In this PhD we focus on modeling Embodied Conversational Agents ECAs able to display social signals to modulate what it says, that is we consider the pragmatic function of the social signals. We will consider several signals but will pay particular attention to smile and laughter. We will consider not only the emotional state of the agent but also the dialogic and pragmatic functions of behaviors. We foresee the following steps: - Enlarge the repertoire of nonverbal behaviors of the ECAs. Particular attention will be paid on simulating a great variety of laughter. We will apply machine learning techniques to capture the correlation between acoustic features of laughter and multimodal behaviors. We will ensure the model conveys the dynamics of the laughter motion. We will rely on motion capture data. - Develop an incremental behavior model allowing the agent to update its behaviors on the fly. The behavior planner of the ECA will be able to change incrementally the multimodal behaviors of the agent by either adding the new behavior to the current animation or by suppressing the latter, or by blending the former with the latter. This task requires modifying the virtual agent framework that actually computes the behavior of the agent at the sentence level. - Integrate the incremental behavior model with a dialog manager that computes what the agent says. The dialog manager will output communicative intentions that are turned into multimodal behaviors with the behavior planner module. It will also output pragmatic functions that will be carried out by specific signals (e.g., smile, laughter) that will need to be added onto the signals to be displayed by the agent. - Evaluate the impact of social signals on the perceived meaning of what the agent says and the naturalness of the virtual agent’s behavior.