

The somewhat different Kiosk

Innovative 3D and Gesture Recognition in a brand new Format



Developed by the Fraunhofer Heinrich Hertz Institute, the Free2C Kiosk offers a highly realistic simulation of three dimensional objects that seem to float in space before the display screen. Users can view them with no need to wear glasses, and control them with a simple wave of the hand.

A video-based system for the recognition of hand gestures is the key to such user-friendly interaction. The 3D Kiosk is perfect as an intuitive information terminal for the alluring presentation of exhibits and high-tech products in showrooms. The large-scale photorealistic 3D display is a genuine eye-catcher that is sure to be one of the main points of attraction in whatever context it is used.

Challenges

- Advanced development of auto-stereoscopic techniques
- Realization of outstanding 3D picture quality
- Development of intuitive forms of interaction that dispense with traditional aids like the keyboard and mouse

Technical Background

Not the least of the outstanding qualities of the Free2C Kiosk is the sheer simplicity of its intuitive handling system. Its large-scale display screen (21.3", 1600 by 1200 RGB Pixel) enables all kinds of interactive presentations in photorealistic 3D quality, while a tracking and interaction technique enables the holographic objects to be moved. Cameras mounted in the monitor register the distance and position of the viewer's eyes and this data is used for

computing how the part images should be nested and ordered to create the 3D display. A lenticular lens integrated in the display ensures that the generated image data follows the viewer's head movements, while a hand tracking system gives the exact position of the viewer's fingers and analyses their movement. This data is the basis for the manipulation of the object on the screen.

Benefits

- Clean and hygienic control through touch-free interaction
- High-tech presentations in exhibitions, airports, shopping malls and showrooms
- Virtual viewing and movement of precious museum exhibits
- Intuitive info terminal for the alluring presentation of exhibits and high-tech products in showrooms
- Use in minimal invasive surgery

Visions

Research at the Fraunhofer Heinrich Hertz Institute aims to develop multi-person displays. These auto-stereoscopic 3D displays will also be ideal for glasses-free 3D television that supports viewing by a number of users.

At the same time novel technologies for the recognition of complex human gestures will be developed that enable natural interaction with the system for a group of users.



A laser and cameras track eye- and handmovement. The computer projects a 3D image which can be rotated by the users hand.

References

High-profile presentations by

- Deutsche Telekom
- EWE AG
- Rittal GmbH & Co. KG
- Science Express
- Science Truck
- BBVA (Banco Bilbao Vizcaya Argentaria)
- MTU Friedrichshafen
- Presentation and evaluation of sonar data by Saudi Aramco
- Market research by the University of Applied Sciences Merseburg
- DMU (De Montfort University, Leicester)
- Fraunhofer Development Center for X-ray Technology (EZRT)
- Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS)



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