

综述

光场成像技术进展

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摘要:

归纳总结了光场成像从理论到实现的发展历程,根据光场数据获取方式对目前典型的光场成像设备进行了分类.在光场相机原理的基础上,重点阐述了基于光场的计算成像原理、数字重聚焦技术、合成孔径成像技术和显微成像技术,并对光场成像技术的应用前景和存在的关键问题进行了讨论.

关键词: 光场相机 数字重聚焦 合成孔径成像 光场显微镜

Advances in light field photography technique

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Abstract:

Light field is a representation of full four-dimensional radiance of all rays with spatial and angular information in free space, and capture of light field data enables many new development potentials for computational imaging. The historical development of light field photography is summarized, and typical light field photography devices are categorized in view of capture methods for 4D light field. Based on the principles of light field camera, computational imaging theorem, refocusing theory, synthetic aperture refocusing algorithm, and light field microscopic technology are emphatically described. Finally, the promising application perspectives and existing critical issues of light field imaging are discussed.

Keywords: light field camera digital refocusing synthetic aperture photography light field microscopy

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