

# 激光与光电子学进展

Laser &amp; Optoelectronics Progress

[总第703期]

第 58 卷  
第 20 期

2021.10(下)



Q K 2 1 4 6 3 8 6

# 激光与光电子学进展

## ——先进成像——

第 58 卷 第 20 期 2021 年 10 月 25 日

(总第 703 期)

## 目 次

### · 综述 ·

- 组织光透明技术在骨透明化中的生物医学成像应用与展望 ..... 周康为, 杨林海, 邱棋, 等 2000001  
片上光谱成像系统研究进展及应用综述 ..... 王飞, 余晓畅, 罗青伶, 等 2000002

### · 大气光学与海洋光学 ·

- 基于高光谱数据波段选择的茅洲河悬浮物浓度反演 ..... 陈仲楷, 厉小润, 赵辽英 2001001  
基于显著性特征和 DCNN 的高分遥感影像场景分类 ..... 吕欢欢, 刘涛, 张辉, 等 2001002  
基于偏振检测技术的海面太阳耀光抑制方法 ..... 邓宇, 付强, 张肃, 等 2001003

### · 探测器 ·

- 基于残差和高频替换的 SONY-RGBW 阵列彩色重构方法 ..... 王海琳, 韩正昊, 李力, 等 2004001

### · 傅里叶光学与信号处理 ·

- 基于优化变分模态分解算法的回波信号去噪 ..... 王祺, 王小鹏, 王博辉 2007001

### · 图像处理 ·

- 一种改进的激光点云滤波算法 ..... 韩浩宇, 张元, 韩燮 2010001  
基于改进的 ResNet 手指静脉识别 ..... 汪凯旋, 陈光化, 褚洪佳 2010002  
基于 U-Net 网络的结构光三维测量术 ..... 张子超, 张宗华, 高楠, 等 2010003  
基于 NSST 与 IFCNN 的红外可见光图像融合算法 ..... 杨艳春, 高晓宇, 党建武, 等 2010004  
融合场景上下文的轻量级目标检测网络 ..... 刘婷婷, 苗华, 李琳, 等 2010005  
基于改进双流网络结构的视觉里程计 ..... 张海东, 徐一鸣, 王栗, 等 2010006  
基于改进双线性细粒度模型的压板状态识别 ..... 杨倩文, 周克 2010007  
基于 U-Net 和胶囊网络的合成孔径雷达图像语义分割 ..... 敬绍迪, 喻玲娟, 胡跃虹, 等 2010009  
基于自编码器的显微图像色彩恒常算法 ..... 蓝方鸣, 彭宗举, 陆志华, 等 2010010  
基于暗通道先验的去雾算法研究 ..... 蒲亨飞, 李震, 李良荣 2010011  
融合注意力的生成式对抗网络单图像超分辨率重建 ..... 彭晏飞, 张平甲, 高艺, 等 2010012  
基于改进 CenterNet 的航拍图像目标检测算法 ..... 许延雷, 梁继然, 董国军, 等 2010013  
NSST 域红外和可见光图像感知融合 ..... 李威, 李忠民 2010014  
基于卷积神经网络的砂石骨料分类方法研究 ..... 鄢然, 廖记登, 吴小勇, 等 2010015  
基于截距直方图和 Otsu 融合的弱光图像分割 ..... 曾艳阳, 谢高森, 张建春 2010016  
基于 SURF 和半色调映射加密的彩色零水印算法 ..... 胡森, 吴德阳, 仲美玉, 等 2010017  
基于小波变换的迭代融合去雾算法 ..... 韦春苗, 徐岩, 李媛 2010018  
双分辨率注意力网络行人重识别 ..... 胡佳杰, 李春庚, 安居白, 等 2010019  
基于结构属性的鸟金体藏文古籍字符切分 ..... 张策, 王维兰 2010020  
多特征信息融合的人群密度估计方法 ..... 孟月波, 陈宣润, 刘光辉, 等 2010021

### · 成像系统 ·

- 傍轴光学系统的相干光成像计算 (封面文章·特邀研究论文) ..... 李俊昌, 彭祖杰, 桂进斌, 等 2011001  
CMOS 图像传感器像元 MTF 与 SNR 设计方法 ..... 王耕耘, 谢莉莉, 卜洪波 2011002  
超多视点的大视角光场三维显示方法 ..... 杨乐, 任石青, 焦冬秀, 等 2011003  
基于自寻优归一化最小均方误差算法的非接触式心率测量方法研究 ..... 吴芬, 彭力, 韩鹏, 等 2011004

### · 仪器, 测量与计量 ·

- 基于线阵图像傅里叶与灰度匹配算法的三维测量 ..... 杨凌辉, 杨金成, 廖瑞颖, 等 2012001  
基于图像-点云映射的铆钉平齐度高效检测 ..... 国荣辉, 张益华, 崔海华, 等 2012002

### · 激光器与激光光学 ·

- 基于卷积模块注意力机制深度学习模型的激光熔覆裂纹识别 ..... 崔陆军, 李海洋, 郭士锐, 等 2014001

- 激光三角网格点云孔洞曲面修补方法 ..... 崔文, 陈辉, 刘万泉 2014002

### · 机器视觉 ·

- 基于双通道生成对抗网络的镜片缺陷数据增强 ..... 孟奇, 苗华, 李琳, 等 2015001

- 结合缓冲区与三元组损失的孪生网络目标跟踪 ..... 郭嘉, 王鹏, 杨永侠, 等 2015002

- 基于无监督网络的手机屏幕缺陷分割方法 ..... 代朝东, 许国良, 毛骄, 等 2015003

- 基于改进沙漏网络的人体姿态估计模型 ..... 刘红, 马杰, 柴玉晶 2015004

- 基于多方向结构张量积的快速角点检测算法 ..... 李宁, 景军锋, 章为川, 等 2015005

- 基于双流网络与多示例学习的异常事件检测 ..... 杨先斌, 党建武, 王松, 等 2015006

- 基于 ASRPCA 和五帧差分融合的无人机检测研究 ..... 李娜, 樊宽刚, 刘亚辉, 等 2015007

- 基于优化三维变形模型参数的人脸重建方法 ..... 张红颖, 杨维民, 王汇三 2015008

- 基于双目视觉极线补偿的圆孔位姿检测方法 ..... 陈金友, 关志伟 2015009

### · 医用光学与生物技术 ·

- 多尺度注意力解析网络的视网膜血管分割方法 ..... 罗文劫, 韩国庆, 田学东 2017001

- 基于 NSCT 与 DWT 的 PCNN 医学图像融合 ..... 赵贺, 张金秀, 张正刚 2017002

### · 光计算 ·

- 改进的编码-解码时序动作检测算法 ..... 王玥, 苏寒松, 刘高华 2020001

### · 遥感与传感器 ·

- 基于深度学习和空间分析的港口识别 ..... 李泽明, 程亮, 朱大明, 等 2028002

- 基于机器人激光定位的一种改进 AMCL 算法 ..... 冯佳萌, 裴东, 邹勇, 等 2028003

- 基于 CAFF-PointNet 的机载 LiDAR 点云语义分割 ..... 赖鸣, 赵健康, 刘传奇, 等 2028004

- 基于 RDA-Net 模型的遥感影像云与云阴影检测方法 ..... 张晨, 张秀再, 杨昌军 2028005

- 基于 YOLOv3 的光学遥感图像目标检测算法 ..... 汪鹏, 辛雪静, 王利琴, 等 2028006

### · 光谱学 ·

- 基于高光谱遥感技术的伪装材料的光谱特性分析 ..... 付严宇, 杨桃, 李德军, 等 2030003

XX

## 封面解读

本论文介绍的相干光成像计算理论改写了 50 多年来国内外一成不变的近似计算理论。该理论适用于由  $2 \times 2$  矩阵元素 ABCD 描述的任意成像系统。在祖国 72 华诞之际, 遵照“把论文写在祖国大地上”的精神, 以长城为背景, 绘制论文的成像光路实例, 坚持“实践是检验真理的唯一标准”将理论进行了实验证明。

# Laser & Optoelectronics Progress

## — Advanced Imaging —

Vol. 58, No. 20 (Series No. 703) October 25, 2021

## CONTENTS

### · Reviews ·

- Bone Transparency Imaging Using Tissue Optical Clearing Technique ..... Zhou Kangwei, Yang Linhai, Qiu Qi, et al. 2000001

- Research Progress and Applications of Spectral Imaging System on Chip ..... Wang Fei, Yu Xiaochang, Luo Qingling, et al. 2000002

### · Atmospheric Optics and Oceanic Optics ·

- Inversion of Suspended Particulate Matter Concentration in Maozhou River Based on Band Selection of Hyperspectral Data ..... Chen Zhongkai, Li Xiaorun, Zhao Laoying 2001001

- High-Resolution Remote Sensing Scene Classification Based on Salient Features and DCNN ..... Lü Huanhuan, Liu Tao, Zhang Hui, et al. 2001002

- Method of Suppressing Sea Surface Solar Flare Based on Polarization Detection Technology ..... Deng Yu, Fu Qiang, Zhang Su, et al. 2001003

### · Detectors ·

- Residual and High-frequency Replacement Based Color Reconstruction Method for SONY-RGBW Array ..... Wang Hailin, Han Zhenghao, Li Li, et al. 2004001

### · Fourier Optics and Signal Processing ·

- Echo Signal Denoising Based on Optimized Variational Mode Decomposition Algorithm ..... Wang Qi, Wang Xiaopeng, Wang Bohui 2007001

### · Image Processing ·

- Improved Laser Point Cloud Filtering Algorithm ..... Han Haoyu, Zhang Yuan, Han Xie 2010001

- Finger Vein Recognition Based on Improved ResNet ..... Wang Kaixuan, Chen Guanghua, Chu Hongjia 2010002

- U-Net-based Structured Light Three-dimensional Measurement Technology ..... Zhang Zichao, Zhang Zonghua, Gao Nan, et al. 2010003

- Infrared and Visible Images Fusion Algorithm Based on NSST and IFCNN ..... Yang Yanchun, Gao Xiaoyu, Dang Jianwu, et al. 2010004

- Lightweight Target Detection Network Integrating Scene Context ..... Liu Tingting, Miao Hua, Li Lin, et al. 2010005

- Visual Odometry Based on Improved Dual-Stream Network Structure ..... Zhang Haidong, Xu Yiming, Wang Li, et al. 2010006

- Press-Plate State Recognition Based on Improved Bilinear Fine-Grained Model ..... Yang Qianwen, Zhou Ke 2010007

- Semantic Segmentation of Synthetic Aperture Radar Images Based on U-Net and Capsule Network ..... Jing Shaodi, Yu Lingjuan, Hu Yuehong, et al. 2010009

- Color Constancy Algorithm of Microscopic Images Based on Autoencoder ..... Lan Fangming, Peng Zongju, Lu Zhihua, et al. 2010010

- Research of Dehazing Algorithm Based on Dark Channel Prior ..... Pu Hengfei, Li Zhen, Li Liangrong 2010011

- Attention Fusion Generative Adversarial Network for Single-Image Super-Resolution Reconstruction ..... Peng Yanfei, Zhang Pingjia, Gao Yi, et al. 2010012

- Aerial Image Target Detection Algorithm Based on Improved CenterNet ..... Xu Yanlei, Liang Jiran, Dong Guojun, et al. 2010013

- NSST-Based Perception Fusion Method for Infrared and Visible Images ..... Li Wei, Li Zhongmin 2010014

- Research on Classification Method of Sand and Gravel Aggregate Based on Convolutional Neural Network ..... Yan Ran, Liao Jideng, Wu Xiaoyong, et al. 2010015

- Weak-Light Image Segmentation Based on Intercept Histogram and Otsu Fusion ..... Zeng Yanyang, Xie Gaosen, Zhang Jianchun 2010016

- Color Zero-Watermarking Algorithm Based on SURF and Halftone Mapping Encryption ..... Hu Sen, Wu Deyang, Zhong Meiyu, et al. 2010017

- Iterative Fusion Defogging Algorithm Based on Wavelet Transform ..... Wei Chunmiao, Xu Yan, Li Yuan 2010018

- Double-Resolution Attention Network for Person Re-Identification ..... Hu Jiajie, Li Chungeng, An Jubai, et al. 2010019

- Character Segmentation for Historical Uchen Tibetan Document Based on Structure Attributes ..... Zhang Ce, Wang Weilan 2010020

Crowd Density Estimation Method Based on Multi-Feature Information Fusion	Meng Yuebo , Chen Xuanrun , Liu Guanghui , et al . 2010021
<b>· Imaging Systems ·</b>	
Calculation of Coherent Light Imaging in Paraxial Optical System (Cover Paper, Invited)	Li Junchang , Peng Zujie , Gui Jinbin , et al . 2011001
Design Method of Pixel Modulation Transfer Function and Signal-to-Noise Ratio for CMOS Image Sensor	Wang Gengyun , Xie Lili , Bu Hongbo 2011002
Light Field Three-Dimensional Display with Super Multiple Viewpoints and Large Viewing Angle	Yang Le , Ren Shiqing , Jiao Dongxiu , et al . 2011003
Research on Non-Contact Heart Rate Measurement Method Based on Self-Optimizing Normalized Least Mean Square Algorithm	Wu Fen , Peng Li , Han Peng , et al . 2011004
<b>· Instrumentation, Measurement and Metrology ·</b>	
Three-Dimensional Measurement Based on Line-Scan Image Fourier and Grayscale Matching Algorithm	Yang Linghui , Yang Jincheng , Liao Ruiying , et al . 2012001
An Efficient Rivet Flushness Measurement Method Based on Image-to-Point-Cloud Mapping	Guo Ronghui , Zhang Yihua , Cui Haihua , et al . 2012002
<b>· Lasers and Laser Optics ·</b>	
Laser Cladding Cracks Recognition Based on Deep Learning Combined Convolutional Block Attention Module	Cui Lujun , Li Haiyang , Guo Shirui , et al . 2014001
Hole Surface Repairing for Laser Triangular Mesh Point Cloud	Cui Wen , Chen Hui , Liu Wanquan 2014002
<b>· Machine Vision ·</b>	
Data Enhancement of Lens Defect Based on Dual Channel Generative Adversarial Networks	Meng Qi , Miao Hua , Li Lin , et al . 2015001
Siamese Network Target Tracking Based on Buffer and Triplet Loss	Guo Jia , Wang Peng , Yang Yongxia , et al . 2015002
Cell Phone Screen Defect Segmentation Based on Unsupervised Network	Dai Chaodong , Xu Guoliang , Mao Jiao , et al . 2015003
Human Pose Estimation Model Based on Improved Hourglass Network	Liu Hong , Ma Jie , Chai Yujing 2015004
Fast Corner Detection Based on Multi-Directional Structure Tensor	Li Ning , Jing Junfeng , Zhang Weichuan , et al . 2015005
Anomaly Event Detection Based on Two-Stream Network and Multi-instance Learning	Yang Xianbin , Dang Jianwu , Wang Song , et al . 2015006
Unmanned Aerial Vehicle Detection Based on ASRPCA Fused with Five-Frame Difference	Li Na , Fan Kuangang , Liu Yahui , et al . 2015007
Face Reconstruction Method Based on Optimized Three-Dimensional Morphable Model Parameters	Zhang Hongying , Yang Weimin , Wang Huisan 2015008
Circular Hole Pose Measurement Method Based on Binocular Vision Epipolar Compensation	Chen Jinyou , Guan Zhiwei 2015009
<b>· Medical Optics and Biotechnology ·</b>	
Retinal Vessel Segmentation Method Based on Multi-Scale Attention Analytic Network	Luo Wenjie , Han Guoqing , Tian Xuedong 2017001
PCNN Medical Image Fusion Based on NSCT and DWT	Zhao He , Zhang Jinxiu , Zhang Zhenggang 2017002
<b>· Optics in Computing ·</b>	
Improved Encoder-Decoder Temporal Action Detection Algorithm	Wang Yue , Su Hansong , Liu Gaohua 2020001
<b>· Remote Sensing and Sensors ·</b>	
Deep Learning and Spatial Analysis Based Port Detection	Li Zeming , Cheng Liang , Zhu Daming , et al . 2028002
An Improved AMCL Algorithm Based on Robot Laser Localization	Feng Jiameng , Pei Dong , Zou Yong , et al . 2028003
Semantic Segmentation of LiDAR Point Cloud Based on CAFF-PointNet	Lai Ming , Zhao Jiankang , Liu Chuansi , et al . 2028004
Remote Sensing Image Cloud and Cloud Shadow Detection Method Based on RDA-Net Model	Zhang Chen , Zhang Xiuzai , Yang Changjun 2028005
Object Detection Algorithm of Optical Remote Sensing Images Based on YOLOv3	Wang Peng , Xin Xuejing , Wang Liqin , et al . 2028006
<b>· Spectroscopy ·</b>	
Spectral Characteristics of Camouflage Materials Based on Hyperspectral Remote Sensing	Fu Yanyu , Yang Guang , Li Dejun , et al . 2030001

# 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