THE FRAME PROBLEM IN AI

Erik Sandewall
Department of Computer and Information Science
University of Linköping
Linköping, Sweden

ABSTRACT

Three basic problems with most current research on the frame problem are discussed. These problems are: (1) discreteness assumption; (2) the need for multiple agents and overlapping actions; (3) the inner frame problem.

The first problem is the discreteness assumption that actions can be described in terms of mapping from one situation to another situation. The problem is that actions need to be described in terms of continuous intervals of time in which one action may overlap another action.

The second problem is the need for describing concurrent and even overlapping action initiated by multiple agents instead of singular sequential actions.

The third problem, which is called the inner frame problem, involves the need for duration conditions which need to hold while an action is performed.

Such suggestions are made to alleviate these problems by structuring the description of an action in terms of leaf-like structures involving an initial precondition and proceeding through different paths ending with different results depending upon what duration conditions hold or fail as the action is performed.