning* is based on the idea that group members are limited in their cognitive resources. By combining their abilities and aggregating their learning efforts, the group members can, under specific external intervention, access to a new knowledge (parts of some ontologies).

*Integrative learning* is based on the ongoing process of differentiation of individual skills. The group members define their personal, idiosyncratic points of view. Each member has the opportunity to reach the knowledge of a complete path.

*Debatative learning* deals with the case where the learning limitation is due to individual limited rationality. The same (or versioned) information is available for all the group members, but different strategies are applied by each of them in order to reach their learning objectives (pleasure, erudition...).

## References

1. ARTeFaCT: Generic Platform for the Creation of Interactive Art Experience in Mixed Reality: <http://www.art-e-fact.org>
2. Kanellos I., Le Bras Th., Miras F., Suci I.: Le concept de genre comme point de départ pour une modélisation sémantique du document électronique. Proceedings of the CIDE'05, Beirut, Lebanon, (2005) 201-216.
3. Rastier, F.: Sémantique Interprétative, Seuil, Paris, 1987. (A quick introduction in English can also be found at this address: [www.uqar.qc.ca/signo/rastier/a\\_semantique.asp](http://www.uqar.qc.ca/signo/rastier/a_semantique.asp))
4. Schmidt, K. Cooperative Work: A Conceptual Framework. In Rasmussen, J. Brehmer, J. Leplat (eds.): Distributed Decision Making (Cognitive Models for Cooperative Work), Chichester: John Wiley and Sons (1991)
5. Zaldivar-Carrillo, V.-H.: Contributions à la formalisation de la notion de contexte. Le concept de « théorie » dans la représentation des connaissances, Ph.D, University of Montpellier 2, France (1995)