

Textual Reasoning in the Context of Conversational Case-Based Reasoning Systems

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Position Statement

Several organizations (e.g., Inference Corporation, Atlantis, Astea International, Simon Fraser U.) now market *conversational case-based reasoning* (CCBR) development tools that conduct interactive “conversations” with users (Watson, 1997). These tools have begun to inspire research focussed on improving their functionality (e.g., Aha & Breslow, 1997; Racine & Yang, 1997; Trott & Leng, 1997; Aha et al., 1998). The degree of text processing in these systems is usually limited to using comparatively simple algorithms for case matching (i.e., between the text inserted by the user and the text stored with cases), although some systems now include modules that compile structured text documents into cases. Several text processing capabilities have not yet been fully explored in these systems, and complementary inferencing behaviors are not usually supported.

For example, current CCBR systems usually restrict user text interaction to initial problem descriptions. Users are then expected to answer questions to further elicit their descriptions. That is, users are not given the option to answer questions in free-form text, and natural language or spoken dialogues are not supported. Second, methods for using model-based reasoning to improve the quality of conversations have only begun to be developed. In particular, existing systems do not allow designers to build a model of the case library that can automatically infer answers from user-supplied text. Thus, CCBR systems are limited in their ability to draw inferences during conversations. Third, current generation CCBR tools do not yet interact with multiple sources of unstructured (or partially structured) text when seeking solutions to a user’s problem. Yet developing CCBR tools that support these capabilities is a pressing commercial and research goal.

The position taken here is that a focused discussion on the subject of reasoning with text in CCBR tools could prove valuable for sharing knowledge among the participants. This discussion could help identify behaviors that can be better supported through the use of intelligent text processing techniques, identify how integrated CCBR systems can be designed to incorporate these techniques, determine evaluation criteria for comparing alternative text processing strategies, and identify unsolved yet relevant research issues (e.g., applying CCBR to reactive planning tasks, and the role of text processing in these extensions).

To date, no workshop or conference session on CBR research has focused solely on the issues of conversational CBR, yet this approach is the basis of the

most successfully applied branch of CBR technology. Thus, a discussion focused on this topic could enlighten attendees on the unique research issues that must be addressed in conversational case-based reasoning, promote research on this topic, and assist in developing ties between researchers and organizations that are developing CCBR tools.

References

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