ARUGUMENTS IN MULTI-AGENT SYSTEMS

Argumentation can be defined as an aimed at convincing of the acceptability of a standpoint by putting forward propositions justifying or refusing the standpoint.

There are below factors involved in argumentation, - Dialectic, implies the structure of argumentation (that is acceptable arguments vs. Fallacies). - Social psychology indicates agent attitude change and persuasion.

Artificial Intelligence formalize those approaches so as to provide formal theoretical results about particular models. This will automate agent or multi-agent argumentation capabilities.

For Arguments one needs to reason or provide justifications supporting a conclusion. It is represented as support◊conclusion format.

There are types of arguments as described below,

(a) Informational arguments: (Beliefs->Belief format) e.g. If it is cloudy, it might rain.

(b) Motivational arguments: (Beliefs, desires->Desire format) e.g. If it is cloudy and you want to get out then you don't want to get wet.

(c) Practical arguments: (Belief, sub -goals◊Goal format) e.g. If it is cloudy and you own a raincoat then put the raincoat.

(d) Social arguments: (social comments◊Goal, desire format) e.g. I will stop at the corner because the law say so. e.g. I can't do that, I promise to my mother that I won't.

(e) Interactions (binary or collective) between arguments:

(1) Conflict (defeat) format e.g. attacks

The conflict (defeat) format can be categories further as below,

(i) Rebut (symmetrical):

-support 1. conclusion 1(e.g. Tweety is a small bird->Tweety flies)

-support 2. (not) conclusion 1 (e.g. Tweety is a small bird->Tweety does not fly)

(ii) Undercut (asymmetrical): Defeat the assumptions or their link to the conclusion

-support 2->(not) support 1

e.g. no Tweety is not a bird, it is just a cartoon

(2) There are interactions of support-type that are used for collective binary arguments in multi agents system.

Argumentation model – It is to compute interactions between arguments, like attacks, defeat, support etc. The model also carries out valuation of arguments by using assigned weights to arguments in order to compare them. The values that are assigned to the argument can of intrinsic value or interaction-based value. Selection of an acceptable argument (conclusion) is done on the basis of individual acceptability or collective acceptability by various agents in the system. Computational Models of Argumentation computing the status of arguments according to various semantics