

# Pixel shifting in projected displays

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## **ABSTRACT**

Resolution in a projected display is traditionally defined by number of pixels in the projectors spatial light modulator (SLM). In the recent years different techniques that increase the resolution above the number of SLM pixels have gained popularity, and this is challenging the established definitions of resolution.

The most common way of increasing the resolution above the native SLM pixel count is pixel shifting. In the pixel shifting technology the display physically shifts every  $n$ 'th frame on the projected canvas with sub-pixel precision. This means that each resulting pixel is build up from several subframes in different positions.

The gain in spatial resolution with pixel shifting technology have been proven, but there is still an open question on how much the resolution increases, and also how to quantify it. Since the traditional way of defining resolution is to count the number of pixels, new ways of measuring resolution must also be defined.

In this work we present different measurements on how the pixel shifting technology performs on different SLM technologies, and also discuss how to define the resolution obtained.

## **BIO**

### ***PRIMARY AUTHOR***

**Svein Arne Jervell Hansen** received his Master in Electronics in 2007 at the Norwegian University of Science and Technology. Currently he is a PhD student at the University College of Southeast Norway, and his research is currently focusing on resolution enhancement of projected displays. Svein Arne Jervell Hansen have been working at Barco Fredrikstad in Norway since 2010, mainly focusing on image processing and FPGA design.