

- ❖ 英国《科学文摘》(INSPEC) 来源期刊
- ❖ 俄罗斯《文摘杂志》(AJ) 来源期刊
- ❖ 美国《乌利希期刊指南(网络版)》(Ulrichsweb) 收录期刊
- ❖ 2017—2019年中国国际影响力优秀学术期刊(自然科学与工程技术)
- ❖ 第二届国家期刊奖百种重点科技期刊
- ❖ 中国科技核心期刊 ❖ 全国中文核心期刊
- ❖ 中国科技论文统计源期刊
- ❖ 中国学术期刊综合评价数据库来源期刊
- ❖ RCCSE 核心学术期刊 ❖ 中国期刊方阵双效期刊
- ❖ 《日本科学技术振兴机构数据库》(JST) 来源期刊
- ❖ 美国《艾博思科学数据库》(EBSCO) 全文来源期刊
- ❖ 美国《剑桥科学文摘(自然科学)》(CSA (NS)) 核心期刊
- ❖ 波兰《哥白尼索引》(IC) 来源期刊
- ❖ 中国科学引文数据库(CSCD) 来源期刊
- ❖ 《中文科技期刊数据库》来源期刊
- ❖ 《中国期刊网》《中国学术期刊(光盘版)》来源期刊
- ❖ 中国精品科技期刊顶尖学术论文(F5000)项目来源期刊
- ❖ 《电子科技文献数据库》来源期刊
- ❖ 《中国工程技术电子信息网》来源期刊

## 计算机应用研究

**Jisuanji Yingyong Yanjiu**

**第37卷 第12期 2020年12月**

### 目 次

#### 综述评论

- |                        |                         |
|------------------------|-------------------------|
| 离群点检测技术综述              | 梅林, 张凤荔, 高强(3521)       |
| 面向大数据的 K-means 算法综述    | 任远航(3528)               |
| 基于 LBS 系统的位置轨迹隐私保护技术综述 | 张青云, 张兴, 李万杰, 李晓会(3534) |

#### 算法研究探讨

- |                                |                                  |
|--------------------------------|----------------------------------|
| 面向大数据的图模式挖掘概率算法                | 姜丽丽, 李叶飞, 豆龙龙, 陈智麒, 钱柱中(3545)    |
| 科研社交网络中基于异质网络分析的列表级排序学习推荐方法研究  | 岳峰, 王含茹, 张馨悦, 王刚(3552)           |
| 基于时间序列聚类的轨迹停留点检测算法             | 兰志辉, 陈莉, 段治州(3557)               |
| 改进的不平衡贝叶斯学习分类模型研究              | 韩忠明, 刘聃, 段大高, 杨伟杰, 张珣(3561)      |
| 融合协同过滤和主题模型的弹幕视频推荐算法           | 高茂庭, 杨涛(3565)                    |
| 一种基于改进的巴氏系数的协同过滤推荐算法           | 王伟, 周刚(3569)                     |
| 一种基于自注意力机制的组推荐方法               | 刘浩翰, 任洪润, 贺怀清(3572)              |
| 改进填补法和多权重相似度相结合的推荐算法           | 邹洋, 吴和成, 姜允志, 赵应丁(3578)          |
| 基于多重降噪自编码器模型的 top-N 推荐算法       | 方义秋, 俞晨曦, 葛君伟(3582)              |
| 基于绕质心聚类算法的大数据挖掘                | 田华, 何翼(3586)                     |
| 改进利益驱动神经网络在欺诈信息的应用研究           | 孙林娟, 贾月辉(3590)                   |
| 基于语义依存分析的图网络文本分类模型             | 范国凤, 刘璟, 姚绍文, 朱桂凯(3594)          |
| 基于长短期记忆网络的社区演化预测               | 蒋乐乐, 刘厚泉, 张楠(3599)               |
| 融合动态社交关系的距离度量推荐算法              | 葛君伟, 岳飒, 方义秋(3603)               |
| 基于可变损失和流形正则化的生成对抗网络            | 丁赛赛, 吕佳(3607)                    |
| 混合策略改进正弦余弦算法                   | 林杰, 何庆(3612)                     |
| 一种改进的鲸鱼优化算法                    | 武泽权, 卞永敏(3618)                   |
| 混合策略改进的鲸鱼优化算法                  | 郝晓弘, 宋吉祥, 周强, 马明(3622)           |
| 一种新的直觉模糊集距离及其在决策中的应用           | 许昌林, 沈菊红(3627)                   |
| 多 agent 分层强化学习在数据定位中的应用研究      | 洪壮壮, 万仲保, 张薇, 黄兆华(3635)          |
| 基于框架表示学习的汉语框架排歧                | 侯运瑶, 曹学飞, 崔军, 王瑞波, 李济洪, 李茹(3640) |
| 双层规划下考虑环境侵害的垃圾分拣中心选址研究         | 张晨, 刘勤明, 叶春明, 李冠林(3645)          |
| 基于多层次注意力机制—柔性 AC 算法的机器人路径规划    | 韩金亮, 任海菁, 吴淞玮, 蒋欣欣, 刘凤凯(3650)    |
| 基于 GAED-MADDPG 多智能体强化学习的协作策略研究 | 邹长杰, 郑皎凌, 张中雷(3656)              |

#### 系统应用开发

- |                        |                              |
|------------------------|------------------------------|
| 基于改进变异树的工控协议模糊测试用例生成方法 | 李文轩, 尚文利, 和晓军, 陈春雨, 曾鹏(3662) |
|------------------------|------------------------------|

CPU + MIC 异构系统中动态请求处理模型研究	尤国华,刘媛,高东(3667)
3D-ACC: 基于 3D 集成电路的卷积神经网络加速结构研究	王吉军,郝子宇,李宏亮(3671)
Hilbert 包络谱的熵特征在辐射源个体识别中的应用	岳嘉颖,郑娜娥,蒋春启(3677)
数据失衡下基于 WGAN 和 GPCNN 的轴承故障诊断研究	薛振泽,满君丰,彭成,邓河(3681)

#### 信息安全技术

基于区块链智能合约的代币系统	方燚燧,周创明(3686)
基于区块链的游戏软件产品版权保护研究	贾晓霞,智路平,魏海蕊(3691)
基于 Pi 演算的 Android App 权限提升攻击检测	王涛,马川(3699)
基于 LSTM-CNN 的容器内恶意软件静态检测	金逸灵,陈兴蜀,王玉龙(3704)
基于信任评估的量子区块链网络匿名选举协议	郑涛,昌燕,张仕斌(3708)
无对的去中心基于属性指定证实者签名	张健,黄振杰,陈群山(3712)
适于软硬件实现的安全轻量 S 盒的设计	李凡,张文英,邢朝辉(3717)
基于 ZooKeeper 的全网统一信任锚模型研究	史博轩,章峰,蒋文保(3722)
基于改进型 Henon 映射的快速图像加密算法	赵洪祥,谢淑翠,张建中,吴桐(3726)
任意二粒子纠缠态的受控量子通信	彭家寅(3731)

#### 网络与通信技术

一种基于叠加编码的合作传输协议	芮雄丽,曹雪虹(3736)
边缘计算中基于博弈论的数据协作缓存策略研究	王朝,高岭,高全力,牛秀娟,马景超(3739)
基于拓扑稳定性的有向网络链路预测方法	李治成,吉立新,刘树新,普黎明(3744)
基于机器学习数据流突变型服务功能链构建策略	赵季红,季文君,曲桦,赵建龙,王珂,吴豆豆(3749)
任务序列强度感知的大规模集群服务器控制模型	蔡文伟,朱嘉贤,张会兵(3753)
一种新的无线传感网络干扰攻击检测技术	陈涛,刘姗姗,梁修荣(3757)
基于软件定义网络的触觉互联网端到端系统	魏萌,吕廷勤(3760)
WSN 中基于中继选择的 DH-MSMR-CARQ 时延与吞吐量分析	周永强,代蕾,王波,黎锁平(3764)
基于虚拟力的 LoRa 浮标网络覆盖优化算法	刘侠,郑建道,吴华锋,张倩楠(3768)
基于软件定义网络的边缘控制部署机制	路亚(3773)

#### 图形图像技术

结合空洞卷积的 CNN 实时微表情识别算法	赖振意,陈人和,钱育蓉(3777)
基于动态密集条件随机场增量推理计算的多类别视频分割	张晓翔,卢先领,周洪钧(3781)
用于图像超分辨的密集跳跃注意连接网络	吴荣贵,蒋平(3788)
基于邻域回归的医学图像超分辨率重建	端木春江,沈碧婷(3792)
基于聚类框架与局部感受野的实时人脸疲劳检测	刘君扬,王金凤(3795)
基于字典学习的卫星图像压缩算法研究	卢光跃,翟皎皎,李坤(3799)
强序列关系保持二值编码	王振,孙福振,张龙波,刘萍萍(3803)
硬件优化的高清视频实时去雾算法	陆斌,严利民,陈志恒(3807)
基于卷积神经网络和语义相关的协同显著性检测	张华迪,樊玮,黄睿(3811)
基于 ResNeXt 和 WGAN 网络的单图像超分辨率重建	曾庆亮,南方哲,尚迪雅,孙华(3815)
基于 SPNet 的视频运动放大方法	周飞,杜振龙(3820)
引入多尺度特征图融合的人脸关键点检测网络	齐国强,姚剑敏,胡海龙,严群,林志贤(3825)
学习小波超分辨率系数的人脸超分算法	刘颖,孙定华,公衍超(3830)
基于新的残差沙漏网络的人脸对齐	阳邹,邵雄凯,高榕,王春枝(3836)

#### 信息集萃

下期要目	(3670)
------	--------

期刊基本参数:CN51-1196/TP \* 1984 \* m \* A4 \* 320 \* zh \* P \* ¥50.00 \* 3840 \* 66 \* 2020-12 \* n

本期责任编辑 何俐,黄莉

# Application Research of Computers

## Vol. 37 No. 12 Dec. 2020

### Contents

#### Survey

Overview of outlier detection technology .....	Mei Lin,Zhang Fengli,Gao Qiang(3521)
Survey of K-means algorithm on big data .....	Ren Yuanhang(3528)
Overview of location trajectory privacy protection technology based on LBS system .....	Zhang Qingyun,Zhang Xing,Li Wanjie, <i>et al.</i> (3534)

#### Algorithm Research & Explore

Graph pattern mining probability algorithm for big data .....	Jiang Lili,Li Yefei,Dou Longlong, <i>et al.</i> (3545)
Study of listwise learning-to-rank recommendation method based on heterogeneous network analysis in scientific social network .....	Yue Feng,Wang Hanru,Zhang Xinyue, <i>et al.</i> (3552)
Trajectory stops detection algorithm based on time series clustering .....	Lan Zhihui,Chen Li,Duan Zhizhou(3557)
Improved unbalanced classification model based on Bayesian learning .....	Han Zhongming,Liu Dan,Duan Dagao, <i>et al.</i> (3561)
Danmaku video recommendation combining collaborative filtering and topic model .....	Gao Maotong,Yang Tao(3565)
Collaborative filtering recommendation algorithm based on improved Bhattacharyya coefficient .....	Wang Wei,Zhou Gang(3569)
Group recommendation method based on self-attention mechanism .....	Liu Haohan,Ren Hongrun,He Huaiqing(3572)
Recommendation algorithm based on filling method and multi-weight similarity .....	Zou Yang,Wu Hecheng,Jiang Yunzhi, <i>et al.</i> (3578)
Top-N recommendation algorithm based on multiple denoising auto-encoder .....	Fang Yiqiu,Yu Chenxi,Ge Junwei(3582)
Big data mining based on around-centroid clustering algorithm .....	Tian Hua,He Yi(3586)
Application research of improved interest-driven neural network in fraud information .....	Sun Linjuan,Jia Yuehui(3590)
Text classification model with graph network based on semantic dependency parsing .....	Fan Guofeng,Liu Jing,Yao Shaowen, <i>et al.</i> (3594)
Prediction of community evolution based on long-short term memory network .....	Jiang Lele,Liu Houquan,Zhang Nan(3599)
Distance metric recommendation algorithm for dynamic social relationships .....	Ge Junwei,Sui Sa,Fang Yiqiu(3603)
GAN based on variable loss and manifold regularization .....	Ding Saisai,Lyu Jia(3607)
Mixed strategy to improve sine cosine algorithm .....	Lin Jie,He Qing(3612)
Improved whale optimization algorithm .....	Wu Zequan,Mu Yongmin(3618)
Improved whale optimization algorithm based on hybrid strategy .....	Hao Xiaohong,Song Jixiang,Zhou Qiang, <i>et al.</i> (3622)
New distance between intuitionistic fuzzy sets and its applications in decision-making .....	Xu Changlin,Shen Juhong(3627)
Application research of multi-agent layered reinforcement learning in data location .....	Hong Zhuangzhuang,Wan Zhongbao,Zhang Wei, <i>et al.</i> (3635)
Chinese frame disambiguation based on frame representation learning .....	Hou Yunyao,Cao Xuefei,Cui Jun, <i>et al.</i> (3640)
Study on site selection of garbage sorting center considering environmental infringement under bi-level programming .....	Zhang Chen,Liu Qinming,Ye Chunming, <i>et al.</i> (3645)
Robot path planning based on soft AC algorithm for multilayer attention mechanism .....	Han Jinliang,Ren Haijing,Wu Songwei, <i>et al.</i> (3650)
Research on collaborative strategy based on GAED-MADDPG multi-agent reinforcement learning .....	Zou Changjie,Zheng Jiaoling,Zhang Zhonglei(3656)

#### System Development & Application

Fuzzing test case generation method for industrial control protocol based on improved mutation-tree .....	Li Wenxuan,Shang Wenli,He Xiaojun, <i>et al.</i> (3662)
Study on dynamic request processing model in CPU + MIC heterogeneous system .....	You Guohua,Liu Yuan,Gao Dong(3667)

3D-ACC: convolution neural network accelerator based on 3D integrated circuits .....	Wang Jijun, Hao Ziyu, Li Hongliang (3671)
Application of entropy characteristics of Hilbert envelope spectrum in specific emitter identification .....	Yue Jiaying, Zheng Na'e, Jiang Chunqi (3677)
Research on bearing fault diagnosis based on WGAN and GPCNN under imbalance of data .....	Xue Zhenze, Man Junfeng, Peng Cheng, et al. (3681)

### Technology of Information Security

Token system based on blockchain smart contract .....	Fang Yibiao, Zhou Chuangming (3686)
Study on game soft product copyright protection based on blockchain .....	Jia Xiaoxia, Zhi Luping, Wei Hairui (3691)
Privilege escalation attacks detection for Android App based on Pi calculus .....	Wang Tao, Ma Chuan (3699)
Static detection of malware in container based on LSTM-CNN .....	Jin Yiling, Chen Xingshu, Wang Yulong (3704)
Quantum blockchain network anonymous election protocol based on trust evaluation .....	Zheng Tao, Chang Yan, Zhang Shabin (3708)
Decentralized attribute-based designated confirmer signature without pairings .....	Zhang Jian, Huang Zhenjie, Chen Qunshan (3712)
Design of secure lightweight S-box for software and hardware implementation .....	Li Fan, Zhang Wenyi, Xing Zhaojun (3717)
Research on unified trust anchor model based on ZooKeeper .....	Shi Boxuan, Zhang Feng, Jiang Wenbao (3722)
Fast image encryption algorithm based on improved Henon map .....	Zhao Hongxiang, Xie Shucui, Zhang Jianzhong, et al. (3726)
Controlled quantum communication of arbitrary two-particle entangled states .....	Peng Jiayin (3731)

### Technology of Network & Communication

Cooperative transmission protocol based on superposition coding .....	Rui Xiongli, Cao Xuehong (3736)
Research on data cooperative cache strategy based on game theory in edge computing .....	Wang Chao, Gao Ling, Gao Quanli, et al. (3739)
Link prediction method based on topological stability in directed network .....	Li Zhicheng, Ji Lixin, Liu Shuxin, et al. (3744)
Construction strategy of data stream mutation service function chain based on machine learning .....	Zhao Jihong, Ji Wenjun, Qu Hua, et al. (3749)
Task arrival awareness scheduler in large-scale server clusters .....	Cai Wenwei, Zhu Jiaxian, Zhang Huibing (3753)
Novel wireless sensor network interference attack detection technology .....	Chen Tao, Liu Shanshan, Liang Xiurong (3757)
Tactile Internet end-to-end system based on software defined network .....	Wei Meng, Lyu Tingqin (3760)
Delay and throughput analysis of DH-MSMR-CARQ based on relay selection in WSN .....	Zhou Yongqiang, Dai Lei, Wang Bo, et al. (3764)
LoRa buoy network coverage optimization algorithm based on virtual force .....	Liu Xia, Zheng Jiandao, Wu Huafeng, et al. (3768)
Edge-based deployment mechanism based on software defined network .....	Lu Ya (3773)

### Technology of Graphic & Image

Real-time micro-expression recognition algorithm based on atrous convolutions for CNN .....	Lai Zhenyi, Chen Renhe, Qian Yurong (3777)
Incremental multi-class video segmentation based on dynamic dense conditional field inference .....	Zhang Xiaoxiang, Lu Xianling, Zhou Hongjun (3781)
Densely channel attention skip connection network for image super-resolution .....	Wu Ronggui, Jiang Ping (3788)
Medical image super-resolution reconstruction based on neighborhood regression .....	Duanmu Chunjiang, Shen Biting (3792)
Real-time face fatigue detection based on receptive field and clustering .....	Liu Junyang, Wang Jinfeng (3795)
Research on satellite image compression algorithm based on dictionary learning .....	Lu Guangyue, Zhai Jiaoqiao, Li Shen (3799)
Self-enhanced ordinal relation preserving binary codes .....	Wang Zhen, Sun Fuzhen, Zhang Longbo, et al. (3803)
Hardware optimized real-time dehazing algorithm for high-definition video .....	Lu Bin, Yan Limin, Chen Zhiheng (3807)
CNN and semantic correlation based co-saliency detection .....	Zhang Huadi, Fan Wei, Huang Rui (3811)
Single image super resolution based on ResNeXt and WGAN .....	Zeng Qingliang, Nan Fangzhe, Shang Diya, et al. (3815)
Video motion magnification method based on SPNet .....	Zhou Fei, Du Zhenlong (3820)
Facial landmark detection network with multi-scale feature map fusion .....	Qi Guoqiang, Yao Jianmin, Hu Hailong, et al. (3825)
Wavelet-based deep learning algorithm for face super-resolution .....	Liu Ying, Sun Dinghua, Gong Yanchao (3830)
Face alignment based on new residual hourglass network .....	Yang Zou, Shao Xiongkai, Gao Rong, et al. (3836)