Modelling Human-Awareness for Ambient Agents: A Human Mindreading Perspective

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Ambient Intelligence (AmI) has the vision to make Information and Communication Technologies disappear into the environment thus creating an ergonomic space for the inhabitant, encompassing an active living environment around us. To bring this goal to realization, devices need to be built possessing knowledge about humans enabling these devices to show a more human-like understanding. For this, we need assistance of human-directed disciplines such as cognitive science, psychology and biomedical sciences that develop models for many different aspects of human functioning. By representing these models in a formal and computational format, and incorporating them in these devices, these devices can be made more sensitive and responsive to humans. The integration of these models within AmI applications is becoming more widely known as *human-aware ambient agent modelling*.

Theory of Mind (ToM), or mindreading, is an ability to attribute mental states such as, beliefs, intentions, desires, pretending, knowledge, emotion etc, to others and to understand that those states may be similar or different from one's own.

The work presented in this thesis makes contributions in the area of modelling and simulation by analysing and designing ambient agent models integrating concepts of Theory of Mind, to make these models human-aware. To explore the applicability of the approach proposed in this thesis, it has been applied in different specializations addressing integrated approaches to, for example, emotion generation and reading, emotion contagion, believing, desiring, feeling, decision making, and attention.