

Title : Modular Robotic Systems as Complex Systems

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This talk presents the robotic building block concept in which processing and physical aspects of robotic artefacts is distributed. The technological concept of physical building blocks with processing, input, output (incl. communication) is derived from embodied artificial intelligence that emphasises the role of interplay between morphology and control. The building block concept is exemplified with a variety of applications in toys, self-assembling robots, and playware. Playware is the use of intelligent technology to create the kind of leisure activities we normally label play, i.e. intelligent hard- and software that aims at producing play and playful experiences among users. We developed the modular tangible tiles as components for a new kind of playground, on which children can experience immediate feedback on their motions. Hence, this kind of playground allows implementation of games and plays that demand physical activity amongst the users, and thereby contribute as a new tool in the fight against obesity. The tangible tiles are homogenous robotic building blocks, which gives assembly, substitution and production advantages. Also, studies show that using neural networks it may be possible to classify children's behaviour, and use such classification to develop adaptive playgrounds.