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DESIGN AND IMPLEMENTATION OF A GSM-BASED SCROLLING MESSAGE DISPLAY BOARD

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ABSTRACT

This research work is developed with two AT89C52 microcontrollers from Atmel. The microcontrollers provide all the functionality of the display notices and wireless control. The Display is obtained on a 7X96 Light Emitting Diode (LED) dot matrix display, arranged on a Vero board. A desired text message from a mobile phone is sent via a Global System for Mobile Communication (GSM) to the GSM module located at the receiving end. The GSM modem is connected, through MAX 232 Integrated Circuit (MAX 32 IC), to the AT89C52 microcontroller. The message that is stored in the Electrically Erasable Programmable Read Only Memory (EEPROM) is then displayed on the LED dot matrix display. This hardware uses regulated 5V, 500mA power supply. A three-terminal LM7805 is employed for regulation of the voltage. A bridge type full-wave rectifier is used to rectify the AC output of the secondary of 230/12V step down transformer. The system was tested to work according to specification.

KEYWORDS

AT89C52 Microcontroller, GSM Module, EEPROM, Display Board, LED Array

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A Hybrid DPCM-DCT and RLE Coding for Satellite Image Compression

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ABSTRACT

There are many ways to encode, represent, and compress satellite images. Today, with the huge technological advance, algorithms are used to perform many calculations to compress and decompress a satellite image. The future of the compression can take place only through mathematical algorithms, and the progress of mathematical research undoubtedly will lead to an advance in image and file compression. In this paper, we propose a hybrid DPCM-DCT predictive coding and discrete cosine transform DCT and, run-length encoding (RLE) for satellite image compression.

KEYWORDS

Compression, satellite images, DCT, DPCM

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Validation of the Development Methodologies

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ABSTRACT

This paper argues that modelling the development methodologies can improve the multi-agents systems software engineering. Such modelling allows applying methods, techniques and practices used in the software development to the methodologies themselves. The paper discusses then the advantages of the modelling of development methodologies. It describes a model of development methodologies, uses such a model to develop a system of their partial validation, and applies such a system to multi-agent methodologies. Several benefits can be gained from such modelling, such as the improvement of the works on the development, evaluation and comparison of multi-agent development methodologies.

KEYWORDS

Development methodologies, Modelling, Multi-agent systems.

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Search for Optimized Cost matrix for Performance Enhancement of Anomaly Based Intrusion Detection System using Cost Sensitive Classifier

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ABSTRACT

Intrusion Detection Systems (IDSs) should maximize security while minimize cost. Classic evaluation measures have been extensively studied in the past. Recently, cost-sensitive classification has received much attention. A cost-sensitive classifier uses cost values to evaluate the performance of the classifier. However, these cost values must be given in advance and are generally unknown for a given dataset. It is very time consuming to find these cost values. Again if it is possible to find out such cost values same cannot be used for other datasets. In a typical classification task, all types of misclassifications are treated equally. However, in many practical cases, not all misclassifications are equal. Therefore, it is critical to use a cost-sensitive classifier to minimize cost of misclassifications. This work uses MetaCost, a costsensitive meta-classifier that takes in a classification algorithm, training data, and a cost matrix. In order for MetaCost to be effective, we need to find an optimal cost matrix. In this paper we have proposed a new optimization technique for choosing the cost matrix: cost matrix optimization technique for Anomaly Based Intrusion Detection System (ABIDS). This approach can be applied for finding out optimized cost matrix for any datasets.

KEYWORDS

Intrusion Detection System, Anomaly based Intrusion Detection System, classification algorithm, accuracy, confusion matrix, cost matrix.

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Contrast of Resnet and Densenet Based on the Recognition of Simple Fruit Data Set

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ABSTRACT

In this paper, a fruit image data set is used to compare the efficiency and accuracy of two widely used Convolutional Neural Network, namely the ResNet and the DenseNet, for the recognition of 50 different kinds of fruits. In the experiment, the structure of ResNet-34 and DenseNet_BC-121 (with bottleneck layer) are used. The mathematic principle, experiment detail and the experiment result will be explained through comparison.

KEYWORDS

Deep learning, Object recognition, Computer vision, Image processing, Convolutional Neural Networks.

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NETCDL: The Network Certification Description Language

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ABSTRACT

Modern IP networks are complex entities that require constant maintenance and care. Similarly, constructing a new network comes with a high amount of upfront cost, planning, and risk. Unlike the disciplines of software and hardware engineering, networking and IT professionals lack an expressive and useful certification language that they can use to verify that their work is correct. When installing and maintaining networks without a standard for describing their behavior, teams find themselves prone to making configuration mistakes. These mistakes can have real monetary and operational efficiency costs for organizations that maintain large networks. In this research, the Network Certification Description Language (NETCDL) is proposed as an easily human readable and writeable language that is used to describe network components and their desired behavior. The complexity of the grammar is shown to rank in the top 5 out of 31 traditional computer language grammars, as measured by metrics suite. The language is also shown to be able to express the majority of common use cases in network troubleshooting. A workflow involving a certifier tool is proposed that uses NETCDL to verify network correctness, and a reference certifier design is presented to guide and standardize future implementations.

KEYWORDS

Physical Network Testing, Automated Testing, Integration Testing.

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Energy Efficient Linear Cluster Handling Protocol for WSN

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ABSTRACT

Wireless sensor networks (WSNs) have attained expanding awareness from both the research association and authentic users. The efficient usage of energy source in a sensor node is very major criteria to sustain the life time of wireless sensor network. For obtaining durability of network lifetime, and reducing energy consumption, energy efficiency routing protocol play an important role. We are exhibit an innovative and energy efficient routing protocol in our research. Towards Energy Efficiency in Linear WSNs a linear cluster handling (LCH) technique is used with multiple static sinks in a linearly enhanced field of 1500m*350m². We are divided the whole into four equal sub-regions. We set multiple static sinks i.e. one at the centre and two at the both corners of the field for efficient data gathering. A reactive and Distance plus energy dependent clustering protocol Threshold Sensitive Energy efficient with Linear Cluster Handling [4] DE (TEEN-LCH) is implemented in the network field. Simulation shows improved results for our proposed protocol in term of throughput, packet delivery ratio and energy consumption.

KEYWORDS

WSN, Routing Protocols, nodes, energy.

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Pandemic Information Dissemination Web Application: A Manual Design for Everyone

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ABSTRACT

The aim of this research is to generate a web application from an inedited methodology with a series of instructions indicating the coding in a flow diagram. The primary purpose of this methodology is to aid non-profits in disseminating information regarding the COVID-19 pandemic, so that users can share vital and up-to-date information. This is a functional design, and a series of screenshots demonstrating its behaviour is presented below. This unique design arose from the necessity to create a web application for an information dissemination platform; it also addresses an audience that does not have programming knowledge. This document uses the scientific method in its writing. The authors understand that there is a similar design in the bibliography; therefore, the differences between the designs are described herein; it is very important to point out that this proposal can be taken as an alternative to the design of any web application.

KEYWORDS

Infodemic, web application, Python, Flask, Social Media, COVID-19 & Analysis.

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Adaptive Type-2 Fuzzy Second Order Sliding Mode Control for Nonlinear Uncertain Chaotic System

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ABSTRACT

In this paper, a robust adaptive type-2 fuzzy nonsingular sliding mode controller is designed to stabilize the unstable periodic orbits of uncertain perturbed chaotic system with internal parameter uncertainties and external disturbances. In Higher Order Sliding Mode Control (HOSMC), the chattering phenomena of the control effort is reduced, by using Super Twisting algorithm. Adaptive interval type-2 fuzzy systems are proposed to approximate the unknown part of uncertain chaotic system and to generate the Super Twisting signals. Based on Lyapunov criterion, adaptation laws are derived and the closed loop system stability is guaranteed. An illustrative example is given to demonstrate the effectiveness of the proposed controller.

KEYWORDS

Chaotic System, Type-2 Fuzzy Logic System, second order Sliding Mode Control, Lyapunov Stability.

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A Study on Optical Character Recognition Techniques

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ABSTRACT

Optical Character Recognition (OCR) is the process which enables a system to without human intervention identifies the scripts or alphabets written into the users' verbal communication. Optical Character identification has grown to be individual of the mainly flourishing applications of knowledge in the field of pattern detection and artificial intelligence. In our survey we study on the various OCR techniques. In this paper we resolve and examine the hypothetical and numerical models of Optical Character Identification. The Optical character identification or classification (OCR) and Magnetic Character Recognition (MCR) techniques are generally utilized for the recognition of patterns or alphabets. In general the alphabets are in the variety of pixel pictures and it could be either handwritten or stamped, of any series, shape or direction etc. Alternatively in MCR the alphabets are stamped with magnetic ink and the studying machine categorize the alphabet on the basis of the exclusive magnetic field that is shaped by every alphabet. Both MCR and OCR discover utilization in banking and different trade appliances. Earlier exploration going on Optical Character detection or recognition has shown that the In Handwritten text there is no limitation lying on the script technique. Hand written correspondence is complicated to be familiar through due to diverse human handwriting style, disparity in angle, size and shape of calligraphy. An assortment of approaches of Optical Character Identification is discussed here all along through their achievement.

KEYWORDS

Optical Character Identification, offline Hand written Character Recognition, Pre-processing, characteristic Extraction, categorization, Post Processing.

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