



全民阅读 绿色行

ISSN 1672- 6944

CN 32-1675/TN

2021 11 第 18 卷 Vol.18

# 无线互联科技

WIRELESS INTERNET TECHNOLOGY

中国核心期刊（遴选）期刊

中国学术期刊网络出版总库（中国知网）全文收录

万方数据 - 数字化期刊群全文收录

中文科技期刊数据库（维普网）全文收录

ISSN 1672-6944



9 771672 694217

主管：江苏省科学技术厅 主办：江苏省科学技术情报研究所

万方数据

2004年创刊

2021年第11期  
(总第207期)

第18卷  
半月刊

2021年6月10日

主 管: 江苏省科学技术厅

主 办: 江苏省科学技术情报研究所

编辑出版: 《无线互联科技》杂志社

社 长: 李 敏

副社长: 李克贵

主 编: 严文强

副主编: 汤 溥

编辑部主任: 王雪芬

本期责任编辑: 姚 鑫

编 委: (按姓氏笔画为序)

马永浩 孙 斌

金福兰 周晓明

黄水清 薛 飞

# 目 次

## 通信观察

- |                           |          |
|---------------------------|----------|
| 1 采用甚小口径终端(VSAT)的卫星通信研究   | 张家芳      |
| 3 对潜通信技术及其发展趋势研究          | 朱 鹏      |
| 5 曰盲紫外光通信系统的信号检测技术分析      | 凌 云      |
| 7 用于5G通信的阻抗带宽共形四臂螺旋天线改进研究 | 何 锦, 商 锋 |

## 无线天地

- |                           |               |
|---------------------------|---------------|
| 10 雷达协同干扰策略及干扰措施探析        | 林 石, 陆春龙, 李 泓 |
| 12 广播电视监测监管平台中的人工智能应用     | 许津子           |
| 14 基于惯性导航的四翼无人机导航技术分析与应用  | 王若凝           |
| 16 基于冗余模式的SCADA系统数据同步机制设计 | 李 寅, 褚红健, 王声柱 |

## 网络地带

- |                             |          |
|-----------------------------|----------|
| 18 混合物联网系统架构及其关键技术研究        | 贺益存      |
| 20 高校计算机网络安全体系构建及策略探讨       | 杜 慧      |
| 22 大型企业网络系统建设与安全平台架构探讨      | 黄道春, 余红仙 |
| 24 基于场景元素的智能网联汽车场景库构建       | 郑新强      |
| 26 计算机网络技术在电子信息工程中的运用       | 宫永梅      |
| 28 物联网技术在医院信息化建设中的应用        | 张少杰      |
| 30 计算机操作系统现状与发展分析           | 肖天舜      |
| 32 基于管制运行关键指标的管制质量评估分析      | 刘海青      |
| 34 高校图书馆微信公众平台服务发展现状及提升对策研究 | 王安萌      |

## 软件透视

- |   |               |
|---|---------------|
| 36 基于Python的计算机软件应用技术研究                     | 李永刚           |
| 38 计算机软件开发中的分层技术研究                          | 丁 凝           |
| 40 物流信息采集与动态跟踪技术对患者追踪定位的有益性研究               | 冯思雨           |
| 42 高水平院校土木建筑类专业科技创新平台建设研究<br>——基于科技创新团队建设视角 | 卢 爽, 朱琳琳, 于微微 |
| 44 数字化变电站综合自动化系统的发展                         | 王 爱           |

## 设计分析

- |                             |                         |
|-----------------------------|-------------------------|
| 46 智能健康监控APP的设计             | 李殊霖, 于 茜, 杨佳鑫, 王诗宇      |
| 48 基于红外光谱的梨糖度无损检测系统设计       | 罗亚琼, 于国龙, 李怀旭, 吴 恋      |
| 50 “互联网+”背景下智能图书馆管理系统的建设    | 吾热亚提·玉素甫                |
| 52 基于HTML5的公共社交平台设计与实现      | 张雪莹, 喻忠霞, 申 进           |
| 54 基于Spark大数据处理的电影推荐系统设计与实现 | 朱炳旭, 叶传奇, 王君洋, 李应霆, 李玉进 |
| 56 基于Android的车位预约设计与实现      | 张 艳, 冯 锋                |
| 60 基于自动控制技术的仿生无人化苹果收集机器人设计  | 李 龙, 黄宇衍, 李毓雯           |
| 62 校园生活综合服务平台小程序的设计与实现      | 左佳丽, 刘文珊, 张玲乐           |
| 64 基于HTML的红色文化网站设计开发        | 卫辰浩                     |

## 技术应用

- |                         |          |
|-------------------------|----------|
| 66 计算机图像处理技术在网页设计中的应用   | 贺纪桦      |
| 68 RFID技术在卷烟厂信息化物流系统的应用 | 陈亮池, 冯 锋 |
| 72 新媒体技术在电子产品展示空间中的应用   | 王靖文      |

74 医院设施智能化与设备自动化控制水平提升措施探讨	许记
76 零过渡动态无功补偿技术的实践应用	吴艳平
79 大数据技术在征信中的应用	张改艳
81 云计算在高校信息化建设中的应用	刘艳柳, 巩晓宁, 杨欣伟
83 自动化炼钢过程控制技术应用分析	李海斌
85 大数据技术在计算机网络信息管理中的应用研究	高文博
87 大数据及云计算在智慧校园中的应用研究	杨俏炜
89 计算机网络技术在人工智能中的应用分析	骆泓玮
91 计算机网络环境下数字媒体技术的应用探究	陈倩
93 人工智能在计算机网络技术中的应用研究	傅篱
95 人工智能技术在大数据网络安全防御中的应用	张智
97 虚拟现实技术在数字校园中的应用	杜沁斐, 李浩铭, 冯留柱, 王斌
99 大数据情境下创新创业生态系统路径研究	赵绍娟
101 多元协同视域下高校图书馆智慧化服务建设研究	范武山

## 实验研究

104 城市轨道交通LTE-M服务质量测试方法	赵保钧, 戴源廷, 魏志恒
108 SSM框架在Web应用开发中的设计与实现	曹华山
110 柔性直流输电技术对大电网弱交流断面输电能力的影响	王斌
112 新型智能化安全巡检系统的研究与探索	许梦瑜, 席满意, 周艳青, 李昊远, 韩俊霖

## 数字教育

115 近三年国内高职院校慕课教学改革现状研究	郑明言, 王东娟, 戴培赟, 李晓丽
117 基于德国“双元制”模式的PLC课程“三教”改革实践探索	巫秀
119 以Web技能竞赛为平台的软件技术专业教学改革研究	张超, 贺霖龄
121 信息时代下高职院校智能网联汽车技术专业发展分析	孙凤霞, 周勇
123 基于学习成果的线上线下混合式“金课”的建设	梁亚静, 刘娜, 朱显英
125 基于大数据技术的高职学情分析方法探析	李玉君
127 职业院校智慧校园建设研究——以常德职业技术学院为例	黄云新, 陈本松, 陈刚
131 智慧校园建设对高校辅导员管理工作的优化研究	谢冬
133 新媒体环境下高校图书馆数字阅读推广策略研究	吴强
135 基于SWOT分析的VR教育发展战略研究	王新言, 冯源, 赵雨婷, 蔡政煜, 万子铭
137 黑龙江省高校学生在线学习情况调查研究	刘鑫, 张磊
139 基于CBL和PBL教学法的工程训练在线课程教学改革探索	蔡文辉, 张海波
141 大数据环境下高校在线开放课程质量评价体系研究	陈果
143 “1+X”证书制度下机电一体化专业群人才培养模式探究	戴艳涛, 雍丽英, 孙福才, 陈峻峰
146 民办高校计算机专业多方协同育人模式探讨	张鑫
148 基于大学生电子设计竞赛的电子信息类应用型人才培养途径探索	张守叶
150 WebQuest教学模式在高职“计算机基础”课程教学中的应用	孔祥雅
153 基于能力导向的高职“计算机应用基础”课程教学改革研究	于康存
155 任务驱动教学法在职业学校“电子技术基础与技能”课程中的应用	治林琴
157 “模拟电子技术”课程教学改革研究	董汉磊, 范文
159 基于电子产品的“电路CAD与识图训练”课程建设	刘娜
161 在线教育视角下基于层次分析法的“电子课程设计”成绩评分方法	肖娟, 徐建, 徐震, 赵煦
163 经济欠发达地区教育装备信息化建设问题研究	张斌财
165 高职院校“人工智能”通识课相关教学研究 ——以滁州职业技术学院信息工程学院为例	丁海涛, 王慧, 李兰兰
167 案例教学法在计算机类课程教学中的应用	刁宇峰

中国标准连 ISSN 1672-6944  
续出版物号: CN 32-1675/TN

邮发代号: 28-473

发行范围: 公开

发行: 江苏省报刊发行局

印刷: 南京百花彩色印刷广告制作

有限责任公司

定价: 40.00元

## 《无线互联科技》杂志社

社址: 江苏省南京市龙蟠路171号

电话: (025)-85433097

(025)-85410361

邮编: 210042

投稿网址: <http://qkcb.jssti.cn>

电子邮箱: [hlkj@sti.js.cn](mailto:hlkj@sti.js.cn)

户名: 江苏省科学技术情报研究所

账号: 4301012509001028301

开户行: 工商银行南京市板仓支行

# WIRELESS INTERNET TECHNOLOGY

No.11 2021 ( Total No.207 )

## CONTENTS

Study on satellite communications using very small aperture terminals .....	Zhang Jiafang ( 1 )
Research on submarine communication technology and its development trend .....	Zhu Peng ( 3 )
Day blind ultraviolet communication system analysis of the signal detection technology .....	LingYun ( 5 )
Study on improved impedance bandwidth conformal four-arm spiral antenna for 5G communication .....	He Jin, Shang Feng ( 7 )
Analysis of radar cooperative jamming strategy and measures .....	Lin Shi, Lu Chunlong, Li Hong ( 10 )
Application of artificial intelligence in radio and television monitoring and supervision platforms .....	Xu Jinzi ( 12 )
Analysis and application of four-wing UAV navigation technology based on inertial navigation .....	Wang Ruoning ( 14 )
Design method of data synchronization mechanism for SCADA system based on redundancy mode .....	Li Yin, Chu Hongjian, Wang Shengzhu ( 16 )
Research on the architecture and key technologies of mixture networking system .....	He Yicun ( 18 )
Construction and strategy of university computer network security system .....	Du Hui ( 20 )
Discussion on network system construction and security platform architecture for large enterprises .....	Huang Daochun, Yu Hongxian ( 22 )
Construction of intelligent networked automobile scene based on scene element .....	Zheng Xinqiang ( 24 )
Application of computer network technology in electronic information engineering .....	Gong Yongmei ( 26 )
Application of Internet of Things technology in hospital information construction .....	Zhang Shaojie ( 28 )
Current situation and development analysis of computer operating system .....	Xiao Tianshun ( 30 )
Analysis of quality assessment of control based on key operational indicators .....	Liu Haiqing ( 32 )
Research on the development status and promotion countermeasures of WeChat public platform service in university library .....	Wang Anmeng ( 34 )
Research on computer software application technology based on Python .....	Li Yonggang ( 36 )
Research on layered technology in computer software development .....	Ding Ning ( 38 )
Study on the usefulness of logistics information collection and dynamic tracking technology for patient tracking and positioning .....	Feng Siyu ( 40 )
Research on the construction of science and technology innovation platform of civil engineering and architecture specialty in high level colleges: perspective of science and technology innovation team construction .....	Lu Shuang, Zhu Linlin, Yu Weiwei ( 42 )
Development of digital substation integrated automation system .....	Wang Ai ( 44 )
Design of an intelligent health monitoring APP .....	Li Shulin, Yu Xi, Yang Jiaxin, Wang Shiyu ( 46 )
Design of pear sugar degree non-destructive detection system based on infrared spectrum .....	Luo Yaqiong, Yu Guolong, Li Huaixu, Wu Lian ( 48 )
Design of intelligent library management system under the background of “Internet +” .....	Wureyati · Yusufu ( 50 )
Design and implementation of public social platform based on HTML5 .....	Zhang Xueying, Yu Zhongxia, Shen Jin ( 52 )
Design and implementation of film recommendation system based on spark Big Data processing .....	Zhu Bingxu, Ye Chuanqi, Wang Junyang, Li Yingting, Li Yujin ( 54 )
Design and implementation of parking reservation based on Android .....	Zhang Yan, Feng Feng ( 56 )
Design of bionic unmanned apple collection robot based on automatic control technology .....	Li Long, Huang Yuheng, Li Yuwen ( 60 )
Design and implementation of small program of campus life integrated service platform .....	Zuo Jiali, Liu Wenshan, Zhang Lingle ( 62 )
Design and development of red culture website based on HTML .....	Wei Chenhao ( 64 )
Application of computer image processing technology in Web design .....	He Jihua ( 66 )
Application of RFID technology in cigarette factory information logistics system .....	Chen Liangchi, Feng Feng ( 68 )
Application of new media technology in electronic product display space .....	Wang Jingwen ( 72 )
Discussion on measures to improve the level of intelligent facilities and equipment automation control .....	Xu Ji ( 74 )
Application of zero transition dynamic reactive power compensation technology .....	Wu Yanping ( 76 )
Application of Big Data technology in credit investigation .....	Zhang Gaiyan ( 79 )

Application of cloud computing in information construction of colleges and universities .....	Liu Yanliu, Gong Xiaoning, Yang Xinwei ( 81 )
Application analysis of automatic steelmaking process control technology .....	Li Haibin ( 83 )
Research on the application of Big Data technology in computer network information management .....	Gao Wenbo ( 85 )
Analysis of the design and implementation of Big Data and cloud computing in smart campus .....	Yang Qiaowei ( 87 )
Application analysis of computer network technology in artificial intelligence.....	Luo Hongwei ( 89 )
Research on the application of digital media technology under the environment of computer network .....	Chen Qian ( 91 )
Application research of artificial intelligence in computer network technology .....	Fu Li ( 93 )
Application of artificial intelligence technology in Big Data network security defense .....	Zhang Zhi ( 95 )
Application of virtual reality technology in digital campus .....	Du Qinwen, Li Haoming, Feng Liuzhu, Wang Bin ( 97 )
Research on the path of innovation and entrepreneurship ecosystem in Big Data context .....	Zhao Shaojuan ( 99 )
Research on the construction of intelligent service in university library under multi-comprehensive perspective .....	Fan Wushan ( 101 )
The test method of LTE-M service quality for urban rail transit .....	Zhao Yujun, Dai Yuanting, Wei Zhiheng ( 104 )
Design and implementation of SSM framework in web application development .....	Cao Huashan ( 108 )
Influence of flexible DC transmission technology on transmission capacity of weak AC section in large power grid .....	Wang Bin ( 110 )
Research and exploration of new intelligent security inspection system .....	Xu Qinyu, Xi Manyi, Zhou Yanqing, Li Haoyuan, Han Junlin ( 112 )
Research status of MOOC teaching reform in domestic higher vocational colleges in recent three years .....	Zheng Mingyan, Wang Dongjuan, Dai Peiyun, Li Xiaoli ( 115 )
PLC course based on German dualism model exploration on reform practice of “three education” in China .....	Wu Xiu ( 117 )
Research on teaching reform of software technology specialty based on web skill contest .....	Zhang Chao, He Linling ( 119 )
Analysis on the development of intelligent networked automobile technology specialty in higher vocational colleges in the information era .....	Sun Fengxia, Zhou Yong ( 121 )
Construction of online and offline hybrid “Gold Course” based on learning results .....	Liang Yajing, Liu Na, Zhu Xianying ( 123 )
Analysis of higher vocational college students’ learning situation based on Big Data technology .....	Li Yujun ( 125 )
Study on the construction of intelligent campus in vocational colleges: taking Changde Vocational Technical College as an example .....	Huang Yunxin, Chen Bensong, Chen Gang ( 127 )
Study of intelligent campus construction on optimizing the management of college counselors .....	Xie Dong ( 131 )
Research on digital reading promotion strategy of university library in new media environment .....	Wu Qiang ( 133 )
Research on the development strategy of VR education based on SWOT analysis .....	Wang Xinyan, Feng Yuan, Zhao Yuting, Cai Zhengyu, Wan Ziming ( 135 )
Investigation and research on students’ on-line learning in Heilongjiang province .....	Liu Xin, Zhang Lei ( 137 )
Exploration on teaching reform of engineering training online course based on CBL and PBL teaching method .....	Cai Wenhui, Zhang Haibo ( 139 )
Research on quality evaluation system of online open courses in colleges and universities under Big Data environment.....	Chen Guo ( 141 )
“1+X” exploration on the training mode of mechatronics specialty group in certificate system .....	Dai Yantao, Yong Liying, Sun Fucui, Chen Junfeng ( 143 )
Discussion on multi-party cooperative education model of computer major in private colleges .....	Zhang Xin ( 146 )
Exploration of the ways of cultivating applied talents of electronic information in college students’ electronic design competition .....	Zhang Shouye ( 148 )
Application of webquest teaching model in the teaching of “Computer Foundation” courses in higher vocational education .....	Kong Xiangya ( 150 )
Research on teaching reform of “Basic Computer Application” course in higher vocational education based on ability orientation .....	Yu Kangcun ( 153 )
Application of task-driven teaching method in “Electronic Technology Basis and Skilled” course in vocational school .....	Ye Linqin ( 155 )
Research on teaching reform of “Analog Electronic Technology”.....	Dong Hanlei, Fan Wen ( 157 )
Construction of circuit CAD and drawing recognition training course based on electronic products.....	Liu Na ( 159 )
AHP-based grading method for electronic course design under education online .....	Xiao Juan, Xu Jian, Xu Zhen, Zhao Xu ( 161 )
Research on information construction of educational equipment in underdeveloped areas .....	Zhang Bincai ( 163 )
Research on the teaching of general courses of “Artificial Intelligence” in higher vocational colleges: a case study of School of Information Engineering of Chuzhou Vocational and Technical College .....	Ding Haitao, Wang Hui, Li Lanlan ( 165 )
Application of case teaching method in the teaching of computer courses .....	Diao Yufeng ( 167 )