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研究论文

高分辨率计算集成成像自由视点光场重构方法

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摘要：

针对传统自由视点集成成像计算重构方法重构图像分辨率较低的问题，提出了一种基于光场模型的自由视点计算重构方法．根据视点位置和观看方向，采用光场投影矩阵将微单元图像阵列投影到重构平面上，充分利用微单元图像阵列中的信息，实现了高分辨率的自由视点集成成像计算重构．仿真结果表明，采用文中方法可以实现集成成像系统的自由视点计算重构，且重构图像的分辨率比传统方法重构图像的分辨率有了很大提高．

关键词： 集成成像 自由视点 高分辨率 光场 计算重构

High resolution free view integral imaging reconstruction using the light field model

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Abstract:

To improve the low resolution of images reconstructed by conventional free view computational reconstruction methods, a free view computational reconstruction method based on the light field model is proposed. High resolution free view integral imaging computational reconstruction is realized by using the light field projection transformation matrix to project the elemental image array to the reconstruction plane according to the view point and viewing direction, and thus the information in the elemental image array is fully utilized. Simulation results show that the proposed method can achieve free view integral imaging computational reconstruction, and the resolution of the images reconstructed by the proposed method is improved greatly compared with the conventional method.

Keywords: integral imaging free view high resolution light field computational reconstruction

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