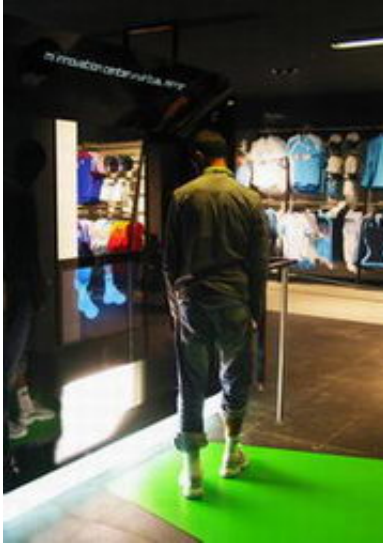# Hands-off shoe fitting

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Image: © Fraunhofer HHI

A new technology puts an end to the tedious business of buying shoes: Customers can now try on a variety of models in front of a virtual mirror without changing their shoes. They can navigate through the collection by simply pointing at products on a computer screen.

A Paris shop has put an end to the tiresome procedure of putting on and taking off shoes: Instead of trying on dozens of pairs, the customer simply stands in front of a virtual mirror. On his foot, he can see his favorite model with the red stripes, he then selects the gold leather alternative for comparison.

This entertaining form of shopping can be found on the Avenue des Champs Elysées, where adidas has opened its most modern shop anywhere in the world. The virtual mirror was developed by researchers at the Fraunhofer Institute for Telecommunications, Heinrich-Hertz-Institut HHI, in Berlin.

Unlike a conventional mirror, it does not display a true reflection. Instead, a camera captures the customer's feet and legs and displays them as a video scene on the monitor. The various shoe models are inserted into this picture. "Thanks to the 3-D image processing techniques developed at the HHI, the software is so fast that it can follow the customer's movements in real time," says Jürgen Rurainsky, one of the virtual mirror's developers.

A second presentation area known as "Infospace", also conceived by the HHI, presents shoes and apparel from the sportswear manufacturer in pictures, ad spots and brief movies. In contrast to the touch screen technique, the customer can navigate through the menu without touching anything at all. All he needs to do is point at the screen with his index finger from a distance of approximately 80 centimeters. What makes it all possible is a "finger-tracking" system: A stereo camera on the ceiling photographs the finger and calculates its spatial position and the direction in which it is pointing.

The information is passed on to a software program that moves and activates the objects on the monitor. If the customer wants to click on an object, for example a video scene, he simply keeps his finger pointing in the appropriate direction for a moment. The challenge for the researchers was to program the system so skillfully that it would be fast enough to respond instantly to these motions. After all, it not only has to interpret the finger's motion correctly within fractions of a second, but also translate the gestures into the appropriate commands without delay.

"Another important goal was to make this technology understandable and easy to use," explains Paul Chojecki, who tested the user-friendliness of the control-by-gesture system. "But our goal for both presentation areas was to demonstrate that you can move around in the virtual world without recourse to technical aids such as data gloves or 3-D goggles." The researchers will be demonstrating how well their method works at the CeBIT fair in Hanover from March 15 to 21.

Source: Fraunhofer-Gesellschaft

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