

0782 **DESIGN OF SAFE CONSUMER PRODUCT BASED ON CHILDREN BEHAVIOUR MODEL CONSTRUCTED FROM BEHAVIOUR OBSERVATION: CASE STUDY OF PLAYGROUND EQUIPMENT**

Y Nishida*, Y Motomura, K Kitamura, T Yamanaka *Correspondence: National Institute of Advanced Industrial Science and Technology, Tokyo Waterfront, 2-3-26, Aomi, Koto, Tokyo, 135-0064, Japan*

10.1136/ip.2010.029215.782

This study presents behaviour-model-based product design as a new approach to safe product design for children. Ubiquitous sensing technology and statistical modelling technology allows us to quantitatively observe and record children behaviour and thus acquire children behaviour model from the large-scale sensory data. This study proposes a system for modelling children behaviour and designing consumer product based on the developed behaviour model. The proposed system consists of a wearable sensor for spatially and temporally measuring children behaviour in an everyday setting together with Bayesian network modelling technology to acquire a children behaviour model. We consider this system from both the theoretical and practical viewpoints. The theoretical framework describes a behavioural model in terms of spatial statistics. The practical aspect of this paper is concerned with a case study in which the proposed system is used to create a new type of playground equipment that is safer for children, in order to demonstrate the practical effectiveness of the system. In this case study, we conducted in situ measurement of 47 children playing with equipment by a wireless wearable location – electromyography sensor that the authors developed in cooperation with a kindergarten.

A model on children's climbing behaviour was created from the measured data. By cooperating with a playground equipment maker, a new climbing wall type of equipment was developed and the developed equipment was installed at a kindergarten. This study also evaluates the performance of the model statistically by observing children playing with the developed equipment using cameras for over 1 year.