

基于稀疏表示的被动毫米波L-R成像算法

成萍^①; 赵家群^②; 司锡才^①; 赵昕^{③*}

^①哈尔滨工程大学信息与通信工程学院 哈尔滨 150001; ^②哈尔滨工程大学理学院 哈尔滨 150001; ^③第二炮兵驻国营699厂军事代表室 北京 100039

L-R Imaging Algorithm for Passive Millimeter Wave Based on Sparse Representation

Cheng Ping^①; Zhao Jia-qun^②; Si Xi-cai^①; Zhao Xin^{③*}

^①College of Information and Communication Engineering, Harbin Engineering University, Harbin 150001, China; ^②College of Science, Harbin Engineering University, Harbin 150001, China; ^③The Second Artillery Corps, Stationed in the state-operated 699 factory military representative room, Beijing 100039, China

摘要	参考文献	相关文章
----	------	------

Download: PDF (646KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 在被动毫米波的图像恢复中, L-R算法是一种简单而有效的非线性方法。但当噪声不可忽略时, L-R算法难以获得较好的复原结果。自适应稀疏表示, 作为一种新的信号处理方法, 具有表达信号灵活的特点, 能够在保持目标特征的同时有效地去除噪声。该文提出一种基于自适应稀疏表示的L-R算法。首先采用稀疏信号表示的方法进行去噪, 然后使用L-R算法进行图像恢复。这种改进算法通过使用基于自适应稀疏表示的去噪算法有效地减少了噪声对L-R算法的影响。实验数据的成像结果表明: 该文的改进算法提高了L-R算法的性能, 可用于低信噪比的图像复原。

关键词: 被动毫米波成像 L-R(Lucy-Richardson)成像算法 自适应稀疏表示 非线性

Abstract: In passive millimeter wave image restoration, L-R algorithm is a simple and effective nonlinear method. However, when the noise can not be neglected, it is difficult for L-R algorithm to get good restoration. As a novel signal processing method, adaptive sparse representation has a merit of representing signal flexibly and can de-noise effectively when maintaining features of targets. A novel L-R algorithm is proposed based on adaptive sparse representation. It first de-noises by employing sparse signal representation, and then restores images by using L-R algorithm. The modified algorithm reduces the influence of noise on L-R algorithm effectively by using de-noise algorithm based on adaptive sparse representation. The imaging results of experiment data show that the modified algorithm proposed in the paper improves the performance of L-R algorithm, and it can be used in image restoration when the signal to noise ratio is low.

Keywords: Passive millimeter wave imaging L-R(Lucy-Richardson) imaging algorithm Adaptive sparse representation Nonlinear

Received 2009-07-17;

通讯作者: 成萍

引用本文:

成萍^①; 赵家群^②; 司锡才^①; 赵昕^③.基于稀疏表示的被动毫米波L-R成像算法[J] 电子与信息学报, 2010,V32(7): 1707-1711

Cheng Ping^①; Zhao Jia-qun^②; Si Xi-cai^①; Zhao Xin^③.L-R Imaging Algorithm for Passive Millimeter Wave Based on Sparse Representation[J] , 2010,V32(7): 1707-1711

链接本文:

http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2009.01017 或 http://jeit.ie.ac.cn/CN/Y2010/V32/I7/1707

Service

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ Email Alert
- ▶ RSS

作者相关文章

- ▶ 成萍
- ▶ 赵家群
- ▶ 司锡才
- ▶ 赵昕
- ▶
- ▶
- ▶
- ▶