Future on display: Desk lamp turns table top into 3D

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Switching on a lamp is all it takes to turn a table-top into an interactive map with this clever display, on show at the SIGGRAPH computer graphics and animation conference [1] in Los Angeles.

Multi-touch table-top displays project content through glass and respond to touch – imagine a table-sized smartphone screen.

But Li-Wei Chan from the National Taiwan University [2] in Taipei wanted to make these types of screens more appealing for multiple users. The idea is that several people could look at the same images, and get more information about the areas that interest them, using moveable objects. "I came up with the idea of using a lamp as the interface to provide source of high-resolution projection when one day I saw the famous lamp in Pixar movies [3]."

Users viewing an image such as a map projected onto a table-top display can zoom in on specific areas – seeing street names for example – simply by positioning the "lamp" device over them.

"We combine an infrared projector and a standard colour projector to simultaneously project visible content and invisible markers on the table surface," says Chan. The "lamp" is fitted with infrared cameras and can use the hidden markers to compute its position in three dimensions. It then uses this information to control the projection of high-res images onto the correct place on the table-top.

Window on 3D

The team have also created a tablet computer which lets viewers see a two-dimensional scene in 3D. If you hold the computer over the area of the map you are interested in, a 3D view of that area will appear on the screen.

The "lamp" also comes in a handheld flashlight design, which Chan thinks could be used with high-res scans of paintings in museums, for example, so that people could zoom in to see more detail of things that have caught their eye.

Using the tablet computer to show up areas of a 3D map would allow several users, each with their own tablet, to examine and discuss the map at once, says Chan. This could be useful for the military, when examining a map of unfamiliar territory and discussing strategy, for example.

SOURCE [4]

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