

Flexible Feature Deletion: Companion Video*

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Abstract. As the number of cases in a case-base reasoning system increases, both storage cost and retrieval time also increase. Case-base maintenance mitigates this problem by deleting cases, and various orderings of the cases for deletion attempt to minimize the loss of problem solving competence. Existing methods assume (1) that the cases have a uniform size and (2) that the case contents are indivisible. In contrast to assumption (1), flexible feature deletion balances the varying storage costs of different cases with their competence benefits. And for assumption (2), flexible feature deletion subdivides selected cases by deleting or compressing their features or subcomponents. Experimental results supported that, for suitable cases bases, flexible feature deletion can outperform existing per-case strategies. In this companion video, a live-action, life-size CBR robot demonstrates each of the four phases of the CBR cycle: retrieve, reuse, revise, and retain. And a teacher explains flexible feature deletion while the robot performs maintenance on articles of his clothing.

Keywords: Case-based Reasoning, Case-base Maintenance, Flexible Feature Deletion, Feature Reduction, Case Deletion, Case-base Compression

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