



中国计算机学会会刊

ISSN 1001-9081  
CN 51-1307/TP  
CODEN JYIIDU

# 计算机应用

JOURNAL OF  
COMPUTER APPLICATIONS

四川省计算机学会 中国科学院成都分院 主办



- ☆ 中文核心期刊
- ☆ 两届国家期刊奖提名奖
- ☆ 全国优秀科技期刊一等奖



微信公众号

2022年3月

Mar. 2022

第42卷 第3期

Vol.42 No.3

国家期刊奖获奖期刊  
中国期刊方阵“双奖”期刊

英国《科学文摘》(SA) 收录期刊  
俄罗斯《文摘杂志》(AJ) 收录期刊  
美国《剑桥科学文摘》(CSA) 收录期刊  
德国《数学文摘》(Zentralblatt MATH) 收录期刊  
波兰《哥白尼索引》(IC) 收录期刊  
《日本科学技术振兴机构数据库》(JST) 收录期刊

中文核心期刊  
中国科技核心期刊  
RCCSE 中国核心学术期刊  
中国科学引文数据库(CSCD) 刊源期刊  
中国科技论文与引文数据库(CSTPCD) 统计源期刊  
中国学术期刊综合评价数据库(CAJCED) 统计源期刊  
中国核心期刊遴选数据库收录期刊  
中文科技期刊数据库(VIP) 收录期刊  
CEPS 中文电子期刊服务全文收录期刊

# 计算机应用

(Jisuanji Yingyong)

第 42 卷 第 3 期 2022 年 3 月

## 目 次

### 2021 年中国计算机学会人工智能会议(CCFAI 2021)

融合多粒度社区信息的网络嵌入方法 .....	胡 军,许正康,刘 立,钟福金( 663 )
基于先验知识的非负矩阵半可解释三因子分解算法 .....	陈 露,张晓霞,于 洪( 671 )
基于随机素描方法的在线核回归 .....	刘清华,廖士中( 676 )
双重特征加权模糊支持向量机 .....	邱云志,汪廷华,戴小路( 683 )
基于ReliefF的层次分类在线流特征选择算法 .....	张小清,王晨曦,吕 彦,林耀进( 688 )
混合伊藤算法求解多尺度着色旅行商问题 .....	韩舒宁,徐 敏,董学士,林 青,沈凡凡( 695 )
基于基因交换的自适应人工鱼群算法 .....	李宗正,周恺卿,欧 云,丁 雷( 701 )
基于贝叶斯权函数的模型无关元学习算法 .....	许仁杰,刘宝弟,张 凯,刘伟锋( 708 )
基于离散哈希的聚类 .....	轩书婷,刘惊雷( 713 )
基于时间条件提取序列的数据流偏好查询 .....	李润泽,孙雪姣( 724 )
基于关键帧筛选网络的视听联合动作识别 .....	陈亭秀,尹建芹( 731 )
基于深度时空残差卷积神经网络的课堂教学视频中多人课堂行为识别 .....	黄勇康,梁美玉,王笑笑,陈 微,曹晓雯( 736 )
基于深度注意力网络的课堂教学视频中表情识别与智能教学评估 .....	于婉莹,梁美玉,王笑笑,陈 微,曹晓雯( 743 )
基于生成对抗网络和网络集成的面部表情识别方法EE-GAN .....	杨鼎康,黄 帅,王顺利,翟 鹏,李一丹,张立华( 750 )
基于Res2Net-YOLACT和融合特征的室内跌倒检测算法 .....	张 璐,方 春,祝 铭( 757 )
基于单标注样本的多损失学习与联合度量视频行人重识别 .....	殷雨昌,王洪元,陈 莉,冯尊登,肖 宇( 764 )
基于神经网络的复杂垃圾信息过滤算法分析 .....	张 建,严 珂,马 祥( 770 )
基于E-CARGO模型的共乘出行匹配建模与优化方法 .....	李晓会,董红斌( 778 )
基于生成对抗网络的基因数据生成方法 .....	曹一珉,蔡 磊,高敬阳( 783 )
基于集合经验模态分解和长短期记忆网络的催化裂化装置氮氧化物排放预测 .....	陈 冲,闫 珠,赵继轩,何 为,梁华庆( 791 )
基于时序超图卷积神经网络的股票趋势预测方法 .....	李晓杰,崔超然,宋广乐,苏雅茜,吴天泽,张春云( 797 )
基于多尺度特征融合的红外单目测距算法 .....	刘 斌,李港庆,安澄全,王永根,王建生( 804 )
交通道路行驶车辆车标识别算法 .....	李 讷,徐光柱,雷帮军,马国亮,石勇涛( 810 )

基于注意力机制的多尺度残差 UNet 实现乳腺病灶分割 ..... 罗圣钦,陈金怡,李洪均( 818 )  
U-Net 与自适应阈值脉冲耦合神经网络相结合的眼底血管分割方法 ..... 徐光柱,林文杰,陈莎,匡婉,雷帮军,周军( 825 )

## 人工智能

融合层次特征和混合注意力的目标跟踪算法 ..... 朱文球,邹广,曾志高( 833 )  
基于注意力机制和金字塔融合的 RGB-D 室内场景语义分割 ..... 余娜,刘彦,魏雄炬,万源( 844 )  
面向视觉问答的跨模态交叉融合注意网络 ..... 王茂,彭亚雄,陆安江( 854 )  
基于 BART 噪声器的中文语法纠错模型 ..... 孙邱杰,梁景贵,李思( 860 )  
智能问诊中基于深度神经网络的反问生成方法 ..... 杜曾贞,唐东昕,解丹( 867 )  
教与学信息交互粒子群优化算法 ..... 聂方鑫,王宇嘉,贾欣( 874 )  
基于密集连接卷积神经网络的道路车辆检测与识别算法 ..... 邓天民,冒国韬,周臻浩,段志坚( 883 )

## 数据科学与技术

基于轨迹点聚类的航路发现方法 ..... 刘海杨,孟令航,林仲航,谷源涛( 890 )  
异质信息网络中基于有向无环图的影响力最大化算法 ..... 吴晴晴,周丽华,寸轩懿,杜国王,姜懿庭( 895 )  
基于金融技术指标的用电数据分析 ..... 杨安,蒋群,孙钢,殷杰,刘英( 904 )

## 网络空间安全

车载自组网中可撤销的聚合签名认证方案 ..... 吴静雯,殷新春,宁建廷( 911 )  
融合残差密集块自注意力机制和生成对抗网络的对抗攻击防御模型 ..... 赵玉明,顾慎凯( 921 )

## 多媒体计算与计算机仿真

融合空间位置与结构信息的压缩感知图像重建方法 ..... 林乐平,周宏敏,欧阳宁( 930 )  
基于多感受野的生成对抗网络医学 MRI 影像超分辨率重建 ..... 刘朋伟,高媛,秦品乐,殷喆,王丽芳( 938 )  
基于率失真特性的视频编码优化算法 ..... 郭红伟,樊香所,刘帅,韦相,赵伶俐( 946 )  
改进的基于锚点的三维手部姿态估计网络 ..... 危德健,王文明,王金玉,任好盼,高彦彦,王志( 953 )  
基于注意力机制的弱监督动作定位方法 ..... 胡聪,华钢( 960 )  
基于特征融合的三维人脸点云质量判断 ..... 高工,杨红雨,刘洪( 968 )

## 网络与通信

协作多输入多输出环境反向散射通信系统遍历速率分析 ..... 郑鑫,李素月,王安红,李美玲,Sami MUHAIDAT,宁爱平( 974 )  
无人机巡检系统中高频效的混合波束赋形方法 ..... 凌欣,李民政( 980 )

CCF 第 37 届中国计算机应用大会(CCF NCCA 2022)暨 2022 年互联网+智能应用学术会议征文通知 ..... (封二)  
2022 年中国高校计算机教育大会征文通知 ..... (封三)

# Journal of Computer Applications

Vol. 42 No. 3 Mar. 2022

## Contents

### 2021 CCF Conference on Artificial Intelligence (CCFAI 2021)

Network embedding method based on multi-granularity community information .....	HU Jun, XU Zhengkang, LIU Li, ZHONG Fujin( 663 )
Partially explainable non-negative matrix tri-factorization algorithm based on prior knowledge .....	CHEN Lu, ZHANG Xiaoxia, YU Hong( 671 )
Online kernel regression based on random sketching method .....	LIU Qinghua, LIAO Shizhong( 676 )
Doubly feature-weighted fuzzy support vector machine .....	QIU Yunzhi, WANG Tinghua, DAI Xiaolu( 683 )
Hierarchical classification online streaming feature selection algorithm based on ReliefF algorithm .....	ZHANG Xiaoqing, WANG Chenxi, LYU Yan, LIN Yaojin( 688 )
Hybrid ITÖ algorithm for multi-scale colored traveling salesman problem .....	HAN Shuning, XU Min, DONG Xueshi, LIN Qing, SHEN Fanfan( 695 )
Adaptive artificial fish swarm algorithm utilizing gene exchange .....	LI Zongzheng, ZHOU Kaiqing, OU Yun, DING Lei( 701 )
Model agnostic meta learning algorithm based on Bayesian weight function ...	XU Renjie, LIU Baodi, ZHANG Kai, LIU Weifeng( 708 )
Clustering based on discrete hashing .....	XUAN Shuting, LIU Jinglei( 713 )
Data stream preference query based on extraction sequence according to temporal condition .....	LI Runze, SUN Xuejiao( 724 )
Audio visual joint action recognition based on key frame selection network .....	CHEN Tingxiu, YIN Jianqin( 731 )
Multi-person classroom action recognition in classroom teaching videos based on deep spatiotemporal residual convolution neural network .....	HUANG Yongkang, LIANG Meiyu, WANG Xiaoxiao, CHEN Zheng, CAO Xiaowen( 736 )
Student expression recognition and intelligent teaching evaluation in classroom teaching videos based on deep attention network .....	YU Wanying, LIANG Meiyu, WANG Xiaoxiao, CHEN Zheng, CAO Xiaowen( 743 )
EE-GAN:facial expression recognition method based on generative adversarial network and network integration .....	YANG Dingkang, HUANG Shuai, WANG Shunli, ZHAI Peng, LI Yidan, ZHANG Lihua( 750 )
Indoor fall detection algorithm based on Res2Net-YOLACT and fusion feature .....	ZHANG Lu, FANG Chun, ZHU Ming( 757 )
One-shot video-based person re-identification with multi-loss learning and joint metric .....	YIN Yuchang, WANG Hongyuan, CHEN Li, FENG Zundeng, XIAO Yu( 764 )
Analysis of complex spam filtering algorithm based on neural network .....	ZHANG Jian, YAN Ke, MA Xiang( 770 )
Modeling and optimization method of ride-sharing matching based on E-CARGO model .....	LI Xiaohui, DONG Hongbin( 778 )
Gene data generation method based on generative adversarial network .....	CAO Yimin, CAI Lei, GAO Jingyang( 783 )
Prediction of NOx emission from fluid catalytic cracking unit based on ensemble empirical mode decomposition and long short-term memory network .....	CHEN Chong, YAN Zhu, ZHAO Jixuan, HE Wei, LIANG Huaqing( 791 )
Stock trend prediction method based on temporal hypergraph convolutional neural network .....	LI Xiaojie, CUI Chaoran, SONG Guangle, SU Yaxi, WU Tianze, ZHANG Chunyun( 797 )
Infrared monocular ranging algorithm based on multiscale feature fusion .....	LIU Bin, LI Gangqing, AN Chengquan, WANG Shuigen, WANG Jiansheng( 804 )
Logo recognition algorithm for vehicles on traffic road .....	LI Ne, XU Guangzhu, LEI Bangjun, MA Guoliang, SHI Yongtao( 810 )



Multiscale residual UNet based on attention mechanism to realize breast cancer lesion segmentation  
 ..... LUO Shengqin, CHEN Jinyi, LI Hongjun( 818 )

Fundus vessel segmentation method based on U-Net and pulse coupled neural network with adaptive threshold  
 ..... XU Guangzhu, LIN Wenjie, CHEN Sha, KUANG Wan, LEI Bangjun, ZHOU Jun( 825 )

### Artificial intelligence

Object tracking algorithm with hierarchical features and hybrid attention ..... ZHU Wenqiu, ZOU Guang, ZENG Zhigao( 833 )

Semantic segmentation of RGB-D indoor scenes based on attention mechanism and pyramid fusion  
 ..... YU Na, LIU Yan, WEI Xiongju, WAN Yuan( 844 )

Cross-modal chiastopic-fusion attention network for visual question answering ..... WANG Mao, PENG Yaxiong, LU Anjiang( 854 )

Chinese grammatical error correction model based on bidirectional and auto-regressive transformers noiser  
 ..... SUN Qiujie, LIANG Jinggui, LI Si( 860 )

Method of generating rhetorical questions based on deep neural network in intelligent consultation  
 ..... DU Zengzhen, TANG Dongxin, XIE Dan( 867 )

Teaching and learning information interactive particle swarm optimization algorithm..... NIE Fangxin, WANG Yujia, JIA Xin( 874 )

Road vehicle detection and recognition algorithm based on densely connected convolutional neural network  
 ..... DENG Tianmin, MAO Guotao, ZHOU Zhenhao, DUAN Zhijian( 883 )

### Data science and technology

Route discovery method based on trajectory point clustering ..... LIU Haiyang, MENG Linghang, LIN Zhonghang, GU Yuantao( 890 )

Influence maximization algorithm based on directed acyclic graph in heterogeneous information networks  
 ..... WU Qingqing, ZHOU Lihua, CUN Xuanyi, DU Guowang, JANG Yiting( 895 )

Power data analysis based on financial technical indicators ..... YANG An, JIANG Qun, SUN Gang, YIN Jie, LIU Ying( 904 )

### Cyber security

Revocable aggregate signature authentication scheme for vehicular ad hoc networks  
 ..... WU Jingwen, YIN Xinchun, NING Jianting( 911 )

Adversarial attack defense model with residual dense block self-attention mechanism and generative adversarial network  
 ..... ZHAO Yuming, GU Shenkai( 921 )

### Multimedia computing and computer simulation

Compressed sensing image reconstruction method fusing spatial location and structure information  
 ..... LIN Leping, ZHOU Hongmin, OUYANG Ning( 930 )

Medical MRI image super-resolution reconstruction based on multi-receptive field generative adversarial network  
 ..... LIU Pengwei, GAO Yuan, QIN Pinle, YIN Zhe, WANG Lifang( 938 )

Video coding optimization algorithm based on rate-distortion characteristic  
 ..... GUO Hongwei, FAN Xiangsuo, LIU Shuai, WEI Xiang, ZHAO Lingli( 946 )

Improved 3D hand pose estimation network based on anchor  
 ..... WEI Dejian, WANG Wenming, WANG Quanyu, REN Haopan, GAO Yanyan, WANG Zhi( 953 )

Weakly supervised action localization method based on attention mechanism..... HU Cong, HUA Gang( 960 )

Quality judgment of 3D face point cloud based on feature fusion ..... GAO Gong, YANG Hongyu, LIU Hong( 968 )

### Network and communications

Ergodic rate analysis of cooperative multiple input multiple output ambient backscatter communication system  
 ..... ZHENG Xin, LI Suyue, WANG Anhong, LI Meiling, Sami MUHAIDAT, NING Aiping( 974 )

Hybrid beamforming method with high spectral efficiency for unmanned aerial vehicle patrol system..... LING Xin, LI Minzheng( 980 )