

# 激光与光电子学进展

Laser & Optoelectronics Progress

[总第691期]

第 58 卷  
第 8 期

2021.4(下)



Q K 2 1 1 8 1 5 4



ISSN 1006-4125



08>

9 771006 412210

DOI: 10.3788/LOP202158.0800001

中国科学院上海光学精密机械研究所 主办

# 激光与光电子学进展

## ——先进成像——

第 58 卷 第 8 期 2021 年 4 月

(总第 691 期)

## 目 次

### · 综述 ·

- 基于相移条纹分析的实时三维成像技术发展综述(封面文章,特邀综述) ..... 郭文博, 张启灿, 吴周杰 0800001  
基于红外热成像的早期疾病检测技术的研究进展 ..... 赵明珠, 张艳, 朱应燕 0800002  
 $\text{Cr}^{3+}$ 掺杂长余辉发光纳米粒子在生物医学研究中的应用研究简述 ..... 杨倩婷, 热娜古丽·阿不都热合曼, 燕音, 等 0800003

### · 图像处理 ·

- 基于双通道先验和光照图引导滤波的图像增强 ..... 赵馨宇, 黄福珍 0810001  
一种立体全景图像显著性检测模型 ..... 邱森森, 柴雄力, 邵枫 0810002  
Yolo-C: 基于单阶段网络的 X 光图像违禁品检测 ..... 郭守向, 张良 0810003  
基于 ORB 特征的高分辨率图像拼接改进算法 ..... 刘天赐, 宋延嵩, 李金旺, 等 0810004  
基于改进超分辨率生成对抗网络的图像重建算法 ..... 查体博, 罗林, 杨凯, 等 0810005  
基于 Jeffrey 散度相似性度量的加权 FCM 聚类算法 ..... 吴辰文, 马宁, 蒋雨璠 0810006  
基于改进残差注意力网络的 SAR 图像目标识别 ..... 史宝岱, 张秦, 李瑶, 等 0810008  
基于 Hu 矩和 TF-KSURF 的多测度青铜器铭文相似性度量方法 ..... 商立丽, 王慧琴, 王可, 等 0810009  
基于多特征融合和混合卷积网络的高光谱图像分类 ..... 冯凡, 王双亭, 张津, 等 0810010  
基于单列深度时空卷积神经网络的人群计数 ..... 鱼春燕, 徐岩, 缪丽莎, 等 0810011  
多尺度特征融合的安检图像危险品检测 ..... 王昱晓, 张良 0810012  
基于光衰减先验和背景光融合的水下图像复原 ..... 林继强, 郁梅, 徐海勇, 等 0810013  
一种低重叠率的三维点云配准方法 ..... 张元, 李晓燕, 韩燮 0810014  
基于透视变换的 3D 柱面失真快速响应码修复算法 ..... 苏育挺, 严昌飞, 刘婧 0810015  
光阑法变口径离子束修形仿真研究 ..... 康乐, 蒋世磊, 孙国斌, 等 0810016  
室内场景下弱纹理物体三维重建算法的研究 ..... 张庆鹏, 曹宇 0810017  
基于区域自我注意力的实时语义分割网络 ..... 鲍海龙, 万敏, 刘忠祥, 等 0810018  
基于 YOLO-Mask 算法的口罩佩戴检测方法 ..... 曹城硕, 袁杰 0810019  
一种级联改进 U-Net 网络的脑肿瘤分割方法 ..... 褚晶辉, 黄凯隆, 吕卫 0810020  
基于分数阶微分的噪声图像 NSCT 域边缘检测 ..... 陈骏懿, 廖一鹏 0810021  
少样本条件下基于生成对抗网络的遥感图像数据增强 ..... 姜雨辰, 朱斌 0810022  
基于改进 Xception 迁移学习的野生菌种类识别研究 ..... 陈德刚, 艾孜尔古丽, 尹鹏博, 等 0810023  
任意步长两步相移法的鲁棒高精度相位解算方法 ..... 尹卓异, 刘聪, 赖立钊, 等 0810024  
基于 Pearson 相关系数的图像误匹配点剔除算法 ..... 李硕, 韩迎东, 王双, 等 0810025

• 成像系统 •

- 基于光度立体成像与灰度值变化的签名笔迹检验 ..... 周鹏, 高树辉 0811001  
基于多重连接特征金字塔的 SAR 图像舰船目标检测 ..... 徐志京, 黄海 0811002  
菲佐干涉仪可变波长标准球面镜头设计 ..... 王艳, 张齐元, 王全召, 等 0811004

## • 仪器, 测量与计量 •

- 基于 OCAE-SOM 的室内指纹定位算法研究 ..... 李新春, 纪小璐, 魏武, 等 0812001  
分区间曲线拟合的干涉条纹中心点提取方法 ..... 张瑞峰, 刘畅 0812002

• 激光器与激光光学 •

- 基于机器视觉的激光智能去除锈蚀的研究 ..... 张晓, 王明媚, 刘金聪, 等 0814001

• 机器视觉 •

- 基于 LSD 算法的链篦机台车侧板偏移检测 ..... 王月明, 李真如, 瞿容清, 等 0815001  
基于改进生成对抗网络的铝板缺陷电涡流检测图像分割 ..... 张琦, 叶波, 罗思琦, 等 0815002  
基于多尺度密集网络的配网架空输电线路绝缘子识别 ..... 陈志豪, 肖业伟, 李志强, 等 0815003  
高置信度的尺度自适应核相关跟踪方法 ..... 李福进, 刘慧慧, 任红格, 等 0815004  
基于 LFMCW 雷达多目标检测的 CA-CFAR 改进算法 ..... 孙宾宾, 沈涛, 李洪鹏, 等 0815005  
微小型光学元件尺寸的视觉测量系统研制 ..... 赵美丹, 余桂英, 瞿永顺, 等 0815006  
基于卷积神经网络的车道线实例分割算法 ..... 周苏, 吴迪, 金杰 0815007  
基于加权 Schatten- $p$  范数与结构稀疏分解的视频前背景分离 ..... 魏玉峰, 景明利, 李岚, 等 0815008

• 医用光学与生物技术 •

- 基于改进 Inception 模型的乳腺癌病理学图像分类 李赵旭, 宋涛, 葛梦飞, 等 0817001

• 光计算 •

- 基于  $10.6 \mu\text{m}$  波长的小型化非线性全光衍射深度神经网络建模方法 ..... 孙一宸, 董明利, 于明鑫, 等 0820001

• 光学设计与制造 •

- 金属桶内底部缺陷检测照明方案仿真研究 ..... 瞿永顺, 余桂英, 张宝武, 等 0822001

• 遥感与传感器 •

- 基于点线面混合控制基元的点云地理化 ..... 王家晖, 姚吉利, 赵雪莹, 等 0828001  
基于连续小波系数的叶绿素 a 浓度估测模型 ..... 彭咏石, 陈水森, 陈金月, 等 0828002  
基于覆盖路径弧的无人机桥梁激光扫描路径规划 ..... 刘春磊, 张宏立, 王聪 0828003

• 光谱学 •

- 基于荧光光谱的鲜茶叶叶绿素含量定量分析 ..... 刘燕德, 林晓东, 高海根, 等 0830001  
人工老化小麦种子的红外光谱鉴别 ..... 刘杰, 刘刚, 李姝洁, 等 0830002  
鞋底材料的差分拉曼光谱可视化快速鉴别 ..... 张进, 姜红, 刘峰, 等 0830004

Decorative border pattern featuring a repeating geometric motif of diamonds and circles.

### 封面解读

“沉睡三千年，一醒惊天下”，三星堆文物通过结构光三维测量技术实现文物三维数字化，用科技穿越时空阻隔，三千年的岁月积淀，通过毫/微秒速度、毫/微米精度的实时三维成像技术更立体展现出古蜀文明的智慧。

# Laser & Optoelectronics Progress

## — Advanced Imaging —

Vol. 58, No. 8 (Series No. 691) April 2021

## CONTENTS

### · Reviews ·

- Real-Time Three-Dimensional Imaging Technique Based on Phase-Shift Fringe Analysis: A Review(Cover Paper, Invited)  
..... Guo Wenbo, Zhang Qican, Wu Zhoujie 0800001
- Research Progress of Early Disease Detection Technology Based on Infrared Thermography  
..... Zhao Mingzhu, Zhang Yan, Zhu Yingyan 0800002
- Brief Introduction of Cr<sup>3+</sup>-Doped Persistent Luminescence Nanoparticles in Biomedical Applied Research  
..... Yang Qianting, Renagul Abdurahman, Yan Yin, et al. 0800003
- ### · Image Processing ·
- Image Enhancement Based on Dual-Channel Prior and Illumination Map Guided Filtering ..... Zhao Xinyu, Huang Fuzhen 0810001
- Saliency Detection Model for Stereoscopic Panoramic Images ..... Qiu Miaomiao, Chai Xiongli, Shao Feng 0810002
- Yolo-C: One-Stage Network for Prohibited Items Detection Within X-Ray Images ... Guo Shouxiang, Zhang Liang 0810003
- Improved Algorithm for High-Resolution Image Stitching Based on ORB Features  
..... Liu Tianci, Song Yansong, Li Jinwang, et al. 0810004
- Image Reconstruction Algorithm Based on Improved Super-Resolution Generative Adversarial Network  
..... Zha Tibo, Luo Lin, Yang Kai, et al. 0810005
- Weighted FCM Clustering Algorithm Based on Jeffrey Divergence Similarity Measure  
..... Wu Chenwen, Ma Ning, Jiang Yufan 0810006
- SAR Image Target Recognition Based on Improved Residual Attention Network  
..... Shi Baodai, Zhang Qin, Li Yao, et al. 0810008
- Multi-Measure Similarity Method for Interpreting Bronze Inscriptions Based on Hu Moment and TF-KSURF  
..... Shang Lili, Wang Huiqin, Wang Ke, et al. 0810009
- Hyperspectral Images Classification Based on Multi-Feature Fusion and Hybrid Convolutional Neural Networks  
..... Feng Fan, Wang Shuangting, Zhang Jin, et al. 0810010
- Crowd Counting Based on Single-Column Deep Spatiotemporal Convolutional Neural Network  
..... Yu Chunyan, Xu Yan, Gou Lisha, et al. 0810011
- Dangerous Goods Detection Based on Multi-Scale Feature Fusion in Security Images ... Wang Yuxiao, Zhang Liang 0810012
- Underwater Image Restoration Based on Light Attenuation Prior and Background Light Fusion  
..... Lin Jiqiang, Yu Mei, Xu Haiyong, et al. 0810013
- Three-Dimensional Point Cloud Registration Method with Low Overlap Rate ... Zhang Yuan, Li Xiaoyan, Han Xie 0810014
- Restoring 3D Cylindrically Distorted QR Code Based on Perspective Transformation  
..... Su Yuting, Yan Changfei, Liu Jing 0810015
- Simulation Study on Ion Beam Polishing with Changing Aperture by Diaphragm Method  
..... Kang Le, Jiang Shilei, Sun Guobin, et al. 0810016
- Research on Three-Dimensional Reconstruction Algorithm of Weak Textured Objects in Indoor Scenes  
..... Zhang Qingpeng, Cao Yu 0810017
- Real-Time Semantic Segmentation Network Based on Regional Self-Attention  
..... Bao Hailong, Wan Min, Liu Zhongxiang, et al. 0810018
- Mask-Wearing Detection Method Based on YOLO-Mask ..... Cao Chengshuo, Yuan Jie 0810019
- A Method for Brain Tumor Segmentation Using Cascaded Modified U-Net ... Chu Jinghui, Huang Kailong, Lü Wei 0810020
- Edge Detection of Noisy Images in NSCT Domain Based on Fractional Differentiation ... Chen Junxie, Liao Yipeng 0810021
- Data Augmentation for Remote Sensing Image Based on Generative Adversarial Networks Under Condition of Few Samples  
..... Jiang Yuchen, Zhu Bin 0810022
- Research on Identification of Wild Mushroom Species Based on Improved Xception Transfer Learning  
..... Chen Degang, Azragul, Yin Pengbo, et al. 0810023
- Robust High-Precision Phase Solution Method Based on Two-Step Phase-Shifting Method with Arbitrary Step Length  
..... Yin Zhuoyi, Liu Cong, Lai Lizhao, et al. 0810024

Algorithm for Eliminating Mismatched Points Based on Pearson Correlation Coefficient	..... Li Shuo , Han Yingdong , Wang Shuang , et al . 0810025
<b>· Imaging Systems ·</b>	
Signature Handwriting Examination Based on Photometric Stereo Imaging and Change of Gray Value	..... Zhou Peng , Gao Shuhui 0811001
Ship Detection in SAR Image Based on Multiple Connected Features Pyramid Network	..... Xu Zhijing , Huang Hai 0811002
Design of Wavelength-Variable Standard Spherical Lens in Fizeau Interferometer	..... Wang Yan , Zhang Qiyuan , Wang Quanzhao , et al . 0811004
<b>· Instrumentation, Measurement and Metrology ·</b>	
Research on Fingerprint Location Algorithm Based on OCAE-SOM	..... Li Xinchun , Ji Xiaolu , Wei Wu , et al . 0812001
Interference Fringe Center Point Extraction Method Based on Interval Curve Fitting	..... Zhang Ruifeng , Liu Chang 0812002
<b>· Lasers and Laser Optics ·</b>	
Laser Intelligent Rust Removal Based on Machine Vision	..... Zhang Xiao , Wang Mingdi , Liu Jincong , et al . 0814001
<b>· Machine Vision ·</b>	
Side Plate Offset Detection of Grate Trolley Based on LSD Algorithm	..... Wang Yueming , Li Zhenru , Zhai Rongqing , et al . 0815001
Aluminum Plate Defect Image Segmentation Using Improved Generative Adversarial Networks for Eddy Current Detection	..... Zhang Qi , Ye Bo , Luo Siqi , et al . 0815002
Insulators Identification for Overhead Transmission Lines in Distribution Networks Based on Multi-Scale Dense Network	..... Chen Zhihao , Xiao Yewei , Li Zhiqiang , et al . 0815003
Scale Adaptive Kernel Correlation Tracking Method with High Confidence	..... Li Fujin , Liu Huihui , Ren Hongge , et al . 0815004
Improved CA-CFAR Algorithm Based on LFMCW Radar Multi-Target Detection	..... Sun Binbin , Shen Tao , Li Hongpeng , et al . 0815005
Development of Visual Size-Measurement System for Micro-Optical Components	..... Zhao Meidam , Yu Guiying , Qu Yongshun , et al . 0815006
Lane Instance Segmentation Algorithm Based on Convolutional Neural Network	..... Zhou Su , Wu Di , Jin Jie 0815007
Video Foreground-Background Separation via Weighted Schatten- $p$ Norm and Structured Sparsity Decomposition	..... Wei Yufeng , Jing Mingli , Li Lan , et al . 0815008
<b>· Medical Optics and Biotechnology ·</b>	
Breast Cancer Classification from Histopathological Images Based on Improved Inception Model	..... Li Zhaoxu , Song Tao , Ge Mengfei , et al . 0817001
<b>· Optics in Computing ·</b>	
Modeling Method of Miniaturized Nonlinear All-Optical Diffraction Deep Neural Network Based on 10.6 $\mu\text{m}$ Wavelength	..... Sun Yichen , Dong Mingli , Yu Mingxin , et al . 0820001
<b>· Optical Design and Fabrication ·</b>	
Simulation Research on Illumination Scheme for Bottom Defect Detection of Metal Barrel	..... Qu Yongshun , Yu Guiying , Zhang Baowu , et al . 0822001
<b>· Remote Sensing and Sensors ·</b>	
Point Cloud Georeferencing Based on Fixed Control Primitives of Point, Line, and Surface	..... Wang Jiahui , Yao Jili , Zhao Xueying , et al . 0828001
Estimation Model of Chlorophyll-a Concentration Based on Continuous Wavelet Coefficient	..... Peng Yongshi , Chen Shuisen , Chen Jinyue , et al . 0828002
UAV Bridge Laser Scanning Path Planning Based on Coverage Path Arcs	..... Liu Chunlei , Zhang Hongli , Wang Cong 0828003
<b>· Spectroscopy ·</b>	
Quantitative Analysis of Chlorophyll Content in Tea Leaves by Fluorescence Spectroscopy	..... Liu Yande , Lin Xiaodong , Gao Haigen , et al . 0830001
Infrared Spectroscopy Identification of Artificially Aging Wheat Seeds	..... Liu Jie , Liu Gang , Li Shujie , et al . 0830002
Differential Raman Spectroscopy Visualization and Rapid Identification of Shoe Sole Materials	..... Zhang Jin , Jiang Hong , Liu Feng , et al . 0830004

# 激光与光电子学进展

Laser & Optoelectronics Progress

特别专辑

“先进成像”封面文章

2020年



万方数据

中国科学院上海光学精密机械研究所 主办