

光电信息获取与处理

改善光电稳瞄系统视觉效果的图像增强算法

韩梅¹; 李广良¹; 张志龙²; 赫海凤¹; 刘亚琴¹; 桑蔚¹

- 1. 西安应用光学研究所, 陕西西安710065;
- 2. 国防科技大学电子科学与工程学院ATR国家重点实验室, 湖南长沙410073

摘要:

为了改善光电稳瞄系统的视觉效果, 使视频图像更加适合于人眼观察, 并且有利于对目标的自动跟踪效果, 将直方图均衡化处理与拉普拉斯边缘锐化处理相结合, 在增强对比度的同时尽量保持边缘细节。仿真结果显示采用本文算法能够有效改善视频图像的视觉效果。

关键词: 图像增强 对比度增强 拉普拉斯 边缘锐化

Image enhancement algorithm for improving the vision of electro-optical stabilized sight

HAN Mei¹; LI Guang-liang¹; ZHANG Zhi-long²; HE Hai-feng¹; LIU Ya-qin¹; SANG Wei¹

- 1. Xi'an Institute of Applied Optics, Xi'an 710065, China;
- 2. ATR Laboratory, National University of Defense Technology, Changsha 410073, China

Abstract:

In order to improve the visual sense of electro-optical stabilized sight for the ease of operation and facilitate the automatic tracking of targets, histogram equalization algorithm was combined with Laplace edge sharpening algorithm to enhance image contrast and preserve image edge details. The simulation results indicate that the vision effect of video images is effectively improved by this algorithm.

Keywords: image enhancement contrast enhancement Laplace edge sharpening

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 韩梅(1974-), 女, 黑龙江哈尔滨人, 高级工程师, 主要从事光电稳瞄总体技术及图像处理技术的研究工作。

作者简介:

作者Email:

参考文献:

[1] 倪雪, 李庆武, 陈小刚. 基于第二代Curvelet变换的低对比度图像增强[J]. 计算机工程与应用, 2008, 44(17): 188-190.

NI Xue, LI Qing-wu, CHEN Xiao-gang. Low contrast image enhancement based on second generation

扩展功能

本文信息

- Supporting info
- PDF(2047KB)
- [HTML全文]
- 参考文献[PDF]
- 参考文献

服务与反馈

- 把本文推荐给朋友
- 加入我的书架
- 加入引用管理器
- 引用本文
- Email Alert
- 文章反馈
- 浏览反馈信息

本文关键词相关文章

- 图像增强
- 对比度增强
- 拉普拉斯
- 边缘锐化

本文作者相关文章

- 韩梅
- 李广良
- 张志龙
- 赫海凤
- 刘亚琴
- 桑蔚

PubMed

- Article by Han, M.
- Article by Li, G. L.
- Article by Zhang, Z. L.
- Article by He, H. F.
- Article by Liu, E. Q.
- Article by Sang, W.

curvelet transform [J] . Computer Engineering and Applications, 2008,44(17): 188-190. (in Chinese with an English abstract)

[2] 吴颖谦,施鹏飞.基于小波变换的低对比度图像增强 [J] . 红外与激光工程, 2003,32(1): 4-7.

WU Ying-qian, SHI Peng-fei. Approach on image contrast enhancement based on wavelet transform [J] . Infrared and Laser Engineering, 2003,32(1): 4-7. (in Chinese with an English abstract)

[3] 刘国军,唐降龙,黄剑华,等. 基于模糊小波的图像对比度增强算法 [J] . 电子学报, 2005,33(4): 643-646.

LIU Guo-jun, TANG Jiang-long, HUANG Jian-hua, et al. An image contrast enhancement approach based on fuzzy wavelet [J] . Acta Electronica Sinica, 2005,33(4): 643-646. (in Chinese with an English abstract)

[4] 江巨浪,张佑生,薛峰,等. 保持图像亮度的局部直方图均衡算法 [J] . 电子学报, 2005,34(5): 861-866.

JIANG Ju-lang, ZHANG You-sheng, XUE Feng, et al. Local histogram equalization with brightness preservation [J] . Acta Electronica Sinica, 2005,34(5): 861-866. (in Chinese with an English abstract)

[5] 高岩, 乔彦峰. 一种基于改进直方图均衡的图像增强方法 [J] . 计算机仿真, 2008,25(4): 198-200.

GAO Yan, QIAO Yan-feng. An image enhancing method based on reformative histogram equalization [J] . Computer Simulation, 2008,25(4): 198-200. (in Chinese with an English abstract)

[6] 宋岩峰, 邵晓鹏, 徐军. 基于双平台直方图的红外图像增强算法 [J] . 红外与激光工程, 2008,37(2): 308-311.

SONG Yan-feng, SHAO Xiao-peng, XU Jun. New enhancement algorithm for infrared image based on double plateaus histogram [J] . Infrared and Laser Engineering, 2008,37(2): 308-311. (in Chinese with an English abstract)

[7] 周鸣争,汪军. 基于直方图变换的弹痕图像增强技术及实现 [J] . 安徽机电学院学报, 2002,17(4): 31-33.

ZHOU Ming-zheng, WANG Jun. Technology and implementation of image enhancement about bullet mark based on histogram mapping [J] . Journal of Anhui Institute of Mechanical & Electrical Engineering, 2002,17(4): 31-33. (in Chinese with an English abstract)

[8] 黄剑玲,邹辉. 基于高斯Laplace算子图像边缘检测的改进 [J] . 微电子学与计算机, 2007,24(9): 155-161.

HUANG Jian-ling, ZOU Hui. The improvement of image edge detection based on GaussLaplace operator [J] . Microelectronics & Computer, 2007,24(9): 155-161. (in Chinese with an English abstract)

[9] 鲍宗泛,李红华. 关于图像边缘检测的Laplace算子的改进 [J] . 中国计量学院学报, 2000,11(2): 169-172.

BAO Zong-fan, LI Hong-hua. Improvement of Laplace operator on edge detection [J] . Journal of China Institute of Metrology, 2000,11(2): 169-172. (in Chinese with an English abstract)

本刊中的类似文章

1. 郭佳;秦文罡;刘卫国. 自适应红外目标特征增强算法[J]. 应用光学, 2009,30(2): 357-360
2. 韩保君;拜丽萍;刘上乾;吴志鹏. 基于人眼视觉特性的火炮内膛图像增强方法[J]. 应用光学, 2005,26(1): 36-38
3. 陈国群;付冬梅. 基于灰度聚类算法的红外图像增强研究[J]. 应用光学, 2007,28(2): 142-145
4. 邸慧;于起峰;张小虎. 一种基于灰度变换的红外图像增强算法[J]. 应用光学, 2006,27(1): 12-14