Social Identity Bias in Agents' Rational Decision

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Abstract. The Dynamic Identity Model for Agents allows simulating the influence of social context in autonomous agents' identity. Social context changes the way people perceive their or others identity (either as part of a social group or as unique and distinctive individuals). This perception tends to bias rational decision by leading to more cooperation with the members of a group, even when the groups goals contrast from the personal goals. The process is dynamic since the identity perceived shifts as the social context changes and its salience (strength) changes as well. We believe this is crucial for autonomous agents that face scenarios with social dilemmas, where group and personal interests are in conflict.

Keywords: context-situated agents, cooperation, dynamic identity, social bias, social identity, social dilemma.

1 Introduction

One of the processes that greatly influences a person's identity is how one sees oneself and others regarding the membership of social groups [4, 5]. When in the presence of an out-group, the perception as group member strengthens, because a person tends to focus his or her perception on the shared features with other in-group members. The person sees itself as less distinctive from the rest of its own group, and when that occurs, there is a shift in the identity (e.g. motives, values and interests) from self (personal) to the group's. But, in the absence of a strong out-group, a person becomes aware of each member's uniqueness and specific personal attributes, relating to others in an interpersonal manner, dependent on their personality traits and close personal relationships, thus, using a more personal identity [1]. For the above reasons, this process of social identification often leads to bias in rational decision directing people to cooperate more with members of their in-group when the social group's identity is salient, even if, from the individual's perspective, the rational decision would be not to do so [3].

2   DIMA and Rational Decision

The Dynamic Identity Model for Agents (DIMA) allows agents to have their identity associated with several social identities (one for each group membership) besides their personal identity and also have their behaviour influenced by the one that has more salience (strength) according to the social context (see more in [2]). DIMA was implemented on the Project INVITE's research tool [1] that allows the configuration of a myriad of game theory paradigms. In one of the possible situations, the players' goal is to escape an island before a volcano erupts. Players are assigned into teams and each team must build a raft in order to survive. Consequently, players must gather wood for their team, throughout several days. However, gold can also be found scattered all over the island. In the end, the player that survives with more gold wins. Players are then faced with the dilemma of either helping everyone by collecting wood (team's interest) or gathering gold and thus become rich when they escape (personal interest).

Using DIMA, the process of social identification can lead to a bias in the agent's decision. Depending on each team's members characteristics (e.g. shirt colour) and relevant aspects from the environment, the agent's identity can shift from personal to social. The team which players identify with the most, have a stronger social identity salience. Thus, while the rational decision is prioritizing self gain, this bias shifts the decision into more favourable outcomes to the team, resulting in more wood gathered. The higher the salience is, the strong the effects of the bias are.

3   Acknowledgements

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[1] http://project-invite.eu/