



中国计算机学会会刊

ISSN 1001-9081

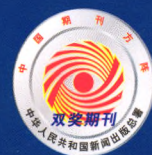
CN 51-1307/TP

CODEN JYIIDU

# 计算机应用

## JOURNAL OF COMPUTER APPLICATIONS

- 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



第 35 卷  
Vol. 35

第 7 期  
No. 7

2015 年 7 月  
July 2015

四川省计算机学会 主办  
中国科学院成都分院

**2015**  
第 7 期



国家期刊奖获奖期刊  
 中国期刊方阵“双奖”期刊  
 中文核心期刊  
 中国科技核心期刊  
 中国计算机学会会刊  
 中国科技论文统计源期刊  
 中国科学引文数据库刊源期刊  
 中国学术期刊综合评价数据库统计源期刊  
 中国期刊网、中国学术期刊(光盘版)收录期刊

中文科技期刊数据库收录期刊  
 英国《科学文摘》收录期刊  
 俄罗斯《文摘杂志》收录期刊  
 《日本科学技术振兴机构数据库》收录期刊  
 美国《剑桥科学文摘》收录期刊  
 波兰《哥白尼索引》收录期刊  
 德国《数学文摘》收录期刊  
 CEPS 中文电子期刊服务全文收录期刊  
 RCCSE 中国核心学术期刊

# 计算机应用

(Jisuanji Yingyong)

第 35 卷 第 7 期 2015 年 7 月

## 目 次

### 网络与通信

基于频谱合约的协作频谱共享方法 .....	赵楠,武明虎,周先军,熊炜,曾春艳(1805)
基于多拓扑路由的无拥塞快速业务迁移算法 .....	罗龙,虞红芳,罗寿西(1809)
有效能量空洞避免的无线传感器网络混合多跳路由算法 .....	杨晓峰,王睿,彭力(1815)
改进的加权网络节点重要性评估的互信息方法 .....	王班,马润年,王刚,陈波(1820)
基于动态加权的量化分布式卡尔曼滤波 .....	陈小龙,马磊,张文旭(1824)
基于移动模型的车载自组织网络连通特征 .....	冯慧芳,孟玉如(1829)
基于射频相位的两步测距法 .....	赵阳,黄建尧,刘德亮,刘开华,马永涛(1833)

### 先进计算

关注用户服务评价反馈的云资源再分配方法 .....	匡桂娟,曾国荪,熊焕亮(1837)
A*算法的改进及并行化 .....	熊壬浩,刘羽(1843)
基于 HBase 的海量地形数据存储 .....	李振举,李学军,谢剑薇,李雁南(1849)
基于 Goldschmidt 算法的高性能双精度浮点除法器设计 .....	何婷婷,彭元喜,雷元武(1854)

### 信息安全

基于交错螺旋矩阵加密的自动信任协商模型 .....	李健利,谢悦,王艺谋,丁洪骞(1858)
参与式感知中隐私保护的差异化数据分享协议 .....	刘树波,王颖,刘梦君,朱光军(1865)
基于串空间理论的安全协议自动验证 .....	刘家芬(1870)
只需异或运算的秘密分享方案 .....	袁琦钊,蔡红亮,张景中,夏航宇(1877)
基于信息融合的网络安全态势评估模型 .....	李方伟,张新跃,朱江,张海波(1882)
相关向量机超参数优化的网络安全态势预测 .....	肖汉杰,桑秀丽(1888)
基于统计特征的隐匿 P2P 主机实时检测系统 .....	田朔玮,杨岳湘,何杰,王晓磊,江志雄(1892)
基于动态重加密的云存储权限撤销优化机制——DR-PRO .....	杜明,郝国生(1897)
基于纠错码的健壮性图像信息隐藏算法 .....	任方,郑东(1903)
结合均值调整整数变换的迭代自适应可逆图像水印算法 .....	陈文鑫,邵利平,师军(1908)

### 数据技术

基于增量计算的信息系统属性粒结构计算方法 .....	郝彦彬,郭晓,杨乃定(1915)
基于模式增长的不确定数据的频繁模式挖掘算法 .....	王乐,常艳芬,王水(1921)
基于近邻传播与密度相融合的进化数据流聚类算法 .....	邢长征,刘剑(1927)

## 人工智能

- 基于动态功能连接的运动任务大脑状态表达 ..... 张欣,胡新韬,郭雷(1933)
- 多标记数据特征提取方法的核改进 ..... 李华,李德玉,王素格,张晶(1939)
- 服装类商品属性实体识别 ..... 周详,李少波,杨观赐(1945)
- 基于 LIBSVM 的“就是”句句间关系判别方法 ..... 周建成,吴铤,王荣波,常若愚(1950)
- 基于云模型重叠度的相似性度量 ..... 孙妮妮,陈泽华,牛昱光,阎高伟(1955)
- 面向不平衡微博数据集的转发行为预测方法 ..... 赵煜,邵必林,边根庆,宋丹(1959)
- 中文口语理解弱监督训练方法 ..... 李艳玲,颜永红(1965)
- 基于动态评价选择策略的改进人工蜂群算法 ..... 徐向平,鲁海燕,程毕芸(1969)
- 面向文献搜索系统的用户实时需求发现方法 ..... 徐浩,陈雪,胡晓峰(1975)
- 融合朋友关系和标签信息的张量分解推荐算法 ..... 丁小煊,彭甫榕,王琼,陆建峰(1979)
- 基于三度影响力的社交好友推荐机制 ..... 王名扬,贾冲冲,杨东辉(1984)
- 基于多属性效用的协同过滤推荐系统 ..... 邓峰,张永安(1988)

## 计算机软件技术

- 面向服务集成的工作流模型及其实现方法 ..... 张型龙,李松犁,肖俊超(1993)
- 基于句法分析的代码摘要技术 ..... 王金水,薛醒思,翁伟(1999)
- 基于全同步对覆盖的线程调度序列生成方法 ..... 石存洋,李征,郭俊霞,赵瑞莲(2004)
- 基于 UML 图依权限有序的 Web 链接测试用例生成方法 ..... 张钜,王曙燕,孙家泽(2009)

## 虚拟现实与数字媒体

- 基于改进 Contourlet 变换的遥感图像融合算法 ..... 陈利霞,邹宁,袁华,欧阳宁(2015)
- 结合粗糙集与分层思想的彩色图像分割算法 ..... 韩建栋,朱婷婷,李月香(2020)
- 基于双准则自适应融合的目标跟踪算法 ..... 张灿龙,唐艳平,李志欣,蔡冰,马海菲(2025)
- 基于视觉背景提取的自适应运动目标提取算法 ..... 吕嘉卿,刘立程,郝禄国,张文忠(2029)
- 基于动态阈值的核密度估计前景检测算法 ..... 杨大勇,杨建华,卢伟(2033)
- 基于高斯尺度空间粗糙度描述子的花粉图像分类识别 ..... 谢永华,徐赵飞,范文晓(2039)
- 基于支持向量机与模糊  $k$ -均值算法的部位外观模型 ..... 韩贵金(2043)
- T-Bézier 曲线能量法的光顺计算 ..... 方永锋,陈建军,邱泽阳(2047)
- 基于主动表观模型的稀疏聚类人脸识别算法 ..... 费博雯,刘万军,邵良杉,刘大千,孙虎(2051)
- 基于 Shearlet 变换和均匀局部二值模式特征的协作表示人脸识别算法 ..... 谢佩,吴小俊(2056)
- 在线融合特征的眼睛状态识别算法 ..... 徐国庆(2062)

## 行业与领域应用

- 服务率不确定的单站点传送带给料加工站系统鲁棒优化控制 ..... 黄浩,唐昊,周雷,程文娟(2067)
- 基于物联网的纺织车间环境智能测控系统 ..... 刘向举,李敬兆,刘丽娜(2073)
- 特征滞后计算的股市波动预测 ..... 姚宏亮,李大光,李俊照(2077)
- 基于迭代误差补偿的核极端学习机模型在短期电力负荷预测中的应用 ..... 郎坤,张明媛,袁永博(2083)
- 改进膜蜂群算法求解 0-1 背包问题 ..... 宋潇潇,王军(2088)
- 基于多点协作的团队出行路径优化算法 ..... 邱吉刚,李汶隆,杨佳(2093)
- 基于多时间窗的油料保障模型 ..... 闫华,高黎,刘国勇,王红旗(2096)
- 基于改进的最大后验概率矢量量化和最小二乘支持向量机集成算法 ..... 张俊,关胜晓(2101)
- 基于信号杂波噪声比的认知雷达扩展目标探测波形设计 ..... 闫东,张朝霞,赵岩,王娟芬,杨玲珍,施俊鹏(2105)
- 基于肌电信号的多模式抓握力估计 ..... 张冰珂,段小刚,邓华(2109)

2015 全国第十三届嵌入式系统学术会议 (ESTC 2015) 征文通知 ..... (封二)

中科院成都信息技术股份有限公司介绍 ..... (封三)

# Journal of Computer Applications

Vol. 35 No. 7 July 2015

## Contents

### Network and communications

- Cooperative spectrum sharing method based on spectrum contract  
..... ZHAO Nan, WU Minghu, ZHOU Xianjun, XIONG Wei, ZENG Chunyan (1805)
- Congestion avoidance and fast traffic migration based on multi-topology routing ..... LUO Long, YU Hongfang, LUO Shouxi (1809)
- Hybrid multi-hop routing algorithm of effective energy-hole avoidance for wireless sensor networks  
..... YANG Xiaofeng, WANG Rui, PENG Li (1815)
- Improved evaluation method for node importance based on mutual information in weighted networks  
..... WANG Ban, MA Runnian, WANG Gang, CHEN Bo (1820)
- Quantized distributed Kalman filtering based on dynamic weighting ..... CHEN Xiaolong, MA Lei, ZHANG Wenxu (1824)
- Connectivity characteristics based on mobility model for vehicular Ad Hoc networks ..... FENG Huifang, MENG Yuru (1829)
- Radio phase-based two-step ranging approach ..... ZHAO Yang, HUANG Jianyao, LIU Deliang, LIU Kaihua, MA Yongtao (1833)

### Advanced computing

- Cloud resource re-allocation method focusing on user's evaluation feedback  
..... KUANG Guijuan, ZENG Guosun, XIONG Huanliang (1837)
- Improvement and parallelization of A\* algorithm ..... XIONG Renhao, LIU Yu (1843)
- Massive terrain data storage based on HBase ..... LI Zhenju, LI Xuejun, XIE Jianwei, LI Yannan (1849)
- Floating point divider design of high-performance double precision based on Goldschmidt's algorithm  
..... HE Tingting, PENG Yuanxi, LEI Yuanwu (1854)

### Information security

- Automated trust negotiation model based on interleaved spiral matrix encryption  
..... LI Jianli, XIE Yue, WANG Yimou, DING Hongqian (1858)
- Privacy-preserving various data sharing protocol in participatory sensing  
..... LIU Shubo, WANG Ying, LIU Mengjun, ZHU Guangjun (1865)
- Automatic verification of security protocols with strand space theory ..... LIU Jiafen (1870)
- Secret sharing scheme only needing XOR operations ..... YUAN Qizhao, CAI Hongliang, ZHANG Jingzhong, XIA Hangyu (1877)
- Network security situational awareness model based on information fusion  
..... LI Fangwei, ZHANG Xinyue, ZHU Jiang, ZHANG Haibo (1882)
- Network security situation prediction based on hyper parameter optimization of relevance vector machine  
..... XIAO Hanjie, SANG Xiuli (1888)
- Real-time detection system for stealthy P2P hosts based on statistical features  
..... TIAN Shuwei, YANG Yuexiang, HE Jie, WANG Xiaolei, JIANG Zhixiong (1892)
- DR-PRO: cloud-storage privilege revoking optimization mechanism based on dynamic re-encryption  
..... DU Ming, HAO Guosheng (1897)
- Robust image information hiding algorithm based on error correcting codes ..... REN Fang, ZHENG Dong (1903)
- Iterative adaptive reversible image watermarking algorithm combined with mean-adjustable integer transform  
..... CHEN Wenxin, SHAO Liping, SHI Jun (1908)

### Data technology

- Computing method of attribute granule structure of information system based on incremental computation  
..... HAO Yanbin, GUO Xiao, YANG Naiding (1915)
- Frequent pattern mining algorithm from uncertain data based on pattern-growth  
..... WANG Le, CHANG Yanfeng, WANG Shui (1921)
- Evolutionary data stream clustering algorithm based on integration of affinity propagation and density  
..... XING Changzheng, LIU Jian (1927)

### Artificial intelligence

- Characterization of motor-related task brain states based on dynamic functional connectivity  
..... ZHANG Xin, HU Xintao, GUO Lei (1933)
- Kernel improvement of multi-label feature extraction method ..... LI Hua, LI Deyu, WANG Suge, ZHANG Jing (1939)

Entity recognition of clothing commodity attributes ..... ZHOU Xiang, LI Shaobo, YANG Guanci (1945)

LIBSVM-based relationship recognition method for adjacent sentences containing “jiushi”  
 ..... ZHOU Jiancheng, WU Ting, WANG Rongbo, CHANG Ruoyu (1950)

Similarity measurement between cloud models based on overlap degree  
 ..... SUN Nini, CHEN Zehua, NIU Yuguang, YAN Gaowei (1955)

Prediction of retweeting behavior for imbalanced dataset in microblogs  
 ..... ZHAO Yu, SHAO Bilin, BIAN Genqing, SONG Dan (1959)

Weakly-supervised training method about Chinese spoken language understanding ..... LI Yanling, YAN Yonghong (1965)

Improved artificial bee colony algorithm based on dynamic evaluation selection strategy  
 ..... XU Xiangping, LU Haiyan, CHENG Biyun (1969)

Finding method of users’ real-time demands for literature search systems ..... XU Hao, CHEN Xue, HU Xiaofeng (1975)

Tensor factorization recommendation algorithm combined with social network and tag information  
 ..... DING Xiaohuan, PENG Furong, WANG Qiong, LU Jianfeng (1979)

Social friend recommendation mechanism based on three-degree influence  
 ..... WANG Mingyang, JIA Chongchong, YANG Donghui (1984)

Collaborative filtering recommendation system based on multi-attribute utility ..... DENG Feng, ZHANG Yongan (1988)

### **Computer software technology**

Service integration-oriented workflow model and implementation method ..... ZHANG Xinglong, LI Songli, XIAO Junchao (1993)

Source code summarization technology based on syntactic analysis ..... WANG Jinshui, XUE Xingsi, WENG Wei (1999)

Generation method of thread scheduling sequence based on all synchronization pairs coverage criteria  
 ..... SHI Cunfeng, LI Zheng, GUO Junxia, ZHAO Ruilian (2004)

Generation method for Web link testing cases with permissions and sequence based on UML diagram  
 ..... ZHANG Ju, WANG Shuyan, SUN Jiaze (2009)

### **Virtual reality and digital media**

Remote sensing image fusion algorithm based on modified Contourlet transform  
 ..... CHEN Lixia, ZOU Ning, YUAN Hua, OUYANG Ning (2015)

Color image segmentation algorithm based on rough-set and hierarchical idea ..... HAN Jiandong, ZHU Tingting, LI Yuexiang (2020)

Target tracking approach based on adaptive fusion of dual-criteria  
 ..... ZHANG Canlong, TANG Yanping, LI Zhixin, CAI Bing, MA Haifei (2025)

Adaptive moving object extraction algorithm based on visual background extractor  
 ..... LYU Jiaqing, LIU Licheng, HAO Luguo, ZHANG Wenzhong (2029)

Foreground detection algorithm based on dynamic threshold kernel density estimation  
 ..... YANG Dayong, YANG Jianhua, LU Wei (2033)

Pollen image classification and recognition based on Gaussian scale-space roughness descriptor  
 ..... XIE Yonghua, XU Zhaofei, FAN Wenxiao (2039)

Part appearance model based on support vector machine and fuzzy *k*-means algorithm ..... HAN Guijin (2043)

Fairing computation for T-Bézier curves based on energy method ..... FANG Yongfeng, CHEN Jianjun, QIU Zeyang (2047)

Face recognition algorithm based on cluster-sparse of active appearance model  
 ..... FEI Bowen, LIU Wanjun, SHAO Liangshan, LIU Daqian, SUN Hu (2051)

Face recognition algorithm of collaborative representation based on Shearlet transform and uniform local binary pattern  
 ..... XIE Pei, WU Xiaojun (2056)

Eye state recognition algorithm based on online features ..... XU Guoqing (2062)

### **Industries and fields application**

Robust optimal control of single conveyor-serviced production station with uncertain service rate  
 ..... HUANG Hao, TANG Hao, ZHOU Lei, CHENG Wenjuan (2067)

Intelligent environment measuring and controlling system of textile workshop based on Internet of things  
 ..... LIU Xiangju, LI Jingzhao, LIU Lina (2073)

Stock market volatility forecast based on calculation of characteristic hysteresis ..... YAO Hongliang, LI Daguang, LI Junzhao (2077)

Application of extreme learning machine with kernels model based on iterative error correction in short term electricity load forecasting  
 ..... LANG Kun, ZHANG Mingyuan, YUAN Yongbo (2083)

Improved artificial bee colony algorithm based on P system for 0-1 knapsack problem ..... SONG Xiaoxiao, WANG Jun (2088)

Path optimization algorithm for team navigation based on multiple point collaboration ... QIU Jigang, LI Wenlong, YANG Jia (2093)

Petrol-oil and lubricants support model based on multiple time windows  
 ..... YAN Hua, GAO Li, LIU Guoyong, WANG Hongqi (2096)

Integration algorithm of improved maximum a posteriori probability vector quantization and least squares support vector machine  
 ..... ZHANG Jun, GUAN Shengxiao (2101)

Cognitive radar waveform design for extended target detection based on signal-to-clutter-and-noise ratio  
 ..... YAN Dong, ZHANG Zhaoxia, ZHAO Yan, WANG Juanfen, YANG Lingzhen, SHI Junpeng (2105)

Force estimation in different grasping mode from electromyography ..... ZHANG Bingke, DUAN Xiaogang, DENG Hua (2109)

# 《计算机应用》第十届编辑委员会名单

The 10th Editorial Board of Journal of Computer Applications

主 编 Editor-in-chief 张景中 ZHANG Jingzhong

副 主 编 Associate Editor-in-chief 夏朝晖 XIA Zhaohui

顾问委员 Advisors (以姓氏笔画为序)

丁秋林 DING Qiulin

刘锦德 LIU Jinde

杨 路 YANG Lu

吴中福 WU Zhongfu

邱玉辉 QIU Yuhui

何积丰 HE Jifeng

陈 静 CHEN Jing

陈国良 CHEN Guoliang

周巢尘 ZHOU Chaochen

唐泽圣 TANG Zesheng

潘云鹤 PAN Yunhe

常务委员 Standing Committee Members (以姓氏笔画为序)

王国胤 WANG Guoyin

王晓京 WANG Xiaojing

王宽全 WANG Kuanquan

王瀚漓 WANG Hanli

牛夏牧 NIU Xiamu

田 捷 TIAN Jie

付忠良 FU Zhongliang

冯 丹 FENG Dan

冯 勇 FENG Yong

尼玛扎西 Nyima Tashi

齐 勇 QI Yong

江晓波 JIANG Xiaobo

汤 庸 TANG Yong

孙仕亮 SUN Shiliang

孙利民 SUN Limin

李天瑞 LI Tianrui

李战怀 LI Zhanhuai

李晓维 LI Xiaowei

肖 斌 XIAO Bin

吴 跃 WU Yue

何炎祥 HE Yanxiang

余志文 YU Zhiwen

张 军 ZHANG Jun

张 蕾 ZHANG Lei

张敏灵 ZHANG Minling

张道强 ZHANG Daoqiang

陈 斌 CHEN Bin

陈恩红 CHEN Enhong

陈雷霆 CHEN Leiting

范平志 FAN Pingzhi

周 涛 ZHOU Tao

周志华 ZHOU Zhihua

周尚波 ZHOU Shangbo

周傲英 ZHOU Aoying

周激流 ZHOU Jiliu

赵永涛 ZHAO Yongtao

钟 勇 ZHONG Yong

洪西进 HONG Xijin

姚绍文 YAO Shaowen

秦志光 QIN Zhiguang

耿卫东 GENG Weidong

唐常杰 TANG Changjie

黄健斌 HUANG Jianbin

章 毅 ZHANG Yi

彭宇新 PENG Yuxin

潘 炜 PAN Wei

潘爱民 PAN Aimin

## 计算机应用

Jisuanji Yingyong

(月刊 1981年创刊)

第35卷 第7期(总第299期) 2015年7月

## Journal of Computer Applications

(Monthly, Started in 1981)

Vol.35 No.7(Series No.299) July 2015

主 办 四川省计算机学会  
中国科学院成都分院  
主 管 四川省科学技术协会  
主 编 张景中  
编 辑 《计算机应用》编辑部  
通信地址 成都市人民南路四段9号 (610041)  
电 话 (028) 85224283  
传 真 (028) 85222239-816  
电子信箱 bjb@joca.cn  
网 址 www.joca.cn  
出 版 四川计算机应用杂志社有限公司  
出版日期 2015年7月10日  
印刷装订 成都蜀通印务有限责任公司  
国内发行 四川省报刊发行局  
订 购 处 全国各地邮局  
国外发行 中国国际图书贸易总公司  
(北京399信箱 100044)

Sponsored by Sichuan Computer Federation  
Chengdu Branch, Chinese Academy of Sciences  
Superintended by Sichuan Association for Science and Technology  
Editor-in-chief ZHANG Jingzhong  
Edited by Editorial Office of Journal of Computer Applications  
Address No. 9, 4th Section of South Renmin Road, Chengdu 610041, China  
Telephone (028) 85224283  
Fax (028) 85222239-816  
E-mail bjb@joca.cn  
Web site www.joca.cn  
Published by Sichuan Computer Applications Press Co., Ltd.  
Publication Date July 10, 2015  
Printed by Chengdu Shutong Printing Co., Ltd.  
Distributed by Sichuan Bureau for Distribution of Newspapers and Journals  
Domestic All Local Post Offices in China  
Foreign China International Book Trading Corporation  
(P. O. Box 399, Beijing 100044, China)

ISSN 1001-9081

中国标准连续出版物号 ISSN 1001-9081  
CN 51-1307/TP

国外发行代号 M4616

国内邮发代号 62-110

广告经营许可证号 5100004001023

定 价 33.00元/册



9 771001 908152

0 7 >