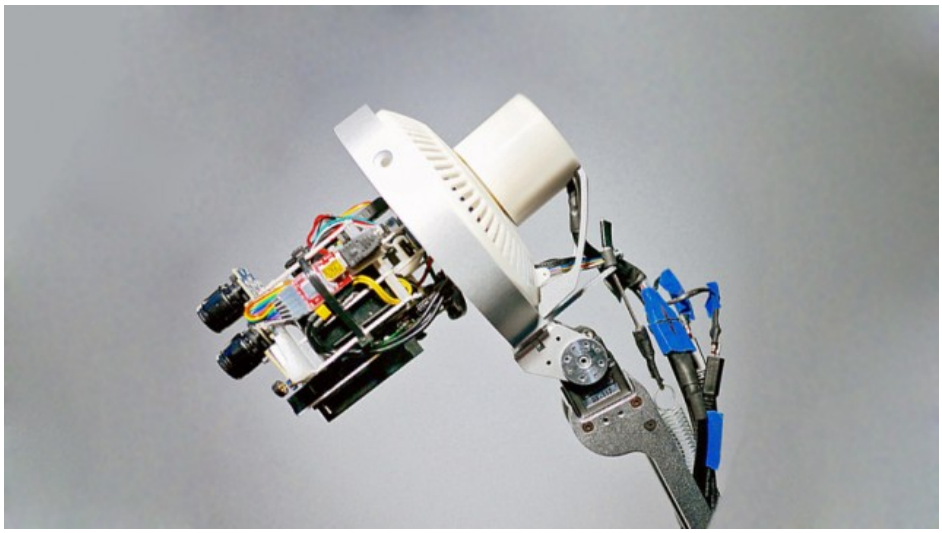
Augmented Light Bulb Turns Desk Into a Touchscreen



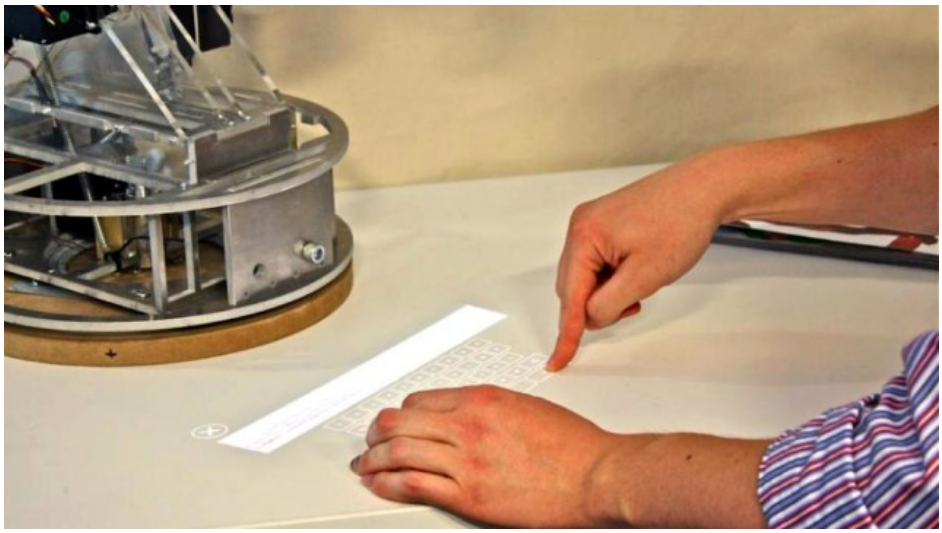
Powerful computers are becoming small and cheap enough to cram into all sorts of everyday objects. Natan Linder [1], a student at MIT's Media Lab, thinks that fitting one inside a light bulb socket, together with a camera and projector, could provide a revolutionary new kind of interface—by turning any table or desk into a simple touchscreen.

The LuminAR [2] device, created by Linder and colleagues at the Media Lab, can project interactive images onto a surface, sensing when a person's finger or hand points to an element within those images. Linder describes LuminAR as an augmented-reality system because the images and interfaces it projects can alter the function of a surface or object. While LuminAR might seem like a far-fetched concept, many large technology companies are experimenting [3] with new kinds [4] of computer interfaces in hopes of discovering new markets for their products.

Linder's system uses a camera, a projector, and software to recognize objects and project imagery onto or around them, and also to function as a scanner. It connects to the Internet using Wi-Fi. Some capabilities of the prototype, such as object recognition, rely partly on software running on a remote cloud server.

LuminAR could be used to create an additional display on a surface, perhaps to show information related to a task in hand. It can also be used to snap a photo of an object, or of printed documents such as a magazine. A user can then e-mail that photo to a contact by interacting with LuminAR's projected interface.

"I'm really excited by the way this would be used by engineers and designers," says Linder, who believes it could be useful for any creative occupation that often involves working with paper and other tangible objects as well as computers.



LuminAR could have uses beyond the desk or office environment. One demo to illustrate the use of one of the devices features a mock-up of an electronics store, where the device projected price tags next to cameras on a table, as well as buttons that could be used to call up more product information. Linder has also tried using it for Skype-style video calls, projecting the caller's video onto the wall next to the desk the lamp stood on.

The current prototype is built around a processor from Qualcomm's Snapdragon series, commonly used in smartphones and tablets. Linder and colleagues are experimenting with both a custom Linux-based operating system and a modified version of Google's Android mobile operating system.

Earlier LuminAR prototypes included a motorized arm for the lamp, too. But the researchers are currently focused on finessing the bulb-only version. That design cuts costs and complexity, and also makes the technology easier to adopt, says Linder. "It has zero cost of adoption. You just change the bulb in your lamp," he says.

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