

## Generalized Lasso Prediction Based Lyapunov Weighted Round Robin Seamless Scheduling for Big Stream Data Processing

N. Arunadevi<sup>1</sup>, Dr. Vidyna Thulasiraman<sup>2</sup>

<sup>1</sup>Part-Time Research Scholar, Department of Computer Science, Periyar University, Salem, Tamilnadu, India.

<sup>2</sup>Assistant Professor, Department of Computer Science, Govt Arts & Science College for Women, Bargur, Tamilnadu, India.

### Abstract

Streaming data analysis is significant in big data processing. The scheduling of streaming data is difficult due to its fast data arriving speed and huge size. Few research works have been designed for predictive scheduling of big stream data processing. The performance of existing scheduling technique was not effectual. In order to solve this drawback, a Generalized Lasso Prediction Based Lyapunov Weighted Round Robin Seamless Scheduling (GLP-LWRRSS) Technique is proposed. The GLP-LWRRSS technique is designed with the key objective of improving scheduling performance of big stream data processing with higher prediction accuracy and lesser scheduling time. The GLP-LWRRSS technique employs Generalized LASSO Predictive Model to accurately predict average data processing time by using selected features of processing unit with higher accuracy. After prediction, GLP-LWRRSS technique used Lyapunov Weighted Round Robin Seamless Scheduling algorithm where stream data tasks are scheduled to appropriate processing units with lower time. This assists for GLP-LWRRSS technique to increase the scheduling efficiency of big stream data processing. As a result, GLP-LWRRSS Technique attains improved performance of predictive scheduling for big stream data processing as compared to state-of-the-art works. The GLP-LWRRSS technique conducts the experimental works using metrics such as prediction accuracy, false positive rate, scheduling efficiency and scheduling time with respect to different number of big stream data. The experimental results show that GLP-LWRRSS technique is able to increase the prediction accuracy and scheduling efficiency of big stream data processing as compared to existing works.

**Keywords:** Features, Generalized LASSO, Lyapunov Function, Stream Data, Weighted Round Robin Seamless Scheduling, Processing Unit

### INTRODUCTION

Big data is commonly used for business operations in today's competitive scenario. Big data stream is a continuous data streams with huge size. With the development of Internet of

Things (IoT), personal computing, and electronic commerce, streaming data analysis has become a significant topic in science and commercial needs. As an important part of big data, streaming data is not easy to be analyzed in real time owing to the data speed and huge size of data set in stream model. Predictive resource scheduling is used to improve the performance by leveraging big data analytics. A lot of research works has been developed in big data analytics of predictive scheduling for stream data. But, predictive scheduling of big stream data processing is still a challenging task. Therefore, there is a requirement for novel technique for improving predictive scheduling performance of big stream data processing.

A prediction scheduling algorithm was presented in [1] for scheduling threads to machines based on the prediction results. The prediction accuracy was lower. A Dynamic Assignment Scheduling (DAS) algorithm was intended in [2] for big data stream processing in mobile Internet services. The scheduling efficiency of this algorithm was not improved.

A new predictive scheduling framework was designed in [3] allows fast stream data processing. The computational complexity of this framework was not reduced. An energy-efficient scheduling was introduced in [4] to increase the performance results of big-data streaming applications. The memory consumption was higher.

Re-Stream framework was presented in [5] to minimize response time of big data stream processing. An adaptive moving window regression was used in [6] for predictive analytics of complex IoT data streams. The error rate and time complexity was not solved.

A stable online scheduling strategy was introduced in [7] for efficient system stability and minimizing response time of big data streams. A node scheduling model was developed in [8] with application of Markov chain for analyzing big streaming data in real time. Scheduling time for big stream data analysis was not solved.

Streaming analytics of Real-time big data was presented in [9]. However predictive scheduling was remained unaddressed. Incremental partial least squares analysis technique was

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## A Study on a Multiplicity of Load Balancing Algorithms

Vidyaathulasiraman<sup>1</sup> and C. Manikandan<sup>2</sup>

<sup>1</sup>Assistant Professor and Head, Department of Computer Science, Government Arts and Science College for Women, Bargur, Tamil Nadu, India

<sup>2</sup>Research Scholar, Department of Computer Science, Periyar University, Salem, Tamil Nadu, India  
E-Mail: vidyaathulasir@gmail.com, manjayan56@gmail.com

*Abstract* - Past days rulers and pulites need to convey message their relatives or one place to somewhere else with the assistance of some correspondence channels like birds or individuals like present mailmen or post ladies and days are passing and development of data and innovation the communication quick and less expensive and present day interchanges totally through on the web. Day by day populace development and innovation utilizing people groups heterogeneously expanding. So present days network is a critical part and significant assuming jobs in day by day life its outcomes more system issues like less throughput, insufficient network resources, less flags, resource not similarly shared for a given timeframe, time complicity because of this troubles the communication mostly or here and there totally interfered with now daily's a fundamental piece of information is an expected portion to social and economic related change and it is logically expanding worldwide condition. In this exploration essentially an undertaking has been made to classify secured sharing models, architecture, sharing arrangements and load adjusting algorithms in w3. At present need to configure modern load adjusting algorithms on account of our central and state Government focusing propelled correspondences and modernized classrooms through distributed computing.

*Keywords:* Load Adjusting, Performance, Algorithm

### I. INTRODUCTION

Exceptional advancement in technology innovation has led to the ascent of the interest of fast handling and the need of high versatility, accessibility and quick reaction. This brought about utilization of similar and circulated registering frameworks where additional than one workstation forms the movement at the same time. One of the principle look into issues in parallel and dispersed framework is powerful procedure to circulate remaining task at hand among various processors. Burden adjusting is utilized for limiting the reaction time, expanding the throughput, and to stay away from the over-burden. Burden adjusting is to guarantee that each processor in the framework does around a similar measure of work anytime of time [1].

#### A. Load Balancing

Load matching helps to share out load crossways one or else more resource and also keep track of status of all resource while distributing resource request. If a server is not available it stops sending traffic. Burden adjusting is the procedure of circulation or redistribution of burden among

processor subsequently improving the execution of the framework. In registering, load adjusting conveys outstanding burden over numerous figuring assets, for example, personal computer, a personal computer bunch, arrange connections, or local handling units. Burden adjusting means to upgrade asset use, amplify throughput, limit response time, and maintain away-from overstrain of any single resource [3].

#### 1. Types of Load Balancing

- Hardware Load Balancing:* It is based on the hardware which works as load balancer but is very expensive, even big companies use them only as first point of contact and use other mechanisms for load balancing.
- Software Load Balancing:* It is based on the hybrid approach in this approach every client request on this port will be received by proxy and then passed to the backend service in efficient way. Haproxy is the popular open source software.

#### 2. Necessitate of Load Balancing

A conveyed framework contain amount of processors functioning freely with one another plus connected by correspondence control. A few be not connected with any correspondence channel. Every work station have an underlying burden with the purpose of is the measure of work to be performed, and each may have an alternate preparing limit. The work load have to be in order circulated among all processors dependent going on their handling alacity with the goal that opportunity to execute all assignments gets limited and inactive time of every processor can be diminished. This is the reason we need load adjusting. Burden inequity is likewise a fundamental issue within information similar application moreover at these times additionally it chiefly happens because of the uneven circulation of information among the different processors in the framework. Without great burden circulation systems and procedures, we can't plan to achieve great speedup and great effectiveness.

#### 3. Issues Identified with Load Balancing

The accompanying issues are brake down and burden adjusting.



# Discretive Cuckoo Search Resource Optimized Map Reduce for Predictive Scheduling With Big Stream Data

N. Arunadevi

Dept of Computer Science  
Periyar University  
Salem, Tamilnadu  
naraseema@gmail.com

Vidyan Thulsdraman

Dept Of Computer Science  
Govt Arts & Science College for Women  
Bangur, Tambolachi  
vidyanthulsdraman@gmail.com

**Abstract** - Processing a data stream is a crucial concern for streaming application with available resources since it varied depending on their characteristics and the preferred applications performance. Several techniques are introduced for Big-Data streaming applications but it failed to process and handle due to the large and high complexity of data created at any time. In order to improve the scheduling efficiency with minimum time complexity, a Resource aware Discretive Cuckoo Search Optimization based MapReduce Predictive Scheduling (RDCSO-MRPS) mechanism is introduced. The RDCSO-MRPS mechanism includes two major processes namely preprocessing and predictive scheduling for stream data in big data analytics with minimum resource utilization. In preprocessing, continuous data streams are discretized using Khlops method. The discretization process starts from the continuous time intervals and it combines the nearest time intervals according to the chi-square value. As a result of big data stream preprocessing, the time complexity is minimized at the time of predictive scheduling. After preprocessing, MapReduce function is applied to discretized data for predictive analytics using Multi-Objective Ranked Cuckoo Search Optimization (MRCSO). In MRCSO, initialize the population of 'n' hosts/nests (i.e. processing units). Define the objective functions for each processing units such as CPU time, memory consumption, bandwidth utilization and energy consumption. For each processing unit, the fitness is computed and assigns the rank. As a result, RDCSO-MRPS Mechanism predicts the resource optimized processing unit with high rank through the mapping process. Then, the RDCSO-MRPS Mechanism assigns a stream data task to that high-rank processing unit with high scheduling efficiency. In addition, the optimization technique in MapReduce function minimizes the incorrect stream data task scheduling and workload among the several processing units. Experimental evaluation of RDCSO-MRPS Mechanism and existing methods are carried out with different factors such as predictive scheduling efficiency, false positive rate, time complexity and memory consumption with respect to number of data tasks. Based on the observations, RDCSO-MRPS mechanism is more efficient in predictive scheduling with big data than the conventional methods.

**Keywords** - Big Stream Data, preprocessing, Khlops method, chi-square value, predictive scheduling, MapReduce function.

## 1. INTRODUCTION

Big data analytics is the process of gathering, organizing the large volume of data to find useful patterns. To quantify such a large volume of data is not easy. Therefore, processing the large data is a major concern. In big data analytics, the streaming data is data that is created by various data sources in a continuous manner. Big data streaming is a process in which data is rapidly processed to extract real-time insight. While processing the big data streams, the sufficient resources are needed to complete the task within the time interval. Therefore, the resource optimization is carried out to find optimal processing units for processing the big data stream.

A new predictive scheduling framework was introduced in (Teng Li, December 2016) to provide fast stream data processing. Based on the topology of graph and runtime statistics, topology-aware method was developed to effectively calculate the tuple processing time of scheduling process. The effective algorithm was presented in predictive scheduling framework to allocate the tasks to machines for obtaining effective scheduling results. The framework minimizes the tuple processing time but it failed to use any preprocessing technique for further minimizing the time complexity. A real-time and energy-efficient scheduling and optimization approach for Stream was developed in (Dawei Sun G. Z., October 2015) to calculate the energy efficiency and time for big data stream computing environments. With the aid of distributed stream computing theories, the essential path was detected through constructed data stream graph. However, memory consumption was not minimized. A dynamic assignment scheduling algorithm was introduced in (Yan Liu, 2016) for processing the big data stream using a stream query graph stream query graph was employed to compute the weight of every edge. The smaller weight edges were chosen to send the tuples. The algorithm does not increase the scheduling efficiency.

## RISK PREDICTION SYSTEM USING DATA MINING TECHNIQUES IN GYNECOLOGICAL OVARIAN CANCER

Vidyan Thulasraman<sup>1</sup> and S. Kavitha<sup>2</sup>

<sup>1</sup>Department of Computer Science, Government Arts and Science College for Women, Bangalore, India

<sup>2</sup>Department of Computer Science, Annilam College, India

### Abstract

Cancer is one of the leading causes of death worldwide. Early detection and prevention of cancer plays a very important role in reducing deaths caused by cancer. Ovarian Cancer (OC) is a type of cancer that affects ovaries in women, and is difficult to detect at initial stage due to which it remains as one of the leading causes of cancer death. Identification of genetic and environmental factors is very important in developing novel methods to detect and prevent cancer. This research uses data mining technology such as classification, clustering and prediction to identify potential cancer patients. Therefore a cancer risk prediction system is here proposed which is easy, cost effective and time saving.

### Keywords:

Ovarian Cancer, Multi-Layer Perceptron Classifier, Detection

## 1. INTRODUCTION

Ovarian cancer is the leading cause of death from Gynecological malignancies with an estimated 65,697 new cases and 41,448 deaths each year in Europe [1]. Approximately 15% of women present with disease localized to the ovaries and in this group with full staging surgery the 5-year survival is >90%. However, the majority of women present with advanced disease (International Federation of Gynecological Oncology (FIGO) stage III-IV) and their survival at 5 years is poor, currently <30%. Early diagnosis is fundamental to achieving a high cure rate, but this is difficult due to the paucity of clearly defined symptoms. At present, there is no evidence for screening asymptomatic women although trials are in progress. Advanced ovarian cancer is most commonly diagnosed following presentation with symptoms and some of these may be present in early-stage disease.

Most women with early ovarian cancer are cured by surgery. Ovarian cancer is contained epithelial ovarian, essential peritoneal and fallopian tube carcinoma [1] [2]. After initial treatment, most patients with ovarian cancer have undetectable diseases and are thought to be in clinical abatement. Cancer is a potentially fatal disease caused mainly by environmental factors that mutate genes encoding critical cell-regulatory proteins. The resultant aberrant cell behavior leads to expansive masses of abnormal cells that destroy surrounding normal tissue and can spread to vital organs resulting in disseminated disease, commonly a harbinger of imminent patient death.

More significantly, globalization of unhealthy lifestyles, particularly cigarette smoking and the adoption of many features of the modern Western diet (high fat, low fiber content) will increase cancer incidence. [3] Detecting cancer is still challenging for the doctors in the field of medicine. Even now the actual reason and complete cure of cancer is not invented. Various tests are available for predicting cancer, but detecting cancer in earlier stage is difficult, but earlier detection of cancer is curable. We

have proposed the cancer prediction system based on data mining. Cancer prediction system estimates the risk of the gynecologic cancer especially in ovary.

Ovarian cancer is cancer that begins in the ovaries. Ovaries are reproductive glands establish only in women. The ovaries produce eggs (ova) for reproduction. The egg's journey during the Fallopian tubes into the uterus where the fertilized egg embeds and establishes into a fetus. The ovaries are also the major cause of the female hormones estrogen and progesterone. One ovary is situated on each side of the uterus in the pelvis. Many types of tumors can generate rising in the ovaries.

The majority of these are benign (noncancerous) and never multiply outside the ovary. Benign tumors can be treated effectively by removing either the ovary or the part of the ovary that contains the tumor. Ovarian tumors that are not benign or malignant (cancerous) and can increase (metastasize) to other parts of the body. Ovarian tumors are named according to the kind of cells the tumor in progress from and whether the tumor is benign or cancerous. There are 3 main types of ovarian tumors. Epithelial tumors establish from the cells that wrap the outer surface of the ovary. Most ovarian tumors are epithelial cell tumors. Germ cell tumors begin from the cells that generate the eggs (ova). Stromal tumors begin from structural tissue cells that grip the ovary collectively and make the female hormones estrogen and progesterone.

A widely recognized formal definition of data mining can be defined as "Data mining is the non-trivial extraction of implicit previously unknown and potentially useful information about data". Data mining has some fields to analysis of data such as classification, clustering, correlations, association rule etc. [4] and has been used intensively and extensively by many organizations.

Data mining technique involves the use of sophisticated data analysis tools to discover previously unknown, valid patterns and relationships in large data set. These tools can include statistical models, mathematical algorithm and machine learning methods in early detection of cancer. In classification learning, the learning scheme is presented with a set of classified examples from which it is expected to learn a way of classifying unseen examples.

In association learning, any association among features is sought, not just ones that predict a particular class value. In clustering, groups of examples that belong together are sought [5]. In numeric prediction, the outcome to be predicted is not a discrete class but a numeric quantity. Data Mining techniques are implemented together to create a novel method to diagnose the existence of cancer for a particular patient. When beginning to work on a data mining problem, it is first necessary to bring all the data together into a set of instances. Integrating data from different sources usually presents many challenges.

# Predicting the Yield of Sugarcane in Vellore District using a Supervised Machine Learning Method

Dr. Vidyaathulasiraman<sup>1</sup>, Mrs. M. Deepanayaki<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Computer Science, Government Arts and  
Science College for women, Bargur

<sup>2</sup>Ph.D Research Scholar, Periyar University, Salem

It is always thrilling to know about the future, the most important part here is that the technology paves the way for it. Agricultural machine learning is not a secretive trick or magic, but a set of well-defined models that collect specific data and apply specific algorithms or models to achieve expected results. Machine learning is a tool which is partly art and partly science, an application of Artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. This paper proposes different machine learning models and various issues related to predict the Agricultural production and income especially in the yield of sugarcane in Vellore district with the data collected from the open sources.

**Keywords:** Smart farming, Yield prediction, Precision agriculture.

# Improved Load Balancing In Cloud Using Glowworm Swarm Optimisation Task Scheduling and Resource Allocation

G. Manikandan

Research Scholar, Department of  
Computer Science,  
Periyar University, Salem, Tamil Nadu, India

Dr. Vidyathulasiraman

Assistant Professor and Head,  
Department of Computer Science,  
Government Arts and Science College  
for Women, Bargur, Tamil Nadu, India

**Abstract** - Cloud Computing (CC) uses load balancing and scheduling in cloud infrastructure for file sharing. In CC, these two constraints must be optimized for file sharing in an optimal way. Scalable traffic management (STM) for traffic balance and service quality is developed recently in data centre. However, a challenge still remains to reduce latency during multidimensional assignment of resources. Efficient resource planning to ensure load optimization in the cloud is therefore required. In this paper, we develop an integrated algorithm for load balancing and resource planning in order to provide effective cloud services. The method creates a multidimensional resource planning model based in Glowworm Swarm Optimisation (GSO) to achieve resource planning efficiency in cloud infrastructure. A dynamically selected request gets from a class with a Multidimensional Load Optimization algorithm that increases the usage of virtual machines (VMs) in a balanced and effective load balance. A load balancing algorithm is implemented to avoid the usage of resources that can lead to increase in time of latency. Simulations are conducted to assess the efficiency of proposed model on Clouds in simulators. The results show that the proposed method has higher success rates, efficient in planning the resource and reduced response time.

**Keywords:** Glowworm Swarm Optimisation, Task Scheduling, Scalable traffic management, Resource Allocation

## 1. INTRODUCTION

CC plays a key role in the area of information technology (IT). In the field of research community, CC is given a greater consideration in distributed computing. The Internet-based CC model [1] helps share computing resources that includes both hardware and software or services efficiently on a low-cost networks. The virtualized file sharing infrastructure enables an improved development in resource planning and efficient load balance. Virtualizing users of cloud access well the server-specified files and resources. In this scenario, the most important focus for efficiently file-sharing remains an efficient resource planning and load balance. Most research was developed for resource planning and cloud load balancing. For example, the STM approach has been addressed in case of CC environment [2]. The maximum connection load was reduced using STM and therefore the load equilibrium among the network users is ensured. This approach, however, was not appropriate for multidimensional planning of resources. A partitioning system for scalable workload [4] aims to improve response time and output for distributed transactions to address this issue. Also, task planning with Honey Bee behaviour [3] is performed in the cloud environment. The behaviour of sweet bees was used to achieve optimum use of the machine. The honey bee behaviour is used for effective load balancing in CC environment. CC has received a more attention and it is considered as an improved way to manage and improve usage of data and resources and to provide different IT computing services. In [6], new insights on the optimization of data centres, performance and power reduced distribution methods are explored. However, the management of resources continues to be unaddressed. To overcome this, resource management performance assessment [5] has been carried out to ensure service quality.

A task planning heuristic was investigated in [8] to improve the performance of the resource. In [7] centralized model game-theoretical mechanisms are introduced. The main criteria, however, called task planning, were not met. HLF, EDF, and LSTF algorithms in [9] helps to schedule several tasks in a distributed real-time system. High quality (precise) results were the main objective of the algorithm and guarantee arriving jobs in the system. Researchers also developed a load balancing algorithms with resource planning under different circumstances. An agent-based load balancing algorithm [10] offers a dynamic load balance for a cloud environment with the help of



## Grouping of E Learners Using Fuzzy K-Medoid Clustering

Vidyaanthulasiraman<sup>1</sup>, S. Anthony Philomen Raj<sup>2</sup> and A. George Louis Raju<sup>3</sup>

<sup>1</sup>Department of Computer Science, Government Arts & Science College for women, Tamil Nadu, India

<sup>2</sup>Research Scholar, Periyar University, Tamil Nadu, India

<sup>3</sup>Department of Master of Computer Applications, Sacred Heart College, Tamil Nadu, India

E-Mail: vidyaanthulasi@gmail.com, philomen@shcpcet.edu, george@shcpcet.edu

**Abstract** - The process of clustering in the general perspective is limited to the grouping of data into clusters and finds its applications in the fields of information retrieval, text ranking and classification and more. The dimension of e-Learning is to improve learning with various tools and technologies. Grouping of learners based on their learning levels is found to improve the learning abilities. Scientific method to cluster the learners is not available in literature, which can further simplify the amalgamation of learning complemented through clustering. This paper is an attempt to examine the aspects of implementing clustering to group the learners according to their learning abilities.

**Keywords:** E-Learning, Grouping of Learners, Clustering

### I. INTRODUCTION

Clustering is the method of grouping together the objects of the same category. Qualitatively, behaviourally, semantically, or contextually analogous objects can be grouped together. In other words, homogeneous objects are grouped in one cluster and heterogeneous objects are grouped in another cluster. Clustering technique is widely used in many applications such as image processing, pattern recognition, market research, and data analysis.

### II. CLUSTERING METHODS

The clustering methods are the following, 1. Partitional Clustering, 2. Hierarchical Clustering, 3. Density Based Clustering, 4. Grid Density-based Clustering, 5. Model-based Clustering and 6. Constraint-based Clustering [3].

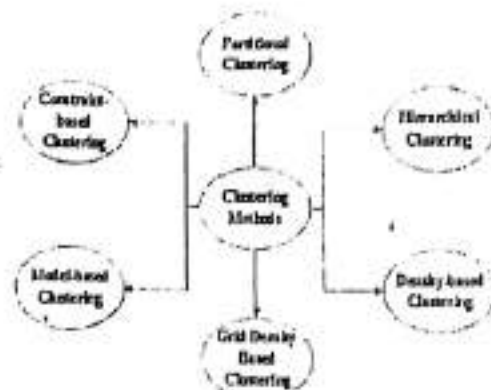


Fig. 1 Clustering Methods

**A. Partitional Clustering:** In the Partition Clustering each object belongs in exactly one cluster. This algorithm

partitions the objects into  $k$  clusters and the number of clusters  $k$  is given well in advance. Partition clustering method groups the objects based on their nearest distance. In Partitioning methods, the cluster is mutually exclusive, and shape of the cluster is spherical. Mostly mean and median is used as a cluster centre to represent each cluster. This method is suitable for medium and small size of data set [8].

**Pros**

1. Scalable and Simple.

**Cons**

2. It is suitable only when the prior number of clusters is known.

**B. Hierarchical Clustering:** This clustering method considers a set of nested clusters that are represented as a tree. It produces a hierarchy of clusters called a dendrogram. This Hierarchical method produces hierarchical decomposition for the given dataset. Agglomerative and Divisive are the two types of Hierarchical Clustering. Another name for Agglomerative is "bottom-up approach". In Bottom-Up approach the observation begins with many clusters and the clusters are combined based on the similarity of the objects. The hierarchy moves up every time the clusters are grouped together. The Divisive hierarchical clustering is also called "Top-Down" approach. The Top-Down approach uses the single cluster for the observation, and the fragmentation of the cluster is done recursively to narrow down the hierarchy. This type of clustering algorithm is mostly used for categorical data [1].

**Pros**

1. Easy to implement.

2. Good for small data sets.

**Cons**

1. Algorithm can never undo the previous step.

2. Not suitable for large datasets.

**C. Density-Based Clustering:** This clustering method which groups the data which is in the region with high density of the data space is considered to belong to the same cluster. The Density Connectivity and Density Reachability concepts are used in the Density based Clustering.

**1. Density Connectivity:** Points  $p$  and  $q$  are said to be density connected if there exists a point  $r$  which has



## A SURVEY ON THE LIMITATIONS OF INTEGRATING SOCIAL MEDIA IN E-LEARNING

ANTHONY PHILOMEN S<sup>1</sup>, VIDYAATHULASIRAM<sup>2</sup>, GOWTHAMI T<sup>3</sup>

Received on 17<sup>th</sup> OCT 2019, Accepted on 12<sup>th</sup> DEC 2019

**Abstract**—E-learning can be a unique and mostly preferred tool or system that allows to be both a typical and an advanced e-learning aims the students the ability to sustain also around their ways of life, only allowing even the business activities, leisure, vacation and education new capabilities. Some media websites is employed for education to study unlimited data to research more and artistic concepts within the program. The educational materials to be utilized by instruction to create learning in additional artistic and most of all students can learn and apply collaboration to make new concepts. Integrating social media like Facebook helps learners and lecturers to know the importance of information and social media website for e-learning. The survey paper is concerning issues being faced by students in using facebook for e-learning.

**Keywords** - E-Learning, Socialmedia, Facebook, Problems.

### 1 INTRODUCTION

Facebook is a social media web application, might be a part of million student lives. Student use Facebook for communication with friends and collaborating as a tool for learning. Though there are many tools obtainable for e-learning, Facebook seems to be one all told the foremost effective tools as a results of students sometimes reply to discussions quickly and are comfortable enough in their "space" to share their knowledge and opinions [1]. The role of students can shift from only receiving data to each looking and sharing their knowledge. Understudy don't know to deal with PC feel problematic to utilize the Facebook for learning. It's qualified to comprehend that speakers can't utilize Facebook mutually educating and learning instrument. Facebook still needs decisions like record accommodation and document sharing to help the full learning system. This paper exhibits the methodology and in this way the involvement with training Facebook for study understudies is a casual and formal learning. Facebook is that the simplest social network data processor that has 704,130,980 user accounts on quarter day, 2011 [2]. These days Facebook has been a lot of and more common worldwide imprint Mahaney agreeing that Facebook had passed Google regarding it moderate spent

on-line [3]. Mahaney noticed that in August 2010, Facebook, just because took the absolute best spot with forty one billion minutes pursued by Google with thirty-nine billion minutes [3]. We have looked to establish that understudies effectively and immediately partook in each asking and respondent a speaker's questions. Understudies shared their new data even once the classes have total and grades were relegated. Students facing many problems practice Facebook in social media.

### 2 Facebook in Teaching and Learning

During this segment of the article we tend to examine associated include abuse facebook utilized for educating and learning. One of the most intriguing article that examines however a teacher can utilize Facebook will be "Facebook for Educator", that infers seven different ways that during which to instructors, which school's arrangement in regards to Facebook, creating pointers for Facebook in instructing and learning, security and privacy settings on Facebook, advancing great citizenship at interims the computerized world, practice Facebook's page and bunch decisions to chat with understudies, grasp the instructive types of twenty first century understudies and utilize Facebook as proficient advancement asset [1]. This investigation varies from the article "Facebook for Educators" [1] in this we tend to focus on an approach to utilize.

Corresponding author: E-mail: philomen@ajcpub.edu,  
vidyaathul@ajcpub.edu, gowthami@ajcpub.edu

<sup>1</sup>Assistant Professor, Dept. of Mater of Computer Application, Sacred Heart College, Tirupattur, Tamil Nadu, India

<sup>2</sup>Department of Computer Science, Government Arts & Science College for women, Tamilnadu, India

<sup>3</sup>Student, Dept. of Mater of Computer Application, Sacred Heart College, Tirupattur, Tamilnadu, India



# A Survey on Internet of Things and Its Architecture

S. Anthony Philomen <sup>#1</sup>, Vidyaaathulasiram<sup>#2</sup>, T. L. Kashif Ahmed <sup>#3</sup>

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**Abstract** — Internet of Things is becoming a fast innovative technology. This paper presents the literature study on introduction, history, working process, stages in IoT, architecture, layer and a reference model. Which includes how the data is collected, analyzed and stored, hardware and software used, the domains, application, protocols to transfer the data. IoT is intelligent inter networking between the real and the digital world, which physical objects are interconnected with each other and forming a network group. The Objects are capable of collecting the information and utilize the information to perform some tasks. This survey paper gives the detailed description on the IoT architecture, layer and reference architecture factors. Thus the work gives better exactness and a superior outcome.

### Keywords

IoT, DAS, wireless sensor networks, sensor, architecture, health care, Smart city, Smart agriculture, Wi-Fi, Bluetooth, RFID.

### Introduction

Internet of things is the interconnection of network devices in network channel and automobiles are connected objects and smart devices. Software, sensors and actuators are built with electronics. It provides a network connectivity that enable the network device to collect, share and exchange data. The surrounded object helps them to interact with other device for decision making it is used. The devices which get data form the hardware devices through the sensors and the data is transferred to edge device. The information is stored in cloud which manipulates the data. IoT is creating a giant network where all the physical devices are connected with network to share and communicate with other network devices. This process takes to next stage where devices will interact with each other and make decisions. IoT plays very important role to improve the quality of our lives. IoT is interconnection of various physical devices, buildings, vehicles and other elements like sensors, soft wares, and electronics devices. In IoT, network connectivity enables various devices to collect data and exchange it. IoT devices provides a capability to the physical objects to hear, visualize and to think. It performs the actions based on the information collected to make decisions.

### History

In 1999, Kevin Ashton created the term Internet of Things, during his work at Procter and Gamble. He is the co-founder of MIT's Auto-ID Lab. He founded RFID in supply chain management it has been used. Because it was the boon of internet in 1990 and he called his presentation as "Internet of Things".

### What is IoT?

Network device are in connected to the other device to share and communicate with other device to exchange information. IoT provides feature that network device can be controlled remotely. IoT is a smart system helps to reduces human effort and it is familiar to access to physical devices which are connected to the network channel. This IoT has a control feature which any network device can control without any human interaction.

### How IoT works?

IoT consists of embedded processors in physical device that use the sensors to gather the data from surrounding and communication to the hardware. It sends the data to another physical device and action is taken on the acquired data from their surroundings. Network devices can share the information through an IoT gateway or some other edge gadget where data is either sent to the cloud for dissecting. This connected physical device are communicate with other physical device to perform action.

### Life cycle of IoT

- ✓ Collect
- ✓ Communicate
- ✓ Analyze
- ✓ Act

Corresponding author E-mail: philomen@sicpub.edu, vidyaathulasiram@gmail.com, kashifahmed0520@gmail.com

<sup>#1</sup>Assistant Professor, Dept. of Master of Computer Application, Sacred Heart College, Tirupattur, Tamilnadu, India.

<sup>#2</sup>Department of Computer Science, Government Arts & Science College for women, Tamilnadu, India.

<sup>#3</sup>Student, Dept. of Master of Computer Application, Sacred Heart College, Tirupattur, Tamilnadu, India.



## COMPARATIVE STUDY ON MACHINE LEARNING

S. Anthony Philomen R<sup>1</sup>, Vidyathulasiram<sup>2</sup>, S. Naveenraj<sup>3</sup>

Received on 07<sup>th</sup> SEPT 2019, Accepted on 30<sup>th</sup> NOV 2019

**Abstract** — In this paper, different Machine Learning Algorithms have been taken and their calculations are utilized for different purposes like information mining, picture preparing, and present examination, and also give some examples. The principle of our work is to give some examples. The principle of our work is to give some examples. The principle of our work is to give some examples.

**Keywords:** Machine Learning, Comparative study, Limits of Machine Learning, ML- Algorithm

### 1 INTRODUCTION

Characterization alludes to recognizing, separating and arranging the information. In picture preparing, Classification goals to arrange all pixels in a computerized picture into one of a few land spread classes. The goal of picture grouping is to distinguish every pixel as a one of a kind dim dimension (or shading) and characterize it into various classes, the various classes are really used to speak to a sort of land spread on the ground. This work has been done on the exhibition examination of a Landsat picture 2014 caught via Landsat B. A dataset is made and its grouping is performed by utilizing few AI characterization calculations. Precision and time multifaceted nature of grouping calculations are acquired and looked at. Exactness discloses to us how well arrangement is performed and time unpredictability then again gives us the time required to examine the information. The earlier worry of any investigation is to expand the exactness and limit the time intricacy. In this paper, an exertion is made to propose a substitute strategy so as to expand the presentation. Execution can be expanded by highlight extraction (measurement decrease) which diminishes the properties of a dataset of a specific picture. Highlight extraction was not relevant for our situation as dataset contained just one band of RGB. Henceforth evacuating any credit would prompt the loss of data in the picture. Consequently, we propose an elective technique for expanding the exhibition which is called dataset decrease. This method expels the excess information present in the picture. Consequently in our work we made various dimensions of datasets. The

main dimension contained the locale in general while in the procedure datasets, the limits of district under arrangement were restricted to the base conceivable zone. Henceforth with each passing dimension the dataset was refined and excess information present was expelled, therefore creating proficient outcomes. In our work, we have utilized diverse AI classifiers so as to do order. Distinctive AI classifiers which we utilized for our dataset incorporate SVM

### UNSUPERVISED LEARNING ALGORITHMS

#### 1.1 APRIORI

The calculation is utilized in a value-based database to mine incessant item sets and after that produce affiliation rules. It is prominently utilized in market crate examination, where one checks for blends of items that much of the time co-happen in the database. When all is said in done, we compose the affiliation rule for 'In the event that an individual buys thing X, at that point he buys thing Y' as:  
X -> Y.

#### 1.2 K-MEANS

K-means is an iterative calculation that gathers comparative information into bunches. It ascertains the centroids of k groups and does out an information point to that bunch having least separation between its centroid and the information point.

\* Corresponding author: E-mail: philomen@shcpub.edu, vidyathulasiram@gmail.com, snaveen764@gmail.com

<sup>1</sup>Assistant Professor, Dept. of Master of Computer Application, Sacred Heart College, Tirupattur, Tamilnadu, India.

<sup>2</sup>Department of Computer Science, Government Arts & Science College for women, Tamilnadu, India.

<sup>3</sup>Student, Dept. of Master of Computer Application, Sacred Heart College, Tirupattur, Tamilnadu, India.

# Implementation of Blowfish Algorithm and Exploring Key Management & Authentication in Cryptography

<sup>1</sup>S.Uma Mageshwari, Research Scholar, R& D Centre, Bharathiar University, Coimbatore.

<sup>2</sup>Dr. R.Santhi, Research Supervisor, Bharathiar University, Coimbatore.

## Abstract

In this IT scenario, there is an increase in the malware, spyware and malicious software (or applications) in the network by the attackers, such things need to be sensed and secured by adopting the mechanism to ensure confidentiality, authentication, integrity and availability. The number of Cryptography algorithms has been devised to develop the secret messages. The security attacks encountered essential to be resolved with key management, public key cryptography, protocols and authentication. This paper enlightens the Key distribution, Authentication, Security focuses in the Network and Blowfish algorithm. The implementation of the Blowfish algorithm is done in Netbeans 8.1.

**Keywords:** Authentication, Blowfish, Key distribution and Security.

## INTRODUCTION

The direct transmission of message over the network give away the attackers to gain access of the information. Therefore, the original text is converted into ciphertext by using various cryptography algorithms. The security of the network structure be determined by the algorithm with key. The key is the most precious thing for safeguarding the information as well as thwarting the hackers for unapproved access. The keys have to be retained and circulated in a proper secure channel. The access privilege to be given only to the legal person. These tasks are achieved with Key distribution and Authentication methodology. As well as, the Blowfish algorithm is discussed in this paper with sample output.

## II. LITERATURE REVIEW

- [1] Youssouf Mahamat koukou et.all.: This paper deals with the comparison of algorithms such as AES, Blowfish, CAST-128 and DES. The performance analysis is done using Crypto tool.
- [2] Manisha Yadav, Karan Singh, Ajay Shekhar Pandey: The overhead problem of communication and storage in the network is carried out using key management technique as well as implemented in Network Simulator(NS2).
- [9] Hasen Nicanfar et.all.: For HAN(Home Area Network) attacks has been resolved with proposed key management and authentication structure.

## III. METHODOLOGY

### A.PUBLIC KEY CRYPTOGRPHY

To ensure confidentiality for the information the concept of public key cryptography is adopted. The asymmetric key cryptography or Public key cryptography needs the following mechanisms such as,

- M : PlainText

CONF 7.9(A)



# CERTIFICATE OF PRESENTATION



## INTERNATIONAL CONFERENCE ON RECENT TRENDS IN ENGINEERING, MANAGEMENT AND SCIENCE (ICRTEMS-2019)

26<sup>th</sup> - 27<sup>th</sup> September 2019 | DITMR - Faridabad, Haryana

This is to certify that S.Uma Mageshwari of  
Bharathiar University, Coimbatore presented his/her  
research paper titled Implementation of ARP Spoofing for IOT Devices Using Cryptography AES and ECDSA algorithm  
at the "International Conference on Recent Trends in Engineering, Management and Science (ICRTEMS-2019)" organized by Delhi  
Institute of Technology Management & Research (DITMR), Faridabad, Haryana on 26<sup>th</sup> - 27<sup>th</sup> September 2019.

Dr. Sharel Chede  
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DITMR - Faridabad

Mr. Nausad Khan  
Assistant Professor  
DITMR - Faridabad



Mr. Rudra Bhanu Satpathy  
Chief Executive Officer  
DITMR - Faridabad

# Authentication of IOT Device Network Address with Implementation in Virtual Machine

S. Uma Mageshwari, R. Santhi

*Abstract: The IOT is booming in this era, to make user convenience much better than before. The IOT devices involved for communication can be vulnerable by the intruder. During data transmission for the IOT devices, it must be authenticated with suitable methodology. The hackers spoof the address and pretend to be the actual communicator. The other party trust this spoofed address is the authorized person. Hence, this can be processed with the appropriate Cryptography algorithms. The proposed approach is the fusion of AES and ECDSA with implementation of Python code in Ubuntu Linux. The established code takes the Network Address (MAC - Media Access Control) of running host directly through OS, such that the Network address is encrypted. The verification of the Network address is demonstrated with Windows and Ubuntu Virtual Machine. Therefore, the developed code must be installed in IOT device to accomplish secure data transmission. The motto of this paper is to enlighten the security for Network address of IOT devices.*

**Keywords:** Cryptography, IOT, Network Address, Security.

## I. INTRODUCTION

After analyzing the various existing methods, the address spoofing is the greatest challenge for data security. This is accomplished in preventing the spoofing of Network address. This paper highlights the encrypted Network address must be sent to the receiver and it is authenticated with the password to prove the identity of the user. This scenario is proved with IP based connection using SSH (Secure Socket Shell) protocol between two hosts. The reason behind of choosing SSH is cryptography protocol to have secure network access. The SSH is an application layer protocol that runs over TCP (Transmission Control Protocol) for remote connection. Hence, the communication can be established only with the authorized devices in the network. Thus, it provides the stronger security to the entire system.

## A. IOT Architecture

The IOT architecture paves the way for communication between the devices with the Network address. The Network address plays a vital role in the architecture. Such address can be hacked and later the entire network will be poisoned. Therefore, it leads to lack of security. The IOT architecture[3] can be classified broadly into three categories namely,

- Three Layer Architecture( Perception, Network & Application)
- Four Layer Architecture(Perception . Support, Network & Application)
- Five Layer Architecture(Perception, Transport, Processing, Application & Business)

## B. Security Attacks In IOT

There are many vulnerable attacks possible for IOT devices. But the proposed method take into account only three attacks namely, Man-in -Middle , Denial of Service and Spoofing of Address. In simple words, the denial of service means creating unnecessary Network traffic . Man-in -Middle attack leads to eavesdropping without the knowledge of communicators and Spoofing makes the attacker to grasp the network access may be partially or completely.

## C. Cryptography Algorithms Used To Prevent Attacks

Among various cryptography algorithms, the most suitable algorithm identified is AES approved by NIST(National Institute of Standards and Technology) in US. The AES is used for encryption of Network address to accomplish confidentiality. ECDSA is used for signing and verifying the digital signature with the Network address for Authentication.

- DES(Data Encryption Standard)
- RSA algorithm(Rivest Shamir Adleman)
- AES(Advanced Encryption Standard)
- ECDSA(Elliptic Curve Digital Signature Algorithm )

## D. Cryptography Keys

The keys in algorithms makes the code very protected. Such key size may contrast depends on the algorithm preferred for encryption and decryption process. The proposed approach emphasizes data encryption and digital signature keys. The different role of cryptographic keys is given below.

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S.Uma Mageshwari, Research Scholar, R & D Centre, Bharathiar University, Coimbatore, India.

Dr. R.Santhi, Research Supervisor, Bharathiar University, Coimbatore, India.





## Identification of Proper Machine Learning Classification Model based on Image Annotation Technique

Ms. Kavitha S. <sup>\*1</sup>, Dr. Vidyaathulasiraman <sup>\*2</sup>

<sup>\*</sup> *Research scholar, Department of Computer Science, Periyar University, Salem, India.*

<sup>1</sup> *Assistant Professor and Head, Department of Computer Science, Government Arts and Science College for Women, Bargur, India*

<sup>1</sup>kavithasenthil14@yahoo.com, <sup>2</sup>vidhyaathulasiraman@gmail.com

### ABSTRACT

The ovary is a complex organ, the detection of the ovarian cancer is done at an early stage so that the death rate of women may decrease to certain level. The woman of old age have chance for suffering the severe illness of ovarian cancer. Depends upon the research 7<sup>th</sup> mortality rate for woman is this ovarian cancer and this one is the 5<sup>th</sup> normal cancer across the globe. By the use of ANN Artificial neural networks, lot of innovators classified the ovarian cancer. Decision making among the doctors believed in accuracy classification as the efficient factor. Accurate and Early diagnosis decreases the rate of mortality and secures life. In this paper a new annotated ovarian image classification using FR-CNN (fast region-based CNN) is proposed on segmented ROI basis. Input images are classified into three kinds they are epithelial, germ and stroma cells. Preprocessing and segmenting the images and then the process of annotation is proceeded by FR-CNN. This work contrasts the features of annotation process and features which are trained in FRCNN manually for the purpose of classification which is region based. This will guide in the process of examining the increase accuracy. Completing the FRCNN training in region-based through the combination of classifiers like SVC- Support vector and Gaussian Naives Bayes. Because of increased indexing of data, the ensembling method was utilized in feature classification. Results of simulation provides the accurate part of input image for detecting ovarian cancer.

**Keywords:** Ovarian cancer, annotated image classification, FR-CNN (Fast Region-based CNN), ROI (Region of Interest), SVM, Gaussian NB, Accuracy.

### 1. INTRODUCTION

In world, ovarian cancer is 2<sup>nd</sup> leading cancer which affects about 2% of female over their lifetime. If it is diagnosed in the earlier stage, it has 90% survival rate. Many research reports after investigation presents that early symptoms and indications of ovarian cancer are not clear [1]. For ovarian cancer, medical experts face several problems in producing cancer-screening guide-lines, there exists no single known cause or mark which leads to make it as silent killer. Research reports show that 90% of patients have symptoms long back before diagnosed [2]. Further, many patients experience numerous tumor metastasis, treatment cycles and disease recurrences. In female genital tract, while considering endometrial and cervical cancer, ovarian cancer

## Comparative Analysis of Pre-Trained Classifier in Augmented Approach Image

Kavitha S<sup>a</sup>, and Dr. VidyaThulasiraman<sup>b</sup>

<sup>a</sup> Research scholar, Department of Computer Science, Periyar University, Salem.

<sup>b</sup> Assistant Professor and Head, Department of Computer Science Government Arts and Science Coll,  
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online: 20 April 2021

**Abstract:** Ovarian cancer is identified as one of the leading cause for increased mortality rate and diagnosis of ovarian cancer decreases the mortality rate, which demands for efficient classification technique. This paper proposes a deep learning based approach for ovarian cancer cell classification. This technique extracts multiple features for recognition of ovarian cancer from color images. To resolve complexity associated with ovarian cancer cell classification, a deep neural network exhibits improved performance. In deep learning technique, features are extracted from the input image for identification of cell types and texture. However, Annotation based approach exhibits improved classification performance need to be improved for automated cancer diagnosis. To achieve higher accuracy rather than the existing approach, we proposed an augmentation of MRI ovarian image. The augmented images are pre-processed with median filtering and contrast enhancement. In next stage, ROI based image segmentation is performed followed by feature extraction. The classification performance of augmented images CNN model Inception V3 and Xception model is compared. The performance of Inception V3 and Xception model is evaluated with Logistic Regression and Random Forest. The comparative analysis of simulation results expressed that Xception Logistic Regression model performs better than the Inception V3 Logistic regression, Inception V3 Random Forest and Xception Random Forest.

**Keywords:** Ovarian Cancer, Deep learning, Classifier, Inception V3, Xception

### 1. Introduction

Recently, above two thirds of ovarian cancers has metastasized on the outer surface of the ovary. Even for these cancer patients, primary surgery of done with the aim to clear all tumour tissue, microscopic residual infection is left in at least 50% of the cases. After chemotherapy, side effects enlarge the morbidity and costs without affecting the results of final treatment [2]. When side effects are discarded in evaluating ovarian cancers to the response of chemotherapy, non-invasive imaging techniques like CA 125 levels, while declining CA 125 levels, clinician is informed that the tumour burden is decreasing. However, an increase imply a tumour reappearance but the information about its location is unknown. Therefore, evaluating the location and quantifying few residual infection [4].

Based on the classification made by World Health Organization (WHO) volumetric data is used to evaluate the responses of chemotherapy in gynaecological masses [5]. Traditionally, for volumetric data, dimensions are obtained in every computerized tomography (CT)/magnetic resonance imaging (MRI) which produce the best representation of the tumour. The foci of every tumour are summed up to an equivalent number to the patient's overall tumour bulk [6].

WHO has announced that the death caused by cancer is world's second largest following

## Software Quality Management for open Source Software Louvain Parallelization Heuristic and Greedy Discretization Optimization

R. Chennappan<sup>a</sup>, Dr. Vidya Thulasiraman<sup>b</sup>

<sup>a</sup>Research Scholar, Department of Computer Science, Periyar university, Salem- 636011, Tamilnadu, India

<sup>b</sup>Assistant Professor & Head, Department of Computer Science, Government Arts College for Women, Tamilnadu, India

E-mail: [chennappanphd@gmail.com](mailto:chennappanphd@gmail.com)

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**Abstract:** Designing reliable software product is becoming more difficult as software becomes deployed on software quality management. Software quality detection has become the focus. Any changes made in the source lines of codes of software products has an adverse effect therefore compromising the scalability and reliability of software product users. Few researches introduced in existing work for software quality prediction using various data mining techniques and reliability of software quality management was not enough. Besides to that, the time consumption for performing the service provisioning was too high. For that reason, this research work is concentrated to address these issues by providing the higher scalability and minimum amount of time consumption for service provisioning during the software quality management. Thus, the research work introduces the proposed Louvain Parallelization Heuristic Based Greedy Discretization Optimization (LPH-GDO) Model for performing fast software quality prediction in a significant present work, the experimental evaluation of LPH-GDO Model has been conducted on metrics like service provisioning time and software reliability with respect to different size of software products.

**Keywords:** Absolute Importance Rating, Modularity, Objective Function, Reliability, Software Product Test Cases

### Chat with Us Introduction

In general, one of the key aspects of software development is how to make prediction of software quality and reliability for developed products. Software quality prediction is one of the key aspects of software engineering field owing to lack of sufficient tools to evaluate software codes. Predicting software products is a difficult process. Mainly, when the sizes of software products grow

## Plan of Load Balancing using Bees Swarm Optimization in Cloud

G. Manikandan<sup>a</sup>, and Dr.Vidyaanthulasiraman<sup>b</sup>

<sup>a</sup>Research Scholar, Department of Computer Science, Periyar University, Salem, Tamil Nadu, India

<sup>b</sup>Deant Assistant Professor and Head, Department of Computer Science, Government Arts and Science College for Women, Bangalore, Tamil Nadu, India.

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**Abstract:** Lately, the resource allocation and errand planning is a fundamental possibilities of distributed computing. The ideal assignment of assets with load adjusting in distributed computing is been a significant test in the field of distributed computing. In this paper, we propose an incorporated calculation for load adjusted asset intending to give viable cloud administrations. The strategy makes a multidimensional asset arranging model situated in Bees Swarm Optimization (BSO) to accomplish asset arranging productivity in cloud framework. The client demands are chosen powerfully from the heap advancement BSO calculation planned in a multidimensional way that builds the use of virtual machines by balancing the heaps. The BSO component improves the cloud usefulness tentatively. The outcomes show ideal nature of proposed cloud structure utilizing BSO calculation with diminished computational expense, reaction time and asset booking effectiveness.

**Keywords:** BSO, Scalable traffic the executives, Task Scheduling, Resource Allocation

### 1. Introduction

Distributed computing in current occasions assumes a fundamental part nearby data innovation (IT). Due to the circulated idea of figuring, more prominent consideration is paid to the distributed computing climate in the examination local area. Distributed computing is an electronic model[1] that assists with sharing figuring assets or administrations adequately over a minimal effort organization. The virtualized load equilibrium and asset arranging can be completed with the cloud foundation. Cloud framework virtualization furnishes cloud clients with admittance to the worker assets and records. In this specific circumstance, the primary concentration for successful record sharing remaining parts a viable asset arranging and burden adjusting.

The greater part of the exploration was created to design assets and equilibrium loads in the cloud. The greatest association load was decreased by utilizing STM and the heap balance was consequently ensured between network clients. This methodology, anyway is fitting for asset arranging in multidimensional climate. To manage this issue, the conveyed exchanges are divided utilizing a scaled responsibility framework to upgrade the reaction time and yield. For ideal machine use, bumble bee conduct [2] is utilized. To adjust adequately the VM loads in cloud climate, where bumble bee scavenging conduct is utilized.

Cloud has gotten sensible thought, which guarantees an extreme method to oversee, improve and convey different IT and registering administrations. Distributed computing is a recently established innovation that gives cloud clients assets and applications. A gathering dependent on search arrangements and expanding arranging proficiency incorporated the honey bee settlement Algorithm [3]. The heap balance stayed uncertain, notwithstanding. To address this issue, energy-efficient burden balance has been created for the circulation of virtual machines across workers. The outcomes are precise and guarantees all occupations in VMs that are gone into the framework are the primary target of the calculation.

The asset arranging with load balance calculations has been proposed by analysts in different conditions. The unique burden adjusting is given by an independent model to the cloud climate was given the specialist based burden adjusting calculation [4]. Albeit the heap adjusting has been guaranteed, there has not been an improvement.

With the making of cloud foundation, the pattern has expanded towards disseminated server farms. In this way, cloud workers are viewed as energy-efficient and afterward the power cost are critical in the decrease of energy costs. Burden adjusting is intends to advance force in cloud workers utilizing a lining framework, where the force conveyance is ideal and it tends to the heap dispersion [5].

The viable burden balance calculation has been utilized to plan dynamic multi-worker load adjusting [6]. To proficiently share information, an article focused methodology was intended to improve arranging productivity utilizing another exceptionally decentralized structure for the responsibility of data. Heterogeneous asset distribution [7] utilizing an avaricious heuristic way to deal with guarantee execution and expenses.

Arranging and burden offset calculation with all virtual machine (VM) capacities, the assignment span and the interdependency of various undertakings mentioned. Heterogeneous assets were observed through static or dynamic arranging by allocating undertakings to suitable assets and expanding the degree of client fulfillment.

A quick asset load balance [8] in the cloud appropriated capacity framework. The calculations for observing the responsibility and investigation were intended to assess over-burden hubs. The redistribution of asset utilizing a calculation control the VMs. Cloud asset arranging was planned dependent on an Improved Algorithm for

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## Design of Load Balancing Using Bees Swarm Optimisation In Cloud

G. Manikandan, et al.

### Abstract

In recent times, the resource allocation and task scheduling is a vital prospect of cloud computing. The optimal allocation of resources with load balancing in cloud computing is been a major challenge in the field of cloud computing. In this paper, we propose an integrated algorithm for load balanced resource planning to provide effective cloud services. The method creates a multidimensional resource planning model based in Bees Swarm Optimisation (BSO) to achieve resource planning efficiency in cloud infrastructure. The user requests are selected dynamically from the load optimization BSO algorithm designed in a multidimensional manner that increases the utilization of virtual machines by alancing the loads. The BSO mechanism improves the cloud functionality experimentally. The results show optimal nature of proposed cloud framework using BSO algorithm with reduced computational cost, response time and resource scheduling efficiency.

PDF

### How to Cite

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OPTIMAL FEATURE EXTRACTION TECHNIQUES TO IDENTIFY  
PRINCIPAL LEARNERS' ACTIVITIES FOR PERSONALIZED  
LEARNING OUTCOME IN E-LEARNING

Dr. A. John Martin

Department of Computer Applications  
Sacred Heart College (Autonomous), Tirupattur, Tamil Nadu, India  
E-mail: [martin@shcpt.edu](mailto:martin@shcpt.edu)

Dr. S. Anthony Philomen Raj

Department of Computer Applications  
Sacred Heart College (Autonomous), Tirupattur, Tamil Nadu, India  
E-mail: [philomen@shcpt.edu](mailto:philomen@shcpt.edu)

Dr. Vidyaathulasiraman

Department of Computer Science  
Government Arts & Science College for women, Tamil Nadu, India  
E-mail: [vidyaathulasi@gmail.com](mailto:vidyaathulasi@gmail.com)

**Abstract**

*In recent years, the pedagogy is greatly influenced by the advancement in E-Learning. Academic performance of the learner depends on the teaching and learning activities. E-learning, in contrast to traditional education, places a greater emphasis on student-centered learning and is built around learning activities. The most effective E-Learning activities for the creation of any virtual course are continually being developed by researchers. However, adapting to online activities and achieving the desired learning outcome varies from learner to learner. It is generally observed that the learners attain the learning outcome much faster if guided with their preferred learning activities. Identifying the most preferred learning activities of a learner will ensure quicker learning capacities. The focus of this work is to employ feature extraction techniques such as Principal Components Analysis (PCA), Independent Component Analysis (ICA), and Linear Discriminant Analysis (LDA) to recognize the principal learning activities for personalized learning outcome.*

**Keywords:** Learning Activities, Personalization, E-Learning, Principal Components Analysis (PCA), Independent Component Analysis (ICA), Linear Discriminant Analysis (LDA)

**I. INTRODUCTION**

There are significant developments and advancements in information and communication technology, and the modern educational system is becoming more and more technology-driven (ICT). It has created a thirst for introducing novelty and enhancement in pedagogy and the advancement, enhancement, novelty in the teaching and learning process are essential [1]. The goal of the eLearning system is to recognise the desire and requirements of various participants in the educational process, including students, teachers, and the tutors. The efforts made by eLearning systems to recognise the suitable learning activities are constantly emerging and still getting matured.



A

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S

R



## An automated software failure prediction technique using hybrid machine learning algorithms

R. Chennappan<sup>a,\*</sup>, Vidyathulasiraman<sup>b</sup>

<sup>a</sup> Department of Computer Science, Periyar University, Salem, India

<sup>b</sup> Department of Computer Science, Government Arts and Science College for Women, Bangalore, India



### ARTICLE INFO

#### Keywords:

Software technology  
Prediction  
Defect  
Fault finding

### ABSTRACT

Many sophisticated applications have been emerged in various industries due to the rapid growth of software technologies. Especially, the business organizations utilize the services of software-based applications to provide a state-of-the-art service. However, fault prediction in a software is a biggest challenge that needs to be addressed by the industries to improve the growth of their business. Therefore, there is a need for new techniques to perform fault prediction at an early stage of software life cycle so that software defects can be avoided in later stage. To overcome the issues in manual prediction, many prediction techniques are available that can predict the defects automatically. All of the available techniques are based on the pattern learning that finds the fault in the software based on the previously learned similar patterns. Even though many fault findings techniques are available, still there are some challenges to achieve the desired effect in its performance. To overcome the issues in currently available prediction techniques, this paper introduces an efficient software failure prediction technique using hybrid machine learning algorithms. First part of the work performs feature selection with an improved fitness function by utilizing genetic algorithm (GA) to optimize the features in the data set. After selecting the better features, Decision Tree algorithm is used as a classification technique for processing that features. The work compares the GA-DT based hybrid model with the currently available machine learning model such as RCSOLDA-RIR and WFA-PSO for the prediction of software failure. The outcome of the experimental analysis shows that the proposed model achieves better accuracy than the currently available model.

### Introduction

The quality of industrial applications has been improved greatly due to the rapid development of software technology. This ever-expanding technology improves the growth of the organization with the help of fault free software. Software defect prediction [5] is necessary for the developers to improve the quality of the software. Even a single defect in software can create a major problem that leads to loss of the business life. Even though manual software testing is utilized in the industries, they are very complex in nature and requires manpower to perform software testing. However, algorithms such as Software failure prediction is recently performed by many automated prediction schemes [15]. They are useful in selecting appropriate prediction models and other necessary techniques automatically to predict the number of defects in the software module. However, there should be an appropriate model for a specific data set since the number of parameters in each data set is different (Herbold et.al 2018). Similarly,

selecting a preprocessing technique for a particular data set is difficult since many numbers of preprocessing schemes are available. Therefore, it is very difficult to select an appropriate prediction model from the number of available models. At present, ensemble-based learning methods are popular for improving the prediction accuracy [10]. Many machine learning models are available such as random forest, decision tree, SVM, Bayesian and neural networks. Among these algorithms, neural network-based algorithms support processing of high dimensional data. In this paper, we propose a hybrid machine learning technique for the prediction of software defects. This paper is the extended version of our previous work where we utilized Ruzchika index regression (RCSOLDA-RIR) technique for improvising software quality. The previous works are focusing only on the better prediction of software failures but the time characteristics such as response time are not considered properly. Only few works are existed [6,7,16] by considering the importance of time factor. To overcome these problems, the proposed work introduces an improved cuckoo search algorithm

\* Corresponding author.

E-mail address: [chennappanphd@gmail.com](mailto:chennappanphd@gmail.com) (R. Chennappan).