1. Tentative Abstract

We have developed a neuromorphic retina model to study the function of retinal circuits in visual information processing in natural environment. The model consists of a silicon retina and a FPGA module and is able to reproduce responses of retinal neurons in real time. In the workshop, I demonstrate “virtual in vivo experiments” using the neuromorphic retina model. Namely, neural images of retinal neurons responding to natural scenes in a feasible visual environment are reconstructed. I also refer to some applications in robotic vision and prosthetics. The model will provide a novel technology not only for physiological research but for artificial vision research in the field of engineering.

2. Brief Biography

Tetsuya Yagi received the Ph.D. degree in medical science from Nagoya University, Nagoya, Japan, in 1985. Following his study as a Postdoctoral Fellow with the National Institute of Physiological Science and the Rockefeller University, he joined Kyushu Institute of Technology as an Associate Professor in 1990. He is currently a Professor with the Graduate School of Engineering, Osaka University and a director of the Global Center for Medical Engineering and Informatics, Osaka University. His research interests include neurophysiology of visual systems, and neuromorphic engineering systems and their applications for medicine.
3. List of Representative Publications


