

The Role of Causality in Reasoning about Action

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Recent work on *Reasoning about Action* has seen an emphasis on the rôle played by causal domain constraints. The claim is that a direct representation of causality can free a system from the problems that have plagued traditional domain constraints. Moreover, causal constraints may be able to provide a concise solution to the *frame problem*. Several causal systems have been proposed in the literature. In this talk we shall investigate some of the more popular proposals.

We shall begin by examining some of the shortcomings associated with traditional domain constraints, motivating the need for additional elements to the traditional framework. These problems are particularly manifest in attempting to determine the indirect effects of an action. This leads us to propose the use of an explicit causal component. There are a number of frameworks in the literature that take this as their point of departure in adopting causality as a way of solving the frame and ramification problems. We shall focus our attention on just a few of the more significant approaches. In particular, we shall focus on the nature of causality captured by each proposal (i.e., we shall be interested in the properties of the causal component of these frameworks).

The emphasis will be on understanding the manner in which causality is represented and applied in reasoning about the effects of actions. We will attempt to highlight the more significant aspects of each framework and, where possible, effect a comparison of them.

The talk will end with a discussion of some of the open problems in this area.

References

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