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How Tacit Knowledge guides Action

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Abstract: Natural Intelligence is based not only on conscious procedural and declarative knowledge, but also on knowledge that is inferred from observing the actions of others. This knowledge is tacit, in that the process of its acquisition remains unspecified. However, tacit knowledge is an accepted guide of behavior, especially in unfamiliar contexts. In situations where knowledge is lacking, animals act on these beliefs without explicitly reasoning about the world or fully considering the consequences of their actions. This paper provides a computational model of behavior in which tacit knowledge plays a crucial role. We model how knowledge arises from observing different types of agents, each of whom reacts differently to the behaviors of others in an unfamiliar context. Agents' interaction in this context is described using directed graphs. We show how a set of observations guide agents' knowledge and behavior given different states of the world.