

The Role of Social Identity, Rationality and Anticipation in Believable Agents

(Extended Abstract)

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ABSTRACT

Agents that interact in complex social situations need to take the social context in consideration in order to perform believably. We argue that social identity is an important factor; therefore, agents should incorporate social identity theory in their behaviour, which implies the ability to categorize others (and themselves) into social groups. In addition, social situations often present social dilemmas with expected rational choices. Social identity may influence the agent to deviate from the rational choice. However, in some situations the rational choice may be the expected, and believable, behaviour. In fact, we argue that finding the dynamics between the social bias induced by social identity and the rational motivation is one of the challenges of building believable agents. In all this, anticipation takes an important role, as it is important to understand the others to cope well with a social situation.

Categories and Subject Descriptors

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General Terms

Human Factors, Design, Theory

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Keywords

Socially intelligent agents, believable agents, social awareness, social identity, individual and social rationality, anticipation

1. INTRODUCTION

Performing in complex social situations is a challenge for intelligent autonomous agents. To perform well agents need to be socially aware and get a good understanding of the social context, as it defines their context of action and interaction. A social situation implies the presence of other agents and is influenced by the characteristics of the society where the agents are situated; this includes its norms and values, the common interests and goals, its members and its social structure.

One particular aspect is that, in fact, any complex society is fragmented in different social groups, each with its own interests, values, structure and identity. Our research stresses the importance of this aspect to the creation of agents, in particular, the relevance of the social identity in the process of decision making. We believe that this is especially important if the aim is to build natural intelligence and believable (e.g. human-like) behaviour.

Social identity is part of an individual's perception of a social situation. It is the identity ascribed with basis on the perception of membership of social groups and the attachment to that membership [7]. It implies the categorization of the agents (including the self) in terms of the belongingness to social groups. Thus, apart from all individual characteristics that build a personal identity each agent should have a social identity comprised of all social groups they belong to.

Social identity often leads to a social bias in decision-making, especially in situations where it is more salient (e.g.

in the presence of other relevant social groups). People are inclined to favour other people with similar identities (e.g. belonging to the same social groups) or blame people of different social identities for the problems in a group.

This social bias influences the collaboration attitudes of the agents and the way they deal with their social commitments. For example, it is easier to break commitments to cooperate with others of distinct social identities [3, 5].

This can be extended to team commitments. Social identity will influence the decision of agents when considering following their own interests or commit (or keep the commitment) to their team goals. For example, imagine a team of 4 elements with 2 distinct identities: 3 elements with a social identity A (e.g. New Yorkers) and 1 of the elements with a social identity B (e.g. Californian). When confronted with the possibility to break the team commitment the element with the social identity B will more likely do it.

Our goal is to build agents that are able to behave believably in teams with human members. Animation studios such as Disney and Studio Ghibli have long created artificial characters that are able to portrait an illusion of life [8]. Nonetheless, the creation of synthetic characters able to, autonomously, generate behaviour perceived as believable is still an open research problem. Mainly due to the inherent multidisciplinary nature of believability, several definitions have been proposed since the seminal definition by Bates [1], and different aspects for achieving believable behaviour have been researched over the years.

One aspect is that agents should be coherent and meet users' social expectations in order to be believable, since they are perceived as social actors [6]. We argue that social identities are part of those expectations, because people will ascribe them to agents in situations where different social groups are present. Hence, agents should exhibit human-like behaviour that aligns with the findings of social identity in social psychology.

In turn, social situations often present social dilemmas (e.g. Prisoners' Dilemma). Social dilemmas are interesting simulation scenarios of agents because they represent paradoxes of individual rationality. Individual rationality is a central postulate of game theory and states that an agent acts rationally if it maximizes its expected payoff when it selects a given strategy. In social dilemmas the collective pursuit of collective rationality can lead to a Pareto sub-optimal outcome, one for which there is another alternative outcome in which no agents would be worse off and at least one agent would be better off [2].

We propose that to be believable agents should take into account individual rationality and social bias in their decision making. The challenge is achieving a good balance between the two, especially, when they lead to different decisions. For example, agents may be influenced by the social bias and behave irrationally from an individual perspective but never if that leads to their demise.

Furthermore, we would like to stress that in order to be believable in social situations and social dilemmas agents need the ability to anticipate and take others in consideration. This is a crucial point for achieving any kind of social intelligence [4]. In our case it is important, as stated before, to identify the social identities of others in order to implement the social bias. But, in addition to that, it is important to establish beliefs about the personality, intentions, plans and strategies of others; these will support predictions

of behaviour of others that allow agents to adapt their own behaviour and cope better with the social situation.

As a summary, agents should have the ability to take into account social identity, anticipate others and behave rationally in order to perform as expected in complex social situations, with different social groups, and be perceived as believable.

2. CONCLUDING REMARKS

With this paper we want to raise awareness for the fact that Social Identity is central to social behaviour. It has great impact in a wide range of fields and settings, such as prejudice, stereotyping, cooperation and competition, among several other interesting group phenomena. As such we believe that Social Identity theory not only should be considered but is also of great importance for the creation of agents with believable behaviour. So in order to achieve believable social situated agents that interact in complex social situations with humans and other agents, agents should not only take in consideration themselves and others as a set of individuals but also as group members with shared interests, values and goals. In addition, we believe that social dilemmas present interesting social situations in which agents' believability may be studied. In these situations, achieving a good balance between rational choice and bias of socio-emotional nature can be crucial to achieve believable behaviour.

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