KDDI LABS Unveils Free Viewpoint Video Technology

KDDI R&D LABS demonstrates a novel technology for generating Free Viewpoint Video and a realistic 3D Free Viewpoint Video. Their innovative technology realizes a free viewpoint video based on "space dividing ray-space method". The goal of this technology is to enable audiences of a TV program to choose their own "virtual viewpoints". For example, people can watch a soccer game from the viewpoints of players on the playground, where TV cameras cannot be mounted. Besides, it is our purpose that virtual viewpoints can go into among players, and we call this *walk-through* experience.

The technology is one of the image-based rendering technologies with a novel approach "space dividing ray-space". The 3D space is divided into small subspaces to generate a "local ray-space", and the scene is regenerated using locally generated images. This approach is the key to achieve the walk-through scene generation. In addition, stereoscopic technology generates images for left and right eyes by considering disparity between left and right images. This enables adjustment of generated images according to user's characteristics, which provides stereoscopic images with little strain on the eyes. At KDDI R&D LABS' booth, they demonstrate *Stereoscopic Walk-through Video*, which is realized by combining these advanced technologies. Visitors to KDDI R&D LABS' booth can enjoy a realistic 3D walk-through video experience that they never had before.

There are two major directions for the ultra realistic image media; one is to pursue an image quality, for example the digital cinema such as 4K and 8K, and the other is to generate experience-based video in which users can interact with computer simulated environment such as Virtual Reality. Their technology for generating Free Viewpoint Video follows the exact direction. Especially, the realization of walk-through experiences in a large space such as a field about 30-feet across is very innovative, and KDDI R&D LABS believes Free Viewpoint Video will be a fundamental technology for ultra realistic communications.