



Proposal for SEMIE week – Xerox Research Centre Europe

At our research centre we have developed several virtual agents for human-machine interactions (troubleshooting, information gathering, etc). The current in- and output of these systems is in text-format.

We are currently deploying and adapting them to run on top of a humanoid robot (NAO, from Aldebaran Robotics). We have identified several sub-challenges we are proposing in the context of the SEMIE week. In all of these we propose to perform a literature review on the current state-of-the-art, and – if time allows – implement, integrate and test one of these solutions (or a novel solution)

- Verbal Backchanneling: we are interested in basic linguistic primitives used for backchanneling (in English), their context of usage and design a way of integrating them in the current dialogue management
- Non-verbal backchanneling: these are primitives of body movements (head, arms, etc), and we are interested how they correlate with:
 - Context (what has been said so far)
 - Personality of robot (pre-defined)
 - Content of the current utterance
- Micro-expression detection & recognition on faces: identifying them and research ways of how they should guide the dialogue
- When the robot is going to a specific places it uses pre-deployed landmarks for updating its belief about its localization. When a landmark is not where it should be, it should search actively for it and optimize the search with respect to time.

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