电 子 与 信 息 学 报

DIANZI YU XINXI XUEBAO

第 42 卷 第 4 期　　2020 年 4 月

目　次

忆阻器专题. . . . . **专题主编：王春华**

基于忆阻器的混沌、存储器及神经网络电路研究进展 . . . . . 王春华, 蔺海荣, 孙晶如, 周　玲, 周　超, 邓全利 (795)

忆阻高通滤波电路准周期与混沌环面簇发振荡及慢通道效应 . . . . . 李芳苑, 陈　墨, 武花干 (811)

基于双曲正切忆阻器的 Duffing 系统中簇发、共存分析及其 DSP 实现 . . . . . 王梦蛟, 邓　勇, 李志军, 曾以成 (818)

基于忆阻器的乘法器电路设计 . . . . . 王光义, 沈书航, 刘公致, 李付鹏 (827)

基于多通道忆阻脉冲耦合神经网络的多帧图像超分辨率重建算法 . . . . . 董哲康, 杜晨杰, 林辉品, 赖俊昇, 胡小方, 段书凯 (835)

荷控忆阻器记忆衰退的寄生效应 . . . . . 沈怡然, 李付鹏, 王光义 (844)

忆阻数字逻辑电路设计 . . . . . 王晓媛, 金晨曦, 周鹏飞 (851)

简洁无电感忆阻混沌电路及其特性 . . . . . 曾以成, 成德武, 谭其威 (862)

忆阻突触耦合 Hopfield 神经网络的初值敏感动力学 . . . . . 陈　墨, 陈成杰, 包伯成, 徐　权 (870)

多频激励忆阻型 Shimizu-Morioka 系统的簇发振荡及机理分析 . . . . . 李志军, 方思远, 周成义 (878)

分数阶忆阻退化 Jerk 系统的特性分析与 DSP 实现 . . . . . 孙克辉, 秦　川, 王会海 (888)

论　文

基于混合三角变异差分进化算法的平面稀疏阵列约束优化 . . . . . 陈志坤, 杜　康, 彭冬亮, 朱新挺 (895)

稀疏拉伸式 L 型极化敏感阵列的二维波达方向和极化参数联合估计. . . . . 马慧慧, 陶海红 (902)

基于强散射点在线估计的距离扩展目标检测方法 . . . . . 郭鹏程, 刘　峥, 罗丁利, 李俭朴 (910)

一种针对大型凹型障碍物的组合导航算法 . . . . . 李庆华, 尤　越, 沐雅琪, 张　钊, 冯　超 (917)

一种基于多尺度核学习的仿射投影滤波算法 . . . . . 李群生, 赵　剡, 寇　磊, 王进达 (924)

脉冲噪声中基于指数函数的可变拖尾非线性变换设计 . . . . . 罗忠涛, 詹燕梅, 郭人铭, 张杨勇 (932)

基于矢量图的特定辐射源识别方法 . . . . . 潘一苇, 杨司韩, 彭　华, 李天昀, 王文雅 (941)

认知无线电非正交多址接入随机网络物理层安全性能分析 . . . . . 于宝泉, 蔡跃明, 胡健伟 (950)

基于干扰效率多蜂窝异构无线网络最优基站选择及功率分配算法 . . . . . 李国权, 徐勇军, 陈前斌 (957)

基于 Tangle 网络的移动群智感知数据安全交付模型 . . . . . 赵国生, 张　慧, 王　健 (965)

多操作系统异构网络的病毒传播模型和安全性能优化策略 . . . . . 王　刚, 冯　云, 陆世伟, 马润年 (972)

基于混沌集的图像加密算法 . . . . . 李付鹏, 刘敬彪, 王光义, 王康泰 (981)

基于螺旋相位变换和广义 Fibonacci 混沌的光学图像加密 . . . . . 郭　媛, 许　鑫, 敬世伟, 金　涛, 金　梅 (988)

基于多模态特征融合监督的 RGB-D 图像显著性检测 ..... 刘政怡, 段群涛, 石　松, 赵　鹏　(997)
基于近邻搜索花授粉优化的直觉模糊聚类图像分割 ..... 赵　凤, 孙文静, 刘汉强, 曾　哲　(1005)
基于压缩感知高反光成像技术研究 ..... 范剑英, 马明阳, 赵首博　(1013)
基于深度学习的手语识别综述 ..... 张淑军, 张　群, 李　辉　(1021)
基于深度学习的绝缘子定向识别算法 ..... 李彩林, 张青华, 陈文贺, 江晓斌, 袁　斌, 杨长磊　(1033)
基于条件经验模式分解和串并行 CNN 的脑电信号识别 .....
..... 唐贤伦, 李　伟, 马伟昌, 孔德松, 马艺玮　(1041)

JOURNAL OF ELECTRONICS & INFORMATION TECHNOLOGY

Vol.42 No.4 Apr. 2020

CONTENTS

Special Topic on Memristor ..... ***Leading Editor: WANG Chun Hua***

Research Progress on Chaos, Memory and Neural Network Circuits Based on Memristor ..... *WANG Chunhua, LIN Hairong, SUN Jingru, ZHOU Ling, ZHOU Chao, DENG Quanli* (795)

Quasi-periodic, Chaotic-torus Bursting Oscillations and Slow Passage Effect in Memristive High-pass Filter Circuit ..... *LI Fangyuan, CHEN Mo, WU Huagan* (811)

Bursting, Coexistence Analysis and DSP Implementation of Duffing System Based on Hyperbolic-tangent Memristor ..... *WANG Mengjiao, DENG Yong, LI Zhijun, ZENG Yicheng* (818)

Design of Memristor Based Multiplier Circuits ..... *WANG Guangyi, SHEN Shuhang, LIU Gongzhi, LI Fupeng* (827)

Multi-channel Memristive Pulse Coupled Neural Network based Multi-frame Super-resolution Reconstruction Algorithm ..... *DONG Zhekang, DU Chenjie, Lin Huipin, LAI Chun sing, HU Xiaofang, DUAN Shukai* (835)

The Role of Parasitic Elements in Fading Memory of A Charge Controlled Memristor ..... *SHEN Yiran, LI Fupeng, WANG Guangyi* (844)

Memristive Digital Logic Circuit Design ..... *WANG Xiaoyuan, JIN Chenxi, ZHOU Pengfei* (851)

A Simple Inductor-free Memristive Chaotic Circuit and Its Characteristics ..... *ZENG Yicheng, CHENG Dewu, TAN Qiwei* (862)

Initial Sensitive Dynamics in Memristor Synapse-coupled Hopfield Neural Network ..... *CHEN Mo, CHEN Chengjie, BAO Bocheng, XU Quan* (870)

Bursting Oscillations and Bifurcation Mechanism in Memristor-based Shimizu – Morioka System with Multi-Frequency Slow Excitations ..... *LI Zhijun, FANG Siyuan, ZHOU Chengyi* (878)

Characteristics Analysis and DSP Implementation of Fractional-order Memristive Hypogenetic Jerk System ..... *SUN Kehui, QIN Chuan, WANG Huihai* (888)

Papers

Planar Sparse Array Constraint Optimization Based on Hybrid Trigonometric Mutation Differential Evolution Algorithm ..... *CHEN Zhikun, DU Kang, PENG Dongliang, ZHU Xinting* (895)

Joint 2D-DOA and Polarization Estimation with Sparsely Stretched L-shaped Polarization Sensitive Array ..... *MA Huihui, TAO Haihong* (902)

Range Spread Target Detection Based on Online Estimation of Strong Scattering Points ..... *GUO Pengcheng, LIU Zheng, LUO Dingli, LI Jianpu* (910)

Integrated Navigation Algorithm for Large Concave Obstacles ..... *LI Qinghua, YOU Yue, MU Yaqi, ZHANG Zhao, FENG Chao* (917)

An Affine Projection Algorithm with Multi-scale Kernels Learning ..... *LI Qunsheng, ZHAO Yan, KOU Lei, WANG Jinda* (924)

Variable Tailing Nonlinear Transformation Design Based on Exponential Function in Impulsive Noise ..... *LUO Zhongtao, ZHAN Yanmei, GUO Renming, ZHANG Yangyong* (932)

Specific Emitter Identification Using Signal Trajectory Image ..... *PAN Yiwei, YANG Sihan, PENG Hua, LI Tianyun, WANG Wenya* (941)

Performance Analysis of Physical Layer Security for Cognitive Radio Non-Orthogonal Multiple Access Random Network ..... *YU Baoquan, CAI Yueming, HU Jianwei* (950)

Interference Efficiency-based Base Station Selection and Power Allocation Algorithm for Multi-cell Heterogeneous Wireless Networks ..... *LI Guoquan, XU Yongjun, CHEN Qianbin* (957)

A Mobile Crowdsensing Data Security Delivery Model Based on Tangle Network ..... *ZHAO Guosheng, ZHANG Hui, WANG Jian* (965)

(To be continued on inside back cover)

(Continued)
Virus Propagation Model and Security Performance Optimization Strategy of Multi-operating System Heterogeneous Network ..... *WANG Gang, FENG Yun, LU Shiwei, MA Runnian* (972)
An Image Encryption Algorithm Based on Chaos Set ..... *LI Fupeng, LIU Jingbiao, WANG Guangyi, WANG Kangtai* (981)
Optical Image Encryption Based on Spiral Phase Transform and Generalized Fibonacci Chaos ..... *GUO Yuan, XU Xin, JING Shiwei, JIN Tao, JIN Mei* (988)
RGB-D Image Saliency Detection Based on Multi-modal Feature-fused Supervision ..... *LIU Zhengyi, DUAN Quntao, SHI Song, ZHAO Peng* (997)
Intuitionistic Fuzzy Clustering Image Segmentation Based on Flower Pollination Optimization with Nearest Neighbor Searching ..... *ZHAO Feng, SUN Wenjing, LIU Hanqiang, ZENG Zhe* (1005)
Research on High Reflective Imaging Technology Based on Compressed Sensing ..... *FAN Jianying, MA Mingyang, ZHAO Shoubo* (1013)
Review of Sign Language Recognition Based on Deep Learning ..... *ZHANG Shujun, ZHANG Qun, LI Hui* (1021)
Insulator Orientation Detection Based on Deep Learning ..... *LI Cailin, ZHANG Qinghua, CHEN Wenhe, JIANG Xiaobin, YUAN Bin, YANG Changlei* (1033)
Conditional Empirical Mode Decomposition and Serial Parallel CNN for Electro Encephalo Gram Signal Recognition ..... *TANG Xianlun, LI Wei, MA Weichang, KONG Desong, MA Yiwei* (1041)