Cooperative epistemic multi-agent planning for implicit coordination

Epistemic planning can be used for decision making in multi-agent situations with distributed knowledge and capabilities. Recently, Dynamic Epistemic Logic (DEL) has been shown to provide a very natural and expressive framework for epistemic planning. We extend the DEL-based epistemic planning framework to include perspective shifts, allowing us to define new notions of sequential and conditional planning with implicit coordination. With these, it is possible to solve planning tasks with joint goals in a decentralized manner without the agents having to negotiate about and commit to a joint policy at plan time. First we define the central planning notions and sketch the implementation of a planning system built on those notions. Afterwards we provide some case studies in order to evaluate the planner empirically and to show that the concept is useful for multi-agent systems in practice.