

A Projector With Enhanced Resolution Via Optical Pixel Sharing

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OTHER INFORMATION

CATEGORIZED AS

- » Communications

» Internet

» Optical

» Wireless

» Computer

» Hardware

» Software

» Engineering

BRIEF DESCRIPTION

The technology is a device which enables software and hardware to create a display that is perceptually similar to a true high resolution display at a lower cost.It features targeted higher resolution at desired portion of a display and “Optical pixel sharing unit” hardware.Under this technology users can vary pixel density spatially.

FULL DESCRIPTION

This invention is software and hardware that enhances the resolution of a projector. It uses light modulator panels to create higher resolution at selected regions of a display. This is enabled by special hardware called an optical pixel sharing unit, which can create a higher density of pixels at selected regions. This allows for higher resolution at desired locations like edges, faces or the boundary of foreground and background.

The key to producing the aforementioned variable resolution is to enhance the resolution of the display at a few important pixels using this optical pixel sharing hardware. The technology exploits the sparsity of the important pixels to achieve a higher pixel density at a few locations. The end result is a display that is perceptually similar to a true high resolution display at a lower cost. This process opens up the possibility of targeting resolution at application-specific spatial regions of the display, like faces for surveillance.

The researchers have also developed GPU based computation techniques that allow for real-time content specific imaging processing to select the important pixels that are to be rendered in higher density.

Using a lower resolution projector to display a higher resolution image will render the image blurry and pixelated. As would be expected, in order to properly display a higher resolution image, a higher resolution projector is required. Unfortunately, the cost of projectors rise exponentially with increasing resolution and therefore, upgrading to a higher resolution display is not always feasible. Creating smaller pixels and therefore, higher resolution using lower resolution display modules has been a goal of the display community for many years. This technology solves that problem by creating a display that is perceptually similar to higher resolution displays while using lower resolution projectors.

SUGGESTED USES

- » Enhanced resolution projector

ADVANTAGES

- » Allows for the use of lower resolution projectors for higher resolution display
- » Lowers cost for high resolution display

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,183,771	11/10/2015	2012-446

LEAD INVENTOR

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RELATED MATERIALS

- » Edge-Guided Resolution Enhancement in Projectors via Optical Pixel Sharing, B. Sajadi, M. Gopi, A. Majumder, ACM Transactions on Graphics, 2012. - 07/11/2012

» Engineering

» **Imaging**

» 3D/Immersive

» Software

RELATED CASES

2012-446-0

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- ▶ Video Frame Synchronization for A Federation of Projector Using Camera Feedback
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