

## Light field Vision

### - Light field imaging and its applications for scene understanding-

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Currently, light field camera is getting popular in computer vision and graphics. It is getting easy to use such a camera, since commercial products, Lytro and Raytrix have been in a market as well. The light field camera has been used for a lot of visualization applications such as digital refocusing, free view displaying etc. The light field camera can capture a four dimensional image  $I(x, y, u, v)$ , where  $(u, v)$  represents the two dimensional position of the camera viewpoint, and  $(x, y)$  represents the two-dimensional image coordinates at that point. The regular computer vision has been developed by normal camera image with single viewpoint. Hence, computer vision has been restricted to considering the subspaces of the light field represented as the image  $I(x, y, 0, 0)$  for solving a problem. We propose "light field vision", a new visual recognition approach that uses light field images as an input and establish it as a new field of research area. In this talk, I will introduce the basics of the light field such as the definition and how to obtain it. Also I will show some examples of the researches for object recognition and detection applications utilizing the rich information of the light field.

