

# Visual Action Structuring by Motionese

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Motionese is parental action modification directed to infants versus to adults. Parents enhance the relevant features in their actions so as to maintain the infants' attention and to aid the infants' processing of the actions.

This talk presents our computational analysis on parental actions focusing on the visual structuring of them. In order to reveal how parents visually modify their actions and how it can scaffold robot's learning as well as infants', we applied a bottom-up visual attention model to the analysis of motionese. The model based on saliency can detect conspicuous locations in a scene in terms of primitive features. That is, it can demonstrate what information can be detected by infants and robots even if they are supposed to have no a priori knowledge about the actions. Our analysis using the saliency model revealed that motionese has the effects of (a) highlighting the initial and final state of objects used in the action, (b) underlining the properties of the objects, and (c) indicating the significant state changes in the action. Parents physically emphasized these aspects by suppressing or adding their body movement. Our further analysis comparing different actions uncovered the commonality and uniqueness of motionese depending on the action.

The talk also presents our robotics approach to designing an infant-like robot that can induce parent-like teaching of human partners. Open issues in robot action learning are that a robot does not know where to attend when observing an action demonstration, and that only the robot designers can properly teach it actions. We therefore developed a robot simulation equipped with the saliency-based attention model and investigated whether it could encourage naive partners to properly teach it as parents do to infants. Our analysis on the human-robot interaction experiment showed that the robot was accepted as an infant-like social agent.