

Invited Talk I

Action as a founding principle of cognitive development in
humans and robots

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Abstract: It is argued that action constitutes the foundation for cognitive development. It reflects the motives of the child, the problems to be solved, the goals to be attained, and the constraints and possibilities of the child's body and sensory-motor system. Actions are directed into the future and their control is based on knowledge of what is going to happen next. This is possible because the stream of events in the world is governed by rules and regularities. Infants are endowed with innate predispositions that make them able to use those rules to their advantage. However, the most important developmental principle is a set of motives that makes infants do certain things rather than others. These motives provide the goals of actions and the urge to fulfill them. In early development, infants rapidly acquire knowledge about external events, their own body, and other people's actions that enable them to interact intelligently with the outside world. By acting on the world, infants develop their cognition. If robots can be endowed with similar motives, they could, in principle, develop human-like cognitive abilities.

Speaker Bio: Dr. Claes von Hofsten is a Full Professor of Psychology at the University of Oslo and the University of Uppsala. He received his PhD in psychology at Uppsala University in Sweden in 1973. Between 1998 and 2011 he was a professor in perception at Uppsala. He has spent several extended periods at American universities; as visiting professor at University of Minnesota and University of Virginia and as visiting scientist at MIT and the Center for Advanced Study in the Behavioral Sciences at Stanford. He is also Honoris Causa at University of Normandy in France and honorary member of the American Academy of Arts and Sciences. Dr von Hofsten research interests are focused on the development of action in young children.