

## 目 次

### 智能信息

- 基于改进差分进化的 3-RPS 机器人逆运动学参数标定 ..... 彭金柱, 张建新, 曾庆山( 1 )  
基于深度学习的遥感图像超分辨率重建方法综述 ..... 成科扬, 荣 兰, 蒋森林, 詹永照( 8 )  
具有机器可利用性的双目标置换流水车间调度 ..... 轩 华, 李海云, 李 冰( 17 )  
基于 LightGBM 算法的漏洞利用预测研究 ..... 尹毅峰, 杨显哲, 甘 勇, 毛保磊( 24 )  
基于 YOLOv5s 的金属制品表面缺陷的轻量化算法研究 ..... 贾云飞, 郑红木, 刘闪亮( 31 )

### 机械与动力工程

- 氧合器内部流场特性分析与溶血评估 ..... 刘德平, 郑 凯, 李冬梅( 39 )  
ORC 向心透平的 CFD 计算与性能分析 ..... 马新灵, 张景迪, 孟祥睿, 王 聰, 潘佳浩, 邱宇恒( 46 )  
隧道工况下高速列车动态气密性数值分析方法 ..... 尹小春, 卢耀辉, 赵宏星, 史潇博, 唐 波( 52 )  
硬态车削工艺对 18CrNiMo7-6 钢表层硬度及微观组织的影响 .....  
..... 张银霞, 刘修武, 原少帅, 鄢 伟, 刘治华( 59 )  
小型多级空气压缩机单向阀特性分析及优化设计 ..... 苏智剑, 陈 晨( 65 )

### 土木与水利工程

- 半透水边界下饱和黏土地基的一维黏弹性固结分析 ..... 刘忠玉, 朱少培, 崔鹏陆, 张家超( 71 )  
预应力系梁基础斜柱钢结构施工全过程受力分析 ..... 梁 岩, 赵正豪, 杜晓溪, 卢奥奇( 78 )  
地下车库排烟口朝向对排烟效果的影响 ..... 钟 委, 田 英, 韩 宁, 高子鹤, 章 恒( 84 )  
基于 CEEMDAN 和 MPE 的导墙振动信号降噪方法及应用 .....  
..... 刘 眇, 张鲁丰, 庞博慧, 梁 超, 姚 烨( 91 )

### 电气工程

- 微秒脉冲电场联合 EPA 对 A-549 细胞活性的影响 .....  
..... 张建华, 杨延钧, 吕彦鹏, 金雯雯, 陈传亮( 98 )  
智慧换流站云边协同数据交互方法 ..... 刘 昊, 张景超, 毛万登, 马士棋, 姜 欣, 金 阳( 104 )

## **CONTENTS**

### **[ Intelligent Information ]**

Inverse Kinematic Parameters Calibration of 3-RPS Parallel Robot Based on Modified Differential Evolution .....	PENG Jinzhu, ZHANG Jianxin, ZENG Qingshan ( 1 )
Overview of Methods for Remote Sensing Image Super-resolution Reconstruction Based on Deep Learning .....	CHEUNG Keyang, RONG Lan, JIANG Senlin, ZHAN Yongzhao ( 8 )
Bi-objective Permutation Flow Shop Scheduling with Machine Availability .....	XUAN Hua, LI Haiyun, LI Bing ( 17 )
Research on Prediction of Vulnerability Exploitation Based on LightGBM Algorithm .....	YIN Yifeng, YANG Xianzhe, GAN Yong, MAO Baolei ( 24 )
Lightweight Surface Defect Detection Method of Metal Products Based on YOLOv5s .....	JIA Yunfei, ZHENG Hongmu, LIU Shanliang ( 31 )

### **[ Mechanical and Power Engineering ]**

Analysis of Flow Field Characteristics and Hemolysis Evaluation in Oxygenator .....	LIU Deping, ZHENG Kai, LI Dongmei ( 39 )
CFD Calculation and Performance Analysis of ORC Radial Inflow Turbine .....	MA Xinling, ZHANG Jingdi, MENG Xiangrui, WANG Cong, PAN Jiahao, QIU Yuheng ( 46 )
Numerical Analysis Method for Dynamic Air Tightness Value of High-speed Train .....	YIN Xiaochun, LU Yaohui, ZHAO Hongxing, SHI Xiaobo, TANG Bo ( 52 )
Impact of Hard Turning Process on Surface Hardness and Microstructure of 18CrNiMo7-6 Steel .....	ZHANG Yinxia, LIU Xiuwu, YUAN Shaoshuai, GAO Wei, LIU Zhihua ( 59 )
Characteristic Analysis and Optimization Design of Check Valve for Small Multistage Air Compressor .....	SU Zhiqian, CHEN Chen ( 65 )

### **[ Civil and Hydraulic Engineering ]**

One-dimensional Viscoelastic Consolidation Analysis of Saturated Clay Layer with Semi-permeable Boundary .....	LIU Zhongyu, ZHU Shaopei, CUI Penglu, ZHANG Jiachao ( 71 )
Analysis of the Forces in the Whole Construction Process of the Inclined Column Steel Structure of the Prestressed Beam Foundation .....	LIANG Yan, ZHAO Zhenghao, DU Xiaoxi, LU Aoqi ( 78 )
Influence of Smoke Outlet Orientation on Smoke Exhaust Effect in Underground Garage .....	ZHONG Wei, TIAN Ying, HAN Ning, GAO Zihe, ZHANG Heng ( 84 )
Denoising Method of Discharge Guide Wall Vibration Signal Based on CEEMDAN and MPE and Its Application .....	LIU Fang, ZHANG Lufeng, PANG Bohui, LIANG Chao, YAO Ye ( 91 )

### **[ Electrical Engineering ]**

Effects of Microsecond Pulsed Electric Field Combined with EPA on the Viability of A-549 Cells .....	ZHANG Jianhua, YANG Yanjun, LYU Yanpeng, JIN Wenwen, CHEN Chuanliang ( 98 )
Cloud Edge Collaboration Data Interaction Method of Intelligent Converter Station .....	LIU Hao, ZHANG Jingchao, MAO Wandeng, MA Shiqi, JIANG Xin, JIN Yang ( 104 )