

# Human- friendly 3D display systems

## **Professor Shiro Suyama**

## "3D display using varifocal lens" Floating 3D image Depth sampling 2D display Varifocal lens 3D image Depth positions are changed 3D image is reconstructed using afterimage Sampled Contiunous 3D image "DFD (Depth-fused 3D) display" using discrete planes Perceived 3D image Obserever Discrete two planes Smooth movement parallax "Arc 3D display" by arc-shaped scratches

Illumination

by single light

Only many arc-shaped

scratches

3D image

can be observed

#### Content:

In our laboratory, human-friendly 3D display systems have been developed, based on liquid-crystal devices and perceptual phenomena.

#### <u>"3D display using varifocal lens"</u>

We have developed the varifocal lens using a liquid-crystal devices. By using this varifocal lens, floating 3D images have been realized. These floating 3D images is promising for human-friendly 3D images.

### "DFD (Depth-fused 3D) display"

We found the depth-perception phenomenon that the continuous depth can be perceived only by using discrete two planes. By using this DFD phenomenon, simple 3D display system can be realized from 9-inch to 200-inch size.

## "Arc 3D display"

Many arc-shaped scratches or protrusions easily provide 3D image with smooth movement parallax, which will be switchable by using liquid-crystal devices.

Keywords: 3D, DFD, Volmetric, Depth perception E-mail: suyama.shiro@opt.tokushima-u.ac.jp

Tel. +81-88-656-9425

Fax: +81-88-656-9435

