Information and Computer Technologies

Based on double threshold segmentation gait recognition method to design of motion control system for middle size league soccer robots

Lu Zhenli, Tian Kai, Mao Limin, Li Bin

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To achieve a soccer match where robots against human, the key issue for robots is to effectively identify human action. Through analyzing the characteristics of the human gait, and combing with the motion character of the meddle size league soccer robot, based on the tracking information of human skeleton captured by Kinect, a gait recognition method of double threshold segmentation is proposed in this paper. The gait recognition field is demarcated by acquiring the depth information of the human skeleton. The "go-forward" and "go-backward" and "piaffe" gait rules are developed, which can also generate motion commands to control the middle size league soccer robot to represent the gait. The experimental results show that the proposed method can realize motion recognition in real time, which has strong practical performance and can provide technical reserves for related research.

Keywords: Middle size league soccer robots; Threshold segmentation; Gait recognition; Motion control

A session identification method of Web user based on K-means algorithm

Ping Xiao

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The session identification is an important work in the early stage of analysis of behaviour, which has a decisive impact to find out the behaviour characteristics. After analyzing these common session identification methods, we put forward a kind of optimization method to identify Web user session based on K-means algorithm. We compared the method proposed by this paper with other two methods including θ equals thirty minutes and the session identification based on time distance in three aspects: the number of session, the value of absolute evaluation function A(h) and the value of relative evaluation function R(h). It shows that the session identification method proposed by this paper can identify the real user session more completely.

Keywords: Web user session identification; K-means algorithm; Data Pre-processing; Web log mining

Analysis of calculating authors' breadth centrality in the collaboration network

Li Guangming, Lu Dai

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In collaboration network, based on the relations and cooperation between co-authors, we evaluate importance of scholars, in what position scholars are, such as the centrality of scholars. This information reflects scholars 'research cooperation. In this paper, the methods were given up from various perspectives, which indicate that the network contains a lot valuable information about scholars. Mining and identification of this information with in-depth analysis will play a significant role in guiding the formulation of science and technology management and technology policy.

Keywords: collaboration network; complex network community; breadth centrality

Research on the data warehouse testing method in database design process based on the shared nothing frame

Chen Keming

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This paper firstly introduces the recent research on data warehouse and describes the technology of data warehouse in process of design of database in detail. Data warehouse is a new technology in data management and information, and is mainly used to raise efficiency of data querying and to support decision. We use the theory of data warehouse to design database application system and to organize the database system in order to overcome the shortcomings of the database application system, such as low efficiency when there is a large number of data or in a new work, the data is difficult to transfer into useful information, and it can't satisfy the needs of long time analysis and prediction. According to the actual situation in a certain company, a concrete design of such a system is put forward in the paper. After the infrastructure of database products was briefly introduced, the performance of cloud computing database under the workload of business type, testing technology standard of cloud computing database was especially analyzed, and the evaluate and assessment methods of capacity of cloud computing database was expatiated.

Keywords: data warehouse; design process; performance; benchmark.

The fast multi-level fuzzy edge detection of blurry images

Mu Ke, Yang Jianhui

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To realize the fast and accurate detection of the edges from the blurry images, the fast multi-level fuzzy edge detection (FMFED) algorithm is proposed. The FMFED algorithm first enhances the image contrast by means of the fast multi-level fuzzy enhancement (FMFE) algorithm using the simple transformation function based on two image thresholds. Second, the edges are extracted from the enhanced image by the two-stage edge detection operator which identifies the edge candidates based on the local characteristics of the image and then determines the true edge pixels using the edge detection operator based on the extreme of the gradient values. Experimental results demonstrate that the FMFED algorithm can extract the thin edges and remove the false edges from the image, which leads to its better performance than the Sobel operator, Canny operator, traditional fuzzy edge detection algorithm and other multi-level fuzzy edge detection algorithms.

Keywords: blurry images, edge detection, fuzzy enhancement, image thresholds

Research on the detection of abnormal traffic for multi-channel network

Liu Lixia, Mei Hong, Xie Bing

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With the rapid growth of the categories and numbers of network attacks and the increasing network bandwidth, network traffic anomaly detection systems confront with both higher false positive rate and false negative rate. A traffic anomaly detection system with high precision is presented in this paper. First, we use multi-level and multi-dimensional online OLAP method to analyze traffic data. In order to reduce the computational and space complexity in this analytical process, some optimization strategies are applied in building DetectCube, the minimal directed Steiner tree algorithm is adapted to optimize multiple query on the Cube, and the traffic data is summarized at appropriate level with the help of discovery-driven exploration method. Second, a concept of entropy to measure the distribution of traffic on some particular dimensions is given and the values of entropy in every window and every Group-By operation are collected to form multiple time series of entropy. Finally, we employ one-class support vector machine to classify this multidimensional time series of entropy to achieve the purpose of anomaly detection. The proposed traffic anomaly detection system is validated and evaluated by comparing it with existed systems derived from a lot of real network traffic data sets. Our system can detect attacks with high accuracy and efficiency.

Keywords: traffic anomaly detection; entropy; DetectCube; OLAP; one-class support vector machine.

Throughput analysis of network coding in the internet of things

Chen Si

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Network coding is one of the most important breakthroughs of information transmission technology in communication network, whose main idea is using intelligent function of Router and encoding transmit information by intermediate node of network to improve the efficiency of network transmission. The throughput about IOT in military based on the network coding is analyzed. The simulation results indicate that the network coding can enhance the throughput about IOT in military more than before.

Keywords: component, network coding, Internet of things in military, throughput

Research and implementation on cloud computing security based on HDFS

Liu Zhilong

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This paper focuses on the research of the cloud computing security, proposing the file data management model and implementing the security of the cloud computing based on HDFS. The design of the file data management system under the cloud computer environment is achieved based on HDFS, which is with the functions of upload and download data parallelism, user management, inventory management, etc. Aimed at solving the disadvantages of HDFS that is lack of security storage and transmission of the file data, and the integrity checking, the access authentication security mechanism of data node to the client under HDFS, which is based on the IBE algorithm.

Keywords: cloud computing; identity authentication; cloud security; HDFS; access control; safe storage

Research on the decision-based adaptive weighted mean filter algorithm for impulse noise removal

Zhou Wengang, Fu Fen

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The decision-based adaptive weighted mean filter is proposed to remove impulse noise from the highly corrupted image. The proposed filter first identifies the corrupted pixels using the soft decision-based noise detector and then removes the detected impulses using the adaptive weighted mean filter while keeping the uncorrupted pixels unaltered. Extensive simulations indicate that the proposed filter significantly outperforms a number of existing decision-based filters in that it can remove impulse noise from the corrupted image effectively while preserving the details in the image very well.

Keywords: mean filter, impulse noise, noise detector

The location technology of mobile nodes in wireless sensor network

Qi Yingchun, Guo Huiling

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The existing location method usually needs to establish network and the energy consumption is inequality. So it does not apply to a small number of mobile nodes in wireless sensor networks. Aim at the positioning of each node in wireless sensor network, clustered location algorithm is proposed on the premise of analyzing the computational complexity and the energy consumption of positioning. Using Receiving Signal Strength Indication (RSSI) combined with Centroid Localization Algorithm (CLA) to locate the mobile nodes in the cluster. The analysis and simulation results show that the improvement of clustering method can improve the positioning accuracy and reduce the network energy consumption effectively. Then the network life cycle can achieve the longest.

Keywords: wireless sensor network, clustering algorithm location, mobile node localization, energy consumption

Adaptive relay selection in cooperative communication based on space time block code

Li Xiaokui, Jiang Wei

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Wireless cooperative communication technology share resources with each other, can get space diversity gain and improve the system transmission performance, so that in recent years it has received the extensive attention of many scholars in the field of wireless communications. In view of the flat fading channel, adaptive relay node selection and transmission strategy based on space time block code under decode forward mode is put forward and closed expressions of average outage probability and bit error rate are given under the Rayleigh channel. This strategy applies the opportunistic relay scheme in collaborative space-time coding system, which can get diversity gain and coding gain. The experiment results show that the proposed relay transmission scheme has better performance than fixed relay node transmission strategy.

Keywords: adaptive relay selection, cooperative communication, space time block code, outage probability

Wavelet transform based video compression algorithm and its application in video transmission

Sang Lijun

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This paper proposes a novel wavelet transform based video compression algorithm, and then we apply it in the video transmission. Firstly, we introduce a general video coding framework and Basic coding process in the video compression. Secondly, we design an improved wavelet transform in the video compression problem. The proposed modified wavelet transform is executed by a threshold or a bound, which can guarantee the pathway to discover a direction to satisfy the maximum zero engries. Afterwards, we define the path vectors with point subsets of a finite grid to modify the standard wavelet transform. Thirdly, we illustrate how to exploit the proposed wavelet transform based video compression algorithm and a FPGA chip in a video transmission system. Finally, we test the performance of our algorithm using the VIRAT Video Dataset. Compared with Wavelet-SPIHT and JPEG 2000, the conclusions can be drawn that the proposed can effectively compress videos and greatly promote the performance of video transmission as well.

Keywords: Wavelet transform, Video compression, Video transmission, Filter coefficient, Path vectors

The application of SpMT WaveCache in performance development of dynamic data flow computer

Zhou Ning, Zhang Jing

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Along with the gradually rising of the frequency of single core processor, it also brought communication overhead, design difficulty, power consumption and other problems. These problems all come from memory wall, power wall, and etc. However, dynamic data flow computer well solved the problems such as memory wall, and catered to the development trend of current multi-core system architecture. Based on this, this paper made a study on the performance development of a typical dynamic data flow computer system structure - WaveScalar system structure, introduced in detail the application of SpMT WaveCache in dynamic data flow computer performance development, dug the speculative multithreading parallelism of data flow computer, and finally proved with practice that the performance of WaveScalar system structure was greatly improved, and thus is a method of dynamic data flow computer performance development deserving to be vigorously popularized and applied.

Keywords: data flow computer, WaveScalar, WaveCache, SpMT

Research and implementation of virtual tour training system based on virtools

Zhao Guiliang, Zhao Guolin

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With high resolution aerial images as scene map, using 3DMAX as a 3D modeling tool, Photoshop as a texture image processing tools, through field photographs the scene really 3D scene, with Virtools as the 3D virtual simulation platform, through the creation of 3D virtual character, with a design concept of cosplay class RPG network game Fu Zhou Municipal Tourism virtual

tour guide training system has been Development. This system has the Fuzhou City Attractions Guide demonstration, three-dimensional roaming, information query and tour guide examination spots module, which is a new application of the virtual reality technology in the tourism industry.

Keywords: Virtual Tour, *Network Game*, *Virtual Reality*, *Virtools*

Research on the VXI fault diagnosis for computer network based on immune genetic algorithm in process of data transfer

Zhao Yan, Chen Yao, Zhang Gang, Wei Wei

Computer Modelling & New Technologies 2013 ***17****(5B) 71-75*

This paper analyses status and requirement of electronic equipment test. Auto test system's hardware based on VXI is presented. Test diagnosis network architecture is put forward. The advantages of C/S and B/S mode are analysed. The computer network is combined with virtual instrument ideally. Based on existing VXI test system and combined with computer network technology, fault diagnosis network based on hybrid structure of C/S and B/S is developed by Lab Windows/CVI. It realizes instrument's linking each, share resource and the improvement of the utilizing rate of instruments.

Keywords: fault Diagnosis, *VXI*, *virtual Instrument*, *immune genetic algorithm*, *hybrid Structure*

Research on dimension reduction methods facing massive high dimensional web text data based on cloud computing

Hui Deng

Computer Modelling & New Technologies 2013 ***17****(5B) 76-79*

The cloud model is introduced in the clustering dimension reduction process of the text data. In order to make the feature words selected meet this requirement, the cloud model theory is used for text feature selection, and association cloud filter together with distinction cloud filter is separately done for each feature in the training set; finally, the cloud feature space is obtained. Adopting the cloud computing model can not only allow the text information to be reflected more rationally but also ensure that the vector dimension will not be oversized to influence the machine learning ability. The cloud computing model can be introduced in the massive high-dimensional web text data; on one hand, speed of choosing the feature space can be increased, on the other hand, the data dimension reduction effect can also be enhanced.

Keywords: Cloud Computing; Text Data; Dimension Reduction; Feature

Research on the deployment tactics of workloads confliction based on the neural network in cloud computing

Wu Quinlan, Huang Yanmei

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Aiming at the degrading system performance that busty workloads bring in cloud computing, a resource deployment model based on error back-propagation neural network was proposed to resolve the problems referred to above. A network module is started automatically when the beginning of busty workloads is judged. The prediction of parameter adjustment value is carried out by using pertained network to achieve the purpose of tracking dynamically the changing of underlying resource and outside world task in cloud computing system. The results of simulation in CloudSim prove that the response speed of resource deployment can be improved efficiently by bringing neural network module.

Keywords: deployment tactics; required busty workloads; neural network; resource optimization; cloud computing.

Research on pattern recognition method based on the analysis of large big quality

Huang Yanmei, Wu Quinlan

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As the development of Internet, mobile Internet and networking, we have effectively ushered in an era of mass data. Analysis of research firm IDC released a new digital study reports, this report shows that total global information every two years, will grow 1 time. Therefore, as data growing, how to manage huge amounts of data and analyses has become a very important and urgent needs. Data quality is the basis for conclusion validity and accuracy of the data analysis is the most important prerequisite and guarantee. Pattern recognition development in the 1960s in in signal processing, artificial intelligence, Cybernetics, computer science and other disciplines with its high speed, high accuracy, and high efficiency characteristics of large data processing has its unique advantages.

Keywords: big data, pattern recognition; internet

A study on contour extraction method in computer vision measurement technology

Cui Zhonguyuan, Zhang Hong

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Image segmentation and border extracting technology play an important role in the computer vision measurement system Aiming at the shortcomings of traditional edge detection methods, considering the features of computer vision measurement, a practical contour extraction method is introduced. In the method, image segmentation is based on the gray threshold method, the mathematical morphology method is adopted to remedy the defects of binary image, the contour of image is stored into chain - code through contour tracking algorithm. Using this method, the one – pixel - wide border of image can be easily extracted. The principles and algorithms of key technologies of the method are described. The experiments show that the features of the method such as denoise and precision are better than that of the traditional edge detection methods. It can be applied to practical engineering measurement system.

Keywords: metrology; contour extraction; image segmentation; computer vision; mathematical morphology; gray threshold method.

Research on a New Generation of Wireless Internet of Things and Gateway

Jie Zhang, Tiangi Tan

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The paper put forward a networking scheme for short-range and low-power wireless application network base on 6LoWPAN protocol, use 32bit ARM Cortex M3 MPU and 86FR212 to form a network system, design a new generation wireless gateway, the gateway is low cost embedded with multi-protocol wireless gateway.

Keywords: Internet of Things; Wireless gateway; IPv6; 802.15.4; ARM cortex M3; 86FR212; Route Under MAC

An Improved K2DPCA Dimensional Reduction method for Hyper spectral Remote Sensing Image

Hui Feng, Pan Zijin

Computer Modelling & New Technologies 2013 ***17****(5B) 96-99*

An improved kernel two-dimensional principle analysis (K2DPCA) dimensional reduction method for hyperspertral remote sensing image was proposed in this paper. It decorrelated the columns of remote sensing image by the standard K2DPCA, then used columns 2DPCA to further decorrelate the row direction. It could achieve the dimensional reduction at both widthways and lengthways for remote sensing image. The original images could be reconstructed by the principle components of extracted from each bands of remote sensing image. Experiments were verified with AVIRIS hyperspertral remote sensing image Cuprite, and the result showed that this new method could not only ensure the reconstructed image quality, but also effectively improve the image compression rate.

Keywords: two-dimensional principle analysis, *kernel two-dimensional principle analysis*, *image dimensional reduction*, *image reconstruction*, *hyperspertral remote sensing image*

The technology of marking animation based on virtual reality

Li Linlin

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This topic mainly the manufacture flow which usually uses on the domestic present film and television animation based on virtual reality profession in carries on the analysis, elaborated that further strengthens the digital special effect effective application the necessity, the union concrete case development "the effective application "the around contrast. Unifies in our country movie, the television as well as the advertisement work is good or bad points carries on the analysis. At present in domestic and foreign, our country already had set up the corresponding research, the production as well as the teaching organization. Myself believed how to reduce equipment's loss, haw the more comprehensive performance screenwriter's thought that how more comprehensive development digit special effect research and so on application domain to take the film and television animation creation the important thoughts.

Keywords: Animation; virtual reality; animation manufacture; digital

Research on the retransmit intention of negative word-of-mouth based on interpersonal trust in mobile internet community

Dong Yanyan, Li Qiong, Li Li

Computer Modelling & New Technologies 2013 ***17****(5B) 105-110*

In order to prolong life of wireless sensor network, a novel clustering routing algorithm in wireless sensor networks based on energy equalization to solve the “hot hole” problems in the clustering routing protocol. Firstly, the monitoring region is divided into circular area which base station is taken as the center, and the monitoring area is divided into multi-sectors, the nodes in blocks form a cluster, and then the cluster head is selected according to the node residual energy, and the corresponding cluster communication according to the dispersion coefficient of cluster head, finally, single hop and multi hop is used to communicate between and the simulation experiment to used to test performance of the algorithm. The results show that the proposed algorithm can effectively improve the network energy efficiency and achieve energy consumption balanced among nodes, so it can prolong life time of wireless sensor network.

Keywords: WSN; distribution coefficient; energy-efficient; network life

Design and Realization of Platform of Mass Data Processing Based on High-Performance Computer

Nie Jing

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Today when network information technology develops rapidly, people propose higher requirements on the speed and quality of information processing. For the purpose of satisfying such requirements, we can only rely on the support from high-performance computers. At present, high-performance computers are mainly applied in the field of science and seldom applied in people's daily life relatively speaking. The platform of mass data processing can effectively improve the ability of parallel processing of network information and facilitate the storage, management, processing and utilization of information data to become more standardized and proceduralized. The paper proposes the platform of mass data processing based on high-performance computers, analyzes and inquires into the problems in system application, and puts forward corresponding solutions finally.

Keywords: high-performance computer; mass data processing; programming model; design

Study on the Theoretical Model Based on Image Processing Control System

Li Jiaxian

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With the development of information technology, requirements for image processing have been increasing as well. Only by resolving problems such as image acquisition, processing and storage in the vision measurement process effectively can it be possible to obtain high-standard image information. Based on NI FlexRIO technology, this paper uses a new graphical development platform with the combination of related graphics processing technology to produce a real-time acquisition and processing system, thus realizing the acquisition, processing and storage of image information effectively. Through relevant experiments, the working performance of the system under certain circumstances can be tested. Finally, depending on the superior performance, the result shows that image acquisition and processing is also applicable to other areas of expertise.

Keywords: Image processing technology, NI FlexRIO, acquisition, processing

An analysis on the current development and risk control of the internet financial of China

Lv HongLing, Qiu WenYan

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The so-called Internet Financial is the usage of Internet technology to develop a platform for financial services. For finance development of the Internet, we have to see its innovation should also see its risks both, and focus on risk prevention. In this paper, the concept of Internet banking, characteristics, China's Internet presence and type of financial models were analyzed and summarized with deep analysis of the financial risk types of Internet, the market risk, policy risk, operational risk, security risk, and the risk of trading platforms, etc. And Case Study on P2P and Yu Ebao are to solve problems of how to control these risks by putting forward their own proposals and how the security measures are taken in two ways.

Keywords: internet finance, features, opportunity, the financing mode, risk control, risk response

Research of license plate recognition and location based on SUSAN corner detection

Yang Huanhai

Computer Modelling & New Technologies 2013 ***17****(5B) 124-130*

Recognition technology of license plates is one of the important research subject in the field of intelligent traffic. It relates to computer vision, digital imaging processing and pattern recognition and has extensive real application background. Based on license plate location method of SUSAN corner detection, the paper proposes a location method of license plates aiming at the method firstly uses mathematical morphology for initial location on license plate area. Then, the method uses SUSAN corner detection method to detect the corner of candidate regions. Lastly, the method uses the achieved angular point figure for accurate location by using clustering method. The experiment proves that when the angle of inclination of license plates is great and even is vertical, the method not only has ideal segmentation effect, but also has rapid segmentation speed, which helps real-time location of license plates.

Keywords: license plate location, gray image, slant correction, corner detection, SUSAN