Using Automatic Memoization as a Software Engineering Tool in Real-World AI Systems

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Abstract

Memo functions and memoization are well known concepts in AI programming. They have been around since the sixties and are often used as examples in introductory programming texts. However, the automation of memoization as a practical software engineering tool for AI systems has never received a detailed treatment. This paper describes how automatic memoization can be made viable on a large scale. It points out advantages and uses of automatic memoization not previously described, describes the components of an automatic memoization facility, enumerates potential memoization failures, and presents a publicly available memoization package for the LISP programming language. Experience in applying these techniques in the development of a large planning system are briefly discussed.

Content Areas. AI programming, AI software engineering.

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