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DESIGN AND DEVELOPMENT OF AUTOMATIC WATER FLOW METER

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ABSTRACT

Effective irrigation water management begins with timing and regulating irrigation water application in a way that will satisfy the need of the crop without wasting water, soil and crop nutrients. This involves supplying water according to the crop requirement, quantity that can be held by the soil and is available to the crop at rates tolerated according to the soil characteristics. So measuring water in fields is very essential step in irrigation management systems. There are many water flow measurement techniques as well as different types of water flow meters used in irrigation to measure the volume of water flow in pipelines but these all are too costly. This paper describes design and development of low cost automatic water flow meter which supplies only required amount of water to the crops saving water as well as energy. G1/2 Hall Effect water flow sensor is used as a sensing unit with a turbine rotor inside it whose speed of rotation changes with the different rate of flow of water. The Hall Effect sensor outputs the corresponding pulse train for frequency input to the microcontroller. The whole system comprises of AT89S52 microcontroller, G1/2 Hall Effect water flow sensor, relay, optocoupler, a water pump, 5V supply, LCD, keypad and some passive components. The AT89S52 microcontroller is programmed in Keil development Tool.

KEYWORDS

Low cost sensor, Hall Effect sensor, rotation of rotor, flow rate of water, AT89S52 microcontroller, Keil software, Ultrasonic flow meter.

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DEALING CRISIS MANAGEMENT USING AI

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ABSTRACT

Artificial intelligence has been a buzz word that is impacting every industry in the world. With the rise of such advanced technology, there will be always a question regarding its impact on our social life, environment and economy thus impacting all efforts exerted towards sustainable development. In the information era, enormous amounts of data have become available on hand to decision makers. Big data refers to datasets that are not only big, but also high in variety and velocity, which makes them difficult to handle using traditional tools and techniques. Due to the rapid growth of such data, solutions need to be studied and provided in order to handle and extract value and knowledge from these datasets for different industries and business operations. Numerous use cases have shown that AI can ensure an effective supply of information to citizens, users and customers in times of crisis. This paper aims to analyse some of the different methods and scenario which can be applied to AI and big data, as well as the opportunities provided by the application in various business operations and crisis management domains.

KEYWORDS

Artificial Intelligence, Big Data, Business Operations, Crisis Management

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LINEAR SEARCH VERSUS BINARY SEARCH: A STATISTICAL COMPARISON FOR BINOMIAL INPUTS

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ABSTRACT

For certain algorithms such as sorting and searching, the parameters of the input probability distribution, in addition to the size of the input, have been found to influence the complexity of the underlying algorithm. The present paper makes a statistical comparative study on parameterized complexity between linear and binary search algorithms for binomial inputs.

KEY WORDS

Linear search; binary search; parameterized complexity; statistics; factorial experiments

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PROPOSAL OF A TWO WAY SORTING ALGORITHM AND PERFORMANCE COMPARISON WITH EXISTING ALGORITHMS

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ABSTRACT

An algorithm is any well-defined procedure or set of instructions, that takes some input in the form of some values, processes them and gives some values as output. Sorting involves rearranging information into either ascending or descending order. Sorting is considered as a fundamental operation in computer science as it is used as an intermediate step in many operations. A new sorting algorithm namely 'An Endto-End Bi-directional Sorting (EEBS) Algorithm' is proposed to address the shortcomings of the current popular sorting algorithms. The goal of this research is to perform an extensive empirical analysis of the newly developed algorithm and present its functionality. The results of the analysis proved that EEBS is much more efficient than the other algorithms having O(n2) complexity, like bubble, selection and insertion sort.

KEYWORDS

End-to-End Bi-directional sort (EEBS), algorithms, selection sort, bubble sort, insertion sort.

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CLASSIFICATION OF ECG ARRHYTHMIAS USING DISCRETE WAVELET TRANSFORM AND NEURAL NETWORKS

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ABSTRACT

Automatic recognition of cardiac arrhythmias is important for diagnosis of cardiac abnormalies. Several algorithms have been proposed to classify ECG arrhythmias; however, they cannot perform very well. Therefore, in this paper, an expert system for ElectroCardioGram (ECG) arrhythmia classification is proposed. Discrete wavelet transform is used for processing ECG recordings, and extracting some features, and the Multi-Layer Perceptron (MLP) neural network performs the classification task. Two types of arrhythmias can be detected by the proposed system. Some recordings of the MIT-BIH arrhythmias database have been used for training and testing our neural network based classifier. The simulation results show that the classification accuracy of our algorithm is 96.5% using 10 files including normal and two arrhythmias.

KEYWORDS

ECG, Arrhythmia, Daubechies Wavelets, Discrete Wavelet Transform (DWT), Neural Network (NN).

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DESIGN AND DEVELOPMENT OF CALIBRATION UNIT FOR PRECISION PLANTER

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ABSTRACT

The critical parameters for plant population with desired planting geometry include uniform distribution and precision placement of seeds. R&D efforts in metering of single seeds at predetermined intervals are carried in this paper. Proximity sensor technique based seed spacing evaluation system that measure time intervals between seeds and transmission ratio between two velocities is use to determine planter seed spacing uniformity. The calibration unit includes frame light barrier sensor that consists of square crosssection window including transmitter and receiver with innovative microcontroller technology in its casing along with the inductive type gear tooth sensor that calculates rpm of roller. For acquiring the data serially to personal computer the system includes circuitry to interface the sensors with the AT89S52 microcontroller. Mechanical mechanism of motor/roller/ SMU is controlled using V/F drive through PC itself. Calibration of whole system is based on ISO defined standard parameters that are Quality of feed index, multiple index and Miss index. This calibration unit can be used instead of grease belt stand to rapidly obtain quantitative evaluations of planter seed spacing uniformity in the laboratory.

KEYWORDS

Frame light barrier sensor, gear tooth sensor, SMU, 1 hp AC motor, Yaskawa J1000 AC drive, RS232 and USB communication.

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ANALYSIS OF EMOTION DISORDERS BASED ON EEG SIGNALS OF HUMAN BRAIN

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ABSTRACT

In this research, the emotions and the patterns of EEG signals of human brain are studied. The aim of this research is to study the analysis of the changes in the brain signals in the domain of different emotions. The observations can be analysed for its utility in the diagnosis of psychosomatic disorders like anxiety and depression in economical way with higher precision.

KEYWORDS

EEG, EDF format, Feature extraction, Image classifiers, Emotions, Psychosomatic disorders, Normal and excited brain, Anxiety and Depression.

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CLASSICAL DISCRETE-TIME FOURIER TRANSFORMBASED CHANNEL ESTIMATION FOR MIMO-OFDM SYSTEMS IN VEHICULAR COMMUNICATIONS TECHNOLOGY

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ABSTRACT

In this document, we look at various time domain channel estimation methods with this constraint of null carriers at spectrumborders.We showin detail howto gauge the importance of the “border effect” depending on the number of null carriers, which may vary from one system to another. Thereby we assess the limit of the technique discussed when the number of null carriers is large. Finally the DFT with the truncated singular value decomposition (SVD) technique is proposed to completely eliminate the impact of the null subcarriers whatever their number. A technique for the determination of the truncation threshold for any MIMO-OFDM system is also proposed.

KEYWORD

Singular Value Decomposition,Discrete-Time Fourier Transform

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WORD AND SENTENCE LEVEL EMOTION ANALYZATION IN TELUGU BLOG AND NEWS

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ABSTRACT:

Emotion analysis, a recent sub discipline at the crossroads of information retrieval and computational linguistics is becoming increasingly important from application viewpoints of affective computing.Emotion is crucial to identify as it is not open to any objective observation or verification. In this paper, emotion analysis on blog texts has been carried out for a less privileged language, Telugu and the same system has been applied on the English SemEval 2007 affect sensing corpus containing only news headlines. A set of six emotion tags, namely, happy ( ), sad ( ), anger ( ), fear ( ), surprise ( )and disgust ( ), have been selected towards this emotion detection task for reliable and semi-automatic annotation of blog and news data. Conditional Random Field (CRF) based classifier has been applied for recognizing six basic emotion tags for different words of a sentence. The classifier accuracy has been improved by arranging an equal distribution of emotional tags and non-emotional tag. A score based technique has been adopted to calculate and assign tag weights to each of the six emotion tags. A sense based scoring strategy has been applied to identify sentence level emotion scores for the six emotion tags based on the acquired word level emotion tags. Sentence level emotion tagging has been carried out based on the maximum obtained sentence level emotion scores. Evaluation has been conducted for each emotion class separately on 200 test sentences from each of the Telugu blog and English news data. The system has resulted accuracies of 69.82% and 71.06% for happy, 70.24% and 66.42% for sad, 65.73% and 64.27% for anger, 76.01% and 69.90% for disgust, 72.19% and 73.59% for fear and 70.54% and 66.64% for surprise emotion classes on blog and news test data respectively.

KEYWORDS:

SentiWordNet, Blog, News, Emotion, CRF, Emotion tag, happy, sad, anger, fear, disgust, surprise

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BASIC ANALYSIS ON PROSODIC FEATURES IN EMOTIONAL SPEECH

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ABSTRACT

Speech is a rich source of information which gives not only about what a speaker says, but also about what the speaker's attitude is toward the listener and toward the topic under discussion—as well as the speaker's own current state of mind. Recently increasing attention has been directed to the study of the emotional content of speech signals, and hence, many systems have been proposed to identify the emotional content of a spoken utterance.

The focus of this research work is to enhance man machine interface by focusing on user's speech emotion. This paper gives the results of the basic analysis on prosodic features and also compares the prosodic features of, various types and degrees of emotional expressions in Tamil speech based on the auditory impressions between the two genders of speakers as well as listeners. The speech samples consist of "neutral" speech as well as speech with three types of emotions ("anger", "joy", and "sadness") of three degrees ("light", "medium", and "strong"). A listening test is also being conducted using 300 speech samples uttered by students at the ages of 19 -22 the ages of 19-22 years old. The features of prosodic parameters based on the emotional speech classified according to the auditory impressions of the subjects are analyzed. Analysis results suggest that prosodic features that identify their emotions and degrees are not only speakers' gender dependent, but also listeners' gender dependent.

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