

## 液晶レンズを用いる中心窩結像システム

### Foveated Imaging System with a Liquid Crystal Lens

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We report a foveated imaging system using a liquid crystal (LC) lens [1]. The system is composed of a lens module, an LC lens, and an image sensor as shown in Fig. 1. Our system is different from that proposed by Shimizu, et al [2] in that the LC lens is placed between the sensor and the lens module, and it becomes possible to obtain images focused in clearly defined ROIs.

The LC lens is used to correct defocus by electrically adjusting its focal length. The focus correction does not rely on any mechanical movements [3]. The lens module has a FOV of 60 °and the LC lens modulates partly of the whole light field. In this work, the LC lens is placed on the optic axis of the lens module, and the foveated area corresponds to FOV near 0 degree.

The principle is discussed and foveated imaging is realized experimentally. The parameters, including the position and aperture of the LC lens, the F number of the lens module, etc., that influence the imaging are studied.

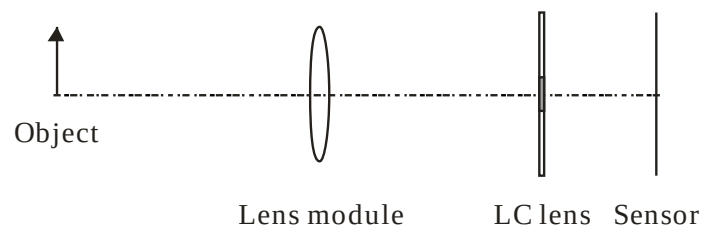


Fig. 1 Imaging system



Fig. 2 Foveated image

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[1] M. Ye, et al., *Appl. Opt.* **43** (2004) 6407. [2] S. Shimizu, et al, IECON 2015 - 41st Annual Conference of the IEEE Industrial Electronics Society (IEEE, 2015), p. 3632. [3] M. Ye, et al., *Appl. Opt.* **51** (2012) 7630.