

Holographic Optical Elements to see through opaque material

Published date: Aug. 28, 2016

Technology description

Background

In many scenarios, it would be useful to display objects placed behind a barrier. For example, a nurse trying to insert a needle would like to be able to see the target under the skin. In some applications, sonogram or another imaging method is used to view a target area, however, the care giver must look away from the patient's body to see the image on the screen. Looking away is counter intuitive and reduces hand eye coordination.

Technology

Investigators at the University of Pittsburgh have developed a new method of displaying data from a tomographic imaging modality such as ultrasound in the field of the body. The image appears to emanate from inside the target that is being scanned, merged with a direct view of the exterior of that target. The virtual image is created by means of a Holographic Optical Element (HOE) and does not require the use of a half-silvered mirror. An HOE is the hologram of an optical system that serves the same function normally performed by mirrors and lenses. A micro-mirror MEMS chip contains a large array of individual micro-mirrors. The output of a laser is routed to the micro-mirror chip through a fiber optic cable so that coherent light may be reflected onto the HOE by any given micro-mirror when that particular micro-mirror is activated by a given pixel in a video signal from the ultrasound scanner.

Application area

Ability to see structures behind an existing obstacle

Advantages

Ability to see through opaque materials ; Ability to operate in a single field of view

Institution

[University of Pittsburgh](#)

Inventors

[George Stetten](#)

[Andreas Nowatzky](#)

联系我们



叶先生

电话 : 021-65679356

手机 : 13414935137

邮箱 : yeyingsheng@zf-ym.com