

Case-Base Organization Using Multicases

Roland Zito-Wolf
Computer Science Department
Center for Complex Systems
Brandeis University
Waltham, MA 02254

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Abstract

This paper focuses on the representation of procedures in a case-based reasoning (CBR) system. It discusses the implementation of the *multicase* (Zito-Wolf & Alterman, 1992), a case-organization in which multiple examples are merged without generalization into a conditionalized structure. The paper describes multicases as they are being implemented within the FLOABN project (Alterman, Zito-Wolf, and Carpenter 1991).

In this paper we discuss the application of the multicase to the representation of procedures and episodes. A multicase consists of a set of *decision points* (conditionals) organized into a directed graph. A procedure is represented as a directed graph whose components are steps; the transitions between steps are defined by decision points. The segmentation of the procedure into steps serves to segment and sort the experiences of the agent. We show how episodes are acquired, segmented, and stored with respect to multicases existing in memory. The overlaying of episodes permits the efficient storage of variant episodes and the potential extension of the procedure represented by the multicase with each experience. The multicase is useful for capturing both intentional learning, that is, the storage of knowledge gained through explicit problem solving processes such as adaptation or instruction interpretation, and incidental learning, the accumulation of useful details about the agent's normal situations of activity.

Lastly, the multicase is compared with existing case-organization models for episodes: *individual* or *monolithic-case* models; *microcases*, where transition and step information are made completely independent; and *hybrids* of these two. More detailed, quantitative comparisons of case-base organizations based on a formal model of CBR can be found in Zito-Wolf & Alterman (1992) and Zito-Wolf & Alterman (1993).

References

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