

# 电子与信息学报

DIANZI YU XINXI XUEBAO

第44卷第10期

2022年10月

## 目次

### “恶劣环境下的图像处理技术”专题

- 基于迭代交替优化的图像盲超分辨率重建 ..... 陈洪刚, 李自强, 张永飞, 王正勇, 卿粼波, 何小海 (3343)
- 基于多尺度级联网络的水下图像增强方法 ..... 米泽田, 晋洁, 李圆圆, 丁雪妍, 梁政, 付先平 (3353)
- 基于背景光修正成像模型的水下图像复原 ..... 周妍, 顾鑫涛, 李庆武 (3363)
- 基于改进SSD的水下光学图像感兴趣目标检测算法研究 .....  
..... 李宝奇, 黄海宁, 刘纪元, 刘正君, 韦琳哲 (3372)
- 基于双重迭代的零样本低照度图像增强 ..... 向森, 王应锋, 邓慧萍, 吴谨, 喻莉 (3379)
- 基于特征解耦的无监督水下图像增强 ..... 刘彦呈, 董张伟, 朱鹏莅, 刘么源 (3389)
- 基于移位窗口多头自注意力U型网络的低照度图像增强方法 ..... 孙帮勇, 赵兴运, 吴思远, 于涛 (3399)
- 基于多先验约束和一致性正则的半监督图像去雾算法 .....  
..... 苏延召, 何川, 崔智高, 姜柯, 蔡艳平, 李艾华 (3409)
- 一种基于YOLOv3的水下声呐图像目标检测方法 ..... 王非, 王欣宇, 周景春, 刘森 (3419)
- 基于迁移学习的三子网图像去雾方法 ..... 武明虎, 丁畅, 王娟, 陈关海, 刘子杉, 郭力权 (3427)

### 模式识别与智能信息处理

- 基于轻量级U-Net深度学习的人体安检隐匿违禁物的实时检测 ..... 李连伟, 秦世引 (3435)
- 基于fMRI功能网络和贝叶斯矩阵分解的脑电源成像方法 ..... 刘柯, 杨东, 邓欣 (3447)
- 标签敏感的多重集正交相关特征融合方法 ..... 赵前进, 平昕瑞, 苏树智, 谢军 (3458)
- 行人轨迹预测条件端点局部目的地池化网络 ..... 毛琳, 解云娇, 杨大伟, 张汝波 (3465)
- 基于超宽带阵列与里程计的多机器人相对定位 ..... 刘冉, 曹志强, 邓天睿, 邓忠元, 肖宇峰 (3476)

### 无线通信与物联网

- 一种基于嵌套晶格码的MIMO中继多用户矢量预编码设计 ..... 姜华, 焦军彩, 都思丹 (3485)
- 多标签无线供电反向散射通信网络能效优化算法 ..... 徐勇军, 杨浩克, 李国军, 陈前斌 (3492)
- 基于联合特征参数的卫星单-混信号调制识别研究 ..... 杨洪娟, 时统志, 李博, 赵楠, 王钢 (3499)
- 基于信噪比分类网络的调制信号分类识别算法 ..... 郭业才, 姚文强 (3507)
- VLC-WiFi异构网络QoS感知的跨层动态资源分配 .....  
..... 刘焕淋, 张彤, 陈勇, 蒲欣, 黄冰川, 龚萧楠 (3516)
- 基于3D电子地图和信道实测数据的市区路径损耗机器学习模型研究 .....  
..... 耿绥燕, 胡玮, 丁海成, 钱肇钧, 赵雄文 (3524)
- 一种基于联邦学习资源需求预测的虚拟网络功能迁移算法 ..... 唐伦, 吴婷, 周鑫隆, 陈前斌 (3532)

### 雷达、声呐与导航

- 非理想正交波形下分布式ISAR运动目标二维成像方法 ..... 李媛媛, 付耀文, 张文鹏, 杨威 (3541)
- 小卫星健康状态自主模糊综合评估方法 ..... 周治国, 马文浩, 刘杰强, 冯荣尉 (3553)

基于高斯原型网络的小样本逆合成孔径雷达目标识别 .....	杨敏佳, 白雪茹, 刘士豪, 曾磊, 周峰	(3566)
椭圆球面波信号Wigner-Ville分布显式渐近求解方法 .....	王红星, 赵乐源, 陆发平, 刘传辉, 康家方	(3574)
基于调频连续波雷达的多维信息特征融合人体姿势识别方法 .....	冯心欣, 李文龙, 何兆, 郑海峰	(3583)
基于天波重构技术的eLORAN信号周期识别算法 .....	刘时尧, 华宇, 张首刚	(3592)

## 密码学与信息安全

改进型Logistic混沌映射及其在图像加密与隐藏中的应用 .....	刘公致, 吴琼, 王光义, 靳培培	(3602)
基于国产密码算法SM9的可追踪属性签名方案 .....	唐飞, 凌国玮, 单进勇	(3610)
智能车载自组织网络中匿名在线注册与安全认证协议 .....	张晓均, 王文琛, 付红, 牟黎明, 许春香	(3618)
一种基于无证书的多方合同签署协议的安全性分析与改进 .....	杨小东, 李梅娟, 任宁宁, 田甜, 王彩芬	(3627)
基于变步长约瑟夫遍历和DNA动态编码的图像加密算法的安全性分析 .....	冯伟, 张靖, 秦振涛, 何怡刚	(3635)
两类极小二元线性码的构造 .....	杜小妮, 胡金霞, 金文刚, 孙彦中	(3643)

## 电路与系统设计

一种高效的前向纠错码桶分配DNA存储解码方法 .....	咎乡镇, 姚翔宇, 许鹏, 陈智华, 石晓龙, 李树栋, 刘文斌	(3650)
具有艾宾浩斯遗忘规则的忆阻联想记忆电路 .....	李志军, 谭茂林, 王梦蛟, 马铭磷	(3657)
基于谐振器慢波传输线的小型化宽阻带谐波抑制功分器 .....	黄文, 李靓, 董金生, 谭菲, 任仪	(3666)
基于变分模式分解和门循环单元的电子系统间歇故障严重程度评估方法 .....	李晟, 徐飞洋, 李玉晓, 刘松华, 张文生, 郭肇禄	(3673)

## 综述评论

差分混沌通信研究综述: 信号设计与性能优化 .....	蔡相明, 徐位凯, 王琳	(3683)
基于深度学习的YOLO目标检测综述 .....	邵延华, 张铎, 楚红雨, 张晓强, 饶云波	(3697)

# JOURNAL OF ELECTRONICS & INFORMATION TECHNOLOGY

Vol.44 No.10 October 2022

## CONTENTS

### Special Topic on Image Processing Technology in Poor Environment

- Blind Image Super-resolution Reconstruction via Iterative and Alternative Optimization ..... *CHEN Honggang, LI Ziqiang, ZHANG Yongfei, WANG Zhengyong, QING Linbo, HE Xiaohai* (3343)
- Underwater Image Enhancement Method Based on Multi-scale Cascade Network ..... *MI Zetian, JIN Jie, LI Yuanyuan, DING Xueyan, LIANG Zheng, FU Xianping* (3353)
- Underwater Image Restoration Based on Background Light Corrected Image Formation Model ..... *ZHOU Yan, GU Xintao, LI Qingwu* (3363)
- Underwater Optical Image Interested Object Detection Model Based on Improved SSD ..... *LI Baoqi, HUANG Haining, LIU Jiyuan, LIU Zhengjun, WEI Linzhe* (3372)
- Zero-shot Learning for Low-light Image Enhancement Based on Dual Iteration ..... *XIANG Sen, WANG Yingfeng, DENG Huiping, WU Jin, YU Li* (3379)
- Unsupervised Underwater Image Enhancement Based on Feature Disentanglement ..... *LIU Yancheng, DONG Zhangwei, ZHU Pengli, LIU Siyuan* (3389)
- Low-light Image Enhancement Method Based on Shifted Window Multi-head Self-attention U-shaped Network ..... *SUN Bangyong, ZHAO Xingyun, WU Siyuan, YU Tao* (3399)
- Semi-supervised Image Dehazing Algorithm Based on Multi-prior Constraint and Consistency Regularization ..... *SU Yanzhao, HE Chuan, CUI Zhigao, JIANG Ke, CAI Yanping, LI Aihua* (3409)
- An Underwater Object Detection Method for Sonar Image Based on YOLOv3 Model ..... *WANG Fei, WANG Xinyu, ZHOU Jingchun, LIU Miao* (3419)
- Three Subnets Image Dehazing Method Based on Transfer Learning ..... *WU Minghu, DING Chang, WANG Juan, CHEN Guanhai, LIU Zishan, GUO Liqun* (3427)

### Pattern Recognition and Intelligent Information Processing

- Real-time Detection of Hiding Contraband in Human Body During the Security Check Based on Lightweight U-Net with Deep Learning ..... *LI Lianwei, QIN Shiyin* (3435)
- EEG Source Imaging Based on fMRI Functional Network and Bayesian Matrix Decomposition ..... *LIU Ke, YANG Dong, DENG Xin* (3447)
- Feature Fusion Method Based on Label-sensitive Multi-set Orthogonal Correlation ..... *ZHAO Qianjin, PING Xinrui, SU Shuzhi, XIE Jun* (3458)
- Local Destination Pooling Network for Pedestrian Trajectory Prediction of Condition Endpoint ..... *MAO Lin, XIE Yunjiao, YANG Dawei, ZHANG Rubo* (3465)
- Multiple Robots Localization Based on the Fusion of Ultra-Wideband Array and Odometry ..... *LIU Ran, CAO Zhiqiang, DENG Tianrui, DENG Zhongyuan, XIAO Yufeng* (3476)

### Wireless Communication and Internet of Things

- Vector Precoding Design Based on Nested-lattice-coding for MU-MIMO Relay Systems ..... *JIANG Hua, JIAO Juncai, DU Sidan* (3485)
- Energy-efficient Optimization Algorithm in Multi-tag Wireless-powered Backscatter Communication Networks ..... *XU Yongjun, YANG Haoke, LI Guojun, CHEN Qianbin* (3492)
- Research on Satellite Single-mixed Signal Modulation Recognition Based on Joint Feature Parameters ..... *YANG Hongjuan, SHI Tongzhi, LI Bo, ZHAO Nan, WANG Gang* (3499)
- Modulation Signal Classification and Recognition Algorithm Based on Signal to Noise Ratio Classification Network ..... *GUO Yecai, YAO Wenqiang* (3507)

(To be continued on inside back cover)

(Continued)

- QoS-aware Cross-layer Dynamic Resource Allocation for Indoor Visible Light Communication-WiFi Heterogeneous Networks ..... *LIU Huanlin, ZHANG Tong, CHEN Yong, PU Xin, HUANG Bingchuan, GONG Xiaonan* (3516)
- Research on Urban Path Loss Model by Machine Learning Based on 3D Electronic Maps and Channel Measurements ..... *GENG Suiyan, HU Wei, DING Haicheng, QIAN Zhaojun, ZHAO Xiongwen* (3524)
- A Virtual Network Function Migration Algorithm Based on Federated Learning Prediction of Resource Requirements ..... *TANG Lun, WU Ting, ZHOU Xinlong, CHEN Qianbin* (3532)

### **Radar, Sonar and Navigation**

- Distributed ISAR Two-dimensional Imaging of Moving Target with Nonorthogonal Waveforms ..... *LI Yuanyuan, FU Yaowen, ZHANG Wenpeng, YANG Wei* (3541)
- Autonomous Fuzzy Comprehensive Evaluation Method for Small Satellite Health State ..... *ZHOU Zhiguo, MA Wenhao, LIU Jieqiang, FENG Rongwei* (3553)
- Small-Data Inverse Synthetic Aperture Radar Object Recognition Based on Gaussian Prototypical Network ..... *YANG Minjia, BAI Xueru, LIU Shihao, ZENG Lei, ZHOU Feng* (3566)
- Explicit and Progressive Solution Method for Wigner-Ville Distribution of Prolate Spheroidal Wave Functions Signal ..... *WANG Hongxing, ZHAO Leyuan, LU Faping, LIU Chuanhui, KANG Jiafang* (3574)
- Human Posture Recognition Based on Multi-dimensional Information Feature Fusion of Frequency Modulated Continuous Wave Radar ..... *FENG Xinxin, LI Wenlong, HE Zhao, ZHENG Haifeng* (3583)
- A Cycle Identification Algorithm for enhanced LOnG RAnge Navigation Signal Based on Skywave Reconstruction Technology ..... *LIU Shiyao, HUA Yu, ZHANG Shougang* (3592)

### **Cryption and Information Security**

- A Improved Logistic Chaotic Map and Its Application to Image Encryption and Hiding ..... *LIU Gongzhi, WU Qiong, WANG Guangyi, JIN Peipei* (3602)
- Traceable Attribute Signature Scheme Based on Domestic Cryptographic SM9 Algorithm ..... *TANG Fei, LING Guowei, SHAN Jinyong* (3610)
- Anonymous Online Registration and Secure Authentication Protocol in Intelligent Vehicular Ad-hoc Networks ..... *ZHANG Xiaojun, WANG Wenchen, FU Hong, MU Liming, XU Chunxiang* (3618)
- Security Analysis and Improvement of a Multi-party Contract Signing Protocol Based on Certificateless ..... *YANG Xiaodong, LI Meijuan, REN Ningning, TIAN Tian, WANG Caifen* (3627)
- Cryptanalysis of Image Encryption Algorithm Based on Variable Step Length Josephus Traversing and DNA Dynamic Encoding ..... *FENG Wei, ZHANG Jing, QIN Zhentao, HE Yigang* (3635)
- Construction of Two Classes of Minimal Binary Linear Codes ..... *DU Xiaoni, HU Jinxia, JIN Wengang, SUN Yanzhong* (3643)

### **Circuit and System Design**

- An Efficient Bucket-allocation Decoding Method Based on Forward Error Correction Codes for Deoxyribo Nucleic Acid Storage ..... *ZAN Xiangzhen, YAO Xiangyu, XU Peng, CHEN Zhihua, SHI Xiaolong, LI Shudong, LIU Wenbin* (3650)
- Associative Memory Circuit Based on Memristor with The Ebbinghaus Forgetting Rule ..... *LI Zhijun, TAN Maolin, WANG Mengjiao, MA Minglin* (3657)
- Compact Power Divider with Ultra-wide Stopband for Harmonic Suppression Based on Resonator Slow-wave Transmission Line ..... *HUANG Wen, LI Liang, DONG Jinsheng, TAN Fei, REN Yi* (3666)
- A Method for Evaluating the Severity of Intermittent Faults of Electronic Systems Based on Variational Mode Decomposition-Gated Recurrent Units ..... *LI Sheng, XU Feiyang, LI Yuxiao, LIU Songhua, ZHANG Wensheng, GUO Zhaolu* (3673)

### **Overviews**

- Survey of Differential Chaotic Communications: Signal Design and Performance Optimization ..... *CAI Xiangming, XU Weikai, WANG Lin* (3683)
- A Review of YOLO Object Detection Based on Deep Learning ..... *SHAO Yanhua, ZHANG Duo, CHU Hongyu, ZHANG Xiaoqiang, RAO Yunbo* (3697)