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4	ENTC	63 to 78
5	ASGE	79

A Literature Survey on BSS Approaches for MIMO-OFDM Detection

Publisher: IEEE   Cite This   📄 PDF

Renuka Bhandari ; Sangeeta Jadhav   **All Authors**

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Abstract

Abstract:

In this paper the problem of detection and blind source separation (BSS) in multiple input and multiple output (MIMO) communication are discussed. In conventional detection techniques, transmitter has to transmit channel state information (CSI) constantly to the receiver. It affects spectral efficiency & it decreases effective data rates also. As spectrum is a limited source, BSS approaches are promising options for MIMO detection. Spectrum efficiency is one of the main challenges in wireless communication system design. The main objective of this literature survey is to provide an overview of main BSS algorithms used in the detection of MIMO-OFDM and the working of BSS in this promising research field. For this, recapitulation is done of last few years research efforts, with SOS (second order statistics) and HOS (higher order statistics) BSS methods in MIMO.

Document Sections

I. Introduction

II. Second Order Statistics BSS Methods

III. Higher Order Statistics BSS Methods

I. Conclusion

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Insight on Symmetrical Posture Detection of Human Using SIFT

Authors   Authors and affiliations

Smita Kulkarni ✉ , Sangeeta Jadhav

Abstract

It is proposed to develop a system for systematic evaluation process of human posture recognition in video sequences which is essential for many solicitations. Video frame has variant information such as different posture, gauge and brightness. This paper implements the algorithm Scale-Invariant Feature Transform (SIFT) to detect and recognize humans posture, in which image is invariant to scrabbling and rendition. This paper explores the application of the SIFT approach in the framework of human posture detection and can deal with the

Facial Emotion recognition using Log Gabor filter and PCA

Publisher: IEEE

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Neelum Mehta ; Sangeeta Jadhav   **All Authors**

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Abstract

Abstract:

Facial expressions are the most visual method to convey emotions. Facial expressions of a person at different instances are not same. Automatic recognition of facial expressions is important for natural human-machine interfaces. Although human recognize facial expressions without delay, however expression reorganization by computer is still a challenge. In this proposed method Log Gabor filter bank of 5 scales and 8 different orientations is used. To reduce the dimensionality PCA (Principal Component Analysis) is then applied to Log-Gabor filtered images. The database used was JAFFE (Japanese female facial expression). The process involves detection of face, feature extraction using Log-Gabor filter, dimensionality reduction by PCA and classification of emotion using Euclidean distance metric. The work had been carried out in two stages. In stage I firstly, all the 7 emotions were

Document Sections

1. Introduction

2. Related Work

3. Facial Expression Recognition System

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Blind Channel Estimation Using Novel Independent Component Analysis with Pulse Shaping for Interference Cancellation

Authors   Authors and affiliations

Renuka Bhandari ✉, Sangeeta Jadhav

Chapter
First Online: 09 June 2017

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Abstract

Now days with the growing exposure of wireless communications, there is more focus on achieving the spectral efficiency and low bit rate errors (BER). This can be basically achieved by Space Time Frequency based Multiple Input Multiple Output (MIMO)-OFDM wireless systems. The efficient channel estimation method plays important role in optimizing the performance of spectral efficiency and BER. There are different types of MIMO-OFDM channel estimation methods. In this paper, we focused on designing efficient blind channel estimation method for

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Blind Channel Estimation Using Novel Independent Component Analysis with Pulse Shaping for Interference Cancellation

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Renuka Bhandari ✉ . Sangeeta Jadhav

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First Online: 09 June 2017

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Abstract

Now days with the growing exposure of wireless communications, there is more focus on achieving the spectral efficiency and low bit rate errors (BER). This can be basically achieved by Space Time Frequency based Multiple Input Multiple Output (MIMO)-OFDM wireless systems. The efficient channel estimation method plays important role in optimizing the performance of spectral efficiency and BER. There are different types of MIMO-OFDM channel estimation methods. In this paper, we focused on designing efficient blind channel estimation method for MIMO-OFDM. Recently there has been increasing research interest in designing the blind channel based estimation methods. There are number of blind channel estimation methods introduced so far, however none of them effectively addressed the problem of Inter Symbol

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Modified Backpropagation with Added White Gaussian Noise in Weighted Sum for Convergence Improvement

Ashwini Sapkal [a, b] ✉, U V Kulkarni [b]

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Abstract

The impact of the noise injection in backpropagation is studied since last two decades. In this manuscript, a brief review is done on noise injection techniques used in the backpropagation. Here, the modified backpropagation algorithm is proposed, in which the white Gaussian noise is added in the weighted sum entity of the backpropagation. The experimentation is carried

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Manish Kumar ; Ashwini Sapkal ; Vighnesh Tiwari   **All Authors**

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Abstract

Abstract:

Water an important resource gifted to us in many forms. One such is holy river Ganges. Ganges water plays a major role in Indian mythology. But due to setting up of different industries in and around Ganges basin, its water quality is deteriorating day by day. And civic authorities are not able to have the real time pollutant status of water and cannot carry out a necessary raid on industries and treatment before it affects aquatic as well as human life. This paper consists of a wireless river water quality monitoring method which can be useful for monitoring Ganges water. Our proposed method is a system of interconnected cloud storage, raspberry pi, temperature sensor and a website to show real time status. Sudden increase and decrease in temperature plays a major role in affecting water resource which happens when waste is executed from an industry which consist a lot of harmful chemicals, when the water molecules come in contact of these chemicals they show a sudden rise in temperature and drastic change in pH level we can sense these changes through the sensors connected through Raspberry Pi and push them on the cloud. This paper also consists of an approach to alarm civic authorities if the concentration of pollutants increases. By this approach not only civic authority, but common man will have a pollutant status around them.

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II. RELATED WORK

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Proceedings of International Conference on Communication and Information Processing (ICCIP) 2019

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Pravendra Singh
Army Institute of Technology Pune

Prof. Ashwini Sapkal
Army Institute of Technology Pune

Date Written: May 17, 2019

Abstract

Diabetic Retinopathy(DR) is a disease which is caused due to long term diabetes. It is a visual exposition of diabetes, caused by impairment of the blood vessels in the retina. Around 80 percent of the population having diabetes for more than 10 or more years has some stage of the disease. In this paper, we propose a system that digitally detects the disease using Convolutional Neural Networks (CNN). CNN are used for the implementation of the proposed system as it most apposite for image data set. The programming language

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Fast Converging Magnified Weighted Sum Backpropagation

Authors   Authors and affiliations

Ashwini Sapkal ✉ , U. V. Kulkarni

Abstract

In backpropagation (BP), Neuron's output drops either into weakly committed or strongly committed zone. Neuron's weighted sum, referred as a net, if close to zero, neuron is weakly committed, otherwise it is strongly committed. To push the weakly committed neurons in strongly committed zone, additional iterations are required, which causes the poor convergence rate. In this manuscript, the weighted sum entity of the backpropagation is magnified. This variant of the backpropagation is referred as a magnified weighted sum backpropagation (MNBP) algorithm. This net enlarging process of the MNBP makes sure that the neuron produces output in strongly committed space. As the net is magnified, it is gradient and is also

Object Detection Using Convolution Neural Networks

Proceedings of International Conference on Communication and Information Processing (ICCIP) 2019

8 Pages · Posted: 18 Jul 2019 · Last revised: 30 Sep 2019

Piyush Jhinkwan
Army Institute of Technology Pune

Vaishali Ingale
Army Institute of Technology Pune

Shubham Chaturvedi
Army Institute of Technology Pune

Date Written: May 17, 2019

Abstract

Accurate and efficient object detection has been an important topic in the advancement of computer vision systems. With the sophistication of deep learning techniques, the precision of object detection has increased drastically. A huge number of visually impaired people in the world have inspired many smart solutions which use sophisticated technologies to aid them in their day to day life. This paper describes a system that aims to perform object detection with the goal of achieving high precision with acceptable real-time performance. The system is designed to help the visually impaired locate day today objects through object detection. The system is trained on CIFAR-100 [1] dataset which consists of 100 classes where each class has 500 training samples and 100 testing samples. The total training size is 50000 samples and the testing size is 10000 samples. The experimental results are determined by using convolution neural network combined with dropout, batch normalization and data augmentation to determine which technique or combination of techniques provides the best performance for object detection. The system is then implemented with the

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III. Methodology

IV. Related Work and Performance Comparison

» Conclusion

Abstract:

Peoples trapped in the disastrous areas may have chances to survive if they are rescued in seventy two hours. Ad hoc networks are considered more suitable for such scenarios due to infrastructure-less feature. Two different mobility models - Reference group Mobility Model and Disaster Area Model are generally used in such scenario. In this paper, various ad hoc routing protocols such as destination distance vector routing protocol, dynamic source routing protocol, ad hoc on demand routing protocol and ad hoc on demand multipath routing protocol are discussed and analyzed using reference group mobility models and disaster area model. Also these protocols are compared using various performance metrics such as packet delivery ratio, delay, throughput, control overhead, average energy consumed etc.

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Chanchal Kumar Roshan ; Rajeet Kaushal ; Sha Alam ; Shashank Rai ; Yuvraj Gholap   All Authors

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Abstract:

Due to recent outbursts in the number of point and shoot devices. The data generated in the form of raw video has also increased exponentially. On YouTube alone, 300 hours of video alone is added every minute. This brings up the need of coming up with a long term solutions to tackle such behemoth tasks. The solution should be flexible, robust with ability to scale up and down dynamically as and when required. Needless to say, such system have a high cost and it is also of utmost importance to consider the cost factor and feasibility. Hadoop is one such framework which met all our requirements. It provides facility to distribute a big and complex task to low as well as high end computers to achieve a common goal. Hadoop is a highly scalable storage platform, because it can store and distribute very large data sets across hundreds of inexpensive servers that operate in parallel. Another advantage of using a Hadoop cluster is that it is fault tolerance as copies of the data are made and can be used in case of failure of a node. etc.

Abstract

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V. Results and
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Cultivar Prediction of Target Consumer Class Using Feature Selection with Machine Learning Classification

Authors   Authors and affiliations

Shyamala Devi Munisamy ✉, Suguna Ramadass, Aparna Shashikant Joshi, Mahesh B. Lonare

Conference paper
First Online: 13 July 2019

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Abstract

Recently, Industries are focusing on cultivar prediction of customer classes for the promotion of their product for increasing the profit. The prediction of customer class is a time consuming process and may not be accurate while performing manually. By considering these aspects, this paper proposes the usage of machine learning algorithms for predicting the customer cultivar of Wine Access. This paper uses multivariate Wine data set extracted from UCI machine learning repository and is subjected to the feature selection methods like Random Forest, Forward feature selection and Backward elimination. The optimized dimensionality reduced dataset from each of the above methods are processed with various classifiers like Logistic

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Task Scheduling Performance Evaluation of Unreliable Virtual Machines and Cloudlets

Authors | Authors and affiliations

Aparna Joshi ✉, Shyamala Devi Munisamy

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First Online: 13 July 2019

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Abstract

For load balancing in cloud computing environment, scheduling algorithm are used. This paper analyses the research on scheduling algorithms. Further, using cloudsim simulation tools, evaluation of performance of the three algorithms i.e. First Come First Serve (FCFS), Generalized Priority (GP) and Shortest Job First (SJF) was carried out. Three algorithms were compared by varying both virtual machines (VM) and cloudlets, keeping constant VM and increasing Cloudlets, varying the nature of tasks. For all the three algorithms, as the number of cloudlets increases, execution time increases. Generalized Priority algorithm (GP) has lower execution time than both First Come First Serve (FCFS) and Shortest Job First (SJF)

Design of IoT Blockchain Based Smart Agriculture for Enlightening Safety and Security

Authors   Authors and affiliations

M. Shyamala Devi ✉ , R. Suguna, Aparna Shashikant Joshi, Rupali Amit Bagate

Conference paper
First Online: 18 May 2019

Abstract

The Internet of Things is evolving as a complete matured technology to be used in all the Smart applications and it establishes itself in the future generations of internet. As like Internet of Things, Blockchain is the blooming technology in which each node involved in the blockchain contains the distributed ledger which enhances the security and data transparency. Illegal users are not able to perform any fault transaction in the blockchain network due to its ability of performing smart contract and consensus. The Internet of Things can be merged with the blockchain to improve the performance of the application in real time. However, managing the

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Movie Recommender System Using K-Means Clustering AND K-Nearest Neighbor

Publisher: IEEE   Cite This   PDF

Rishabh Ahuja ; Arun Solanki ; Anand Nayyar   **All Authors**

Abstract

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I. Introduction

II. Literature review

III. Evolution of Proposed
    Movie Recommendation
    system

IV. Algorithm of Proposed
    System

V. Implementation

Abstract:

In the field of Artificial Intelligence Machine learning provides the automatic systems which learn and improve itself from experience without being explicitly programmed. In this research work a movie recommender system is built using the K-Means Clustering and K-Nearest Neighbor algorithms. The movielens dataset is taken from kaggle. The system is implemented in python programming language. The proposed work deals with the introduction of various concepts related to machine learning and recommendation system. In this work, various tools and techniques have been used to build recommender systems. Various algorithms such as K-Means Clustering, KNN, Collaborative Filtering, Content-Based Filtering have been described in detail. Further, after studying different types of machine learning algorithms, there is a clear picture of where to apply which algorithm in different areas of industries such as recommender systems, e-commerce, etc. Then there is an illustration of how implementations and working of the proposed system are used for the implementation of the movie recommender system. Various building blocks of the proposed system such as Architecture, Process Flow, Pseudo Code, Implementation and Working of the System is described in detail. Finally, in this work for different cluster values, different values of Root Mean Squared Error are obtained. In this proposed work as the no of clusters decreases, the value of RMSE also decreases. The best value

Computer Science > Computer Vision and Pattern Recognition

[Submitted on 21 Jan 2021]

Video Summarization: Study of various techniques

Ravi Raj, Varad Bhatnagar, Aman Kumar Singh, Sneha Mane, Nilima Walde

A comparative study of various techniques which can be used for summarization of Videos i.e. Video to Video conversion is presented along with respective architecture, results, strengths and shortcomings. In all approaches, a lengthy video is converted into a shorter video which aims to capture all important events that are present in the original video. The definition of 'important event' may vary according to the context, such as a sports video and a documentary may have different events which are classified as important.

Subjects: **Computer Vision and Pattern Recognition (cs.CV)**
Journal reference: Video Summarization: Study of Various Techniques Proceedings of IRAJ International Conference, 26th May, 2019, Pune, India
Cite as: arXiv:2101.08434 **[cs.CV]**
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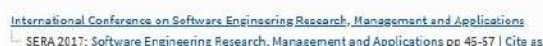- Semantic Scholar

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A Comprehensive Survey of Different Phases for Involuntary System for Face Emotion Recognition

Authors   Authors and affiliations

Dipti Pandit ✉, Sangeeta Jadhav

Abstract

Involuntary recognition of basic and non-basic emotions has started great curiosity in research area. Developing a fully automated computational model for face emotion analysis is quite difficult a human face is complex, multidimensional and has different meaningful visual messages to pass. A big research augmented in Human Computer Interaction over decades but still many queries are still clueless as in what should be the important signs and expressions to be evaluated for meaning encoding of messages. In this paper fundamental components, as face ...ge acquisition, registration, pre-processing or dimensionality reduction, feature extraction

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A Discriminative Model for Multiple People Detection

Authors	Authors and affiliations

Smita S. Kulkarni ✉ , Sangeeta Jadhav

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First Online: 12 January 2021

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Abstract

Group activity recognition is becoming more important day by day for video surveillance, sports analytics, etc. Monitoring various cameras manually through human resources is a complex job; due to this, computer vision algorithms are being developed to perform lower and higher level tasks. This paper presents multiple people detection using the histograms of oriented gradients (HOG) feature descriptor algorithm through a support vector machine (SVM) based on the different group action class of persons. Multiple people detection for group action identification is a complex problem as accurate detection of individual persons requires extensive computation. To achieve multiple people detection for group activity, HOG feature extraction is proposed. HOG is precise and accurate person detection algorithm in the recent

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Road Extraction Techniques from Remote Sensing Images: A Review

Authors | Authors and affiliations

Dhanashri Patil ✉ , Sangeeta Jadhav

Conference paper
First Online: 03 February 2021

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Part of the Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT, volume 59)

Abstract

Road detection from remotely sensed images is a fundamental task in the geographic information system. On account of applications like urban management, traffic control, and map updating, road extraction from remote sensing images has significant research importance in recent times. Road extraction from satellite images is a crucial task as these images are noisy and contain lots of information. So it becomes difficult to process large amount of data. The important parameters for road detection are road features and its corresponding classification methods. These parameters decide the performance accuracy of the road extraction system. The systematic analysis of existing road detection techniques is elaborated in three important

Fast Converging Magnified Weighted Sum Backpropagation

Authors   Authors and affiliations

Ashwini Sapkal ✉ , U. V. Kulkarni

Abstract

In backpropagation (BP), Neuron's output drops either into weakly committed or strongly committed zone. Neuron's weighted sum, referred as a net, if close to zero, neuron is weakly committed, otherwise it is strongly committed. To push the weakly committed neurons in strongly committed zone, additional iterations are required, which causes the poor convergence rate. In this manuscript, the weighted sum entity of the backpropagation is magnified. This variant of the backpropagation is referred as a magnified weighted sum backpropagation (MNBP) algorithm. This net enlarging process of the MNBP makes sure that the neuron duces output in strongly committed space. As the net is magnified, it is gradient and is also

A Reinforcement Learning Approach for Evaluation of Disaster Relief

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Gajanan Walunjkar ; Anne Koteswara Rao   **All Authors**

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Abstract

Abstract:

Ad hoc networks are considered more suitable for disaster scenarios due to infrastructure-less feature. Existing routing algorithms used on such mobile ad hoc networks are non-adaptive routing algorithms and based on shortest path algorithms. But shortest path may not give optimum path. If the network is heavy loaded with traffic, shortest path may not give better results. Various reinforcement algorithms are used to design such adaptive routing where the routing takes place based on the actual traffic present on a network. One of the reinforcement routing algorithms is Q routing and various variants of Q routing like CQ routing, CDRQ routing etc. In this paper, Q routing and CDRQ routing are implemented and compared using disaster area mobility model in disaster area scenario.

Document Sections

I. Introduction

II. Reinforcement Routing
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III. Simulation Environment
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Abstract

Sarcasm is an unwelcome impact or a linguistic circumstance to express histrionic and bitterly opinions. In sarcasm single word in a sentence can flip the polarity of positive or negative statement totally. Therefore sarcasm occurs when there is an imbalance between text and context. This paper surveys different approaches and datasets for sarcasm detection. Different approaches surveyed are statistical approach, rule based approach, classification approach and deep learning approach. It also gives insight to different methodologies used in past for sarcasm detection. After surveying we found deep learning is generating a good result as ...pare to other approaches.

Articles

Dynamic degree balanced with CPU based VM allocation policy for load balancing

Aparna S. Joshi ✉ & Shyamala Devi Munisamy
Pages 543-553 | Published online: 28 Apr 2020

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Abstract

In cloud computing environment, Load balancing is key challenge. To address above challenge, we have proposed Dynamic Degree Balance with CPU based VM allocation policy. The proposed algorithm includes both VM allocation and task allocation. This algorithm is compared with the two static algorithms viz. Shortest Job First (SJF) and First Come First Serve (FCFS). CloudSim simulator is used to perform experiment. Degree of

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A Survey on Human Group Activity Recognition by Analysing Person Action from Video Sequences Using Machine Learning Techniques

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Abstract

There has been a tremendous advance in machine learning techniques especially for automatic group activity recognition (GAR) over the past few decades. This review article surveys the modern advancement made towards video-based group activity recognition technique. Various applications, including video surveillance systems, sports analytics and human behaviour for robotics characterization, require a group activity recognition system. Comprehensive reviews of machine learning (ML) techniques like hidden Markov models (HMMs), graphical method

Construction of University Ontology Step By Step

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Abstract **– The current web is based on html which can display information simply. The Semantic Web term was coined by Tim Berners Lee for a web of data that can be processed by machines. Ontologies are nowadays one of the most popular and widespread means of knowledge representation. The construction method and the construction process were deeply explored, and an easy way to implement university ontology was proposed for non-professional users who don't have too much knowledge of computer, which made it possible for the scholar from every field to participate in the construction of ontology. Protégé is a most popular tool for ontology editing and for developing ontology. This paper aims to present an ontology model of university to represent its knowledge. Generalized structure of Indian universities and workflow processes have been taken for ontology development by describing the class hierarchy, and demonstrate the graphical view of ontology.**

Keywords— Semantic Web, Ontology, Protégé Tool, University Concepts.

I. INTRODUCTION

The Semantic Web, an extension of the current web, "will bring structure to the meaningful content of Web pages, creating an environment where software agents roaming from page to page can readily carry out sophisticated tasks for users [1]. Researchers predicted that the ultimate realization of the Semantic Web and its application in education will completely change the current education mode. It will lead to a revolution of education mode [2]. As the use of web data increase day-to-day. It would also affect to web database. So there will be a very big problem is that to arrange data precisely. To solve this problem Tim Burner's lee proposed a new version of web called semantic web. The representation of ontology depends on the application context being used. This paper proposed a model of university ontology.

II. RELAETED RESEARCH

Most studies of Course Ontology are focused on how to organize the domain knowledge in the course [3][4]. While other researchers tried to propose an upper level university ontology which can be used as a general description of a university. Among them, Corvinno technology defined a top-layer course Ontology, being composed of Curriculum, Knowledge Area, Basic Concept, Theorem, and Example [6]; NETg divided Course Ontology into 3 layer structure --- Unit, Lesson, and Topic [5]. Just as the same as ontology, university ontology have both the Explanation which has philosophy meaning and the explanation which is used in the computer application field. From the field of computer applications, university ontology is used to express the concepts and the relationships among those concepts, either in a university departments [5][6] or in a series of related departments. The study of University Ontology in the computer application field covers 3 aspects: the content and composition of University Ontology, the methods of University Ontology creation, as well as the research on the education application system which is based on university ontology.

III. METHODOLOGY

In designing the university ontology we have to go through the steps as shown b e l o w . The first step in creating ontology is to collect all the details regarding the working of the university. The second step is to identify the classes that can be created. Third step is to identify the properties that exist among classes. Fourth step is to bind the properties to appropriate classes. Fifth step is to create ontology using protégé 4.3 beta tool. Next step is to save the ontology created at on to the disk. Last step is to export the ontology which displays the RDF/XML or OWL/XML code generated by the ontology.

A. Building Enviornment:

An ontology is a conceptualization of a domain into machine readable format [1]. Ontologies are becoming increasingly popular modelling schemas for knowledge management services and applications. Focus on developing tools to graphically visualize ontologies is rising to aid their assessment and analysis. Graph visualization helps to browse and comprehend the structure of ontologies. Protégé [2] is one

Performance of Hadoop using TPC-H Benchmark

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Abstract—**Big Data is a hot topic today. With the invent of Internet of Things there is going to be an accelerated growth of data. Most of this data is unstructured or semi structured and it is heterogeneous in nature. The volume and the heterogeneity of data with the speed it is generated, makes it difficult for the present computing infrastructure to manage Big Data. To handle or process this Big Data we have different frameworks one of which is Hadoop/Map-Reduce Framework. Hadoop and HDFS by Apache is widely used for storing and managing Big Data. We have seen that the main feature of Hadoop is, it works on unstructured Data. But there is huge amount of data in traditional RDBMS and this data is structured Data. So in this paper we have implemented some of the common SQL Queries like SELECT, SELECT with WHERE clause and JOIN using Java implementation of Hadoop. We have used the dataset generated from the TPC-H Benchmark. We have generated the dataset of size 1GB and 3GB. For running this queries we have formed a cluster of 3 PC's and we have checked the CPU Time taken on single machine and the 3 PC cluster. Our results shows that using distributed cluster we can reduce the time taken for answering the Queries which takes huge amount of time.**

Keywords—*component; formatt*

ing; style; styling; insert (key words)

I. INTRODUCTION

"Big data" has become very popular term, due to the explosion in the amount of data being stored and processed by today's businesses and people. Big data is not about just the bigness of the data, however. Data volume is in fact defines the main characteristic of big data. Other characteristics, coined by industry analysts as the "Four V's," include velocity—the speed at which the data must be processed means we should process data real-time; variety – the different types and sources of data that must be analyzed; and veracity – referring to the uncertainty of data. Everybody is using Hadoop [1] to handle the Big Data. Data within the enterprise is widely varying in source and type. Depending on the business needs and use scenarios, your data may originate as log files, sensor readings, transactional data, stored social interactions, or downloaded data sets, among other possibilities. One distinction between different types of data is whether that data is structured, such as database records, unstructured, such as documents, or semi-structured, such as log data stored within text files. Hadoop is unique in its ability to simultaneously process and analyze complex and disparate types of data. Indeed, this has become one of the principal functions of Hadoop-based applications. But Hadoop is not used to process traditional RDBMS data. It's because the traditional data is not much that big but now this data is also becoming humongous. Hadoop's strength lies in processing all kinds of data but it is not the case that it cannot process normal relational data. In this paper we have given relational tables converted into flat text files as an input to Hadoop.

Hadoop is an open source model for writing and running applications that process large amounts of data. Hadoop's accessibility and simplicity give it an edge over writing and running large distributed programs. Even students can quickly and cheaply create their own Hadoop cluster. On the other hand, its robustness and scalability make it suitable for even the most demanding jobs at big companies such as Yahoo and Facebook. These features make Hadoop popular in both academia and industry. Hadoop's main processing engine is Map-Reduce, which is currently one of the most popular and widely used big-data processing frameworks available. Many practical problems ranging from server log analysis, to data sorting, to text processing, to pattern-based search, to graph processing, to machine learning, and much more have been solved using Map-Reduce .

II. MAP-REDUCE FRAMEWORK

Map-Reduce [2] refer to two distinct things first the programming model and second the specific implementation of the framework. It is designed to simplify the development of large-scale, distributed, fault-tolerant data processing applications. In Map-Reduce, developers write jobs that consist primarily of a map function and a reduce function, and the framework handles the details of parallelizing the work, scheduling parts of the job on worker machines, monitoring for and recovering from failures, and so forth. Developers are not required to implement complex and repetitive code and instead, focus on algorithms and business logic. User-provided code is invoked by the framework rather than the other way around. This is much like Java application servers that invoke servlets upon receiving an HTTP request; the container is responsible for setup and teardown as well as providing a runtime environment for user-supplied code. Similarly, as servlet authors need not implement the low-level details of socket I/O, event handling loops, and complex thread coordination, Map-Reduce developers program to a well-defined, simple interface and the container does the heavy lifting. In Map-Reduce computation takes a set of input {key, value} pairs and produces a set of output {key, value} pairs. The use of the Map-Reduce library expresses the computation

Real Time Hand Gesture Recognition for Human Computer Interaction

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Abstract- **Most of the human computer interaction interfaces that are designed today require explicit instructions from the user in the form of keyboard taps or mouse clicks. As the complexity of these devices increase, the sheer amount of such instructions can easily disrupt, distract and overwhelm users. A novel method to recognize hand gestures for human computer interaction, using computer vision and image processing techniques, is proposed in this paper. The proposed method can successfully replace such devices (e.g. keyboard or mouse) needed for interacting with a personal computer. The method uses a commercial depth + rgb camera called Senz3D, which is cheap and easy to buy as compared to other depth cameras. The proposed method works by analyzing 3D data in real time and uses a set of classification rules to classify the number of convexity defects into gesture classes. This results in real time performance and negates the requirement of any training data. The proposed method achieves commendable performance with very low processor utilization.**

Keywords- **Human Computer Interaction (HCI), gesture recognition, hand gestures, convex hull, convexity defects, computer vision and image processing.**

I. INTRODUCTION

Human Computer Interaction (HCI) is the art of designing interfaces that can be used for communication between humans and computers. HCI with a personal computer today is not just limited to keyboard and mouse interaction. The invention of smartphones has single handedly disrupted the idea of what a computer should be. To put it simply, the modern computer should be 'smart', i.e., it should understand the user naturally without requiring explicit instructions for every action. Gesture based interface on a touch screen and swipe keyboards are the perfect example of a smart interface. They are intuitive and fast and still give the user the full control of the interface without being too confusing or complicated. Speech recognition services like "Google Now" further cement the smartness of these devices.

Desktops sadly have been the subject of keyboard and mouse based interfaces for generations now. The now omnipresent direct manipulation interface that consists of a pointing device and a keyboard was first demonstrated by Ivan Sutherland in Sketchpad, which was his 1963 MIT PhD thesis [11]. Adding touchscreens to laptops is also not solving any problems and they in fact make the interface feel more awkward to use.

Thus there is a need for designing more intuitive interface for interacting with personal computers. Hand gestures are one of the most natural mode of communication among human being after verbal communication. Designing an HCI interface that uses hand gestures can be much more intuitive than traditional methods. This is evident by the commercial success of the Kinect sensor present in Xbox 360 and Xbox One gaming system, which is more focused on body parts recognition and their pose estimation.

A hand gesture recognition system to be able to successfully replace a mouse or keyboard needs to be able to precisely detect each finger and hand orientation in real time and should be robust to various changes in hand measurements, rotation, color and lighting. This is a very complex problem and requires advanced image processing and computer vision concepts. In this paper, a novel method is proposed to recognize hand gestures in real time with high accuracy and precision.

II. RELATED WORK

Karam et al. in his work [21] reported that hand has been widely used in comparison to other body parts for gesturing as it is a natural form of medium for communication between human to human hence can best suited for human computer interaction. Kanniche et al. [21] classifies contact based devices for hand gesture recognition into mechanical, haptic, ultrasonic, inertial and magnetic. Chaudhary et al. [21] recognized the need of different algorithms depending on the size of the dataset and the gesture performed. He also notes that the developed system should be both flexible and expandable which maximize efficiency, accuracy and intuitiveness. Segmenting a hand from a cluttered background and tracking it steadily and robustly are challenging tasks. Wachs et al. [3] discusses soft computing based methods like artificial neural network, fuzzy logic and

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Secure M-Banking using Steganography and Face Detection

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Abstract— Overwhelming use of smartphone and phenomenal growth in internet user worldwide .Smartphone usage for all your need is mandatory now a day, mobile banking is not an exception for it. Most of the banks extending mobile banking to include a full complement of transactional and interactive services. These security challenges are variedand increasing in number due to huge amount of money flowing across the consumers and banks. Banks are searching for various types of options to preserve privacy of user and protect them from several attacks. In this paper we focus on smartphone mobile banking with providing two factor biometric authentication for a smartphone mobile user i.e. username and password and face recognition [10][11]. We also propose the use of various methods of steganography selecting randomly to improve the communication channel security for any intrusion and detection by the hackers.

Keywords— **LSB, SLSB,Random Bit,RGB**

I. INTRODUCTION

New era smartphones are very powerful and they can perform all operation, which personal computer can. Technologies drive the need in every sector and enterprise needs to understand changing need of customer [4]. Financial sector has also no exception. Integrating mobile devices like smartphones and tablets into an enterprise gives employees possibilities to work more productively. In order to satisfy all financial need for customer banks are taking help of smartphone and faster internet by developing smarter and secure applications .However, integrating smartphone with applications has also brought diverse security challenges and risks. In spite of all advantages of mobility, flexibility and robustness of using internet on smartphone, many banks are using conventional security mechanism. Smartphone devices are exposed to a wide range of threats like a personal computer that have to be countered. Simply implementing information security standards from server domains with mobile devices is unlikely to be effective for banks and user. Thus, from banking point of view, security levels are not clear on Smartphone devices [10][11]. Generally, a highlevel of security might be reached on Smartphone devices by setting a high level of restrictions. This will minimize user acceptance for application and satisfaction factors [7].

Here we make use of total 3 different algorithm i.e. LSB,SLSB ,Random bit steganography .The random selection of any algorithm from LSB ,SLSB ,Random bit for sending username and password in encrypted format to server increase the security . Only single key is sent along with image used in Steganography (cover image) ininterdependent manner. On the basis of key value the server will detect, whichalgorithm need to use for decryption of username and password .Then server initiate the request for starting of camera on mobile device .Using camera user will take his/her picture and send it and will match the face with available database .Once face is authenticate then further transaction started with secure way by sending all details in image.

II. RELATED WORK

2.1 Faster internet and with the development of digital signal processing, information theory and coding theory, steganography has gone "digital".[7]For a computer, an image is an array of numbers that represent light intensities at pixels. These pixels make up the image's raster data up to 300kb. A common image size is 640 × 480 pixels and 256 colours (or 8 bits per pixel). Digital images are typically stored in either 24-bit or 8-bit files. A 24-bit image provides the most space for hiding information.All colour variations for the pixels are derived from three primary colours: red, green, and blue. Each primary colour isrepresented by 1 byte; 24-bit images use 3 bytes perpixel to represent a colour value. These 3 bytes can berepresented as hexadecimal, decimal, and binary values. In many Web pages, the background colour is represented by a six-digit hexadecimal numberactuallythree pairs representing red, green, and blue. A whitebackground would have the value FFFFFF: 100 percent red (FF), 100 percent green (FF), and 100 percentblue (FF). Its decimal value is 255, 255, 255, and itsbinary value is 11111111, 11111111, 11111111,which are the three bytes making up white.[8,9]

2.1.1 LSB

Least significant bit (LSB) insertion is a common used, with simple approach of embedding information in a cover image [14]. The least significant bit (8th bit) of some of the word or all of the bytes of all word inside an image is changed to a bit of the secret message. When using a 24-bit image, a LSB bit of each of the red, green and blue (RGB) colourcomponents can be used, since they are each represented by a byte. In other words, one can store 3 bits in each pixel. An image of pixel size 800 × 600 , can thus store a total amount of 1,440,000 bits or 180,000 bytes of embedded data .For example a grid for 3 pixels of a 24-bit image can be as follows;

Implementation of an Intelligent Traffic Control System and Real Time Traffic Statistics Broadcasting

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Abstract— **Over the past decades, increasing traffic volume poses many challenges, dynamic traffic light management is one of them. Unlike foreign countries, road traffic conditions of India are heterogeneous due to which detection, counting and classification of vehicles in real-time has become difficult. Due to fixed and predefined nature of traffic light switching traffic congestion is often. In nutshell, an improved and optimized traffic control system is required. Introducing Beagle Bone Black/Rasp Pi to the traffic light system provides numerous customizations to turn a traditional traffic light into a smart one. To control traffic at road intersections, system containing microcontroller is established on traffic light. Image processing algorithms, such as Haar Cascade and Background Subtraction are used to control timer. We have developed traffic control system model for the main intersections of road. The real-time traffic image, traffic density and other statistics will be sent to server. The data can be broadcasted from server at any time on demand through digital solutions. The device gives a forecasted route to user by contacting different traffic lights on the way of user. The motto of this research is to handle varied traffic situations efficiently and to save time and money of user.**

Index Terms— *Intelligent Systems, Traffic Control, Traffic Lights, Traffic Statistics, Microcontrollers, Real Time Systems*

I. INTRODUCTION

Traffic mobbing is a major problem in developed cities. In this traffic mobbing scenarios peoples are wasting vehicles fuel and unable to utilized their time [1]. High utilization of present road capacity by managing traffic efficiently is very important. Due to these traffic congestion people's daily schedules getting disturbed as well as some are going through critical cases [3][5]. If we take example of ambulance having patient in critical conditions and if there is traffic jam on that road, then there are high chances that ambulance will not be able to reach hospital in time. Due to situations like these human lives are in danger. That's why there is need of dynamic intelligent traffic control system who can able to handle these traffic conditions efficiently to circumvent traffic crowding and accidents situations [4][5]. Current traffic lights control system is ineffective because signal switching time is predefined and not based on vehicle density. Let's assume a situation where your vehicle is standing idly before red traffic light, while the lane with green traffic

light is empty, traffic control system sitting idle and thus completely fail to be utilized own resources efficiently. This happens because of fixed and same switching time of all the traffic lights. In view of above scenario, we can switch to green signal for maximum time where density of traffic is high and minimum time where density of traffic is low, then this might solve problem.

Many attempts were made to transform a traditional traffic light into smarter one, but these attempts are either sensor-based or manual. Introducing Microcontroller to the traffic light helps in applying algorithmic approach to traffic light to make it smarter in real-time. Image processing algorithm, such as Haar-cascade and Background subtraction is used for dealing with different conditions. These algorithm needs a training period and could be made more accurate. This approach will allow the traffic timer to change in real-time. In order to give a real-time view of the upcoming traffic light, Region of Influence concept was created, which allows user to fetch data and statistics from the upcoming traffic light directly and to decide better route. By one click user can receive all the statistics and data along with real-time images from the traffic light, in layman language traffic light is directly communicating user.

The paper is organized as follows: section II explains the design of the system. Section III discusses the working of the system. Section IV is the result of experimentation. Section V concludes the paper. Finally, section VI gives future scope of the project followed by the acknowledgement and key references used in the research work.

II. SYSTEM DESIGN

The work is divided into 4 parts. The first part is to process the video signal and image acquisition from fixed camera using Image Processing. Microcontroller will do the processing part. The second part is to change the timer according to the traffic density. The third part is to send all the data to server (in particular timestamp). Finally, in the last part user can make use of that data according to their needs through an App. The overall block diagram of the proposed system is illustrated below.

Integrity and Confidentiality Preservation in Cloud

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Abstract—Challenges in cloud forensics have been increasing due to increase in cloud computing. Many types of attacks are used to bring down different types of cloud service models by malicious users. In this paper, we provide a scheme which main- tains the integrity and confidentiality of logs as well as provides easy verification mechanism for the logs. Various encryption techniques and hash functions are used to provide integrity to the generated logs in the system. We use RESTful API to publish our logs on the web for verification in the system and also by the auditor. To avoid non-repudiation, we use digital signature generation. Our scheme ensures that even the cloud provider cannot collude with the attacker. Unlike the techniques introduced so far for storing and verifying logs, we introduce bloom sequence which ensures a low false positive rate.

Keywords—Logs, encryption, cloud forensics, hash, database

I. INTRODUCTION

- Cloud computing, an upcoming technological paradigm, has changed the market trends and is expected to take over more than quarter of applications by 2020. The different service models are helpful for IT companies to develop their projects at a less budget and faster speed because of immediate resource availability. The need for costly physical and administrative infrastructure decreases because of the pay as you go model of cloud services. Today the companies require more modular approach as components have to be changed without shutting down the whole program in large applications [1],[2]. However, with such great functionality there are many security issues in clouds [3],[4],[5].

- According to a recent IDCI survey, 74 percent of the companies refrained from migration to the cloud service models due to security [6]. Also, many factors complicate the forensic investigation in clouds [7].The investigation of hazardous network attacks like DDoS attacks, launched against clouds by malicious users to consume all resources available on the server until it becomes unavailable, requires comprehensive Network Forensics Methods (NFM) to identify the source of the attack. The logs generated in a network on distributed system play an important role in knowing who have been active on the network. As the logs are available to the Cloud Service Providers (CSPs) and the user has only

limited access to these logs, they can easily be tampered with and hence mislead a forensic investigator.
The investigator depends on the CSP to collect the logs for the investigation. This adds on to the possibility of CSP tampering with the logs and providing fake logs to frame an innocent user. However, the Law Enforcement Agency (LEA) needs to believe the CSPs blindly, as they cannot verify if the CSPs actually tampered with the logs or not. Sometimes, the investigator may also be malicious and may collude with an attacker.

- We propose the scheme of secure and trustworthy cloud computing which collect logs from Virtual Machines(VMs) and stores them in a database. This ensures that the volatility of logs does not create an issue. While storing, it encrypts confidential data to preserve confidentiality and to maintain sequence, it creates a hash-chain of the logs. The log entries are then stored in a persistent database along with the respective hash chain values.The logs then pass through our three way verification system which ensures that only correct logs are produced to the forensic investigator on request.

Organization. The rest of the paper is organized as follows: Section II presents the related research work. It consists of the work done in eliminating the challenges of cloud security. Section III describes our proposed scheme and the internal data structure involved. It gives an overview of the scheme along with the architecture and the algorithm. It describes in detail the data structures and the procedure of log verification. Section IV provides the implementation of our scheme on OpenStack and the snapshots of the interface and the results obtained. Section V discusses the usability of our proposed scheme and finally, we conclude.

A. Background and challenges

The following challenges in cloud systems have motivated us to introduce our scheme while analyzing the logs:

- **Control over logs**: Various service models of the cloud provide different level of control to the user over the logs generated in the cloud. This control will be maximum for the CSP in case of IaaS and hence CSP can tamper with

Intelligent Personal Assistant with Knowledge Navigation

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Under Guidance of Prof. Rushali Patil, Computer Science Department, AIT Pune

Abstract

An Intelligent Personal Agent (IPA) is an agent that has the purpose of helping the user to gain information through reliable resources with the help of knowledge navigation techniques and saving time to search the best content. The agent is also responsible for responding to the chat-based queries with the help of Conversation Corpus. We will be testing different methods for optimal query generation. To felicitate the ease of usage of the application, the agent will be able to accept the input through Text (Keyboard), Voice (Speech Recognition) and Server (Facebook) and output responses using the same method. Existing chat bots reply by making changes in the input, but we will give responses based on multiple SRT files. The model will learn using the human dialogs dataset and will be able respond human-like. Responses to queries about famous things (places, people, and words) can be provided using web scraping which will enable the bot to have knowledge navigation features. The agent will even learn from its past experiences supporting semi-supervised learning.

Keywords

NLTK, Turing Test, Lemmatization, Levenstein Distance, Conversation Semantics, Semi-Supervised Learning

1. Introduction

Whenever we have a conversation, each response is based on the previous sentence heard. If we have any dataset of human conversations then the same rule applies to that dataset. This theory is true for more than 95% of the conversations. The basic idea of developing the bot which can respond on facebook was to enable as many users as possible to interact with the bot making a large learning database for future references.

In this paper we try to find the best possible matching line in the database to the input query. We will check the different algorithms for analyzing the dataset to enable faster search operations. MongoDB will be used as the backend database as it provides faster read operations. The database will update itself after each conversation and use this knowledge in the next chat.

2. Previous Works

Existing chatter bot systems have a few issues which should be removed in order to make the best model. Initial bots used to respond by making changes in the input (like replacing "I" with "You" and "We" with "They" and vice-versa). Example:

> *Input: I want to know this.   Output: You want to know this.*

This type of response by the bot isn't the best and a better response is provided below.

> *Input: I want to know this.   Output: What do you what to know?*

Another instances where these bots fail is the case of answering the common quiz based questions like:

Input: Who is Sachin Tendulkar?   or   Input: What is DHCP?   or   Input: When is Independence Day celebrated?

Performance Enhancement Of apache APEX

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Abstract—In a processing engine there is a continuous exchange of data between the computing nodes. The data that needs to be exchanged cannot be transferred in its normal form hence needs to be converted into normal bytes for faster execution. This is achieved by the process of Serialization. If there is any computation required to be performed on the data that is being transmitted we will have to de-serialize the data, perform the computation, reserialize it and transmit it again towards destination. This causes a lot of unnecessary overhead that can be avoided. This can be avoided by making use of the UnsafeRow Format developed by DataBricks. We can use this format to perform the required computation on the serialized data without the need to deserialize it. Thereby, increasing the overall performance of the apex framework.

Index Terms—UnsafeRow Format, Operators, Apache Apex

I. INTRODUCTION

APACHE Apex [13] is an enterprise grade native YARN big data-in-motion platform that unifies stream processing as well as batch processing. It processes big data in-motion in a highly scalable, highly performant, fault tolerant, stateful, secure, distributed, and an easily operable way. It provides a simple API that enables users to write or re-use generic Java code, thereby lowering the expertise needed to write big data applications. For memory extensive applications in Apache Apex [13], an optimized memory management must be implemented as in java memory management [4] [8] is not so memory friendly. Off heap memory [11] is utilized for the same. Using off heap memory and using object pools both help reduce GC (Garbage Collector) pauses, this is their only similarity. Object pools are good for short lived mutable objects, expensive to create objects and long live immutable objects where there is a lot of duplication. Medium lived mutable objects, or complex objects are more likely to be better left to the GC to handle. However, medium to long lived mutable objects suffer in a number of ways which off heap memory [11] solves. Further these serialized objects which are in bytes array format are stored using java maps. Depending upon aggregation maps are created and hence reducing the memory wastage and improving performance at the same time.

II. BACKGROUND AND CURRENT SCENARIO

A. Efficient Object Serialization in Java

Object serialization [1] is the ability of an object to write a complete state of itself and of any objects that it references to an output stream, so that it can be recreated from the serialized representation at a later time. Pickling, the process of creating a serialized representation of objects, has been investigated for many years in the context of many different distributed systems. Sun Microsystems introduced a simple and extendible API for object serialization in version 1.1 of the Java Development Kit. Application developers can use this standard serialization in their applications, or they can develop custom versions for different user-defined classes. Many distributed applications that use standard serialization to communicate between distributed nodes, experience significant degradation in performance due to large sizes of serialized objects. We present a number of improvements to the serialization mechanism aimed at decreasing pickle sizes without visible degradation in serialization performance. Through performance results, we show that it produces pickles up to 50 without degrading serialization performance.

B. DataTorrent RTS: Real-Time Streaming Analytics for Big Data [2]

The escalating growth of unstructured data is leaving organizations unable to make critical decisions in time to realize business benefit. Complex machine generated data, log files, and data from mobile and gaming applications are all growing at unprecedented rates, and arriving faster than ever. Today, many firms are simply unable to ingest or process the massive amount of data that is being generated around their business in a timely manner, leaving them unable to take meaningful action. This reality is at odds with the need to provide time critical responses to risks and threats as well as exploiting opportunities that can make a positive difference to the bottom line. Organizations need to make decisions in business time the speed at which their business runs today with most expecting to make faster and more insightful decisions faster in the future. Unfortunately, most organizations today are making low-impact or no-impact decisions based on small sets of data. More importantly, the lag in traditional (often batch oriented) big data processing means that decisions often come hours or days after the value of that data to the business has decreased or vanished. Forester rightly calls these important opportunities perishable insights, and exploiting them requires a streaming analytics platform capable of detecting and acting on potentially complex events in high velocity streams of data. Enterprises today are looking to hadoop [9] as the core of their big data strategy. However, the traditional MapReduce paradigm is not meeting business needs for business-time awareness and actionable insights. Despite the ability to do real-time queries in hadoop, the data must first go through a batch process before queries can be made. For many enterprises, this time lag is simply too long for real value to be extracted. A streaming analytics platform provides an end to end solution that takes data directly from multiple sources in real time, combines it with existing data, and delivers actionable analysis.

CPU Core Optimization In Cloud

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Abstract—**Cloud computing has been on the scale of becoming a dire technology in today's world. With the augmenting demand of the cloud resources it is very pressing concern to enhance the cloud architecture for higher efficiency. Former optimization systems concentrated either on dynamic electricity switching or Real Time Virtual Machines[2] which did not utilize the intact capacity of hosts. The contemplated system considers the administrator point of view and helps in increase in revenue generation by stocking the resources to the optimum level. Dynamic Core Recommendation averts any kind of extravagance of resources. Detailed analysis and a better training model will recommend to the administrators and user so as to aid both parties**

Keywords—*State Vector Machine; Virutal Machine*

I. INTRODUCTION

Lack of cloud resource optimization has led cloud providers in a pressing concern to cope up with the amount of wasted cloud resources. The resources which are being acquired by users but gets remained underutilized. Utilization of these resources will effectively help cloud providers to increase their revenue multiple times without any kind of cloud infrastructure enhancement. This paper presents a cloud resource optimization system in which a dynamic CPU cores recommender will recommend cores allocation to users based on proposed predictive model. The proposed predictive model will consider following parameters of user's cloud usage: 1) time 2) day 3) week 4) percentage utilization.

II. PREVIOUS WORK

Some of the work that has been done was on the basis of the mapping of the VMs. They optimized with the help of the physical and virtual machine mapping to avoid any kind of latency. This type of mapping was required in the case of the multi-IaaS problem[1]. Several other works have been done on the basis of the QoS requirements[2]. Such type of the optimization was used for the web application-based programs. It is quite possible that the customers have various choices for the different resources like the RAM, CPU Cores, Storage.

III. SYSTEM REQUIREMENTS

We used open stack to deploy our cloud. The devstack script was used to create the automated tool settings. It got us through

the settings of Nova, Cinder, Keystone, Neutron and Horizon cloud APIs on the single machine. Some changes were made to curl the packages from HTTP to HTTPs. A machine with two dedicated Network Interface Cards was required for internal and external networking. D-link switch was used for internal networking. Following are the essential system requirements:

Operating System – Ubuntu 16.04 LTS

Software – Python 3.6, Spyder

Libraries – Numpy, Sklearn, Psutils

Storage – 1 TB

Ram – 16 GB

Processor – Intel core i7 4790@3.6GHz

IV. EXPERIMENTAL WORK

The entire process is divided into two main tasks It all started with the two main tasks.

1) Analysis

2) Core recommendation.

A. Analysis Experimentation

A Virtual Machine instance is running physically at the location of the company, so the latency is very low. The latency occurs during analyzing the VMs when the hardware is at 90% or more capacity. Until and unless the load is very low latency in this part and that's why we say it is NP complete. The reading latency is also affected by the following features:

1) Ctx_switches

2) Interrupts

3) Software interrupts

4) System calls

Such type of date was collected by the virtual machine. A python script was used to collect this data and write into a csv format file[6],[7],[9]. We used this script to retrieve the data which is used further for the analysis. The algorithm which is mentioned below is used for the analysis of the data the data which is received after running the script.

Customer Profiling using Social Media Analytics for Automobile Recommendation

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Abstract—Research on Social Media Analytics and Recommendation has grown many fold in the past few years as it is seen as a means of garnering insights into human behavior and recommending products. There are many methods and algorithms to perform recommendations over static and structural data whereas data available from social media are usually dynamic and unstructured.

A novel approach to derive insights from the publicly available data on social media platforms is highlighted and used to create a unique customer profile that helps the client to understand its customer better. Separate user profiles are maintained that contains all the generated insights about the user/customer. These insights are then used to recommend suitable automobiles to user using collaborative filtering technique.

Keywords—Web Crawling, Data Scraping, RESTful API, Collaborative filtering, Social Network Recommendation systems.

I. INTRODUCTION[1]

The internet and mobile technologies are the major force behind the rise of social media, providing technological platform for information sharing, content generation, and interactive communications. Major components of social media include user-generated content and information exchanges. Examples include web logs, micro blogs, wikis, podcasts, social posts etc. Social media generates huge amount of unstructured data every second and it is growing with the technological advancements. As social media data has grown more ubiquitous, important data can be gathered from different social media sites that represents behavioral patterns of the users. This unstructured social media data can be gathered using web-scraping methods and used as a key factor in the product recommendation systems.

Researchers utilize social media data as a platform for developing new algorithms for text mining and sentiment analysis and focus on social media as a sensor network for natural experimentation for exploring social interactions and their implications. Methods to scrape data from various social media sites have been discussed and insights have been generating from them.

In this paper, we utilise the power of data generated by social media to recommend products that have a very low buying frequency, in particular automobiles using collaborative filtering technique. Buying frequency is a frequency associated with every product that indicates about the trade of the product. Generally products with higher selling price tend to have a very low buying frequencies for example houses, cars, jewellery etc. Collaborative Filtering is used in variety of domains such as trust based systems and security [1,2,3,4], web services recommendation [5,6] and context-aware systems [7,8].

II. RELATED WORK

1) User Profiling
   Advent of internet and social media has led to a boom in social platform footprints which can be quite useful in understanding customer requirements and market behavior in variety of scenarios [9,10].User Profiling is an important key to a successful marketing campaign. Currently, major techniques to extract data from information retrieval systems are RESTful APIs, Platform-wrapper libraries ,web crawling and data scraping. Commercial third party API's are also available to extract data from social media platforms such as Crimson Hexagon, Octoparse, etc but are quite expensive and offer restricted data sets.

2) Recommendation System
   Nowadays recommendation system have become very popular approaches for helping users make decisions ranging from which product to buy to which movies to watch. These systems aim to retain user loyalty, reduce customer time and confusion and increases sales from producer's view point. There are three main techniques of implementing recommendation system: content based, collaborative filtering and hybrid approach. There are many techniques to extract knowledge from a social graph network such as Information Retrieval [11] and Knowledge Extraction [12].

III. DATA GATHERING PHASE FOR CUSTOMER PROFILING

Publicly available data on the popular social media sites has been used to derive insights about a user. We are assuming to have only three given parameters of a user : name,email and contact number.

Using these three parameters we have derived a lot of information about a user using his social media footprint.

Web crawlers can be used for obtaining the publicly available data but it is not feasible to crawl all these sites only on basis of these three given parameters and some of the social media sites restrict to search a person directly and dont give unique results. In such cases, collaborative data about a particular user from other social media sites is used to filter

Developing an Inscript Keyboard with Autocorrection and Text Prediction For Visually Impared

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Abstract— There are about 285 million people who are visually impaired worldwide of which 39 million are blind and 246 million have low vision (severe or moderate visual impairment). With 7.8 million blind people in India, India accounts for 20 per cent of the 39 million blind population across the globe, and this is a big number. Versions after versions of popular typing applications have come, and yet no application yet has addressed the difficulty that smaller user groups such as visually impaired people have while entering input.The intention is to enable blind students be independent of scribes (writers) to write their exams. We want to develop a typing model for Android using the Inscript keyboard layout. This tutor aims to help blindstudents to get familiar with Keyboard in their own native language. And finally made an attempt of reducing typing efforts by predictive texts and language detection using n-gram algorithm.

Index Terms— Text To Speech(TTS), Text Classification, Supervised Learning, NLP, n-gram, autocomplete, autocorrect, visually impaired

1.1 INTRODUCTION

With 7.8 million blind people in India, India accounts for 20 per cent of the 39 million blind population across the globe, and this is a big number. The reports narrate the sad stories of the quality of life of most of these people. The only solution to improve the quality of life of visually impaired people is education using technology. As per the pilot study conducted, there are no well researched training models to impart training to visually impaired people, which takes in to account the cognition process and learning styles of visually impaired people. The intention is to enable blind students be independent of scribes (writers) to write their exams. To achieve this vision, the aim is to develop an application which initially trains student to type and operate basic text navigation functions on the Android device. Text editors are in abundance in present times. However, most text editors fail to help in a very important aspect i.e. typing. In the era of touch-screens and voice commands, most text editors require typing out entire words on our old keyboards and laptops. While most people are used to this mechanical approach, novice users and senior citizens often have a hard time trying to locate alphabets on their keyboards. People with physical disabilities are unable to use such conventional systems. Also, often people in non-English speaking countries are unfamiliar with exact spellings of English words. Work in the text prediction domain has been going on since a long

time. One of the oldest algorithms is HWYE or Hear What You Expect algorithm which works by building a large language model based on frequencies of usage of words and other predictive cues. Sonal R. Pampattiwar, Prof. Anil Z Chhangani in "Smartphone Accessibility Application for visually impaired" has proposed an Android Smart Phone application for the visually challenged. Through this application the visually challenged user can always be connected with the world around. Akshay Bhatia in "Predicitive and Corrective text input for desktop editor using ngrams and suffix trees" used a method for text prediction first all the words in the dictionary are scanned to build a suffix tree a.k.a trie. This tree is traversed with respect to frequency to suggest the top words. A method of text classification is used in which each class is presented by an exemplar vector called codebook. The codebook vectors are placed in the feature space in a way that decision boundaries are approximated by the nearest neighbor rule. It presents the results of automated classifying Farsi text documents using tri-gram, quad-gram, and word frequency statistics methods. It use the Bayesian approach for Persian documents and they improve it by using the word collocation.

While the implementation of such a system is not unprecedented, the existing systems have drawbacks. This paper aims to address these and propose implementation of innovative features to develop a more comprehensive system.

Smart Underwriting System: An Intelligent Decision Support System for Insurance Approval & Risk Assessment

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Abstract—**Over the past years, insurance industry poses many challenges, one of them is maintaining the data either in legacy systems or in paper files for underwriting transaction. Most of the insurance companies are automating their data collection process. Traditionally, information of the client (such as personal details, medical records etc.) who needs insurance is sent to the underwriter through an email and after proper analysis, underwriter sends the quickQuote back to the agent based on his intuition and experience. Generally, quickQuote consists of insurance approval conditions and insurance plan name. Due to enormous amount of diseases and medicines, complexity in underwriting process has been increased. In a nutshell, an improved and optimized way of underwriting process is required. Introducing Artificial Intelligence can help to transform the traditional underwriting process to smart one. Usually data given to the underwriter is in unstructured format. Using Natural Language Processing and by training numerous statistical machine learning classifiers over the unstructured texts, important features were extracted out from unstructured emails. Main challenge is to exploit the information embedded in emails using automated tools, because of noisiness, uncleaned and unstructured data. Based on the features extracted, a model was trained and tested for unseen mails to get the proper insurance plan name and advice. This data was drafted to a template and sent back to the agent through an automated email reply. Main Objective of the project is to handle dynamic situations efficiently and to automate the underwriting task.**

Index Terms— *Information Extraction, Machine Learning, Underwriting, Mining of Text, Natural Language Processing*

I. INTRODUCTION

Underwriting is one of the most crucial task for any insurance company. Over the years, data is maintained either in legacy systems or in paper files for underwriting transactions. Main driver for better performance is to grow beyond simple calculations into the realms of business intelligence and analytics [1].Traditionally examination aspect of underwriting is coupled with data to enhance the capabilities of predictive analytics which can be used for transforming insurance business. Complexity of underwriting process has been increased with the increase of data. An AI based decision support system is required which can act as underwriter and it should be capable enough to take decisions based on the trained data.

Initially, agent will record and draft the personal information of client in text format and send it to the underwriter using email [7]. This data will be unstructured and needs cleaning, so that important features can be extracted out and based on it, proper results can be given. In the mail, apart from personal information of client, medical text is also present. These medical texts can carry important information about previous and current medical record, symptoms as well as any judgement given by physicians[2].NLP techniques were used for the data of medical text to perform tasks which are important, like, preprocessing, detection of features as per context and entity extraction [3][5][9].These features could be any type of disease, medication, bad habit, symptom, surgery, procedure or any past medical history and it should be unbiased, relevant to the context and contribution comprehensive. Natural Language documents are considered as bags of words (which is a count for number of term occurrences) and refining those to bag-of-concept from bag-of-concepts model to extract highly probable or richer concepts from health records[8].Some pre-processing is required to extract information which includes structure analysis of document, tokenization, part-of-speech tagging, spell checking, disambiguation of word sense, sentence splitting and parsing. During feature extraction, situation dependent features like negation and subject identification plays a vital role. For feature extraction, techniques like pattern matching based on symbolic rules, or based on statistics and machine learning can be used [4][11]. After knowledge extraction, relation between information and standard terminologies were checked which can be further used for analysis purpose. This will give the training feature set which will be further given to the classifier we are using. All the steps will collectively help the decision support system.

Following is the organization model of the paper: section II explains the design of the system. Section III discusses the approach and working of the system. Section IV is the result of experimentation. Section V concludes the paper. Finally, section VI is the acknowledgement followed by important references which were used in the research work.

BlockSLaaS: Blockchain Assisted Secure Logging-as-a-Service for Cloud Forensics

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Abstract. Cloud computing has become a prominent and widespread technology nowadays. However, it agonized due to incremental serious security issues. To solve these issues forensic techniques needs to be applied in cloud. Log is a paramount element in forensic investigations to reveal 3W i.e. who, what, when of happened suspicious activity. That's the reason, secure preservation and investigation of different logs is an essential job for cloud forensics. Due to very little control over the clouds, it's very difficult to collect authentic logs from cloud environment while preserving integrity and confidentiality. Till today, forensic investigator has to trust Cloud Service Provider (CSP), who collect the logs from individual sources of cloud environment. However, untrusted stakeholders of cloud and malicious entities from outside the cloud can collude with each other to alter the logs after the fact and remain untraceable. Thus, validity of the provided logs for forensics can be questionable. In this paper, we proposed forensic aware blockchain assisted secure logging-as-a-service for cloud environment to securely store and process logs by tackling multi-stakeholder collusion problem and ensuring integrity & confidentiality. The integrity of logs is ensured using immutable property of blockchain technology. Cloud Forensic Investigator (CFI) can only be able to access the logs for forensic investigation by BlockSLaaS, which preserves confidentiality of logs.

Keywords: Secure logging · Forensics · Blockchain ·
Cloud computing

1 Introduction

CLOUD computing has unfolded scope of computing using its characteristics resiliency, ubiquitous access and measured service to various business fields. 83% of small and medium business fields workload will be in the cloud and it's projected to reach \$411 billion market value by 2020 [1]. While using fascinating broad network access and economical computing model of cloud, security of these systems is ever growing and prime issue [9–11,20]. Affordable pay per use model of cloud motivates malicious cloud service consumers and attackers to launch

Disrupting Insurance Industry Using Blockchain

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Abstract. In this paper, we designed a blockchain based insurance platform that support faster claim processing. To look at blockchain's potential part in insurance this paper explorer's ways the innovation can enable insurers to rearrange claims handling a procedure that requires an as of now damaged recipient to experience a tedious movement to process claims. We look at where a blockchain based arrangement can join the present passing enrollment and demise claims handled into a solitary, disentangled strategy requiring least mediation from different partners. With its capability to transform business procedures and plans of action, blockchain and its public record could give organization an impressive upper hand.

Keywords: Blockchain · Ethereum · Hyperledger · Insurance industry

1 Introduction

Blockchain is a distributed, open and shared ledger with non-refutation of transactions that may add the absence of trust across a peer-to-peer network. In 2016 alone finished $1.4 billion was crammed blockchain innovation universally crosswise over completely different areas, basically through interests in varied new firms in the medicinal services, back and production network parts. Indeed, even safety net providers have investigated every possibility to investigate blockchain's potential for different arrangements through innovation.

1.1 Blockchain

Figure 1 delineates how blockchain functions. All nodes approve exchanges and validate the whole record without the requirement for a middleman, because of the utilization of open key encryption and agreement conventions. Generally, when a peer starts a transaction on the blockchain, nodes within the system assess, make sure and confirm and consent to the projected exchange, bringing about its incorporation to the "chain," alongside other alternative exchanges, as a "block." Another kind of a blockchain arrange is private blockchain, which enables just known nodes to take part in the system.

Hybrid CAT Using Bayes Classification and Two-Parameter Model

Nikita Singhal, Amitoz S. Sidhu, Ajit Kumar Pandit,
Shailendra Pratap Singh Sengar and Tutu Kumari

Abstract Much research and implementation has been done in the field of adaptive learning, while many such platforms exist almost none of them have tackled the problem of maintainability of such high demand systems. This paper proposes a new system using naive Bayes classifier and two-parameter model of IRT to develop a low cost, easy to maintain, self-evolving test platform. The proposed model harnesses the knowledge of the community while implementing powerful test theory. The paper discusses in detail the major modules of the system along with the related theory. The proposed model incorporates machine learning and IRT to provide a state of the art system while still being a community powered platform. The scope of the proposed model is visited. This paper provides a direction and precedent for the development of a new breed of low maintenance high capability test platforms.

Keywords Item response model · Naive Bayes model · CAT
(Computer adaptive Test) · Two-parameter model · Recommendation system

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Mixed Reality in Smart Computing Education System

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Abstract— One of the technologies that has been showing possibilities of application in educational environments is the Mixed Reality (MR) comprising of both Augmented Reality(AR) and virtual Reality(VR), in addition to its application to other fields such as tourism, advertising, video games, among others. The primary reason for this research work is to depict and condense trials with production training and education applications utilizing mixed reality gadgets. The entry of new and further developed mobile devices opens up more opportunities for the applications to develop and be circulated. This paper tries to build upon the current state of mixed reality and its application in education. The first segment describes basic structure of mixed reality and its different parts. Following segments give a definitive structure of some experimental applications that were developed for the mixed reality, with the inference taken from the data of experiment done by the National university of Columbia on secondary school students and lastly, the paper shows the benefits of those applications over the traditional teaching methods and the basic user reactions to them.

Index Terms—Mixed Reality, Augmented Reality, Virtual Reality, Mobile Devices, High-End, Teaching-Learning Processes, Virtualization.

I. INTRODUCTION

Mixed Reality (MR) which includes Augmented and Virtual Reality (AR and VR) is an emerging technology and that is being driven and included in modern Education. The most noteworthy purpose behind the applications is that individuals discovered MR plays a basic and fundamental part in making the experience of any object virtually. In any case, MR gadget was excessively costly as of not long ago, the MR equipment is sufficiently cheap enough these days to be connected all the more widely [6]. Mixed reality is the result of blending the physical world. Mixed reality is the next evolution in human computer interaction (HCI) and hence unlocks possibilities by advancements in mobile technologies and new mixed reality devices. The term *mixed reality* was originally introduced in a 1994 paper by Paul Milgram and Fumio Kishino, "A Taxonomy of Mixed Reality Visual Displays." Their paper introduced the concept of the *virtuality continuum* and focused on how the categorization of taxonomy applied to displays. Since then, the application of mixed reality goes beyond displays but also includes environmental input, spatial sound, and location [4]. In real time applications, users concentrate on the both real and virtual conditions. Comparted to the existing approaches, virtual reality compelled in the virtual environments. These interactions mimic our natural behavior

of interaction, such as objects getting bigger as you get closer and the changing of perspectives as you move around an object [3].

II. REALITY-VIRTUALITY CONTINUUM
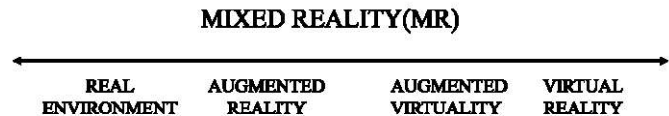
Fig. 1. Mixed Reality (MR)

Augmented reality (AR) is an emerging technology that is being driven and included into different environments education. In the Horizon 2017 report, which reported that performs to identify and describe emerging technologies that will have an impact on learning, teaching and creative research in education, he reality is highlighted increased as a key trend since 2016 for improve digital literacy. Augmented reality innovation has been utilized as a part of a few fields, for example, pharmaceutical, mechanical autonomy, fabricating, machine repair, flying machine reenactments, diversion, gaming and training. Enlarged the truth is an innovation that interfaces the PC world to the human world. Other than that, increased the truth is additionally characterized as an innovation that enables clients to see this present reality with PC created objects superimposed. As indicated by, at first, the enlarged the truth was utilized for military reason to build up a propelled pilot training program. These days, enlarged the truth is additionally executed in the instruction field [2].

A few investigations demonstrate that expanded the truth can improve the instructing and learning background. Coordinated increased reality in the instruction field draws in the student to investigate this present reality by utilizing media components, for example, writings, recordings and pictures as supplementary components to lead examinations of the surroundings. Increased the truth is likewise ready to expand the coordination of this present reality with advanced learning assets in three measurement (3D) frame. For instance, the utilization of expanded reality empowers student to learn troublesome logical wonders in Chemistry, for example, synthetic bond. Science is a reasonable subject that requires dynamic ideas for inside and out comprehension.

A Review on Sentiment Analysis from Multimodal Data

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Abstract

A sentiment analysis is becoming a popular research area. Sentiments can be expressed in various forms like text, image, audio, video etc. Opinion of large population is anticipated by aggregating sentiments of individual and used in numerous applications. Traditional sentiment analysis system focuses on single modality to infer user's perception about subject. Such type of sentiment analysis has its own limitation and fails to employ other modality's expressiveness.

With the advent of technologies, the conventional system evolved into multimodal sentiment analysis which integrates multifarious data (i.e. text, audio, and visual) available over internet. Multimodality refers to the availability of more than one modality or medium. Every mode of data has unique features and helps users to express their emotions, opinions or attitude about the entity. Incorporating such features from multiple content enhance the effectiveness of sentiment analysis process. To find a constructive fusion mechanism to integrate these features is the challenging aspect of sentiment analysis. In this survey we have defined different modalities of sentiments, characteristics and fusion techniques of multimodal data. This paper gives an overview of different approaches for and applications of multimodal system.

Keywords: *Multi-modal data, Sentiment Analysis, Opinion Mining.*

1. Introduction

Nowadays social media has become very convenient and easy mode for knowledge sharing in various forms like text, images, audio, video, etc. People are freely sharing their opinions with each other through different platforms such as Facebook, Twitter, YouTube, and Foursquare. This huge amount of available information is further analyzed to help e-commerce, political reviews, recommender system and etc. Airport service quality is examined by user generated content on social media using text based sentiment analysis (SA) [21]. SA aims to acquire people's attitude hidden in shared views or opinions. SA helps in improving teaching and learning process by analyzing student's feedback from textual comments [19, 20]. Nowadays twitter is gaining more attention from people and have potential to influence the traditional media. Twitter allows users to create and post short text messages in the form of tweets. These tweets are categorized into positive or negative score [22]. The accuracy of tweet's content plays an important role in critical incidents such as natural calamities or social issues. This can be achieved by incorporating machine learning techniques with sentiment analysis in order to minimize spreading of misinformation [23].

People are expressing themselves through verbal, facial expressions, modulating tone of voice or body gestures. All these means exhibit strong correlation to affective computing which influences the judgment about entity (product, service, aspects etc.) into consideration. A multimodal sentiment analysis leverages SA by incorporating expressions from different modality to infer user's intent behind it [27, 5]. It also works

Cultivar Prediction of Target Consumer Class Using Feature Selection with Machine Learning Classification

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Abstract. Recently, Industries are focusing on cultivar prediction of customer classes for the promotion of their product for increasing the profit. The prediction of customer class is a time consuming process and may not be accurate while performing manually. By considering these aspects, this paper proposes the usage of machine learning algorithms for predicting the customer cultivar of Wine Access. This paper uses multivariate Wine data set extracted from UCI machine learning repository and is subjected to the feature selection methods like Random Forest, Forward feature selection and Backward elimination. The optimized dimensionality reduced dataset from each of the above methods are processed with various classifiers like Logistic Regressor, K-Nearest Neighbor (KNN), Random Forest, Support Vector Machine (SVM), Naive Bayes, Decision Tree and Kernel SVM. We have achieved the accurate cultivar prediction in two ways. Firstly, the dimensionality reduction is done using three feature selection methods which results in the existence of reasonable components to predict the dependent variable cultivar. Secondly, the prediction of customer class is done for various classifiers to compare the accuracy. The performance analysis is done by implementing python scripts in Anaconda Spyder Navigator. The better cultivar prediction is done by examining the metrics like Precision, Recall, FScore and Accuracy. Experimental Result shows that maximum accuracy of 97.2% is obtained for Random Projection with SVM, Decision Tree and Random Forest Classifier.

Keywords: Machine learning · Dimensionality reduction · Feature selection · KNN · SVM · Naïve Bayes · Decision Tree and Random Forest

1 Introduction

In machine learning classification problems, the final classification results are based on number of input features. Since most of the features are correlated, they may be redundant. This redundant feature increases the storage space and reduces the computation time. Also, when the number of features is high, it is hard to visualize the data to prior analysis of data. This ensures the need of dimensional reduction algorithms. The classification performance using machine learning algorithms depends on various

Disrupting Insurance Industry Using Blockchain

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Abstract. In this paper, we designed a blockchain based insurance platform that support faster claim processing. To look at blockchain's potential part in insurance this paper explorer's ways the innovation can enable insurers to rearrange claims handling a procedure that requires an as of now damaged recipient to experience a tedious movement to process claims. We look at where a blockchain based arrangement can join the present passing enrollment and demise claims handled into a solitary, disentangled strategy requiring least mediation from different partners. With its capability to transform business procedures and plans of action, blockchain and its public record could give organization an impressive upper hand.

Keywords: Blockchain · Ethereum · Hyperledger · Insurance industry

1 Introduction

Blockchain is a distributed, open and shared ledger with non-refutation of transactions that may add the absence of trust across a peer-to-peer network. In 2016 alone finished $1.4 billion was crammed blockchain innovation universally crosswise over completely different areas, basically through interests in varied new firms in the medicinal services, back and production network parts. Indeed, even safety net providers have investigated every possibility to investigate blockchain's potential for different arrangements through innovation.

1.1 Blockchain

Figure 1 delineates how blockchain functions. All nodes approve exchanges and validate the whole record without the requirement for a middleman, because of the utilization of open key encryption and agreement conventions. Generally, when a peer starts a transaction on the blockchain, nodes within the system assess, make sure and confirm and consent to the projected exchange, bringing about its incorporation to the "chain," alongside other alternative exchanges, as a "block." Another kind of a blockchain arrange is private blockchain, which enables just known nodes to take part in the system.

Design of a Forensic Enabled Secure Cloud Logging

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ABSTRACT

Adoption of cloud computing services greatly reduce the cost of managing businesses and increase the productivity. But, due to complex network configurations of cloud, it is a vector for various malicious attacks. Logs are the most valuable element which can be helpful in revealing the insights of any activity happened in cloud. Experienced attackers and malicious users always targets to destroy logging service first, after their attacks to remain untraceable. The existing logging techniques, which consider logger as a trusted stakeholder cannot be applied in cloud as there is possibility of collusion in between logger of cloud i.e. cloud service provider and fraud cloud service consumer or cloud forensic investigators to falsify the logs.

CCS CONCEPTS

• **Security and privacy** → *Virtualization and security* ; • **Applied computing** → *Network forensics*; • **Computer systems organization** → *Cloud computing*.

KEYWORDS

Cloud Forensics, Forensic Investigation, Cloud Security, Blockchain, Interplanetary File System (IPFS)

1 PROBLEM STATEMENT

Design of a Forensic Enabled Secure Cloud Logging

2 PROPOSED SECURE CLOUD LOGGING

In our work, we analyse the threats on cloud logging service[1], looking attentively at cloud multi-stakeholder collusion problem [2]. On the basis of threat analysis, we propose forensic enabled secure cloud logging service, which preserves the integrity and confidentiality of cloud service consumer logs. We employed blockchain for building forensic enabled logging scheme, which provides proof of log manipulation to cloud forensic investigator. InterPlanetory File System(IPFS) was used to remove the storage overhead of logs on blockchain. Cloud service consumers CSC send an event E to request R with the help of request attributes RA to data file objects O in cloud to perform their day-to-day business activities which generates logs $L = \{l_1, l_2, l_3, \ldots l_n\}$. **Step 1:** Log File Creation: $E_i \rightarrow L_i <$ time, First event in the cloud system will get recorded into log say L_1. Let's say $E_i \rightarrow L_i$ where i=1; for every first event of the day. $E_i \rightarrow L_{i+1}$ where i is an index of previous log. Each time CSP assigns an index i to each event E and appends it to the log file. **Step 2:** Partial Proof Generation: In this step we are creating proofs of ten events in one file. $LF.insert\{E_0, E_1, \ldots E_{10}\} \rightarrow PP_1$; where PP_1 is a Partial Proof of events E_1 to E_{10}. **Step 3:** Partial Proof Encryption: $Encrypt_{CSC}(PP_i) \rightarrow EP_i$ where EP(Encrypted Proof) bound to its version number i and signed. Thus, versions of partial proof will be consistent. **Step 4:** Add Encrypted Proofs on IPFS Network: Finally, versions of proofs $P_0 \ldots P_i, P_{i+1}, P_{i+2} \ldots$ which are mutually consistent and encrypted are added on IPFS network. After every day, hash of all proofs is stored on blockchain.

3 RESULTS

After any malicious incidence cloud forensic investigator can anytime verify the integrity and confidentiality of logs. Our results shows integrity verification of 10K logs in just 1660 seconds. Thus, our technique makes cloud more secure and transparent.

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Springer Link

Optimization of Network Functions Using Static and Heuristic Approach in Software-Defined Network

Proceeding of First Doctoral Symposium on Natural Computing Research pp 403-412 | Cite as

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Abstract

The software-defined network is nowadays playing important role in achieving dynamicity and flexibility in network resource optimization. The software-defined networking (SDN) using network function virtualization (NFV) and OpenFlow architecture is supporting this evolution. There by drastically user driven services to guarantee low latency and fast access of user applications on laid network on one hand, and the trend to support personalization of services on the other. The static linear and dynamic heuristic estimation of multimedia data services towards the edge nodes can be helpful in optimization of resources. The software-defined network optimization is useful in new policy decisions, to scale up the network media availability and help network administrator at local network. At present, these facilities are available with enterprise network administrator only.

Keywords

Software-defined network   Network functions   Network resources computing
Cloud resources   Network resources allocation
Network resources analysis (bandwidth)   OpenFlow
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Securing Trustworthy Evidences for Robust Forensic Cloud in Spite of Multi-stakeholder Collusion Problem

International Conference on Hybrid Intelligent Systems

HIS 2019: Hybrid Intelligent Systems pp 376-386 | Cite as

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Conference paper
First Online: 13 August 2020

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Abstract

Many organizations are widely using cloud for their day to day business activities. But several attackers and malicious users are targeting cloud for their personal benefits. It is very important to collect and preserve admissible evidences of various activities happened in cloud securely in spite of multi-stakeholder collusion problem. Logs are one of the utmost vital elements to trace the malicious activities happened in cloud computing environment. Thus, forensic investigations involving logs face a grave challenge of making sure that the logs being investigated are consistent and not tampered with. A lot of research has been performed in this field; however with the advent of blockchain and Interplanetary File System (IPFS) new innovative approaches can be applied to secure trustworthy evidences in cloud. In this paper, we used blockchain and IPFS to build a system which stores the logs of cloud users' activities and assurances the trustworthiness and recovery of such logs to aid in forensic investigation. The integrity of the trustworthy log evidences is assured with the help of blockchain. Using versioning nature of IPFS our system can track the modification of log files. In earlier work, the systems could assure whether a log has been altered with or not, but none provided a mechanism to recover metadata of tampered logs to their original state. With the help of IPFS our proposed technique extend the existing work by providing the original logs for interfered logs.

Smart KYC Using Blockchain and IPFS

**Nikita Singhal, Mohit Kumar Sharma, Sandeep Singh Samant,
Prajwal Goswami and Yammanuru Abhilash Reddy**

Abstract Know your customer, also known as know your client or simply KYC, is the process that businesses and financial institutes must employ to identify their clients and assessing any kind potential risk due to illegal intentions and foul play for the business relationship in compliance with a national regulating body. The term KYC is often used to refer the bank regulations and the anti-money laundering regulations which are in place to govern such activities. Also due to bribery and foul play, companies of all sizes are compelled to employ KYC for the purpose of ensuring their consultants, agents, or distributors follow rules set by anti-bribery compliant. With population of India around 1.3 billion, a secure and faster system for sharing sensitive information like KYC document which may contain personal document, capable of handling this vast amount of this data is of high demand. While the implementation of such a system isn't new, the present systems have drawbacks. The proposed system will replicate the functionality of the legacy KYC system. By using the immutable property of Distributed Ledger Technology (DLT) and Inter Planetary File System (IPFS), a tamper-proof system can be formed. This paper aims to address some of the shortcomings of the current system and propose implementation of innovative features to develop a more secure and comprehensive system. The proposed system will allow customer and business institute to verify and record the customer KYC document into the DLT. The proposed system will use IPFS which will greatly improve the storage efficiency of DLT.

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3.3.3 CONFERENCE & BOOK CHAPTERS (2015-20)

Sr No	Year	Title	Faculty Name	Conference/ Chapter
1	2015	Experimental Study Of Heat Transfer Characteristics In Oscillating Flow Heat Exchanger	Dr J D Patil1	Proceedings of the 23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference IHMTC2015 17-20 December, 2015, Thiruvananthapuram, India
2	2016,	Study of isothermal and cyclic oxidation of Thermal Barrier Coating.	Dr Pritee Purohit	Eighteenth National Congress on Corrosion Control (Silver Jubilee Year) 24-26 February, 2016, Hotel Green Park, Chennai
3	2016	Fabrication of Do It Yourself Solar Kit: Democratizing Solar Energy Applications	Prof R B Gurav	2016 Biennial International Conference on Power and Energy Systems:Towards Sustainable Energy (PESTS E)
4	2019	Experimental Study of Heat Transfer Enhancement in a Novel Padma Heat Sink Minichannel	Dr Pritee Purohita*, R.B. Guravb, S.M.Gaikwadc	Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTC-2019), December 28-31, 2019, IIT Roorkee, Roorkee, India
5	2019	Production, Properties, and Applications of High Temperature Coatings	Dr Pritee Purohit	Amir Hossein Pakseresht University of Tehran, Iran & Materials and Energy Research Center, Iran
6	2019	CFD Analysis of Diesel Autorickshaw Exhaust System	Dr Sanjiv M Sansgiri	https://iopscience.iop.org/article/10.1088/1742-6596/1240/1/012022

IHMTC2015- 548

EXPERIMENTAL STUDY OF HEAT TRANSFER CHARACTERISTICS IN OSCILLATING FLOW HEAT EXCHANGER

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ABSTRACT

This paper presents experimental study of heat transfer characteristics of oscillating flow heat exchanger. Spreading heat with oscillating flow is similar to the spreading the flow with pulsating heat pipe, except the oscillating/reciprocating flow requires fluid movement by mechanical means instead of thermal input for the pulsating heat pipe. Mechanically operated oscillating mechanism is designed to obtain frequency range of 0 to 4 Hz and stroke length of 1.5 cm to 6 cm. The heat transfer characteristics of oscillating flow heat exchanger having a small amount of fluid contained in hermetically sealed conduit with provision of varying the frequency and stroke length are studied. Four important parameters that were studied are: The effective thermal conductivity between the heat source and sink for different heat input; the effective thermal conductivity between the heat source and sink for different frequencies and tidal displacement of the oscillating fluid; the axial heat flux and heat transfer coefficients in cooling region. The experimental results for above mentioned cases are compare with theoretical correlations mentioned by different researcher's viz. Kurzweg's correlation and Nishio's for theoretical effective thermal conductivity. The experimental result shows that there is an increase in effective thermal conductivity by a magnitude of 160 to 1700 times the value of thermal conductivity of pure copper, for different combinations of heat input, frequencies and tidal displacement. The effective thermal conductivity in oscillating flow heat exchanger is observed to be proportional to the product of square root of frequency and square of tidal displacement.

Keywords: Variable frequencies drive (VFD), oscillating fluid flow, effective thermal conductivity, tidal displacement.
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NOMENCLATURE

Ac	Cross-section area of pipe, m^2
Asc	Pipe outer surface area for cooling region, m^2
Cp	Specific heat at constant pressure, J/kg K
do	Outer diameter of flow tube.
F	Oscillation frequency, Hz
h	Convective heat transfer coefficient, W/m^2 K
K	Thermal conductivity, W/m K
Keff	Experimental effective thermal conductivity, W/m K
Keffk	Theoretical effective thermal conductivity using Kurzweg's correlation, W/m K

Study of isothermal and cyclic oxidation of Thermal Barrier Coating.

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Abstract

The need for higher efficiencies in power generation using gas turbine is increasing. The operating temperature plays important role in efficiency of power generation. It should be as high as possible. The components of gas turbine have to sustain this high temperature. Ni-based or co-based superalloys are used to make the turbine components. The melting point of these materials is around 1200^OC. To protect these materials, a coating which provides thermal gradient is applied. Thermal barrier coating provides an appreciable temperature difference between the coating and the component. They withstand higher operating temperatures there by increasing life of the component and enhancing the efficiency. Thermal barrier coating are having MCrAlY bond coat, TGO and top coat of ceramic material mainly YSZ. Al_2O_3 that is TGO layer acts as an oxygen barrier and retards the further bond coat oxidation. To increase the performance of the coating, new material such as defect cluster TBC, pyrochlores, perovskites, hexa-aluminates are developed as a top coat material. It was found that use of alumina along with existing materials increased the performance of the coatings. Al_2O_3/YSZ coatings have shown good spallation and oxidation resistance and increased densification and phase transition rate. Present work summarizes the different methods and combinations of using Al_2O_3 along with existing materials, to enhance the life of TBC.

Introduction

Thermal barrier coatings (TBCs) are having top coat made up of YSZ and MCrAlY bond coat. These are mainly used in gas turbines and aero engines. The TGO layer formed over the bond coat and below the top coat after high temperature oxidation results in the failure of the TBCs. Many researchers have tried to suggest different alternatives and combinations to improve TBC life. One of them is incorporating small Al_2O_3 layer using various ways. The present paper is the review of previous work done by incorporating Al_2O_3 in the TBC system. A TGO layer is forming after the oxidation of bond coat when TBCs are exposed to high temperatures. It grows between bond coat and top coat. The alumina layer in TGO prevents the underlying substrate from further oxidation. Within the alumina layer thermal mismatch strain develops after cooling [1]. As the thickness of TGO increases TBC

Fabrication of Do It Yourself Solar Kit: Democratizing Solar Energy Applications

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Abstract—**In India, we are very fortunate to have our location at the Tropic of Cancer making India one of the best locations for solar power generation. Some people have even compared India with solar farm of this world. In foreign countries people are seeking solar energy to fulfil their daily requirements of energy. But in India, solar power generation didn't really pick up. What are the reasons behind it? One obvious reason is the affordability factor. An average Indian household requirement is 300W per day, which requires an investment of more than 3 Lakhs. In Indian scenario, solar power generation is feasible only for higher class people or top class institutes, complexes, multiplexes and towers. Solar power energy generation is way beyond the reach of common people. This paper bequeaths the fabrication of Do It Yourself Solar Kit which is accessible to people from their nearest stores and can be easily set up using simple tools without any professional help.**

Keywords— *Solar panel, Multi junction solar panel, Do it yourself Solar Kit.*

I. INTRODUCTION

India is facing a perfect storm of factors that will drive solar photovoltaic (PV) adoption at a "furious pace over the next five years and beyond". The falling prices of PV panels, Mostly from China but also from the U.S., have coincided with the growing cost of grid power in India. Government support and ample solar resources have also helped increase solar adoption, but perhaps the biggest factor has been need. India, a growing economy with a surging middle class, is now facing a severe electricity deficit that often runs between 10% and 13% of the daily need.

The need of the hour is energy. Generating energy from Solar Power fits in today's context & also works in favour of sustainable development. In India, we need to look for Indian centric innovations to solve problems of solar power generation in accordance to Indian ways. But the main problem is space requirement; generation of 1MW power requires 4 acres of land [1]. So it is not possible to provide power to the entire nation just by utility scale solar farms. In foreign countries, people do have a concept of residential solar systems but in India people either can't afford it or even if they can, they have space issues. Our paper bequeaths about fabrication of a Do It Yourself solar kit which has its own variety of residential, automobile and industrial application. It

is a kit which can be available to you at your nearest departmental or electronics store at a very pocket friendly price. Place it at a roof or at the top of a car and fix it using simple techniques .Using this energy generated, batteries can be charged in automobiles or industries and in industries, machines and motors can be run. Energy generated can be used in household application too, like boiling water or fulfilment of electricity requirements. This solar kit has solar panels having a design inspired from a dish TV antenna and a tree like structure to gain maximum from the available incident energy[2][3]. It is a fully automated solar kit which traces sunlight by itself throughout the day .Each solar panel has solar concentrators to enhance the sunlight incident on solar panels [4].

The solar panels used in solar kit are multi- junction solar panels with efficiency greater than 30%. The present solar panels used in India have efficiency less than 10% [5]. Accumulating all these together, this solar kit gives 300% enhancement in power generation through solar in Indian context. This paper is based upon the fabrication of solar kit which includes mechanical design with tracking system, material selection for solar panels and solar concentrators to get most out of the available resources [6]. Accumulating all these concepts together we give an economical, efficient and durable solar kit which will meet your daily requirement of energy .This paper is organized as follows - section II consists of mechanical design with tracking system, Section III deals with material selection of solar panels, Section IV consist of concluding remarks.

II. MECHANICAL DESIGN WITH TRACKING SYSTEM

Solar tracking is the most appropriate and most effective with the greatest return on investment and in changing our present economy to solar economy [7].The majority of solar panels out there today are rooftops or small commercials. When solar tracker tracks on a single axis, we produce approximately 20% more power, and when tracked on a dual axis we produce another 20% power [8]. By producing 20% or 40% more power, we increase the economic effectiveness of the solar system and the return on investment while make the investment affordable and worthwhile without affecting the

IHMTC2019-HTE-526

Experimental Study of Heat Transfer Enhancement in a Novel Padma Heat Sink Minichannel

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ABSTRACT

Experimental and numerical investigation was conducted for the fluid flow and heat transfer in minichannel with a novel Padma heat sink. The minichannel heat sink is consisting of a novel Padma design (Flower shape) engraved on a rectangular plate. The dimension of a rectangular plate is 30 x 30 x 6 mm and that of the Padma is a cylinder having 15 mm diameter with 5 mm depth of the channels. Padma heat sink made of aluminum is having 10 channels with fluid inlet at the center and radial outlet. Water is used as a working fluid with the Reynolds numbers ranging from 50 to 250. The experimental results consisting of the heat transfer enhancement and friction factor, for minichannels are compared with the parallel channels with the same surface area. It is observed that the Performance Enhancement Factor of Padma heat sink is in the range of 1.71 to 3.02. The flow behaviour is analyzed using numerical method. It is observed that the fluid mixing rate is enhanced in case of Padma heat sink due to secondary flow generation at divergent sections. The experimental and numerical results obtained are in reasonably agreement with the experimental data.

Keywords — **Heat Transfer, mini/microchannel**

NOMENCLATURE

A	Amplitude, m
a	Channel width, m
A_c	Cross-section area , m^2
b	Channel depth, m
C_p	Specific heat at constant pressure, J/kg K
D_h	Hydraulic diameter of channel, m
E	Enhancement
f	Fanning friction factor
h	Convective heat transfer coefficient, W/m^2 K
k	Thermal conductivity, W/m K
k_w	Thermal conductivity of water, W/mK
L	Length of channel, m

m	Mass flow rate of cooling water, kg/s
n	Number of parallel microchannels
Nu	Nusselt number
Pr	Prandtl number
Q	Heat rate, W
Qf	Volume flow rate, cm^3/s
Qout	Heat output, W
q	Heat flux, W/m^2
s	Fin thiness, m
Tm	Mean Fluid temperature, ^oC
Tw	Wall temperature, ^oC
Tin	Temperature at inlet, ^oC
$Tout$	Temperature at outlet, ^oC

Greek symbol

α	width of channel to wave length
ρ	Density of water, kg/m^3
μ	Dynamic viscosity, $N\ s/m^2$
v	Kinematic viscosity, m^2/s
Δp	Pressure drop across the mini channel, Pa

INTRODUCTION

The Fast development in information technology (IT) industry, the air cooling technology for heat flux in integrated circuits reached its limits of 100 W/cm2. More research was carried out in microchannel with liquid cooling due to available more surface area and heat transfer coefficient. But microchannels has a limitation in implementation because of higher pressure drop. This higher pressure drop needs to pump the coolant fluid through the microchannels. This motivate researcher to go for Minichannel which is used for higher heat flux and mild pressure drop as compared to microchannels. The minichannel heat sink with foot print size 20 mm x 20 mm was analysed numerically with water as working fluid. The constant heat flux was used as boundary condition. The channel dimensions like wall thickness,

Production, Properties, and Applications of High Temperature Coatings

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CFD Analysis of Diesel Autorickshaw Exhaust System

To cite this article: Monil Yadav and Sanjiv M Sansgiri 2019 *J. Phys.: Conf. Ser.* **1240** 012022

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Performance Analysis of Denoising Filters for MR Images

Authors   Authors and affiliations

Shraddha D. Oza ✉ , K. R. Joshi

Chapter
First Online: 20 January 2017

Abstract

Medical imaging modalities play an extremely significant role in treating human diseases. Magnetic resonance imaging (MRI) is one such imaging technique popularly used for its ability to scan and generate a view of any internal body organ or tissue. The MR image suffers from signal-dependent noise which obeys Rician distribution. This multiplicative noise is difficult to remove but is necessary for accurate diagnosis. For this noise removal, denoising filters are added in the preprocessing stage of MRI. The denoising filters can be implemented in spatial or temporal domain and they can be broadly classified as linear or nonlinear. The frequency-domain wavelet-based filters have been implemented for noise removal in MR images. But they may add characteristic artifacts which can be critical. The NLM and Bilateral filter are nonlinear neighborhood filters which are being preferred for denoising for their better edge-preserving ability. Quality of the denoised image may be evaluated using pixel-based parameters such as PSNR, MSE, and SSIM index which indicate structural content of the image and is more close to human visual system. The paper analyzes the performance of NLM, bilateral, and linear Gaussian filters using PSNR, MSE, and SSIM index. In future, edge quality measuring metric may be used for better evaluation of the filter performance.

Keywords

MRI   Denoising   Nonlinear filters   NLM   Bilateral   Image quality assessment

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MRI Denoising for Healthcare

Kalyani Rajiv Joshi (PES Modern College of Engineering, India) and Shraddha Dinesh Oza (Army Institute of Technology, India)

Abstract

Biomedical Image processing is an important research domain which contributes to the human health care. Magnetic resonance imaging (MRI) is the most popularly used medical imaging modality for its ability to scan any organ or tissue of a body without causing health risk to patient. Because of immense potential of MRI in health care it is very popular with the researchers. Along with improvisations in MR machines, the researchers are exploring different de noising filters, implementation techniques, and platforms so as to improve the MR image quality and enhance accuracy of diagnosis. The chapter discusses all the aspects of MRI - its physics, image attributes, rician noise pdf, different denoising filters and their implementation aspects. The performance analysis being significant in evaluating image quality, different quality measures used are discussed in details. The chapter also briefs about possible opportunities of research in the said domain.

Chapter Preview

Top

Magnetic Resonance Imaging (Mri)

Medical Images are images of internal body organs, tissues and thus an extremely powerful means to diagnose a disease or injury. There exist many imaging modalities such as Computer Tomography, X ray, Ultrasound and Magnetic Resonance Imaging. Out of these, MRI is a technique extensively used and preferred by doctors for its ability to capture every possible body organ and tissue which otherwise could not be seen by any other imaging technique. The main advantage of MRI technique is it can acquire scans in different planes such as coronal, axial, sagittal without altering position of the object. This helps the medical practitioner to diagnose a disease or deformity with more accuracy. MR imaging has clinical advantage as it does not involve any invasion, surgery to patient. The next section elaborates significance of MRI for patient healthcare.

Blind Channel Estimation Using Novel Independent Component Analysis with Pulse Shaping for Interference Cancellation

Authors   Authors and affiliations

Renuka Bhandari ✉, Sangeeta Jadhav

Abstract

Now days with the growing exposure of wireless communications, there is more focus on achieving the spectral efficiency and low bit rate errors (BER). This can be basically achieved by Space Time Frequency based Multiple Input Multiple Output (MIMO)-OFDM wireless systems. The efficient channel estimation method plays important role in optimizing the performance of spectral efficiency and BER. There are different types of MIMO-OFDM channel estimation methods. In this paper, we focused on designing efficient blind channel estimation method for MIMO-OFDM. Recently there has been increasing research interest in designing the blind channel based estimation methods. There are number of blind channel estimation methods introduced so far, however none of them effectively addressed the problem of Inter Symbol Interference (ISI). ISI may have worst impact on performance of channel estimation methods if there are not addressed by channel estimation techniques. In this paper we are designing the novel blind channel estimation approach using Independent Component Analysis (ICA) with both ISI cancellation and blind interference cancellation. This method is named as Hybrid ICA (HICA). HICA algorithm use the HOS (higher order statistical) approach and pulse shaping in order to minimize the blind interference and ISI effects. Simulation results shows that HICA is outperforming the existing channel estimation methods in terms of BER and MSE.

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Research Article

Modeling and Optimization of a Jackfruit Seed-Based Supercapacitor Electrode Using Machine Learning

Seema Mathew ✉, Parashuram Balwant Karandikar, Neelima Ravindra Kulkarni,

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Abstract

Supercapacitors can be used for portable energy storage applications. In this study, machine learning techniques are applied to optimize the process of preparation of supercapacitor electrodes from chemically activated carbon made from jackfruit seeds. Experimental trials were carried out using statistical design of experiments. Artificial neural network was employed to generate the process model and a multiobjective optimization was attempted by means of swarm intelligence and the Derringer's desirability function. The optimized electrode demonstrated high capacitance and low resistance making it suitable for supercapacitors. The algorithm developed in the study can be adopted by process engineers for efficient optimization.

Road Extraction Techniques from Remote Sensing Images: A Review

Authors   Authors and affiliations

Dhanashri Patil ✉ , Sangeeta Jadhav

Conference paper
First Online: 03 February 2021

Abstract

Road detection from remotely sensed images is a fundamental task in the geographic information system. On account of applications like urban management, traffic control, and map updating, road extraction from remote sensing images has significant research importance in recent times. Road extraction from satellite images is a crucial task as these images are noisy and contain lots of information. So it becomes difficult to process large amount of data. The important parameters for road detection are road features and its corresponding classification methods. These parameters decide the performance accuracy of the road extraction system. The systematic analysis of existing road detection techniques is elaborated in three important sections: different features of road, supervised, and unsupervised classification techniques. The main objective of this comprehensive survey is to render the analysis of different classification methods like mathematical morphology, SVM, CNN, etc. By using multiple features of the road,

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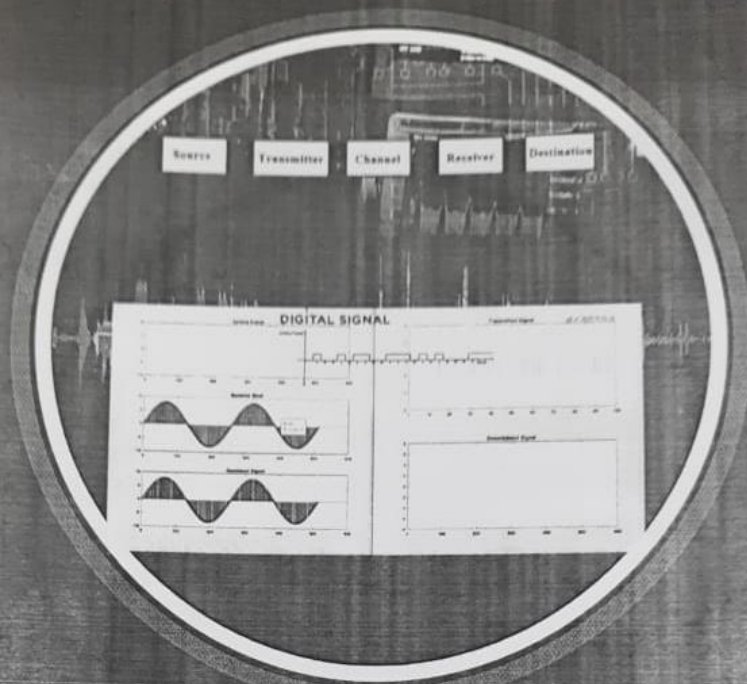Email : niralidelhi@pragationline.com

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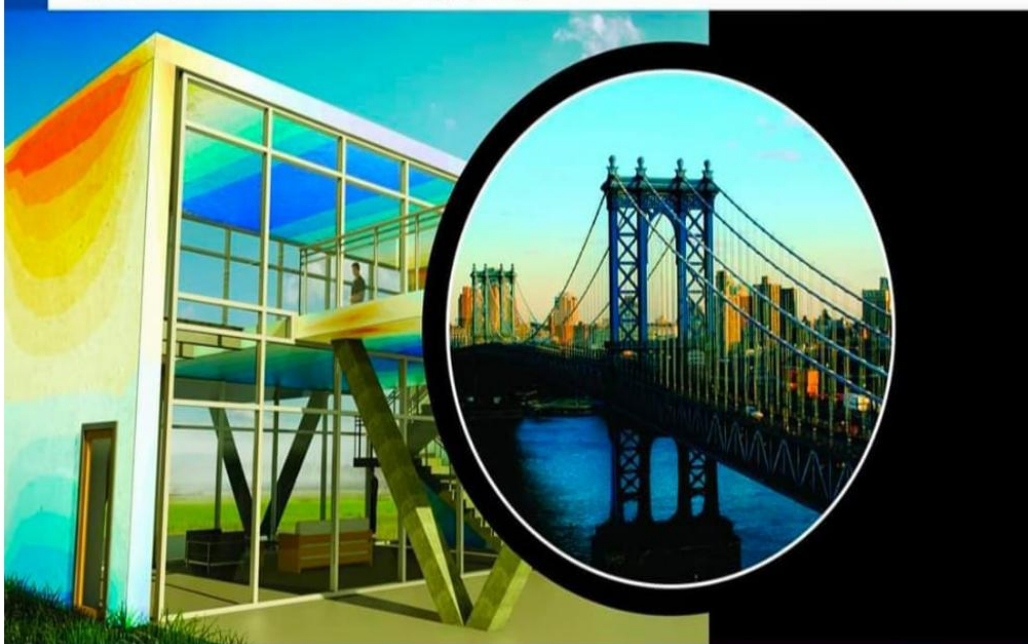
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