

# 计算机测量与控制

## 2023年3月 第31卷 第3期

### 目 次

#### ● 测试与故障诊断 ●

- 基于被动声信号解算方法的高速目标轨迹测量..... 孙贵新,于文彬(1)  
智能安全驾驶监测系统设计与实现..... 张鸿,吉泉仲,王译,张卓,欧阳文凯,黄德(8)  
基于Swin Transformer的YOLOv5安全帽佩戴检测方法..... 郑楚伟,林辉(15)  
基于机器视觉的摄像整纬纬斜检测研究..... 史先传,许议元,殷帅(22)  
小卫星综合测试供电安全性探索与实践..... 马文伟,赵淑莉,鄢婉娟,王乐乐,孟翔翼(29)  
基于深度学习的磁芯表面缺陷检测研究..... 吴显德,陈科宇,周宝,雷雅彧,翁扬凯,王宪保(36)  
自适应传输技术在风机故障监测中的应用研究..... 孙思琦,崔英英,梁雅博,张淑洁,逯瑞婷(43)  
基于CEEMD-IBA-LSSVM的微电网短期负荷预测研究与应用.....  
..... 李晓辉,佟鑫,曹敬立,李蒙,张迎春,王梓舟(49)  
基于混合注意力机制的软件缺陷预测方法..... 刁旭炀,吴凯,陈都,周俊峰,高璞(56)  
面向故障分析的遥测参数可视化平台..... 郑丹(63)  
基于共同邻居惩罚的复杂网络链路预测方法..... 邬剑升,李玉珩(71)  
基于MQTT的液漏监测系统的设计与实现..... 刘艳芳,侯钰龙,高凯(76)  
基于动态可重构技术的装备测试系统研究..... 罗东明,马跃,董旭,连文涛(83)  
基于模糊熵的轨道电路分路不良故障自动预警系统设计..... 肖焕丽(89)  
Kirsch联合高低双阈值的RGB图像边缘检测算法..... 魏雨,黄玉蕾(95)  
基于蒙特卡洛方法的火箭残骸落点范围预测..... 张晓,刘丙杰(102)  
面向天基物联的异步免授权SCMA多用户检测方案..... 郭一诺,吴云飞,张景,成俊峰,陆洲(110)  
一种振梁式加速度计非线性度参数的自动测量装置设计与实现..... 林渊,尹伟伟,胡广明(119)  
基于WOA-XGBoost模型的网络入侵检测..... 闫海涛,张之义,朱晓明,王鹏(127)

#### ● 控制技术 ●

- 基于无线数传技术的无人船控制系统设计与实现..... 罗淦,余华兵,余海瑞,吴文凭,肖宇峰(134)  
非同轴两轮机器人自平衡与转向闭环控制..... 周鑫强,石晓辉,黄剑鸣(140)  
移动目标追踪系统的设计及实现..... 张建峰,秦飞舟(149)  
基于改进高速单光子探测器的复合跟踪控制系统设计..... 徐乐凤,孙彬,徐鲁波,黄劲,王和欣(155)  
基于摩擦模型的伺服系统模糊控制技术研究..... 王楚杏,史守峡(162)

- 基于啤酒发酵过程的时变轨迹输出反馈鲁棒模糊预测控制 ..... 俞宏磊, 姜冠杰, 王守亚(171)  
孤岛微电网中二阶滤波器与PID控制器一体化参数整定方法 ..... 史毅, 沈奥龙, 张正江, 胡文, 章纯, 洪智慧, 闫正兵(180)  
基于图形化热工水力测控程序的解释性加载设计 ..... 向友洪, 廖芳芳, 付玉, 程杰, 王建宇(187)

## ● 军事装备测控技术 ●

- 基于过程集成的迫击炮内弹道参量优化 ..... 王锰磊, 姚养无, 李树军(193)

## ● 设计与应用 ●

- 指定域多无人机协同目标跟踪研究 ..... 朱代武, 刘豪, 曾婧涵, 孙永鹏(201)  
基于六边形网格组部署的对称密钥预分配模型 ..... 庞浩杰, 常凯, 金琰, 朱亮(208)  
基于Generalized Region Loss的代价函数及在图像分割中的应用 ..... 张凯, 余义斌(215)  
基于MVC架构的通用型数据处理软件的设计与实现 ..... 崔北鹏, 张宝欣, 关凯元, 李坤龙, 陈昕(223)  
基于场景理解与改进型BUG算法的移动机器人避障 ..... 查荣瑞, 马云华, 燕翔, 郑霜(228)  
基于LoRa自组网的电能采集系统设计与实现 ..... 陈德富, 刘小湖, 周旭文, 邱宝象, 吴华君, 屈亮亮(235)  
枪用计数器的加速度感应开关仿真 ..... 庞海涛, 姚养无, 车悦, 朱良材, 韩成辉(241)  
基于SpringBoot的运载火箭信息交互指挥平台 ..... 陈锴迪, 欧阳李青, 马玉璘, 张海波, 徐玮, 徐昕(247)  
基于缓存结构的民机实时QAR数据译码方法 ..... 马驰, 乔添, 王潇, 袭奇, 王婧, 张怡丰(255)  
基于多普勒变化率估计的载波跟踪算法 ..... 马瑞, 耿虎军, 王西夺, 陈韬亦(262)  
基于改进时间差分的视觉/惯性组合导航研究 ..... 王丰, 李沅, 李佳潞, 侯琪, 李皓(268)  
天基物联多码率QC-LDPC码构造方法研究 ..... 刘哲铭, 成俊峰, 魏肖, 缪德山, 张景, 陆洲(275)  
基于时窗熵的冲击波到时提取方法研究 ..... 刘晓佳, 李剑, 刘代劲, 魏晓曼, 孔庆珊, 金艳(281)  
基于STK\_Matlab的共形相控阵对卫星可见性分析 ..... 武昭希, 吴涛, 吴海洲, 孔永飞, 史鹏程(287)  
基于Kalman滤波的原子时算法研究 ..... 孙同川, 王振岭, 孙建设, 刘铁强(294)  
基于轻量型U-net的钢材金相图像晶界分割方法 ..... 王森, 国蓉, 胡海军, 许勇, 张钰, 李秀峰(300)

## ● 试验与评价技术 ●

- 基于稀疏导波的裂纹定位和尺寸评估 ..... 董文利, 景健, 王胜, 郑凯, 宗圣康, 张辉(306)

期刊基本参数：CN11-4762/TP\*1993\*m\*16\*300\*zh+en\*P\*¥45\*1000\*45\*2023-3

本期责任编辑：唐德生

# COMPUTER MEASUREMENT & CONTROL

Vol. 31 No. 3 Mar. 2023

## Contents

### ● Test and Fault Diagnosis ●

Measurement for High-Speed Target Trajectory Based on Acoustic Signal Calculation Algorithm.....	SUN Guixin,YU Wenbin(1)
Design and Implementation of Intelligent Safe Driving Monitoring System.....	ZHANG Hong,JI Quanzhong,WANG Zhun,ZHANG Zhuo,OUYANG Wenkai,HUANG Yi(8)
YOLOv5 Helmet Wearing Detection Method Based on Swin Transformer.....	ZHENG Chuwei,LIN Hui(15)
Research on Weft Skew Detection of Camera Weft Straightener Based on Machine Vision.....	SHI Xianchuan,XU Yiyuan,YIN Shuai(22)
Exploratory and Practice on Power Supply Security of Small Satellite Integrated Test.....	MA Wenwei,ZHAO Shuli,YAN Wanjuan,WANG Lele,Meng Xiangyi(29)
Research on Magnetic Core Surface Defect Detection Based on Deep Learning.....	WU Xiande,CHEN Keyu,ZHOU Bao,LEI Yayu,WENG Yangkai,WANG Xianbao(36)
Research on Application of Adaptive Transmission Technology in Fan Fault Monitoring.....	SUN Siqi,CUI Yingying,LIANG Yabo,ZHANG Shujie,LU Ruiting(43)
Research and Application of Microgrid Short-term Load Power Prediction Based on CEEMD-IBA-LSSVM.....	LI Xiaohui,TONG Xin,CAO Jingli,LI Meng,ZHANG Yingchun,WANG Zizhou(49)
Method of Software Defect Prediction Based on Mixed Attention Mechanism.....	DIAO Xuyang,WU Kai,CHEN Du,ZHOU Junfeng,GAO Pu(56)
Visualization Platform of Telemetry Data for Fault Analysis.....	ZHENG Dan(63)
Complex Network Link Prediction Method Based on Common Neighbor Punishment.....	WU Jiansheng,LI Yuheng(71)
Design and Implementation of Liquid Leakage Monitoring System Based on MQTT.....	LIU Yanfang,HOU Yulong,GAO Kai(76)
Realization of Automatic Test System Based on Dynamic Reconfigurable Technology.....	LUO Dongming,MA Yue,DONG Xu,LIAN Wentao(83)
Design of Automatic Early Warning System for Track Circuit Branch Bad Fault Based on Fuzzy Entropy.....	XIAO Huanli(89)
RGB Image Edge Detection Based on Kirsch Combined with high and low Double Thresholds.....	WEI Yu,HUANG Yulei(95)
Landing Point Range Prediction for Rocket Wreckage Based on Monte Carlo Method.....	ZHANG Xiao,LIU Bingjie(102)
Asynchronous Grant-free SCMA Multi-user Detection Algorithm for Space-Based IoT.....	GUO Yinuo,WU Yunfei,ZHANG Jing,CHENG Junfeng,LU Zhou(110)
Design and Implementation of an Automatic Measuring Device for Nonlinear Parameters of Vibrating beam Accelerometer.....	LIN Yuan,YIN Weiwei,HU Guangming(119)
Network Intrusion Detection Based on WOA-XGBoost Model.....	YAN Haitao,ZHANG Zhiyi,ZHU Xiaoming,WANG Peng(127)

### ● Control Technology ●

Design and Implementation of USV Control System Based on Wireless Data Transmission module.....	LUO Gan,YU Huabing,YU Hairui,WU Wenping,XIAO Yufeng(134)
Self-balancing and Steering Closed-loop Control of Non-coaxial Two Wheeled Robot.....	ZHOU Xinqiang,SHI Xiaohui,HUANG Jianming(140)
Design and Implementation of Moving Target Tracking System.....	ZHANG Jianfeng,QIN Feizhou(149)

Design of Compound Tracking Control System based on Improved High Speed Single Photon Detector.....	XU Lefeng,SUN Bin,XU Lubo,HUANG Jin,WANG Hexin(155)
Study on Servo System with Fuzzy Control Based on Friction Model.....	WANG Chuxing,SHI Shouxia(162)
Predictive Control of Output Feedback Robust Fuzzy for Time-varying Trajectory Based on Beer Fermentation Process.....	YU Honglei,JIANG Guanjie,WANG Shouya(171)
Integrated Parameter Setting Method for Second Order Filter and PID Controller in Isolated Island Microgrid.....	SHI Yi,SHEN Aolong,ZHANG Zhengjiang,HU Wen,ZHANG Chun,HONG Zhihui,YAN Zhengbing(180)
Explanatory Loading Design Based on Graphical Thermal Hydraulic Measurement and Control Program.....	XIANG Youhong,LIAO Fangfang,FU Yu,CHENG Jie,WANG Jianyu(187)

## ● Military Equipment Technology in Measurement and Control ●

Optimization of Internal Ballistic Parameters of Mortar Based on Process Integration.....	WANG Yilei,YAO Yaowu,LI Shujun(193)
---	-------------------------------------

## ● Design and Application ●

Study on Multi-UAV Collaborative Target Tracking in Specified domain.....	ZHU Daiwu,LIU Hao,ZENG Jinghan,SUN Yongpeng(201)
Symmetric Key Pre-distribution Model Based on Hexagonal Grid Group Deployment.....	PANG Haojie,CHANG Kai,JIN Yan,ZHU Liang(208)
Cost Function Based on Generalized Region Loss and its Application in Image Segmentation.....	ZHANG Kai,YU Yibin(215)
Research and Realization of Universally Data Processing Software Based on MVC Architecture.....	CUI Beipeng,ZHANG Baoxin,GUAN Kaiyuan,LI Kunlong,CHEN Xin(223)
Mobile Robot Obstacle Avoidance Based on Deep Learning and Improved Bug Algorithm.....	ZHA Rongrui,MA Yunhua,YAN Xiang,ZHENG Shuang(228)
Design and Implementation of Power Collection System Based on LoRa Ad Hoc Network.....	CHEN Defu,LIU Xiaohu,ZHOU Xuwen,QIU Baoxiang,WU Huajun,QU Liangliang(235)
Simulation Of Gun Counter Acceleration Induction to Switch.....	PANG Haitao,YAO Yangwu,CHE Yue,ZHU Liangcai,HAN Chenghui(241)
Launch Vehicle Information Interactive Command Platform Based on SpringBoot.....	CHEN Kaidi,OUYANG Liqing,MA Yulin,ZHANG Haibo,XU Wei,XU Xin(247)
Decoding Method of Civil Aviation Real Time QAR Data Based on Cache Structure.....	MA Chi,QIAO Tian,WANG Xiao,XI Qi,WANG Jing,ZHANG Yifeng(255)
Carrier Tracking Algorithm Based on Doppler Rate of Change Estimation.....	MA Rui,GENG Hujun,WANG Xiduo,CHEN Taoyi(262)
Research on Vision and Inertial Integrated Navigation Based on Improved Time Difference.....	WANG Feng,LI Yuan,LI Jialu,HOU Qi,LI Hao(268)
Research on Construction Method of Multi-rate QC-LDPC Codes for Space-based IoT.....	LIU Zheming,CHENG Junfeng,WEI Xiao,MIAO Deshan,ZHANG Jing,LU Zhou(275)
Research on Shock Wave Arrival Time Extraction Method Based on Time Window Entropy.....	LIU Xiaojia,LI Jian,LIU Daijin,WEI Xiaomao,KONG Qingshan,JIN Yan(281)
Visibility Analysis of Conformal Phased Array to Satellite Based on STK and Matlab Interconnection Simulation....	WU Zhaoxi,WU Tao,WU Haizhou,KONG Yongfei,SHI Pengcheng(287)
Research on Atomic Time Algorithm Based on Kalman Filter.....	SUN Tongchuan,WANG Zhenling,SUN Jianshe,LIU Zieqiang(294)
Grain Boundary Segmentation Method of Steel Metallographic Image Based on Lightweight U-net.....	WANG Sen,GUO Rong,HU Haijun,XU Yong,ZHANG Yu,LI Xiufeng(300)

## ● Test & Evaluation Technology ●

Crack Location and Size Evaluation Based on Sparse Guided Waves.....	DONG Wenli,JING Jian,WANG Sheng,ZHENG Kai,ZONG Shengkang,ZHANG Hui(306)
--	---