Three Tools of Belief Change: Selection, Retention and Distribution

Abhaya Nayak

Intelligent Systems Group
Department of Computing
Macquarie University, Australia

Abstract

Belief Change deals with how a belief state should rationally be modified in response to some observation made or evidence received. There are several related approaches to deal with different issues relevant to belief change. A body of knowledge could be a finite set or infinite, the modification method could be used on a one off basis or repeatedly, the body of knowledge could be probabilistic or non-probabilistic, the modification could involve removal of knowledge or addition of knowledge, and so on. There are some standard tools that are used in modifying a body of knowledge. The "selection" tool is possibly the best known among them. It comes in the form of epistemic entrenchment, plausibility ordering or other such tie breaking mechanisms, and used mostly in the context of non-probabilistic belief change. In the probabilistic context we need two more tools, Retention and Distribution that will help with rational modification of probabilistic knowledge. In this talk I will briefly touch upon some ideas in this context.