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VIRTUAL KEYBOARD WITH HOLOGRAM

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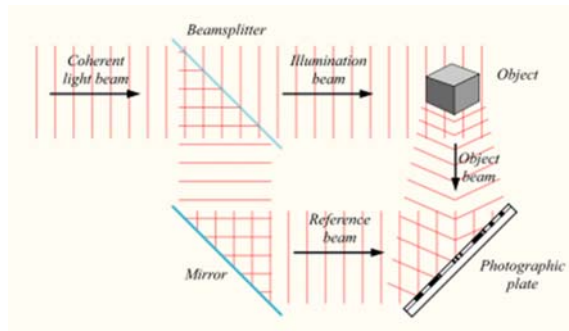
Virtual keyboard with hologram

Abstract

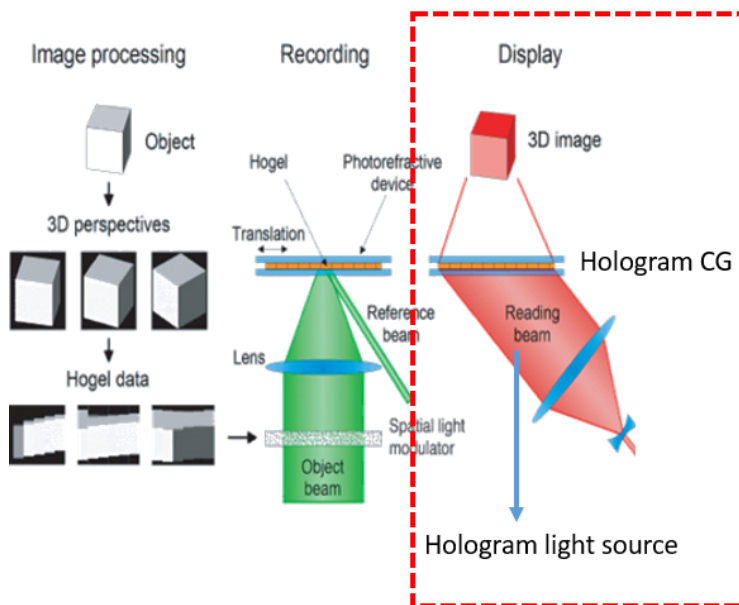
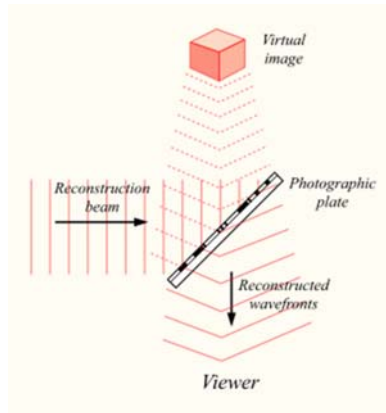
2nd display will be more and more popular in the future and keyboard picture will show on the 2nd display. But bad typing feedback on cover glass without depth feeling and 2D key keyboard is hard to let user confirm right typing position. We provide new structure can let end user see 3D floating keyboard or Image on the 2nd display. This 3D image can switch on/off and can also provide end user better typing experience.

Simplified Hologram technology

Typically, a hologram is a photographic recording of a light field, rather than of an image formed by a lens, and it is used to display a fully three-dimensional image of the holographed subject, which is seen without the aid of special glasses or other intermediate optics. The hologram itself is not an image and is usually unintelligible when viewed under diffuse ambient light. It is an encoding of the light field as an interference pattern of seemingly random variations in the opacity, density, or surface profile of the photographic medium. When suitably lit, the interference pattern diffracts the light into a reproduction of the original light field and the objects that were in it appear to still be there, exhibiting visual depth cues such as parallax and perspective that change realistically with any change in the relative position of the observer.

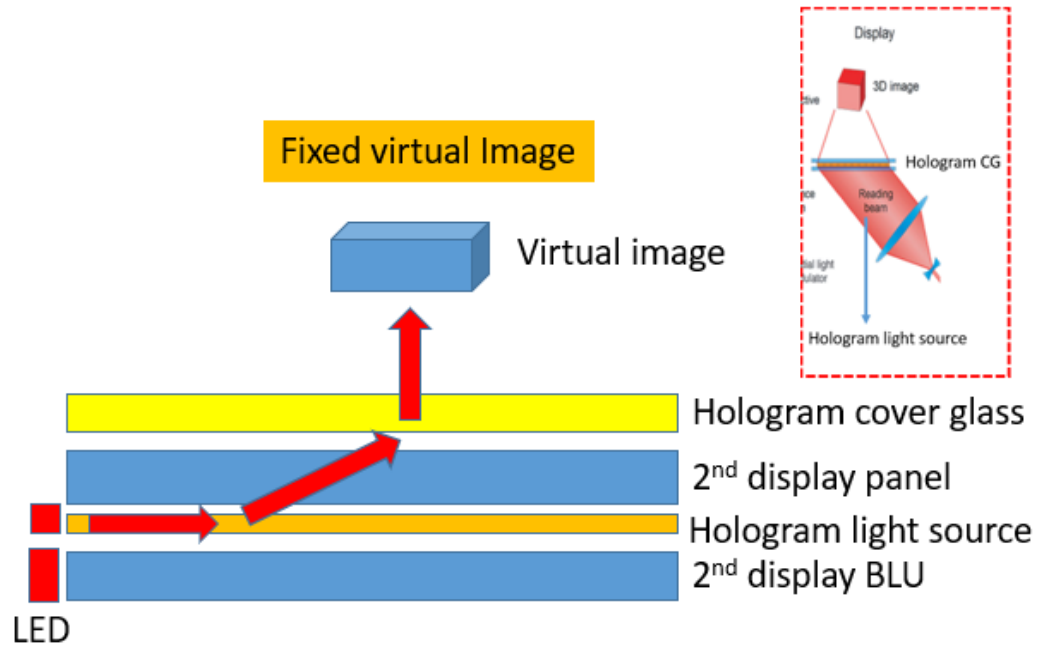


When the hologram plate is illuminated by a laser beam identical to the reference beam which was used to record the hologram, an exact reconstruction of the original object wavefront is obtained. An imaging system (an eye or a camera) located in the reconstructed beam 'sees' exactly the same scene as it would have done when viewing the original.



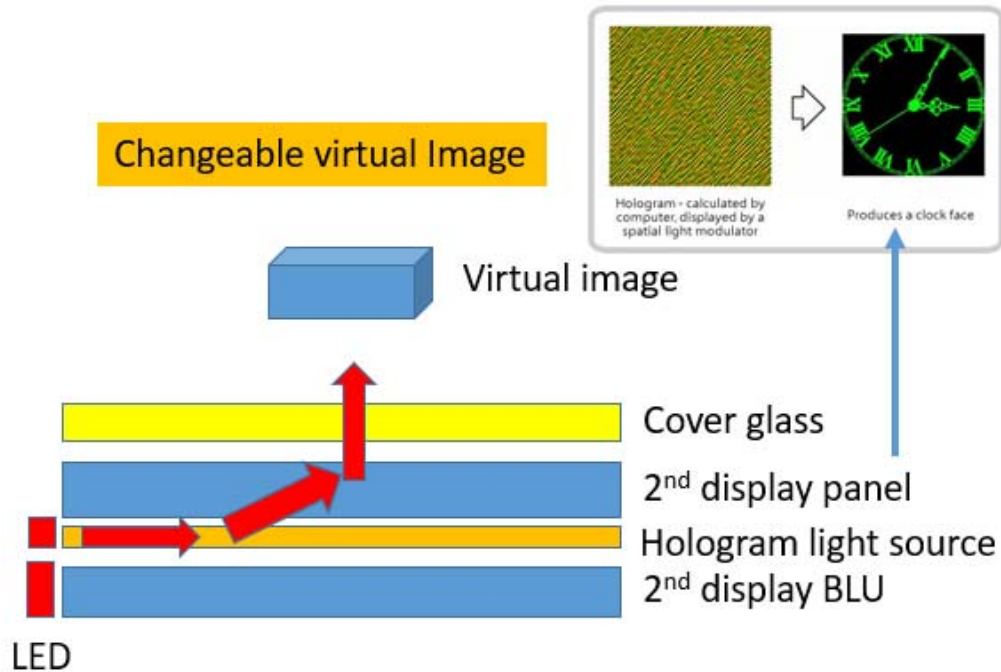
The structure of virtual keyboard

[Structure 1]



- The structure include (1)Backlight unit (2) Hologram light unit (3) Panel (4) Cover glass with hologram
- Add light source between 2nd display BLU and panel. Cover glass including hologram pattern inside.
- With keyboard typing requirement, we can turn on hologram light source then trough hologram CG to generate virtual keyboard floating on the 2nd display.
- Without typing, turning off light source, 2nd display will same as normal display
- 2nd display BLU is focus on lighting 2nd display panel.

[Structure 2]



- The structure include (1)Backlight unit (2) Hologram light unit (3) Panel (4) Cover glass
- Add light source between 2nd display BLU and panel.
- With keyboard typing requirement, we can turn on hologram light source
- Input hologram pattern on 2nd display panel
- When light through 2nd display panel then transfer to virtual image which is floating on display.
- Without typing, no need input hologram pattern on 2nd display panel

Advantage of this structure

- Generate 3D image floating on 2nd display
- 3D key keyboard is easier to let user confirm right typing position.
- Provide “depth” press feeling to user
- It can also provide different 3D image by using computer-generated holography technology.

Disclosed by Super Liao, Ann Alejandro Villegas and KT Wu, HP Inc.