Innovative Applications of Fringe Pattern Projection

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Abstract

The stereo vision by fringe pattern projection (FPP) is a popular active 3D imaging technology. In order to acquire the 3D images it is necessary to use the fringe analysis for the absolute phase map. With the aided of the phase map, the point correspondence can be identified, and the 3D images can be obtained precisely by triangulation strategy. Compared with other 3D imaging technology, such as spackle pattern projection or TOF (Time of Flight), FPP can efficiently acquire full color 3D images with high accuracy and density of the point cloud. Based on the FPP some dedicated 3D scanners such as the body scanner, the face scanner and the desktop scanner are developed by the ESUN Co. Ltd and Shenzhen University. This presentation will show the technical parameters and innovative applications of those 3D scanners. The ESUN+ body scanner can reconstruct 3D model of the whole body in a flash-speed scanning, performing with a cinematic detailed result. The body scanner has many potential applications in the field of anthropometry, fitness, fashion and virtual reality/augmented reality, etc. The ESUN+ desktop 3D scanner is operating in a fully automatic way and providing with a photorealistic result. The applications of ESUN+ desktop 3D scanner include e-shop and education. The ESUN+ face scanner can acquire the 3D image of whole face in a fast speed. The applications of this type of 3D scanner involves in electronic gaming, plastic surgery and virtual reality.

Keywords: 3d imaging, 3d modeling, 3d scanner, optical digitizer

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