

本科生发表论文一览表

序号	论文题目	作者	署名位次	刊物名称	发表日期
1	基于低压电力线的载波模块设计	李照彬, 林宏, 谢嘉倍	第一	电子产品世界	2018.01
2	基于主成分分析与支持向量回归的精明增长建模与预测	蔡念、李飞洋、陈文杰、陈伟建	第二	广东工业大学学报	2017.9
3	Smart Growth Prediction Based on Support Vector Regression	李飞洋、陈文杰、蔡念	第一	Advanced in Intelligent Systems Research	2017.5
4	The study of multimodal gas recognition algorithm based on machine olfaction	Chuchu Zhu, Yunlong Sun, Dehan Luo, Ge Bai, Jialuan Zhou, Li Hui, Yao Yin	第一	IEEE International Conference on Consumer Electronics-China (ICC C-China)	2017
5	基于自适应阈值方法的 IC 焊点检测	叶倩, 蔡念, 林健发, 梁永辉, 王晗	第一	焊接质量控制与管理	2016.7
6	UNB3 模型的性能分析及在卫星定位的应用研究	温志群, 刘立程, 陈变娜, 王峰, 杨永达	第一	计算机测量与控制	2016.6
7	用于导航定位坐标系转换的引申迭代算法研究	伍致聪、刘立程、伍吉修、柯国辉、王峰	第一	计算机测量与控制	2016.03

8	A New IC Solder Joint Inspection Method for an Automatic Optical Inspection System Based on an Improved Visual Background Extraction Algorithm	蔡念、林建发、叶倩	第三	元器件分装包装制造技术	2016.01
9	Symbolic derivation of nonlinear benchmark bicycle dynamics with toroidal wheels	Everett X. Wang, Yu Wang, Junlin Liang, Renhuang Chen, Zhaoheng Zeng, Gengping Xue, Yijun Liu, Qun Fan	第二	Bicycle and Motorcycle Dynamics 2016	2016
10	Accurate, Wearable, Wireless And Pinless Blood Glucose Measurement System Modeled By A Set Of Fractional Differential Equations	X. Z Zhang, J. Xiao, B. W. K. Ling	第一	ICCE 2016	2016
11	Mobile Based Big Data Design Patent Image Retrieval System Via Lp Norm Deep Learning Approach	Jing Su, *Bing W. K. Ling, Qingyun Dai, Jun Xiao	第一	IECON2015-YoKohama	2015.11

1 2	基于互补自适应噪声的集合经验模式分解算法	蔡念、黄威威、谢伟、叶倩、杨志景	第四	电子与信息学报	2015. 1
1 3	Empirical Relationships Between Artificial Noises And Audio Performances Of Wireless Industrial Audio Systems With Dithers	Jun Xiao, Wing-Kuen Ling, Yuping Gui	第一	ICIT 2015	2015
1 4	Classifying Tachycardias Via High Dimensional Linear Discriminant Function And Perceptron With Multi-piece Domain Activation Function	Jing Su, Jun Xiao, Bingo Wing-Kuen Ling, Qing Liu	第一	INDIN 2015	2015

附录论文

基于低压电力线的载波模块设计

李树刚 林亚 陈翰海
广东工业大学通信工程学院

摘要: 由传统的低压电力线通信技术发展而来的低压电力线载波通信技术已经越来越受到关注, 低压电力线载波通信技术利用现有的电力线作为信号传输通道实现一对多、一对多对多对的通信, 选择有效的方案实现电网中的通信至关重要。本设计通过建立低压电力线载波媒体系统模型, 设计了基于HPLC5521F的低压电力线载波模块, 在完成该设计部分理论分析后, 进行电路板的调试, 并对测试结果进一步的分析, 实现了利用低压电力线进行数据传输的目的。通过在实验室和现场环境中测试了其通信效果, 该载波模块设计方案具有较高的可靠性和良好的抗干扰能力。

关键词: 电力线载波; HPLC5521F; 载波模块; 调试

分类号: TN913.6

文内图片:

基于主成分分析与支持向量回归的精明增长建模与预测

蔡志 李飞跃 陈文杰 陈伟建
广东工业大学通信工程学院

摘要: 随着城市化的迅速蔓延, 如何使城市可持续发展成为当前政府决策者的重要课题。为了有效地制定精明增长策略, 本文提出一种基于主成分分析的评价模型, 建立支持向量回归模型预测精明增长的增长率。本文提出一种基于主成分分析的评价模型, 建立支持向量回归模型预测精明增长的增长率。本文提出一种基于主成分分析的评价模型, 建立支持向量回归模型预测精明增长的增长率。

关键词: 精明增长; 主成分分析; 支持向量回归

分类号: F299.2; TP18

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1. 基于低压电力线的载波模块设计

2. 基于主成分分析与支持向量回归的精明增长建模与预测

Smart Growth Prediction Based on Support Vector Regression

Fengyu Li, Wenjie Chen, Weijian Chen and Xian Cai
School of Information Engineering, Guangzhou University of Technology, Guangzhou, P. R. China

Abstract: Smart growth is a technique to improve the quality of development for a city. To effectively measure the degree of smart growth, an evaluation model is proposed based on principal component analysis (PCA). In this paper, we use support vector regression (SVR) to predict the components of smart growth and measure the degree of smart growth in the future. Our experimental results indicate that the proposed model is able to measure the degree of smart growth of a city and predict the trends of smart growth.

Keywords: smart growth, principal component analysis, support vector regression

1. INTRODUCTION

Globally, more people live in urban areas than in rural areas, with 54 percent of the world's population residing in urban areas. The urban population of the world has grown rapidly since 1950, from 166 million to 2.9 billion in 2014. Continuing population growth and urbanization are projected to add 2.5 billion people to the world's urban population by 2030.

Due to the increasing urban population, urban sprawl will inevitably occur, which is the expansion of human population away from central urban areas into low-density and usually less-developed communities, a process called suburbanization. However, human daily activities, such as the commute to work or to school, are dependent on the infrastructure, which leads to an increase in traffic jams. Furthermore, the more people have to drive to work or to school in the downtown, which leads to an increase in traffic jams. Furthermore, the more people have to drive to work or to school in the downtown, which leads to an increase in traffic jams.

In order to develop economic continuously and sustain the quality of human living conditions, city and state governments in US have realized that urban sprawl is not a good idea. Smart growth is a theory of land development that accepts that growth and development will continue to occur, and to seek to direct that growth in an intentional, comprehensive way. Its proponents include urban planners, architects, developers, community activists, and historic preservationists. There are ten principles for smart growth, which are: (1) Compact land use; (2) Create a mix of housing opportunities and choices; (3) Create walkable neighborhoods; (4) Use transit-oriented, attractive, convenient, with a strong sense of place; (5) Preserve open space, farmland, natural beauty, and critical environmental assets; (6) Increase density and critical environmental assets; (7) strengthen

The study of multimodal gas recognition algorithm based on machine olfaction

Chuchu Zhu; Yunlong Sun; Dehan Luo; Ge Bai; Jialuan Zhou; Hui Li; Yao Yin; Hamid Gholami. View All Authors

Abstract: Gas recognition, smell identification and source localization are among complex problems in today's industry. In this study, we employed an electronic nose (Enose) and applied the Locally Linear Embedding (LLE) algorithm to detect and classify four kinds of industrial gas including CO₂, NH₃, CH₄, Volatile Organic Compounds (VOCs). The AIRSENSE PENS Enose was used for gas detection and odor data acquisition. We compared the performance of the proposed LLE algorithm with the Principal Component Analysis (PCA) and Linear Discriminate Analysis (LDA) in extracting the gas characteristics as well as quantitative analysis and data processing. The results verified that the LLE algorithm outperformed other selected algorithms in multimodal gas recognition. Therefore, the LLE algorithm can play important role in the field of machine olfactory and odor identification.

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Conference Location: Guangzhou, China

3. Smart Growth Prediction Based on Support Vector Regression

4. The study of multimodal gas recognition algorithm based on machine olfaction

基于自适应阈值方法的IC焊点检测

叶峰 蔡志 林建发 梁永强 王瑞

广东工业大学通信工程学院, 广东510006

摘要: 为了解IC焊点检测问题, 提出了一种基于自适应阈值方法的焊点检测算法。首先在分析焊点特征与合格焊点之间的差异性的基础上, 提出了一种自适应阈值方法, 用于提取焊点特征。然后, 提出了一种基于自适应阈值的焊点检测算法, 在焊点区域内提取焊点特征, 提出一种基于自适应阈值的焊点检测算法, 用于提取焊点特征。最后, 提出了一种基于自适应阈值的焊点检测算法, 用于提取焊点特征。

关键词: 自适应阈值; IC焊点检测; 图像处理; 图像处理

分类号: TP391; TP391; TP391

UNB3模型的性能分析及在卫星定位的应用研究

Performance Evaluation of UNB3 Model and Its Application to Satellite Positioning

Abstract: UNB3 model is a kind of ionospheric model, which is widely used in GPS and other satellite positioning systems. In this paper, the performance of UNB3 model is analyzed, and its application to satellite positioning is studied. The results show that the UNB3 model has a high accuracy in predicting the ionospheric delay, and it can be used to improve the accuracy of satellite positioning.

Keywords: UNB3 model; ionosphere model; satellite positioning

Author: Wen Zhiquan, Liu Licheng, Chen Bianna, Wang Feng, Yang Yongda

广东工业大学 通信工程学院, 广东510006

5. 基于自适应阈值方法的IC焊点检测

6. UNB3模型的性能分析及在卫星定位的应用研究

用于导航定位坐标系转换的引申迭代算法研究

Research of Extended Iterative Algorithm for Navigational Positioning Coordinate System Conversion

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摘要: GPS导航软件中的坐标轴转换算法的精度对定位结果的精度有重要影响,卫星导航信号处理软件RTKLIB的直角坐标转换至大地坐标算法采用了一种迭代法作为内插算法,为了提升RTKLIB的直角坐标转换至大地坐标算法的性能,作者基于牛顿迭代法的思想,在Bowling直接解法基础上提出一种引申迭代法来取代内插算法,该迭代法克服了Bowling直接解法不可避免带来的... 查看全部>

doi: 10.16526/j.cnki.11-4762/tp.2016.08.062
关键词: 坐标转换 RTKLIB Bowling算法
Keyword: coordinate transformation Newton-Raphson iteration method RTKLIB Bowling's algorithm
作者: 伍毅刚 刘立程 伍晋章 栾国辉 王峰
Author: Wu Zhicong Liu Licheng Wu Jinchang Luo Guohui Wang Feng
作者单位: 广东工业大学机电工程学院,广州,510006
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7. 用于导航定位坐标系转换的引申迭代算法研究

A New IC Solder Joint Inspection Method for an Automatic Optical Inspection System Based on an Improved Visual Background Extraction Algorithm

6 Author(s) Nian Cai, Jianfa Lin, Qian Ye, Han Wang, Shaowei Weng, Bingbo Wang, Kuen Ling View All Authors

6 Paper Citations 600 Full Text Views

Abstract: In the field of automatic optical inspection (AOI), defect recognition for an integrated circuit (IC) solder joint is a long-standing task. Inspired by a visual background extraction (ViBE) algorithm, an object detection method in computer vision, we propose a new inspection method for IC solder joints with an improved ViBE algorithm. To the best of our knowledge, we are the first to consider the defect inspection problem as an object detection problem. We build a solder joint model using the ViBE model updating scheme. Then, we compare the solder joint image with the well-trained model to detect potential defects. Finally, we introduce a frequency map method and define a metric named defect degree to evaluate the qualities of the solder joints. Experimental results show that our method is universal, accurate, and easily debugged compared with the other existing methods.
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8. A New IC Solder Joint Inspection Method for an Automatic Optical Inspection System Based on an Improved Visual Background Extraction Algorithm

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21 - 23 September 2016, Milwaukee, Wisconsin, USA

Symbolic derivation of nonlinear benchmark bicycle dynamics with toroidal wheels

E. X. Wang¹, Y. Wang², J. Liang³, R. Chen⁴, Z. Zeng⁵, G. Xue⁶, Y. Liu¹ and Q. Fan⁸

School of Information Engineering
Guangdong University of Technology
#100 Waihuai Xi Road, Guangzhou HEMC, Guangzhou,
Guangdong, China 510006

¹eveent.wang@gdut.edu.cn, ²11029220823@qq.com, ³1122138351@qq.com, ⁴634843362@qq.com, ⁵1156413653@qq.com, ⁶465913513@qq.com, ⁷lylun2002@163.com, ⁸qfan@msa.com

9. Symbolic derivation of nonlinear benchmark bicycle dynamics with toroidal wheels

Accurate, wearable, wireless and pinless blood glucose measurement system modeled by a set of fractional differential equations

5 Author(s) X. Z. Zhang, J. Xiao, B. W. K. Ling, C. K. Li, K. F. Tsang View All Authors

2 Paper Citations 99 Full Text Views

Abstract: A wearable, wireless and pinless blood glucose measurement system is useful for the general public. This is not only because the system can monitor the blood glucose concentration of a human and provide a warning message when an abnormal level is detected, but also the system is portable and do not cause any pain to the consumers due to its wearable, wireless and pinless nature. However, achieving a high accuracy measurement is the most challenging issue of the system. This paper models the relationship between the blood glucose concentration and the measurements by a set of fractional differential equations. Since the fractional differential equation model is a generalization of the integer differential equation model, the accuracy of the model can be significantly improved. Experimental results verify the outperformance of our proposed system.
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Publisher: IEEE
Electronic ISSN: 2158-4001
Conference Location: Las Vegas, NV, USA

10. Accurate, Wearable, Wireless And Pinless Blood Glucose Measurement System Modeled By A Set Of Fractional Differential Equations

Browse Conferences - IECON 2015 - 41st Annual Conf.

Mobile based big data design patent image retrieval system via Lp norm deep learning approach

5 Author(s) Jing Su, Bingbo W. K. Ling, Qingyun Dai, Jun Xiao, Kim-Fung Tsang View All Authors

150 Full Text Views

Abstract: This paper proposes a mobile based big data design patent image retrieval system via a deep learning approach. The images are represented via sparse vectors by a dictionary. The joint representation and dictionary design problem is formulated as a mixed L2 and Lp optimization problem. An iterative algorithm is employed for finding a locally optimal solution. Experimental results show that the retrieval accuracy is high.
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Publisher: IEEE
Conference Location: Yokohama, Japan

11. Mobile Based Big Data Design Patent Image Retrieval System Via Lp Norm Deep Learning Approach

基于互补自适应噪声的集合经验模式分解算法

Ensemble Empirical Mode Decomposition Base on Complementary Adaptive Noises

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摘要: 经验模式分解(EMD)及集合经验模式分解(CEEMD)是处理非平稳信号的一种有效的数学理论,该文尝试从数学理论上分析集合经验模式分解和自适应噪声集合经验模式分解的收敛性,推导了自适应噪声集合经验模式分解中,互补自适应噪声集合经验模式分解在每一层分解中分解量上的收敛性,在分解过程中添加的互补噪声分量,提出一种基于互补自适应噪声的集合经验模式分解算法,实验... 查看全部>

Abstract: v
doi: 10.11999/IEIT141632
关键词: 经验模式分解 集合经验模式分解 自适应噪声集合经验模式分解 收敛性
Keyword: Empirical Model Decomposition (EMD) Ensemble EMD (EEMD) EEMD with Adaptive Noise (EEMDAN) Mode mixing
作者: 蔡志 莫威威 曹伟 叶青 杨少康
Author: Cai Nian Huang Wei-wei Xie Wei Ye Qian Yang Zhi-jing
作者单位: 广东工业大学机电工程学院,广州,510006
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12 基于互补自适应噪声的集合经验模式分解算法

Empirical relationships between artificial noises and audio performances of wireless industrial audio systems with dithers

4 Author(s) Jun Xiao ; Wing-Kuen Ling ; Yuping Gai ; Kim-Fung Tsang View All Authors

45 Full Text Views

Abstract

Abstract: This paper presents the empirical relationships between various types of noises and the audio performances of various types of dithering systems based on extensive computer numerical simulations. There are two types of dithering systems. They are the subtractive dithering systems and the nonsubtractive dithering systems. For the subtractive dithering systems, artificial noises are added before and after the quantizer. For the nonsubtractive dithering systems, there is only a single artificial noise added before the quantizer. Also, there are two types of subtractive dithering systems. They are the synchronous subtractive dithering systems and the asynchronous subtractive dithering systems. The artificial noises added before and after the quantizer are the same for the synchronous subtractive dithering systems, while they are different for the asynchronous subtractive dithering systems. In this paper, both the subtractive dithering systems and the nonsubtractive dithering systems as well as both the synchronous subtractive dithering systems and the asynchronous subtractive dithering systems are studied. Besides, the Gaussian distributed noises, the uniform distributed noises and the bilateral exponential distributed noises as well as the sinusoidal input signals are employed for evaluating both the signal to noise ratios (SNRs) and the tonal suppression ratios (TSRs). Computer numerical simulation results show that the synchronous subtractive dithering systems outperform the nonsubtractive dithering systems. Also, the use of the uniform distributed noises outperforms the use of the other two types of noises. Moreover, the asynchronous subtractive dithering systems achieve constant TSRs independent of both the type of the noises and the SNR levels.

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13. Empirical Relationships Between Artificial Noises And Audio Performances Of Wireless Industrial Audio Systems With Dithers

Classifying tachycardias via high dimensional linear discriminant function and perceptron with multi-piece domain activation function

9 Author(s) Jing Su ; Jun Xiao ; Bingo-Wing-Ku en Ling ; Qing Liu ; Kim-Fung Tsang ; Kwok-Tai Chui ; Haora... View All Authors

46 Full Text Views

Abstract

Abstract: This paper proposes a novel method for discriminating the supraventricular tachycardias and the ventricular tachycardias via a high dimensional linear discriminant function and a perceptron with a multi-piece domain activation function having multi-level functional values. The algorithm is implemented via the mobile application. First, the discrete cosine transform is applied to each training electrocardiogram. Then, these discrete cosine transform coefficients are scaled down according to their frequency indices. These scaled discrete cosine transform coefficients of each electrocardiogram are employed as features for performing the discrimination. Second, the high order statistic moments of each feature of the training electrocardiograms corresponding to the same type of tachycardias are evaluated. These high order statistic moments of each feature corresponding to same type of tachycardias form a vector. Third, the high dimensional linear discriminant function is employed to minimize the intraclass separation and maximize the interclass separation of these statistic moment vectors. In particular, new vectors are formed by projecting these statistic moment vectors to the high dimensional linear discriminant function. Fourth, the principal component analysis is employed to reduce the dimension of the projected vectors. Finally, a bank of perceptrons with multi-piece domain activation functions having multi-level functional values is employed for performing the discrimination. By using this bank of perceptrons, the condition for general two class pattern recognition problems achieving the error free pattern recognition performance is guaranteed. Computer numerical simulation results show that our proposed method is robust and effective.

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14. Classifying Tachycardias Via High Dimensional Linear Discriminant Function And Perceptron With Multi-piece Domain Activation Function