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论文

确定性相位掩膜可压缩双透镜成像

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摘要:

压缩成像是压缩传感理论的一个重要应用领域.本文将确定性测量引入压缩成像,提出一种确定性相位掩膜可压缩双透镜成像方法.模拟实验结果表明,新的成像方法可以在显著地降低物理实现成本的同时,有效地捕获图像信息来重建原始图像.此方法改变了经典的模拟-数字转换的光学成像思路,减少模数转换开销,并有利于图像的传输和存储,可以为照相机的设计提供若干理论、计算和技术支撑.

关键词: 压缩传感 压缩成像 成像系统 相位掩膜 确定性测量

Compressive Double Lens Imaging Using Deterministic Phase Mask

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Abstract:

Compressive imaging is an important application of the theory of compressive sensing.The deterministic measurements were introduced into compressive imaging and a novel method-compressive double lens imaging was proposed using deterministic phase mask.Simulation results show that novel imaging method can effectively capture the information of image,and reduce the difficulty and costs of the hardware implementation significantly.The classical analog-to-digital conversion of optical imaging is changed,the digital conversion costs are reduced,and the image transmission and storage are able to be facilitated by the proposed method,which provides some theoretical,computing and technical support for new design of camera.

Keywords: Compressive sensing Compressive imaging Imaging system Phase mask Deterministic measurements

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