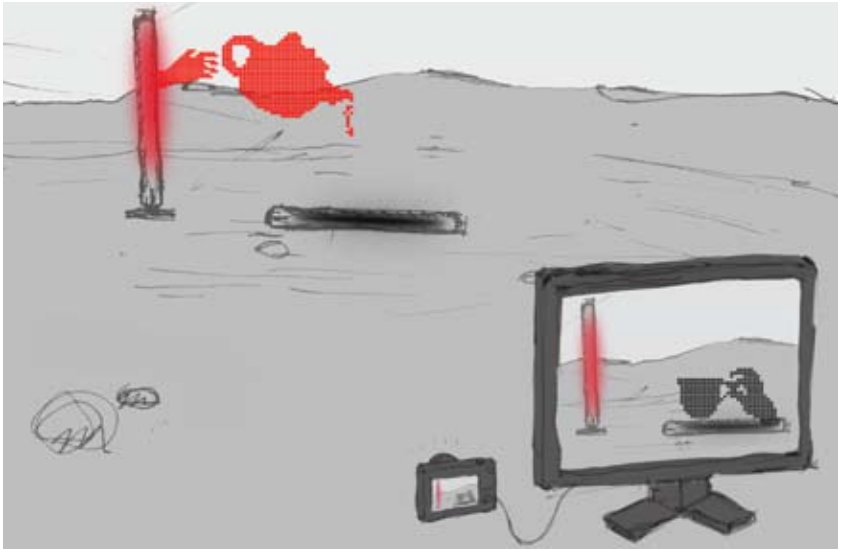
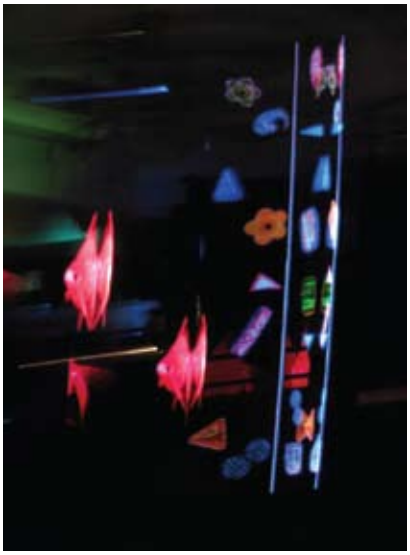
# Ghostly Images Appearing in Moving Human Eyes and Still Machine Eyes

**Hideyuki Ando**
**Alvaro Cassinelli**
**Junji Watanabe**





This saccade-based display is a device capable of presenting two-dimensional images using a unique bar of addressable light sources (a column of LEDs). In a dimly lit environment, each time the saccadic eye movement of the observer is detected, the flashing pattern of the column light expands, and ghostly images appear in midair.

Due to the electronic scanning mechanism of the CCD image sensor, certain video cameras are also capable of capturing these floating images even when they are not moving at all.

These observations encourage a reflection on the process of vision. Natural and artificial visual systems rely on some sort of active sensory mechanism for exploring the external world, though their temporal scales may be different. We sense and react to the world, and we even use machines that can take pictures without paying attention to these hidden perceptual mechanisms, but understanding and exploiting them may open up new possibilities of perceiving and displaying.