Agents, Beliefs, and Plausible Behavior in a Temporal Setting

Nils Bulling, TU Clausthal

Logics of knowledge and belief are often too static and inflexible to be used on real-world problems. We address this problem and extend CTLK (computation tree logic with knowledge) with a notion of plausibility, which allows for practical and counterfactual reasoning. The new logic CTLKP (CTLK with plausibility) includes also a particular notion of belief. A plausibility update operator is added to this logic in order to change plausibility assumptions dynamically. Furthermore, we examine some important properties and show that model checking CTLKP is \( P \)-complete and can be done in time linear with respect to the size of models and formulae.