

Tutorial Outline

Argumentation in AI (Argumentation 1)

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Argumentation has gained significant attention in the last years due to its capability of modelling debates, dialogues, and, in general, situations where conflicts and diversity of opinions arise. Over the last twenty years, argumentation has become more and more central as the core of many applications and reasoning techniques within Artificial Intelligence (AI). A variety of theoretical models at different levels of abstraction have been extensively studied, ranging from purely abstract models to concrete implemented systems, and several applications of argumentation have been proposed in several fields, ranging from modeling dialogues in social networks to law and medicine. An important aspect that backs the usage of argumentation as reasoning mechanism at the core of dialogue-based applications in AI is also its natural aptitude to provide “explanations”. In fact, in recent years, the capability of providing motivations for system/agent behaviours has become crucial in AI, and argumentation is taking on a more and more central role. In this tutorial, we will introduce the foundations of abstract argumentation, starting from the basic concepts and ending with the most popular paradigms extending the classical notions.

Detailed description (one hour):

1. Abstract argumentation: arguments, attacks, defence, semantics, acceptance
2. Elements of Weighted abstract argumentation
3. Elements of Probabilistic abstract argumentation: with and without independence assumption
4. Elements of Bipolar abstract argumentation