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目　次

科研论文

基于深度学习的飞机目标跟踪应用研究
……赵春梅，陈忠碧，张建林　180261

基于对象的三维图像颜色传递与视差优化
……李鹏飞，邵　枫　180446

融合注意力机制和语义关联性的多标签图像分类
……薛丽霞，江　迪，汪荣贵，杨　娟　180468

伪随机序列激光制导信号产生与分析
……都元松，罗　威，董睿杰，董文锋　180475

自适应分数阶算子的图像增强
……李　帅，王伟明，刘先红，闫德立　180517

基于改进 R-FCN 的多遮挡行人实时检测算法
……刘　辉，彭　力，闻继伟　180606

采用小波降噪和神经网络的 FOG 温度漂移补偿方法
……李光耀，侯宏录，杜　鹃，李　媛　180636

一种人体热红外图像拼接及部位划分方法
……陈晨涛，潘之玮，沈会良，朱云芳　180689

城市道路视频中小像素目标检测
……金　瑶，张　锐，尹　东　190053

基于非线性最小二乘法的无人机机载光电平台目标定位
……陈丹琪，金国栋，谭力宁，芦利斌，卫文乐　190056

本期封面图片由中国科学院光电技术研究所赵春梅(180261)提供

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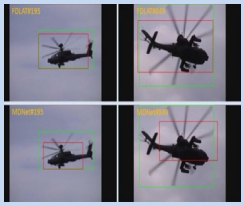
Contents

Article

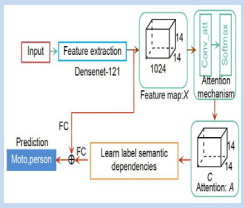


Application of aircraft target tracking based on deep learning 180261
Zhao Chunmei, Chen Zhongbi, Zhang Jianlin

Based on muti-domain network (MDNet), fast deep learning for aircraft tracking (FDLAT) algorithm was proposed to track aircraft target. Robust tracking for aircraft in rotation, similar targets, fuzzy targets, complex environment, scale transformation, target occlusion, morphological transformation and other complex states were achieved.

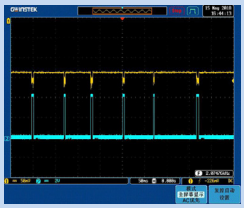
Stereoscopic color transfer and disparity remapping based on selected object 180446
Li Pengfei, Shao Feng

A color transfer method based on the selected object is proposed. By assigning the object of the image, the accurate object was segmented via graph cut, and the probability density curves of color distribution between the selected object and the target image were matched to accomplish the color transfer.



Multi-label classification based on attention mechanism and semantic dependencies 180468
Xue Lixia, Jiang Di, Wang Ronggui, Yang Juan

A method based on convolutional neural networks proposed, which combines attention mechanism and semantic relevance, to solve the multi label problem. The experimental results show that the proposed method can exploit the dependencies between multiple tags to improve the performance of multi label image classification.

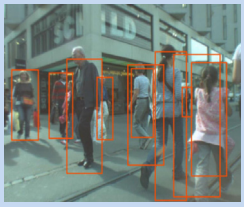


Generation and analysis of pseudo-random sequence laser guidance signal 180475
Du Yuansong, Luo Wei, Dong Ruijie, Dong Wenfeng

In view of the current state of the technology of the laser-guided weapon system that is vulnerable to fraudulent interference, a new idea using random sequence coding was proposed to improve its anti-jamming performance.

Image enhancement of adaptive fractional operator 180517
Li Shuai, Wang Weiming, Liu Xianhong, Yan Deli

In order to highlight the texture details of the image while preserving the smooth region and saving the time to determine the fractional differential order, an improved adaptive fractional differential operator was proposed.

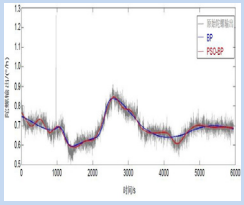


Multi-occluded pedestrian real-time detection algorithm based on preprocessing R-FCN

180606

Liu Hui, Peng Li, Wen Jiwei

One of main challenges of driver assistance systems is to detect multi-occluded pedestrians in real-time in complicated scenes, to reduce the number of traffic accidents. In order to improve the accuracy and speed of detection system, a real-time multi-occluded pedestrian detection algorithm based on R-FCN was proposed.



FOG temperature drift compensation method based on wavelet denoising and neural network

180636

Li Guangyao, Hou Honglu, Du Juan, Li Yuan

The output of fiber optic gyroscope (FOG) is easily affected by the temperature variations. In order to optimize BP neural network, a temperature drift compensation method for FOG based on particle swarm optimization (PSO) and wavelet denoising was proposed.

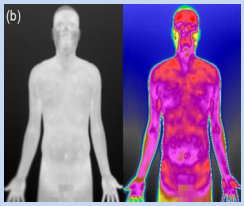
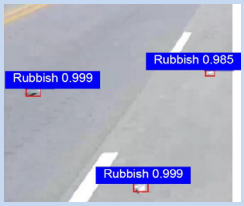


Image stitching and partitioning algorithms for infrared thermal human-body images

180689

Chen Chentao, Pan Zhiwei, Shen Huiliang, Zhu Yunfang

Based on in-depth analysis, the infrared image can provide intelligent diagnosis assistance for human diseases. Two preprocessing algorithms, i.e., upper-lower body image-stitching and body image partitioning, were proposed for medical infrared image analysis.

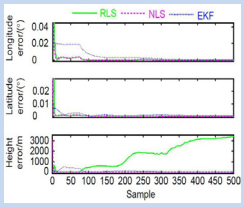


Object detection for small pixel in urban roads videos

190053

Jin Yao, Zhang Rui, Yin Dong

Small pixel targets in video images are difficult to be detected. Aiming at the small pixel target in urban road video, a novel detection method named Road_Net based on the YOLOv3 convolutional neural network was proposed.



Target positioning of UAV airborne optoelectronic platform based on nonlinear least squares

190056

Chen Danqi, Jin Guodong, Tan Lining, Lu Libin, Wei Wenle

A hybrid nonlinear algorithm of least squares and Gauss Newton was proposed. Experimental results of measured data show that the longitude error of fixed target positioning results of this method is less than 1.37×10^{-5} degrees, the latitude error is less than 6.31×10^{-5} degrees, and the height error is less than 1.78 m.