# Theme Preface
## *Mind Minding Agents*

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## INTRODUCTION

The central issue addressed in the Mind Minding Agents symposium is how theories of the Theory of Mind can inform the design of social agents in multi-agent systems and embodied conversational agents interacting with a human interlocutor. Related to this are the questions on how to build and use computational models of the Theory of Mind. The concept of Theory of Mind has been proposed in the psychological literature to account for our capability to attribute mental states to others, or in other words, to read another's mind. Modelling the process that enables us to construct theories regarding the intentions of others seems to be required when designing social agents that interact with each other and have to coordinate their actions, negotiate and collaborate. Embodied conversational agents that engage in face-to-face conversation, similarly have to figure out the intention of the conversational actions of the human interlocutor and provide cues whether or not they are paying attention and understanding of what is being said.

## CONTRIBUTIONS

That something like a Theory of Mind, the human capacity for mind-reading, is crucial to interaction and communication is clearly pointed out by Cristiano Castelfranchi in his considerations on what he calls 'behavioral implicit communication' in which an agent carries out an action which is not a communicative action as such but with the intention that another agent recognizes the action and understands the practical reason motivating the action. This, Castelfranchi claims, is the most basic form of communication and it can be shown that a Theory of Mind is a crucial aspect of it.

A Theory of Mind module is not only at work during conversations but also plays a role in the deliberations of agents on whether or not to enter into a conversation. The paper by Christopher Peters presents a model for agents endowed with synthetic senses and perception that must formulate a theory on whether the other agents wants to have a conversation trying to determine values for such variables as "Have They Seen Me", "Have They Seen Me Looking" and "Interest Level" as part of the Theory of Mind Module.

Valeria Carofiglio and Fiorella de Rosis discuss cognitive models of conversational agents that enable the integration of the recognition of the emotional state with an interpretation of the reasons of this state. They propose dynamic belief network as a representation formalism. This allows the agent to reason on the potential impact of a conversational move on the mental state of the interlocutor.

Bilyana Martinovski and Stacy Marsella discuss the process of coping with stress and emotions in social settings. In particular they provide a discourse analysis of court room sessions. They analyse coping as a twofold process: on the one hand, the experiencer copes with emotions in relation to internal aspects of the self manifested in the form of memory and on the other hand, s/he copes with stress and emotions in the context of social self, otherness, relations, and roles. They show how the cognitive and emotional processes are manifested linguistically.

In the paper 'The effect of familiarity on knowledge synchronisation', Andrew Lee presents a study that investigates differences in the distribution of dialogue moves throughout the MapTask corpus between conversational participants who were either familiar or unfamiliar with each other. The MapTask

corpus consists of dialogues between two participants engaged in a navigational task. They take turns exchanging information, trying to synchronise knowledge, maintaining mental maps of their own knowledge and that of their partner.

Lisette Mol, Rineke Verbrugge and Petra Hendriks describe an experiment that investigates to what extent people use and acquire complex skills and strategies in the domain of reasoning about others and language use. With respect to the latter they investigated Grice's maxim of quantity in interpreting quantifier expressions. Saying `Some students passed' when all students passed violates the maxim of quantity in collaborative settings. But what happens in non-collaborative dialogues?

Stacy Marsella and David Pynadath present an implemented multiagent-based simulation tool for modeling interactions and influence among groups or individuals called PsychSim. In PsychSim each agent has its own decision-theoretic model of the world, including beliefs about its environment and recursive models of other agents. This gives the agents a theory of mind and thereby provides them with a psychologically motivated mechanism for updating their beliefs in response to actions and messages of others.

Rui Prada and Ana Paiva consider scenarios where users and synthetic characters interact as a group. In order for interactions in the group to follow believable group dynamics. they have developed a model that supports the dynamics of a group of synthetic characters, inspired by theories of group dynamics developed in human social psychological sciences. The dynamics is driven by a characterization of the different types of interactions that may occur in the group.

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