Accurate information on people's behaviour helps to improve retail design

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VTT Technical Research Centre of Finland has been developing an advanced tracking system based on depth cameras that provides accurate information on how people move about and behave in various spaces. The system can be applied, for example, to improving customer service in retail shops, optimisation of the use of office facilities, or as an assisting tool for independent living of the elderly. During this summer and autumn, the tracking system will be piloted at Shalkwijk Shopping Centre in Haarlem in the Netherlands, and with Procter & Gamble in Brussels, and in the city of Rovaniemi in Finland.

Depth cameras allow collection of valuable real-time information of how people behave in a shop, for example: where they spend their time, what draws their interest, or where they intend to go next. VTT has been developing depth camera technology based smarter systems for tracking people's movements in several projects since 2010. By analysing the gathered information, it is possible for example to model various customer types as well as design store layouts and product displays to meet the customer and retailer needs, in addition to providing improved customer service.

A depth camera measures the distance to a variety of surfaces with the help of a laser dot pattern operating in the IR range. The dots measured form a depth map, the analysis of which enables creation of a 3D representation of the space, identifying objects, and tracking the moving objects.

VTT is in the process of launching several pilots with the aim to test the operation of a people tracking system under everyday conditions. During this summer and autumn, the solution will be tested at Rinteenkulma Shopping Centre in the city of Rovaniemi in Finland as well as at Shalkwijk Shopping Centre in Haarlem, the Netherlands.

The same technology approach can also be applied to provision of support for senior citizens living at home. In this case, the system collects information on the elderly person's daily routines and detects any deviations in them, allowing interference at an early stage in possible problems caused by, for example, memory disorders. The goal is to enable safe and independent living for the elderly in their own homes for as long as possible.

Other potential applications for a depth camera based tracking system include optimisation of the use of conference rooms and work spaces in common use. In addition to tracking the real-time utilisation rate of such facilities, the system also allows the collection of more detailed information on which sorts of purposes in use employees apply to the premises. With regard to facility management, the solution will be piloted in collaboration with Procter & Gamble in Brussels in autumn.

According to VTT's researchers, the use of people tracking systems does not constitute problems related to privacy. Depth cameras do not record photographic content, and individuals cannot be identified in the depth image – only human figures and their movements.

Provided by VTT Technical Research Centre of Finland