FACE RECOGNITION FROM FEED FORWARD NEURAL NETWORK USING OCCLUDED IMAGES FOR AUTOMATING THE SURVEILLANCE USING HYBRID NEURO FUZZY NETWORK

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Abstract - In the present study we present an innovative approach towards countering the problem of partial occlusion in face recognition scenario. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The advantage that the adopted pre-processing algorithm poses before face recognition steps is to eliminate the distortions due to the variance in light illumination field at the given instance when the facial image is recorded or captured. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets. Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images.

I. INTRODUCTION

A Computer vision is connected to industry computerization, for example, review of parts and protest acknowledgment. With progression in assembling innovation, creation has turned out to be more mechanized and speedier than any other time in recent memory. For continuous applications, the examination speed and precision are significant worries in protest review. Machine vision has turned out to be well known in new assembling enterprises, where picture arrangement and acknowledgment calculations are helpful for some process.

Object recognition builds robots for performing assignments. Object recognition explore to a overlooks the problems in household environment. The present study addresses the issue related to the application of these procedures to household situation. Here technique related to object recognition selects reasonable model to be adjusted and assessed on a testing the datasets. Evaluation compares the false positives and detected objects for both approaches.

Detection of salient region features region of intrigue in whole objects and suppresses the background areas. Visual consideration is considered to include two components: task driven and stimulus driven.

Object recognition identifies an object in an image in potential applications that ensures the process to find the surrounding. It contributes the realization of human computer interaction. Object recognition is used for retrieval of information related to the object identified. The appearance of object vary w.r.t illumination, viewpoint or occlusion changes. The variation of object appearances is larger than the appearances between objects in an image. The recognition of object handles variances between or within class. It creates more challenging task when sample size available is small for training.

SELECTED SINGLE FACE TRACKING IN TECHNICALLY CHALLENGING DIFFERENT BACKGROUND VIDEO SEQUENCES USING COMBINED FEATURES

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Abstract

The commonly identified limitations of video face trackers are, the inability to track human face in different background video sequences with the conditions like occlusion, low quality, abrupt motions and failing to track single face when it contain multiple faces. In this paper, we propose a novel algorithm to track human face in different background video sequences with the conditions listed above. The proposed algorithm describes an improved KLT tracker. We collect Eigen, FAST as well as HOG features and combine them together. The combined features are given to the tracker to track the face. The algorithm being proposed is tested on challenging datasets videos and measured for performance using the standard metrics.

Keywords:

Track Human Face, Different Background, Video Sequences, KLT, Combined Features

1. INTRODUCTION

A lot of advancement in technology is leading to go deeper into the current hot topics of research fields and image processing is one of them. Video processing is part of image processing, which processes the frames/images. Face tracking is an interesting research area in video processing that tracks face(s) under various technical challenges [1], [2]. In face tracking, face is the region of interest (ROI) and face detection is the first activity to take place; and in order to detect it perfectly, we need a robust detector.

An important approach in the pursuit of face detection is Viola Jones algorithm [3], [4]. The main drawback of this approach is, it is trained to detect only the frontal posed faces; and it cannot detect the faces that are tilted, occluded and having various expressions. Hence, the detector needs to be trained with various images of different subjects. But, even after proper training, the algorithm fails to detect the faces under conditions like illumination. The technical problems of face detection being discussed cannot be solved easily using the detectors currently available. But, the proposed algorithm is capable of solving such problems robustly.

Human eye is the best detector compared to machine detectors. Hence, instead of using an available face detector, our proposed algorithm allows the user to draw the ROI location of a human face to track it efficiently. Feature selection is the second activity that follows after locating the ROI. As the features selected directly affect both space and time complexities, we need to consider few searching features. Face tracking is the third and last activity that searches for the known features in the remaining frames of the video sequence.

Video sequences will be having different backgrounds if they are captured under the conditions like, 1. Static sensor and moving face(s), 2. Moving sensor and static face(s), and 3. Moving sensor

and moving face(s). Most of the present algorithms fail to track the face in all the three different background conditions. But, the proposed algorithm can track any selected single face in different background video sequences.

The forthcoming sections of this paper are arranged as follows. Section 2 houses the related works that are referred. Section 3 includes design and implementation of our proposed algorithm. Section 4 i.e. experimental evaluation consist of datasets, performance metrics, results and analysis and time analysis as sub-sections. Finally, the paper halts with conclusion and future work in section 5.

2. LITERATURE REVIEW

Feature based trackers extract the elements of interest from ROI; Eigen [5], FAST (Features from Accelerated Segment Test) [6] and HOG (Histograms of Oriented Gradients) [7] features are few among them. Every matrix has n unique characteristic elements called Eigen values. Shi and Tomasi [5] have suggested Eigen points as relevant feature values for tracking. These points will remain static during rotation and translation transformations; and dynamic under projective condition. Rosten et al. [6] have presented the FAST feature detector. It allows fast on-line activity of the tracking setup. The time (ms) taken by FAST to perform feature detection is sufficiently smaller compared to SUSAN [8] and Harris [9] detectors. Two important approaches for human face detection are, sub-window and part based. Sub-window based approaches can be formulated by fusing different types of features, such as HOG [7]. HOG features are easily trainable; and image information such as edge and texture can be detected effortlessly.

Comaniciu and Meer [10] have proposed a mean shift [11], [12] based nonparametric method for analysing complex feature space and delineated unusually formed clusters in it. Mean shift discovers the maxima of a density function, the familiarly known mode seeking technique. It can be used for object tracking; and the application sphere covers cluster analysis in image processing and computer vision. But, improper window size can force the modes to be federated. By incorporating suitable modifications to mean shift, Bradski [13] proposed an algorithm called CAMSHIFT. Color based approaches make use of this algorithm for visual tracking. But, this algorithm fails i). When the objects are having multiple hues, and ii). While updating the ROI information to the next frames of the video sequence. The contributions of kanade et al. [5], [14], [15] have ended in an algorithm called KLT. It is one of the robust point tracking algorithm available till date. But, it has the issues of window size; i.e. small window is susceptible to noise and may miss quick

Image Training and LBPH Based Algorithm for Face Tracking in Different Background Video Sequence

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Abstract— Video and video types are changing day by day; due to which, video processing is becoming complex time to time. There is a lack of particular algorithm for automatic detection and tracking of human faces in video, to overcome the challenges that are being faced nowadays. This paper describes a model for detection and tracking of human faces in different background video sequence using OpenCV platform. Both positive and negative image samples are trained and saved as xml file. With the help of trained samples, LBPH algorithm clarifies whether the video frame contain faces or not. Further, HOG descriptor is fed to SVM detector to compute the coefficients that are stored in the xml file. Based on this, face regions are tracked until the last frame is reached. We have tested our proposed algorithm on the videos of a technically challenging dataset. Standard metrics helped to judge the success of the proposed algorithm. Test results indicate the superiority of our proposed model, compared to other similar algorithms.

Keywords— Detection, Tracking of human faces, Different background, Video sequence, OpenCV, LBPH, HOG, SVM.

I. INTRODUCTION

Video processing is an interesting research zone in image processing. Face detection and tracking are part of video processing, where the face regions need to be detected and tracked. Due to the tremendous growth in video technology, the algorithms which worked well few years back, are now lacking behind to overcome the current challenges.

There are three phases in any face tracking model. At first, face regions are detected in the video. This phase is challenging [1], because face regions are detected under various interferences like occlusion, illumination, different background conditions, variations in pose and expression etc. to name a few. Several approaches are available for detection. We can either adopt existing face detection techniques or develop our own methods to serve this purpose. Viola-Jones [2, 3] approach is an existing face detection technique. It detects only those face regions that are posed towards the camera. For detecting the faces with other poses, it requires additional training. In our proposed algorithm, we have trained the image samples; using which, LBPH (Local Binary Patterns Histograms) [4] algorithm detect the face regions successfully.

During the second phase, features are selected and extracted from the region(s) of interest (ROI). Since the features selected directly trouble the computational complexities (i.e. time and space), only few features have to be selected cleverly. Various features are available to select from the ROI. Color, texture, and intensity are grouped as primary; while secondary features e.g. HOG (Histograms of Oriented Gradients) [5], and Haar features [3] are formed using primary features. Our proposed algorithm feeds the HOG descriptor to the SVM (Support Vector Machine) [6] detector to compute the coefficients as a model.

At the end, using the features mined during the second phase, third phase track the face regions in the video until the last frame. In order to accelerate the course of tracking, we have implemented our proposed model in OpenCV [7, 8] platform. It houses open source library software; using which, computer vision and machine learning applications can be implemented. Our proposed algorithm can track the faces, which belong to the following three different background video sequence categories: 1) Moving faces, but unmoving camera, 2) Unmoving faces, but moving camera, and 3) Moving faces, with moving camera.

Rest of the paper is structured as stated next. Section II cover the related work. Section III describes the methodology of our proposed model. Results and discussion are part of section IV, and section V concludes the proposed research work with future directions.

The Survey Paper on Cloud Security using RBAC model

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Abstract: *Cloud computing is a fast growing technology. In cloud computing, computing resources are provided as services over the Internet and users can access resources on based on their payments. This paper we discusses cloud security risks, with a focus on access control. As a traditional access control mechanism, role-based access control (RBAC) model can be used to implement several important security principles such as least privilege, separation of duties, and data abstraction. We argue that RBAC is well suited to many situations in cloud computing where users or applications can be clearly separated according to their job functions.*

Keywords – *Cloud computing, cloud security, Role-Based Access Control (RBAC).*

1. INTRODUCTION

The developing prevalence of distributed computing impacts each part of the data innovation (IT) industry [1]. It brings business nimbleness and lower costs for data frameworks by utilizing virtualization and shared foundations. By using existing access control models, cloud suppliers are able to control client exercises inside a solitary occupant.

Distributed computing gives on request assets to capacity to clients which can diminish the weight of specialist co-ops with respect to support costs. Additionally, distributed storage gives a flexible and fitting route for clients to get to their information from anyplace, whenever and on any gadget. Distributed computing has quickly changed the best approach to efficiently give the figuring and programming administrations to the customers on request. Cloud benefit demonstrate [2] can be sorted as: Iaas, PaaS and SaaS as appeared in figure 1. In Software as a Service (SaaS) cloud supplier gives the applications over the system which can be utilized by the cloud clients, Platform as a Service (PaaS) gives the earth in which clients make and convey their applications and Infrastructure as a Service (IaaS) gives the capacity, arrange ability to their clients on request.

For the most part three vital security ideas identified with cloud:

Fig. 1: Cloud Service Model

2. SECURITY RISKS FOR CLOUD PROVIDERS

Security chances in distributed computing situations include customary ideal models in data security, for example, classification, respectability, and accessibility (now and again alluded to as the CIA set of three). Be that as it may they have logical attributes in distributed computing. For instance, for most administration models, the security is to a great extent the obligation of the cloud suppliers. It is then fundamental to recognize hazard issues looked by the virtualized frameworks. These issues incorporate the accompanying [4].

> ➢ Complexity of configuration. Due to more complex usage of networks and systems, the possibility of improper configuration may increase. Such information may not be aware to consumers until some security incidents happen.

> ➢ Privilege escalation. An attacker may take advantage of different levels of access controls of Virtual Machines (VM) and escalate its access privileges through the use of hypervisor – a virtual machine monitor/controller that facilitates hardware virtualization and mediates all hardware access [4].

> ➢ Inactive virtual machines. Data stored in inactive virtual machines may contain sensitive information and has the potential to be accessed by unauthorized users.

> ➢ Segregation of duties. Since a VM provides access to different components using different mechanisms, properly identify access roles and segregate their duties could be difficult.

> ➢ Poor access controls. A hypervisor is basically a single point of access. It has the risk of exposing trusted network resources through poorly defined access control systems.

Access control is the process of limiting access to system resources for only authorized people, programs, processes, or other system components. Access control is one fundamental aspect of information security, and directly ties to the three aspects of the information security triad. From the perspective of access control, cloud computing providers should provide the following basic functionalities [5].

> ➢ Control access to the cloud service's features based on policies specified by the customer, and the level of service purchased by the customer.

A New Multilevel Hierarchial Architecture Approach for Secure User Authentication and Session Management

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Abstract- **The strong need for user-friendly systems that can secure our assets and protect our privacy without losing our identity in this digital world is most obvious. Session management in distributed internet services is traditionally based on username and password and most of the computer vision based applications provide security through biometrics. The mechanisms of user session expiration using classic timeouts and the identity of a user is considered immutable during the entire session. This paper explores promising alternatives offered by applying a new approach for user verification and session management by a secure protocol. The context aware security by multilevel architecture (CASHMA) is applied for adaptive timeouts based on the quality, frequency and type of secure biometric authentication on the internet. The functional behavior of the protocol is illustrated using model based quantitative analysis to assess the ability of the protocol to contrast security attacks by different kinds of attackers.**

1   INTRODUCTION

In relatively every part of human life have figuring gadgets, (for example, PC, advanced cell, tablet, or shrewd watches) wind up essential devices. The correspondence administrations, flight and monetary administrations are particularly controlled by PC frameworks. Individuals depend with crucial data such as therapeutic and criminal records, oversee exchanges, pay bills also, private archives. In any case, this expanding reliance on PC frameworks, combined with a developing accentuation on worldwide openness in the internet, has disclosed new dangers to PC framework security. Also, violations and shams in the internet are all over the place. For most existing PC frameworks, once the client's personality is checked at login, the framework assets are accessible to that client until he/she leaves the framework or on the other hand bolts the session. Actually, the framework assets are accessible to any client amid that period. This might be proper for low security situations, however can prompt session capturing, in which an aggressor focuses on an open session, e.g. whenever individuals leave the PC unattended for shorter or longer periods when it is opened, for instance to get some espresso, to go furthermore, converse with a partner, or just in light of the fact that they don't have the propensity for locking a PC in light of the burden. In high hazard conditions or where the cost of unapproved utilize of a PC is high.

By utilizing nonstop check the character of the human working the PC is persistently checked. Username and secret word of conventional validation framework is get supplant by biometric characteristic if there should be an occurrence of biometric system. Biometrics are the science and innovation of deciding and recognizing the amend client personality in view of physiological and behavioral characteristics which incorporates confront acknowledgment, retinal outputs, unique mark voice acknowledgment and keystroke flow. Biometric client confirmation is planned as a solitary shot check .Single shot check gives client confirmation just at the login time. On the off chance that the personality of client is checked once, at that point assets of the framework are accessible to client for settled timeframe and the personality of client is perpetual for entire session. An essential arrangement is to utilize short session timeouts and intermittently ask for the client to enter his/her qualifications over and over.

To opportune recognize abuses of PC assets and keep that an unapproved client perniciously replaces an approved one, arrangements in light of multi-modular bio-metric persistent confirmation are proposed, transforming client check into a persistent process instead of onetime event. To stay away from that a solitary biometric quality is fashioned, biometrics confirmation can depend on numerous biometrics characteristics .new approach for clients check and session administration are examined in this paper is characterized and actualized in the setting of the multi-modular biometric validation framework CASHMA-(Setting Mindful Security by Progressive Multilevel Engineering). The CASHMA framework understands a secure biometric validation benefit on the Web, in this clients need to recall just a single username and utilize their biometric information instead of passwords to verify in various web administrations. CASHMA work safely with any sort of web benefit for instance web based saving money, military zones, and air terminal zone which require high security administrations.

Object Tracking Using Hybrid Neuro Fuzzy Network Applied to Face Recognition with Image Samples

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Abstract-In the present study we present an object tracking using the problem of partial occlusion in face recognition scenario with hybrid network with examples and iterations. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The advantage that the adopted pre-processing algorithm poses before face recognition steps is to eliminate the distortions due to the variance in light illumination field at the given instance when the facial image is recorded or captured. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image that is how multiple object recognition using hybrid approach. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets. Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images.

Keywords: Face Recognition, object tracking, occlusion, fuzzy network.

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where picture arrangement and acknowledgment calculations are helpful for some process. Object recognition builds robots for performing assignments. Object recognition explore to a overlooks the problems in household environment. The present study addresses the issue related to the application of these procedures to household situation. Here technique related to object recognition selects reasonable model to be adjusted and assessed on a testing the datasets. Evaluation compares the false positives and detected objects for both approaches. Detection of salient region features region of intrigue in whole objects and suppresses the background areas. Visual consideration is considered to include two components: task driven and stimulus driven. Object recognition identifies an object in an image in potential applications that ensures the process to find the surrounding. It contributes the realization of human computer interaction. Object recognition is used for retrieval of information related to the object identified. The appearance of object vary w.r.t illumination, viewpoint or occlusion changes. The variation of object appearances is larger than the appearances between objects in an image. The recognition of object handles variances between or within class. It creates more challenging task when sample size available is small for training.

Neural Network-based Game Theory Approach for Personalized Privacy Preservation in Data Publishing

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Abstract. There is no doubt that information sharing has become one of the prime necessities of today's society and hence it calls forth the discussions related to effective methodologies associated with privacy preserving and data publishing that assures data security and user's privacy. It's very well learnt that majority of the individuals and functional units such as research, hospital etc.… are concerned and regard Personalized Privacy as the most significant parameter. The present work emphasizes on publishing matrimonial data keeping the user's data safe and secure along with maintaining data utility. There have been various privacy models and methodologies constructed that guard against identification of user information through structure information of matrimonial data. Though they don't focus upon the user's privacy concerns and neither employ overall benefits of distributed attributes. This encourages towards building a Neural network-based game technique that attends the concern related to personalized privacy preservation and data publishing. Experiments are carried over certain real-world matrimonial datasets for analyzing the performance of the suggested technique. The results reveal algorithm's efficiency and better data utility. Moreover, privacy has been ensured without compromising on data utility.

Keywords: Personalized, Publishing, Neural network, Game Theory, privacy

Research Article

REAL TIME OBJECT DETECTION USING CONVOLUTION NEURAL NETWORK BASED CLASSIFICATION IN VIDEO SURVEILLANCE SYSTEMS

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ARTICLE INFO	ABSTRACT
	Object recognition in video surveillance systems is the primary and most significant challenge task in the field of image processing. Video Surveillance systems provides us continuous monitoring of the objects for the enhancement of security and control. This paper presents novel approach recognizing the objects using CNN- approach for detecting the corners of the object and then applies the neural network techniques to extract the features of the objects. The main objective of this paper is providing precise recognition of objects and estimation of their location from an unknown scene. Whenever the object is recognized from extracted frames of the input video the background subtraction will be applied. Then the classification of the objects into their respective categories can be achieved using support vector machine classifier by supervised learning. In case of multiple objects of different classes in a single frame, a vector containing the classes of all the detected in that frame is produced as output. The results of this work are drawn in the MATLAB tool by considering the input video dataset taken from various sources and extracting the frames from the input video for the detection then the efficiency of the proposed techniques will be measured.

INTRODUCTION

Object recognition is one the critical challenge that majority of the computer vision research is focused on. Mainly, object detection and tracking is very popular with growing demands in surveillance, defence front, traffic control and medical imaging. It is also a result of the powerful algorithms in sub-fields of machine learning, computer vision as well as due to innovations in hardware that support highly data intensive computations in magnitude of couple of minutes. The ultimate purpose underlying vision based object detection is to comprehend the kind of objects in the image, the characteristics of those, their location in space and additionally involve motion or trajectory of the object while moving. Of the many objects commonly considered for detection, human as an object has got a lot of attention and produced many applications.

The more general application of multiple object detection that may include targets like chair, car, tree i.e. non-living objects in addition to humans or animals is more complex one. This task has the challenges of accurately detecting the object categories as a result of inherent difficulties of multiple objects, varying size in the scene, overlapping of objects and deformities in the target object that vary across images. To overcome this problem when attempting a large detection mission of objects spanning a number of classes, the cue that helps is contextual recognition.

Public benchmark datasets for object detection and classification available Online, involve millions of images with objects belonging to thousands of different categories. Some of those datasets are ImageNet database, Microsoft COCO database and Pascal VOC database. The datasets have annotations made already to each object present. The object classification datasets may have one or more of the three different kinds of images- iconic target dataset, which contain target object visual occupying the central part without other background (context); non-iconic dataset, which contain object instances along with contextual elements and humans; last, iconic scene dataset that involve various objects present in the frame either belonging to the target class or not but absence of humans. Though iconic image types seem to be easier to detect and also track in case the video contains only iconic images of one specific target, it is the non-iconic image data are good candidates for generalization containing contextual information. Having context data in images makes the object recognition algorithm to learn well and output good classification rate when it is tested against a new image dataset

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Object Recognition using Lucas-Kanade Technique and Support Vector Machine Based Classification in Video Surveillance Systems

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Abstract— Object recognition in video surveillance systems is the primary and most significant challenge task in the field of image processing. Video Surveillance systems provides us continuous monitoring of the objects for the enhancement of security and control. This paper presents novel approach recognizing the objects using Shi-Tomasi approach for detecting the corners of the object and then applies the Lucas-Kanade techniques to extract the features of the objects. The main objective of this paper is providing precise recognition of objects and estimation of their location from an unknown scene. Whenever the object is recognized from extracted frames of the input video the background subtraction will be applied. Then the classification of the objects into their respective categories can be achieved using support vector machine classifier by supervised learning. In case of multiple objects of different classes in a single frame, a vector containing the classes of all the detected in that frame is produced as output. The results of this work are drawn in the MATLAB tool by considering the input video dataset taken from various sources and extracting the frames from the input video for the detection then the efficiency of the proposed techniques will be measured.

Keyword: Object recognition , video surveillance systems, Shi-Tomasi approach, Lucas-Kanade techniques, MATLAB

I. INTRODUCTION

Object recognition is one the critical challenge that majority of the computer vision research is focused on. Mainly, object detection and tracking is very popular with growing demands in surveillance, defense front, traffic control and medical imaging. It is also a result of the powerful algorithms in sub-fields of machine learning, computer vision as well as due to innovations in hardware that support highly data intensive computations in magnitude of couple of minutes. The ultimate purpose underlying vision based object detection is to comprehend the kind of objects in the image, the characteristics of those, their location in space and additionally involve motion or trajectory of the object while moving. Of the many objects commonly considered for detection, human as an object has got a lot of attention and produced many applications.

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To overcome this problem when attempting a large detection mission of objects spanning a number of classes, the cue that helps is contextual recognition.

Public benchmark datasets for object detection and classification available Online, involve millions of images with objects belonging to thousands of different categories. Some of those datasets are ImageNet database, Microsoft COCO database and Pascal VOC database. The datasets have annotations made already to each object present. The object classification datasets may have one or more of the three different kinds of images- iconic target dataset, which contain target object visual occupying the central part without other background (context); non-iconic dataset, which contain object instances along with contextual elements and humans; last, iconic scene dataset that involve various objects present in the frame either belonging to the target class or not but absence of humans. Though iconic image types seem to be easier to detect and also track in case the video contains only iconic images of one specific target, it is the non-iconic image data are good candidates for generalization containing contextual information. Having context data in images makes the object recognition algorithm to learn well and output good classification rate when it is tested against a new image dataset containing many generic naturally captured clicks containing various objects.

The problem of detection and tracking of objects from video data has been implemented using many approaches. The main challenges involved are accurate detection of object in occlusions, ambiguous background object movement and real time tracking without comprising quality of output produced. There is much scope in detection of generic objects from videos. In order to detect an object accurately, the object features must be extracted and matched (feature extraction) or the object structure must be learnt automatically through training (machine learning).

Many works have exploited different feature set to achieve good detection performance. Few of the researches involve tracking of objects by means of detection, wherein the mobile object is continuously detected in frames and labeled. One such algorithm makes use of color histogram probability and centroid features for object detection [1].

Histogram Specification and Kalman Filter with Euclidian distance Technique for identification of Human in the video Surveillance systems

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Abstract— In Real time video Surveillance systems, the primary and most significant step is target object detection. Video Surveillance systems provides us continuous monitoring of the objects for the enhancement of security and control. Even though there is lot of progress in this field, human detection still remains one of the challenging tasks.This paper presents novel approach for detection of human using Histogram Specification with the Kalman filtering approach. The main objective of this paper is providing precise identification of human and estimation of their location from an unknown scene. Whenever the human is detected from extracted frames of the input video the background subtraction will be applied with Blob Analysis technique for modelling then the morphological operations are applied to remove the noise in the frame by choosing the size and shape of the neighborhood frame, is applied to find the frequency components of a signal buried in noise, Finally Kalman filter technique is applied where different positions of humans are identified based on the Calculation of Euclidian distance using the correlation matrix. The results of this work are drawn in the MATLAB tool by considering the input video dataset taken from various sources and extracting the frames from the input video for the detection

then the efficiency of the proposed techniques will be measured.

Keywords— Histogram Specification, Background Subtraction, Fourier transformation; Kalman Filter, Morphological operation, Euclidian Distance.

1. INTRODUCTION

With increasing concerns for public safety and security nowadays, the need for automatic surveillance systems based on real time videos of public places is realized. The highly crowded and sensitive places like markets, shopping space, famous restaurants, railway stations etc. must be equipped with these surveillance systems. Without constraining their application to security under public spaces, they are also most demanded for the purposes of traffic control and examination, activity recognition and tracking, fault detection in industrial applications and semantic video indexing. In order to achieve the high level tasks of classification or tracking a target from video stream, the strategy used is to detect the target of interest in individual frames in the first place.

The technique used in many of the works for surveillance is the Background subtraction method. This technique performs extraction of the

Face Recognition Using Hybrid Neuro Fuzzy Network for Occluded Images

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Abstract: *Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images. In the present study we present an innovative approach towards countering the problem of partial occlusion in face recognition scenario. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets.*

Keywords: Occlude images, partial occlusion, confounding, facial regions

1. Introduction

A Computer vision is connected to industry computerization, for example, review of parts and protest acknowledgment. With progression in assembling innovation, creation has turned out to be more mechanized and speedier than any other time in recent memory. For continuous applications, the examination speed and precision are significant worries in protest review. Machine vision has turned out to be well known in new assembling enterprises, where picture arrangement and acknowledgment calculations are helpful for some process.

Object recognition builds robots for performing assignments. Object recognition explore to a overlooks the problems in household environment. The present study addresses the issue related to the application of these procedures to household situation. Here technique related to object recognition selects reasonable model to be adjusted and assessed on a testing the datasets. Evaluation compares the false positives and detected objects for both approaches.

Detection of salient region features region of intrigue in whole objects and suppresses the background areas. Visual consideration is considered to include two components: task driven and stimulus driven.

Object recognition identifies an object in an image in potential applications that ensures the process to find the surrounding. It contributes the realization of human computer interaction. Object recognition is used for retrieval of information related to the object identified. The appearance of object vary w.r.t illumination, viewpoint or occlusion changes. The variation of object appearances is larger than the appearances between objects in an image. The recognition of object handles variances between or within class. It creates more challenging task when sample size available is small for training.

The object recognition is classified into classification and recognition. The methods in [1], [2] classifies the objects in an image into classes and it is separated roughly into temoccluded region [3]–[5] and feature- based methods [6]–[8]. The latter is used in a portable applications [8] [9] [4] to acquire the recognition rate with improved accuracy that recognizes the objects even in lower resolutions.

However, object recognition for HD applications necessities large computations in GOPS but for real-time environment, it requires only a low power consumption. The integration of heterogeneous core makes the energy efficiency possible in recognition an object for object recognition processors [9] [10]. However, communication between the number of cores becomes difficult when the number of cores increases and it leads to low bandwidth, propagation delay and high power consumption [11]. The heterogeneity in multi core processes is utilised for high energy utilization, where NoC is adopted widely in core architectures [4] [8].

1.1 Why Face Recognition?

Occlusion in facial imagery alludes to the obstacle due to scarfs, glasses, different accessories or hairs. Endeavours on recognition of face has just been accomplished in investigations upto this point like enlightenment field, outward appearance, present estimation and fractional occulents has been the research for successful face recognition under changing condition. We have arranged the writing in wonderment of a similar issue and hence enroll the few of the powerful endeavors that have been made to determine the issue. This techniques like Part Based Methods which includes strategies like PCA, LDA, NMF, LNMF, ICA and alternate varieties of it has demonstrated better recognition rates. Likewise, different strategies like component based strategy or fractal technique for the most part considers the highlights around the fundamental facial parts is fused in calculation; however such techniques demonstrate assorted arrangement of examination results.

FACE RECOGNITION FROM FEED FORWARD NEURAL NETWORK USING OCCLUDED IMAGES FOR AUTOMATING THE SURVEILLANCE USING HYBRID NEURO FUZZY NETWORK

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Abstract - In the present study we present an innovative approach towards countering the problem of partial occlusion in face recognition scenario. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The advantage that the adopted pre-processing algorithm poses before face recognition steps is to eliminate the distortions due to the variance in light illumination field at the given instance when the facial image is recorded or captured. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets. Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images.

I. INTRODUCTION

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Multiple Object Tracking Using Hybrid Neuro Fuzzy Network Applied to Face Recognition from Feed Forward Neural Network

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Abstract: In the present study we present an innovative approach towards countering the problem of partial occlusion in face recognition scenario. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The advantage that the adopted pre-processing algorithm poses before face recognition steps is to eliminate the distortions due to the variance in light illumination field at the given instance when the facial image is recorded or captured. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image that is how multiple object recognition using hybrid approach. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets. Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images.

Keywords: Hybrid Neuro Fuzzy Network, Face Recognition, Neural Network, Normalized Rapid Descriptor (NBD), PCA, LDA, NMF, LNMF, ICA.

I. INTRODUCTION

A Computer vision is connected to industry computerization, for example, review of parts and protest acknowledgment. With progression in assembling innovation, creation has turned out to be more mechanized and speedier than any other time in recent memory. For continuous applications, the examination speed and precision are significant worries in protest review. Machine vision has turned out to be well known in new assembling enterprises, where picture arrangement and acknowledgment calculations are helpful for some process. Object recognition builds robots for performing assignments. Object recognition explore to an overlook the problems in household environment. The present study addresses the issue related to the application of these procedures to household situation. Here technique related to object recognition selects reasonable model to be adjusted and assessed on a testing the datasets. Evaluation compares the false positives and detected objects for both approaches. Detection of salient region features region of intrigue in whole objects and suppresses the background areas. Visual consideration is considered to include two components: task driven and stimulus driven. Object recognition identifies an object in an image in potential applications that ensures the process to find the surrounding. It contributes the realization of human computer interaction. Object recognition is used for retrieval of information related to the object identified. The appearance of object varies w.r.t illumination, viewpoint or occlusion changes. The variation of object appearances is larger than the appearances between objects in an image. The recognition of object handles variances between or within class. It creates more challenging task when sample size available is small for training.

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Object Tracking Using Hybrid Neuro Fuzzy Network Applied to Face Recognition with Image Samples

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Abstract-In the present study we present an object tracking using the problem of partial occlusion in face recognition scenario with hybrid network with examples and iterations. The partial occlusion can be caused by various objects such as scarfs, sunglasses etc., and its effects are confounding in the performances of the recognition rates. The advantage that the adopted pre-processing algorithm poses before face recognition steps is to eliminate the distortions due to the variance in light illumination field at the given instance when the facial image is recorded or captured. The framework tends to mathematically model the curvature and other essential features of the face such as micro-expression and the curves of the facial regions. This, significantly enhances the probability of matching the parent image to that of the occlude image that is how multiple object recognition using hybrid approach. The presented algorithm is tested over Extended Yale B & CMU PIE standardized datasets. Over the years biometrics has gained unparalleled popularity in digital medium and has proven its usefulness for several applications concerned with the threats and crime or security purposes. Face Recognition is a widely emerging biometric for automating the surveillance, as it has aid in strengthening the security from several types of terrorist or criminal threats. Though, there are several face recognition techniques which are categorized based on its error rates in recognition but there are few that gives the marginal rate for sufficient and validated recognition rates for occlude images.

Keywords: Face Recognition, object tracking, occlusion, fuzzy network.

I. INTRODUCTION

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Machine learning based recommendation system on movie reviews using KNN classifiers

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Abstract: Recommender systems are the systems that are designed to recommend items to the consumer depending on several different criteria. These systems estimate the most possible product that the consumers are most likely to buy and are of interest to. Companies like Netflix, Amazon, etc. use recommender services to allow their customers to find the right items or movies for them.In the current system recommendations, the content of ltering and collective ltering typically fall into two groups. The method is formerly Periment in our paper in all methods. We take film features such as stars, directors, for content-based ltering. Movie definition and keywords as inputs use TF-IDF and doc2vec for measuring the film resemblance. For the first time, Input to our algorithm is the film ranking encountered by users, and we use neighbours nearest K, as Factorization of matrix to estimate film scores for consumers. We find that teamwork functions better than content. Predictive error and estimation time ltering.

Keywords: Recommendation System, K-neighbours, TF-IDF, Companies, customers and content-based filtering.

1. Introduction

We use the machine to build a custom film scoring system based on the previous movie of the consumer ratings. In movies, people have a different taste, and it's not a single item that we can see when we Google a movie. Our film scoring framework allows consumers to find movies that they like, no matter how diverse their preferences are Perhaps it is.Content-based ltering recommends the same functionality in products. The term recurrence backwards record recurrence weighting method (tf-idf) in the recovery of data [1&2] and word2vec in the regular language process [3] are normal in substance based ltering procedures. We go beyond the use of related films by tf-idf Predict movie ratings and add doc2vec, word2vec extension, to retrieve details in the film summary context. The Bayesian classifier [4][5], the decision tree, the neural networks, etc. [6] are other methods. Content-based filtering has the bonus of addressing the issue of cold start if there were not enough users   or if it wasn't scored for the content. It is therefore restricted to characteristics directly connected to products and it involves a broad method of data collection. Automatic characteristics are particularly costly and costly to remove Multimedia data including videos, video and audio streams [7]. Often the standard of products is not differentiated. Another example is a well-known and a critically regarded

Duplicate Packet Detection in the Multicast Network using Efficient Packet sequencing approach at Mobile Receiver

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ABSTRACT

Duplicate packet detection during signature verificatiapproach, suitable for static receivers. In our proposed packet sequence number approach, packet sequence number is calculated by random number and constant value at the multicast sender. This constant value is shared with all the receivers before the start of transmission. The size of the reserved bytes for storing packet sequence number is modified or unchanged based on the available energy at the receiver. The energy is calculated by a multicast receiver and forwarded to a sender during signature verification. The sender updates reserved bytes for storing sequence number accordingly, which reduces unnecessary usage of memory and processing of sequence number.

Key Words: duplicate packet detection, energy, mobile receiver, packet sequence number.

1. INTRODUCTION

In the multicast network [1] and information system, data duplication is a generic problem. In network analysis data duplication means duplicate packet [2]. With the increased use of multicasting and MANET for different purposes for a range of devices such as mobile, computer, etc. multiple gateways are used within multicast or mobile network posses some advantage over a single gateway in a network in terms of packet loss. If the packet is lost in the network due to congestion or any other reason, other gateways in the network, which has the copy of the packet will try to deliver the packet successfully. Usage of multiple gateways in the network itself creates an unnecessary load on the node to check the duplicate packets which are generated at different gateways. Switches, routers, etc., implement the duplicate packet monitoring in high speed links. Network devices can maintain the information about packets that they have received and forwarded for a period of time. When network devices detect the duplicate at any node or device makes use of resources: bandwidth, memory and CPU, these resources are rich in multicast static receivers but poor in multicast mobile receiver [3] [4]. Duplicate packets are on the devices are identified by information available in the packet header, but the duplicate packet generated in the digital signature header and at the payload is not identified by the packet header because in the digital signature separate signature header is attached to the packet header which will not be processed or detected by the devices because the same payload and signature present in two different packets. So separate scheme or method is needed to identify the duplicate packets at the signature header is required. (DPD) Duplicate packet detection is very much necessary in MANET [5], wireless and multicast network. Packets may be transmitted out via the same interface as the one where they received or from the different interface. Routers and switches may also receive the same copy of the packets from different neighbors. A temporal packet identification mechanism is recommended to detect and reduce the duplicate packet forwarding where incoming packets are compared with packets which are present in the buffer and recently processed. The packets can be duplicated at different stage switches, routers, Network address translation and at transport process are identified and processed by the device itself. Different schemes and methods are available for duplicate packet identification and removal or avoiding but separate scheme for energy constraint duplicate packet detection scheme is needed for Mobile receivers. Scheme in [6] utilizes energy efficiently, suitable for mobile receiver. In this paper, we introduce the packet sequence number of different sizes based on the available energy and the batch size in the signature header of the batches. Our research paper is organized as follows: part 1: focused on the introduction and related works and drawbacks. Part 2: proposes the basic idea and research method. Part 3: compares the results and findings of research carried out. Part 4: highlights the conclusion of the proposed work.

Distributed Streaming Storage Performance Benchmarking: Kafka and Pravega

Sanjay Kumar N V, Keshava Munegowda

Abstract: The performance benchmarking tool for a distributed streaming storage system should be targeted to achieve maximum possible throughput from the streaming storage system by thrusting data massively. This paper details the design and implementation of high-performance benchmark tool for Kafka and Pravega streaming storage systems. The benchmark tool presented in this paper supports multiple writers and readers. The Pravega streaming storage is evaluated against Kafka with respect to performance.

Keywords: Benchmarking, Big Data, Concurrency, Distributed Systems, Events, Kafka, Latency, Open Messaging, Performance, Pravega, Streams, Storage, Throughput.

I. INTRODUCTION

Apache Kafka [1], [2] is one of the widely used distributed streaming [3] storage systems. An existing Kafka (version 2.3.0) producer benchmark tool [4], [5] for write performance benchmarking and consumer benchmark tool [4], [5] for read performance benchmarking, supports only one producer/writer and consumer/reader respectively. But, in a real-time scenario/use case, there will be multiple applications flushing or reading data to/from a single Kafka client. So, it's always better to exercise the Kafka client or any streaming system with multiple producers and consumers. If the single instance of the benchmark tool allows the multiple producers/writers, then these multiple threads need to be synchronized while writing data to Kafka client and also aggregating the data write responses from multiple threads. However, the synchronization of multiple threads reduces the strength of the benchmark tool and it won't be able to flush more data to Kafka client.

In this paper, we present the design and implementation details of Pravega [6], [7] performance benchmark tool [8]. The Pravega benchmark tool was initially developed for the performance benchmarking of Pravega streaming storage and later got extended for Kafka performance benchmarking too. The key differentiation of Pravega benchmark tool compares to Kafka producer and consumer benchmarking tools are

- Supports multiple producers and consumers.
- A common tool for both writer benchmarking and reader benchmarking.
- Supports End to End latency.
- Latency percentile calculations are performed for all the events/messages without any sampling

Even though, the Pravega benchmarking tool supports multiple writers/readers, it does not compromise on the speed at which data is flushed to Kafka client/Pravega client. The Open Messaging benchmark [9] tool also supports Kafka's performance benchmarking with multiple producers and consumers. In this paper, we evaluate the Pravega benchmark tool against the Kafka producer benchmark tool for single producer benchmarking, Kafka consumer benchmark tool for single consumer and Open messaging benchmark tool for performance benchmarking of multiple producers. The proposed design and implementation of benchmarking tool of this paper is used for comparison of Kafka and Pravega for single producer/consumer and multiple producers/consumers performance benchmarking. The same tool is used for End to End Latency benchmarking of both Kafka and Pravega.

II. DESIGN OF KAFKA AND PRAVEGA PERFORMANCE BENCHMARK TOOL

As part of performance benchmarking, before sending an event/message, the writer/producer records the start time by using API System.currentTimeMillis() [10] and once the write is acknowledged then the response thread records the end time by using the same API (Application Programming Interface). We have experimented using the other API System.NanoTime() [10] and class Instant APIs [10], but the System.currentTimeMillis() API has proven very fast and thread safe too. The time precision of System.currentTimeMillis() is in milliseconds is enough for stream storage benchmarking.

Both Kafka and Pravega provide the client APIs for streaming data into their clusters and reading the same. If the benchmark tool supports multiple producers and/or consumers, then multi-threads synchronization is required while accessing the client APIs and consolidating the read/writer responses from Kafka/Pravega cluster. The first case is inevitable, and it should be taken care of by Kafka client or Pravega client. But, the second case is the benchmark tool's responsibility. In our experiments, it was evident that the usage of synchronized [10] method for multiple thread synchronization reduces the strength of the benchmark tool and thus not be able to flush/read more events to the Kafka/Pravega client. Hence, we designed the architecture of the benchmark tool with a shared message queue as shown in Fig. 1.

PRIVACY PRESERVATION IN DATA PUBLISHING: A SURVEY

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ABSTRACT

In Recent days, many of the enterprises are actively collecting and storing data as an information source for making decisions. Privacy preservation in data publishing is used to safeguard susceptible information. The personal data may be misused for a variety of purposes. In this paper, a brief review of various techniques have been proposed to perform privacy preservation on micro data publishing. Recent work has shown that the techniques generalization does not support for high dimensional data and also bucketization does not prevent membership disclosure and does not apply for data that do not have a clear separation between quasi identifying attributes and sensitive attributes. The Anonymization procedure, such as generalization along with bucketization is intended for privacy conservation in microdata creating. These techniques for performing privacy preservation in data publishing are drawn from a wide array of related topics such as data mining, cryptography and information hiding. Here, we also study some application areas of privacy preservation in data publishing.

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1. INTRODUCTION

Today, Data Publishing is used by many companies with a strong consumer focus such as retail, financial and marketing organizations. The word data privacy[1] refers to the relationship between collection and diffusion of data ability, the public privacy and the legitimate and opinionated issues. Data privacy concerns can arise in angry reply to information from a very wide range of resources, such as: health care records, residence and geographic records, ethnicity, criminal investigation and privacy breach.

Data Owners:
- Individuals whose data to be owned Data Publisher:
- Collect data
- Anonymize
- Release

Data Recipient:
- Third party
- Legitimate
- Privacy attacker.

We consider microdata is stored in a table and each record(row) corresponds to one identity. Each record has the form: D(Identifier, Quasi Identifier, Sensitive Attributes, Non-Sensitive Attributes).

1. Identifier: Attributes that clearly identify the individuals. Examples include Social Security Number and Name.
2. Quasi Identifier: Attributes whose values when taken together can identify an individual. Examples include birthdate and Zip code. An adversary may already know(possibly from other publicly available databases)e.g., a voter registration list that include both explicit identifier and quasi identifiers
3. Sensitive Attributes: Attributes, which are unknown to the adversary and are considered sensitive such as disease, salary and disability status.
4. Non Sensitive Attributes: Attributes, that donot fall into the above three categories.

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Clustering and Detection of Liver Disease in Indian Patient Using Machine Learning Algorithms

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Abstract –In Present Days, Machine Learning plays an important role in field of disease classification and prediction regarding to various organs like heart ,kidney ,liver ,stomach etc..to predict automated disease detection using various algorithms,i.e., Naïve Bayes, K-means, and Support Vector Machine. The study concentrates on liver disease-related health care data set and used for comparative performance measurement of the three techniques mentioned above. K-means is used for performing clustering on the training dataset and Naïve-Bayes, Support Vector Machine to predict the test cases using training dataset. Results describe Correct Classifications, Misclassifications, accuracy performance metrics to compare their prediction accuracy. Results derive that SVM classifier provides better accuracy of 81% than Naïve-Bayes.

Keywords –Machine Learning, Naïve-Bayes,K-means,Support Vector Machine, Liver dataset, Clustering.

1. INTRODUCTION

The liver plays an important role in many bodily functions from protein production and bloodclotting to cholesterol, glucose (sugar), and iron metabolism. It has a range of functions,including removing toxins from the body, and is crucial to survival. The loss of those functions can cause significant damage to the body. When liver is infected with a virus injured by chemicals, or under attack from own immune system, the basic danger is the same that liver will become so damaged that it can no longer work to keep a person alive.

The work focuses on three different machine learning techniques, i.e., Naïve Bayes, Kmeans, and Support Vector Machine, propagation to compare their prediction accuracy and computational complexity. The study concentrates on liver disease-related health care data set and used for comparative performance measurement of the three techniques. The utilization of medicinal datasets has pulled in the consideration of specialists around the world. Machine Learning methods have been broadly utilized as a part of creating choice emotionally supportive networks for ailments forecast through an arrangement of therapeutic datasets. Grouping systems have been broadly utilized as a part of the restorative field for exact order than an individual classifier. Liver malady is a sort of harm to or illness of the liver.

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A Machine Learning model for Crop and Fertilizer recommendation

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Abstract –

India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. India is ranked under the world's five largest producers of over 80% of agricultural produce items, including many cash crops such as coffee and cotton. Farmers are growing same crop in the season rather than growing different varieties in various seasons, also applying more quantity of fertilizers without knowing actual contents and quantity. So we have designed a recommendation model based on machine learning , describes the best suitable crop to be grown and fertilizer to be seeded depending on soil and weather conditions. Hence by utilizing our system,farmers can grow new crops in different seasons and benefit a better profit, avoid soil pollution.

*Keywords –*Machine Learning, random-forest,SVM,K-nearest neighbor algorithm

1. INTRODUCTION :

Agriculture is the main occupation for the people of India, covering 60% of the nation land and catering the basic needs of 1.2 billion people [1]. For the benefit of the farmers, modernization of agriculture procedures is carried out today. The crop yield or production majorly depends on the weather conditions, environmental changes, rainfall (which at times is uncertain), water management, and the utilization of pesticides. Therefore farmers are not able accomplish expected yield of crop. Now a days data mining, machine learning as well as deep learning approaches are used by various researchers to enhance and improve the yield of crop and their quality[11,12]. Machine Learning can gain proficiency with the machine without characterized computer programming, so it improves machine execution by distinguishing and portraying the consistency and pattern of drive information. In this work various machine learning approaches such as Linear Regression, Gradient Boosting Regressor, Random Forest Regressor, Decision Tree Regressor, Polynomial Regression, Ridge Regression have been used for yield prediction on crop yield dataset of different states and considering varied crops.

The designed system will recommend the most suitable crop for particular land. Based on weather parameter and soil content such as Rainfall, Temperature, Humidity and pH. They are collected from V C Farm Mandya, Government website and weather department. The system takes the required input from the farmers or sensors such as Temperature, Humidity and pH. This all inputs data applies to machine learning predictive algorithms like Support Vector Machine (SVM) [5] and Decision tree [6] to identify the pattern among data and then process it as per input conditions. The system recommends the crop for the farmer and also recommends the amount of nutrients to be add for the predicted crop. The system has

IoT Based Smart Home Using Edge computing

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Abstract:

Smart home concept has been there for many years and played a very important part in the design and implementation of future homes. The main agenda of home automation are controlling, management, and coordination of home appliances in a comfortable, effective and secure way. The various sensors are used which are specialized in measuring temperature, humidity, light, gas leakages, fire detection, and actuators which helps in t h e conservation of energy. With billions of devices coming online, in this data-rich world enabled by the Internet of things cloud computing won't be able to handle the load. For mission-critical applications where time is of essence network latency is a very critical issue, using Edge computing in home automation eradicates latency related failures and data is filtered processed locally rather than sending it to a data center i.e it is not necessary to store the data in the central cloud by doing this we can prevent cyber-attacks and leakage of personal details. The essence of home automation is security and accessibility, which can be fulfilled by Edge Computing.

1. INTRODUCTION

The Internet of Things (IoT) is guiding a bunch of novel applications and administrations to numerous upward areas. Among those homes, computerization addresses a significant market for the Smart Home area. As indicated by statistical surveying organization measurements, by 2021, the value of the Smart Home market worldwide will reach, 43 Billion which is an awesome few years. Another US Business Analyst Company IHS2 gauges that 470 savvy machines will be associated with arising Smart Homes. Home mechanization will assume an imperative part in making the cutting-edge home shrewd. Throughout the most recent couple of years, there have been incredible increment arrangements that decentralize correspondences, information assortment, and handling, moving all assignments to the edge. This pattern has driven the development of Edge Computing. Along these lines way, figuring and organization assets are nearer to the wellspring of the information than to the cloud server farms. Edge Computing considers further developing the presentation of PC frameworks by bringing down dormancy, diminishing the expense of assets, and expanding responsiveness, versatility, unwavering quality, security, or

Using Machine Learning Techniques Studies on Water Quality Index and Phytoplankton Diversity of Tiptur Lake, Tiptur, Tumkur-District, Karnataka, India

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Abstract: Artificial Intelligence is that the computational complexity of general intelligence may be exponentially hard which happens with Machine Learning. The field itself, and the evolution of natural Water is basic pre-condition for life. Water of good drinking quality is of basic importance to human physiology and the existence of human being is very much depends on its availability. The assessment of Tiptur lake water quality for suitability for drinking and domestic purpose was carried out during November 2020 to August 2021 and evaluate the water quality status through its physicochemical parameters such as AT, WT, P^H, TDS, EC, TA, TH Ca^{++} , Mg^{++} , Cl^-,DOM , SALINIITY, DO ,BOD, Na^+, K^+, PO_4, SO_4 and Fe. The results were compared with BIS Standard [1991]and WHO [1993] drinking water standards. The results revealed that most of the parameters were in normal range and indicated suitability for drinking purposes, and Artificial Intelligence applied for processing the samples with attributes and parameters with the test set. A total of 37genera of phytoplankton were recorded, of which chlorophycean and diatoms were found to be dominant among four classes. Four protozoa were recorded.

Key words: Tiptur-Lake, water quality, Human physiology, physicochemical parameters, suitability, BIS and WHO, Phytoplankton oligotrophic, Artificial Intelligence.

INTRODUCTION:

Water is indispensable and one of the precious natural resources of our planet. Water is the precious gift graced by the nature to the human race.[Water pollution ,V K Berry] Water is one of the major constituents of life supporting system .water is essential for existence of life on earth .water ,indeed a wonderful medium ,which has unique properties of dissolving and carrying in suspension of huge varieties of materials .It is strongly believe that first life originated in the ocean ,Hence sea is called mother of life.2/3 of the earth surface is covered by water but is not suitable for the sustenance and perpetuation of land plants and animals. surface water is about 2% of the global water resources is most suitable for the very existence of all land plants and animals   and out of this only 1% of freshwater is in river ,streams, lakes, ponds

Efficient Identity-Based Batch Signature Scheme to Reduce Energy Consumption at Mobile Receivers

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Abstract

Identity-based signature authentication (IBSA) scheme for delay-tolerant sensor networks using online/offline signature batch authentication reduces the computation cost and improves efficiency in the delivery of packets. However, the energy of the mobile sensor network or mobile node in a multicast network is a critical issue to be addressed clearly. In our proposed modified IBSA scheme smallest least unused random number is selected for master secret, using this master secret public secret is derived. The computation cost for batch signature generation and verification is minimized in a multicast network with both static and mobile nodes, which impacts on processing time of batch signature verification. Processing time and energy required for batch signature verification is less when compared to existing schemes. Processing time required for signature verification is linearly proportional to the energy of the node in a network. Mobile node battery source has a finite lifetime. Energy at the mobile node is the key parameter to increase the lifetime of a mobile node. The processing cycle required for batch verification is recorded by the receiver periodically to compare the energy consumption by the mobile node at different time intervals.

Keywords: Energy, Multicast, Mobile Receiver, Signature verification.

1. INTRODUCTION

In recent days due to the rapid use of the internet for different applications: stock exchange, online video game, and video conferencing, etc., Information transfer from a single sender to multiple receivers is usual communication mode in computer networks which was not popular in early days of the internet. The receiver has to verify whether data has come from the intended sender and whether the data has been altered or not during transit. The problem is if intruder [01] forwards forged data to the receiver then the receiver has to spend more time to verify than unforged data which is a burden to the receiver having low processing capability. Authentication can be carried out using symmetric key cryptography [02] but both encryption and decryption are carried out using the same secret. So the probability of forging data and hacking the key is more in symmetric key cryptography when compared to asymmetric key cryptography. Intruder can act as a real member node in a multicast network if he gets a key. So it's not recommendable to all the critical multicast application [03]. Authentication using asymmetric key cryptography [02] uses separate keys for both encryption and decryption. Source node uses a public key to encrypt data and the recipient uses a private key to decrypt data which is known only to the receiver. Symmetric key cryptography is used in some of the applications where a large amount of data to be transferred and creates less processing overhead to nodes in a network but when coming to security services asymmetric key cryptography is the best choice even though it creates more overheard to nodes in a network.

Digital signature is a asymmetric key cryptography, the best authentication scheme for most of the multicast applications. Digital signature algorithms require more computation, each packet is signed and verified independently [04] [05], not the best choice for resource-constrained devices. Schemes in [06] [07] uses one signature for a block of packets computation cost is minimized when compared to a per-packet signature. Scheme in [08] authenticates many packets simultaneously with verification of one signature. Day by day mobile devices are becoming the most dependable thing to people for their different purposes. The efficient utilization of resources is given paramount importance in mobile devices [09] and authentication is also considered without compromising security services and reducing the overhead at the mobile receiver to a maximum level. Some of the multicast applications aim at the delivery of information to the recipient with acceptable minimum delay experienced in the network. Delay should not impact on the satisfaction of the users, sometimes which leads to termination of service. Previous research on multicast authentication using batch signature [08] schemes and identity-based signature scheme [10] minimizes computation cost to the minimum extent best suitable for static receivers but not for mobile receivers (which have limited processing capability). Computation cost is to be minimized to the maximum level for mobile receivers in a multicast network [11].

In this paper, authentication is carried out using asymmetric key cryptography (digital signature) by considering the energy

AN EFFICIENT ALGORITHM FOR CHANNEL ASSIGNMENT OF NODES IN MANETS

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Abstract— Mobile Ad Hoc Networks display a light weight element channel assignment component & a helpful burden adjusting methodology that is material to group-based MANETS to address. Its performance increasing common & typical network loads considered for MANETS are increasing as application evolve mechanisms to improve performance in terms of throughput, energy consumption and inter packet delay variation. For the performance of wireless mobile computing systems, it is critical to efficiently allocate communication channels. The centralized channel allocating algorithms proposed in the literature are neither scalable, nor robust past are complicated & require active participation of the mobile nodes. The protocol used at the Medium Access Control (MAC) layer ensures the success of a Mobile Ad Hoc Network (MANET). The protocol parameters can be decided to make the optimum utilization of the channel resources at the MAC layer based on the requirements and the specific network under concern.

Keywords- WSN, IPDV, MAC, MANET.

I.   INTRODUCTION

Development in the field of various technologies like networking, sensors have led to the exposure of Wireless Sensor Networks (WSNs). In order to keep track of physical conditions, for instance, temperature, vibration, motion, etc it consists of spatially-distributed autonomous sensors which is being used in various fields of life and applications, such as industrial automation, office and home automation, structural automation, and has gained popularity.

Establishment of a huge scope wired organization information obtaining framework utilizing customary wired sensor networks requires a little while and frequently costly. Consequently, can be supplanted by WSNs. Low power utilization, low framework costs, minimization, multifunctional remote sensor hubs that are portrayed by scaling down and joining are the main qualities of remote sensor networks which find out that the WSN hubs can just have confined computational power and framework intricacy and should utilize applications that are not computationally serious.

A NASH EQUILIBRIUM APPROACH FOR USER BASED DATA MASKING AND RETRIEVAL- A BASIS OF PPPDP

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ABSTRACT

Privacy preservation in data management and publishing has grown to be a vital research area in the era of big data. Efficiently protecting individual privacy in data publishing is especially critical due to variation in personal preference and sensitivity. A conceptual approach is designed to achieve personalized privacy protection in data publishing (PPPDP) based on individual sensitivity classification. Privacy protection becomes a key issue when you want to use data that contains important information from individuals. This approach can be extended to other sectors of data publishing like social media networks, matrimony data, reviews etc. One of the key criteria for research data protection is to protect the privacy of individuals and to protect data confidentiality. The main purpose of researching privacy protection is to achieve optimal privacy when it increases information usage. Based on the sensitivity classification, Game theory has been proposed for achieving personalized privacy preservation applied in the field of data publishing in the financial and banking sector. Game theory is one of the principles adopted for privacy protection in data output. Game theory provides a formal approach to sample agents, in

Energy-Efficient Mobile Node in Multicast Batch Verification

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Abstract and Figures

Conventional methods used in batch signature verification do not distinguish between static node signature verification and mobile node signature verification. Static nodes rarely face energy expenditure problem, but energy conservation is given a critical importance in mobile nodes. In this paper, we propose a new scheme for energy conservation at mobile receiver. Mobile receiver requests sender to modify the batch size based on the available energy at the receiver; when energy at the mobile receiver has reached particular threshold1, then sender is informed to reduce the batch size to half of the original batch size, which decreases the energy utilized by the mobile receiver for batch signature verification. When the energy at the mobile receiver has reached threshold2, then sender is informed to stop batch transmission till further request from mobile receiver for batch transmission of new batch size; this reduces packet loss which occurs when batches do not reach mobile receiver.

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JITTER OPTIMIZATION WITH MOBILE NODE BATCH VERIFICATION

Jagadeesha R , Thippeswamy K

🔒 PDF

Abstract

Jitter occurs in transferring signed multicast batches are identified by calculating the average round trip time in transferring the sequence of ping packets with time stamp for small periodicity. If the average round trip time between two sequences of ping packets is well under the acceptable threshold limit than the periodicity of the ping pocket sequence is doubled. If the average round trip time between two recent sequences of ping packet transmission is more than acceptable values, then the inter-frame delay and Buffer size are calculated by considering the average delay of two recent sequences and the number of data packets coming at that time. A batch RSA signature is verified to check for authenticity and the Inter-frame delay is applied between data packets. The inter-frame delay does not allow contents to display with the variable delay between data packets. This method is suitable for mobile receivers where multicast data streaming with the small delay is tolerable and

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Design and Implementation of Storage Benchmark Kit

Keshava Munegowda & N. V. Sanjay Kumar

Conference paper | First Online: 01 December 2021

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Abstract

The Storage Benchmark Kit (SBK) is introduced in this paper. The SBK is a software framework, designed and implemented to conduct the performance benchmarking of any storage system of any type of data/payload. It delivers the throughput and latency values for every specific interval for live performance analytics. The SBK supports a variety of storage systems such as local mounted and distributed file systems, local/single node (system) database and distributed database systems, any distributed storage system such as distributed messaging/streaming platforms, object storage systems, and distributed key-value storage systems. In this paper, the SBK is demonstrated with the performance benchmarking of XFS File system, Hadoop Distributed File System (HDFS), and Kafka streaming storage systems

SLC: Sliding Latency Coverage Factors for Optimal Performance Benchmarking of Storage Systems

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Keshava Munegowda ; Sanjay Kumar N.V **All Authors**

Abstract

Document Sections

I. Introduction

II. SLC (Sliding latency

Abstract:

The Throughput in terms of bytes/seconds and records/seconds, the latencies range, average latency, median latency, quartiles and percentiles latencies are the de-facto factors for performance benchmarking of write and read operations of storage systems. This paper introduces the new factor called Sliding Latency Coverage(SLC). The SLC denotes the latencies range, median latency, latency quartiles and percentiles in a single unit factor. This paper also demonstrates the implementation of SLC factor as part of Storage Benchmark Kit (SBK). Even though

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