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# Cloud Computing Task Scheduling Algorithm Based on Modified Genetic Algorithm

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**Abstract -** *The design of cloud computing allows for scalable computing. The cloud components can be used to process many requests and handle them in a timely manner. The cloud aids in the handling of multiple requests and the secure management of user data. There are components that locate a suitable architecture and so offer communication bonding between components. The key communication components available in the cloud are virtual machines, data centres, and user bases. As a result, it is always necessary to handle many requests, assign the appropriate virtual machine to the input request, and then provide the fastest response time possible. There are numerous methods for balancing the load on a virtual machine. The data locality preservation is rigorous in the original article, which makes load balancing across nodes a difficult task when the approach is used. a heuristic method. Most range-queriable cloud storage currently uses a combination of neighbour item exchange and neighbour migration methods, which has a high overhead and sluggish convergence. Algorithms like Round robin, throttle, and other VM allocation aid with machine allocation, but only to a limited extent. While progress is being made toward better virtual machine allocation, finding the best possible allocation is constantly needed in order to increase performance. In this paper, a Rule-based threshold heuristic technique is described as an algorithm. This is the algorithm that combines the many characteristics of virtual machines, as well as their statuses, to determine the optimum virtual machine for request allocation. The method is simulated using the Cloud Analyst simulation tool, and a comparison is done by applying an existing algorithm to several topologies.*

***Key Words***: *Cloud Load Balancing, Data sharing, Virtualization, Heuristic Approach, Bully search, Localization, Dynamic Allocation.*

## 1. INTRODUCTION

"Cloud Environment is a platform that combines usable entities from many sources and makes them available as a service on the WWW Internet platform on an as-needed basis, freeing users of the load of administering and exchanging a dedicated complicated computing infrastructure" [1]. "The availability of abundantly provisioned given data management centres, as well as the creation of elastic cloud infrastructures, open up new applications and business models, and it may disrupt cloud environment providers' operations" [2]. "Cloud computing and data storage is a virtual platform that allows for efficient services through the internet. These on-demand IT useable entities are efficiently generated and disposed of, auto-completing utilising the various variables available programmatic data UI, and invoicing is based on their working and quantifiable component utilisation. Usable entities are allotted in a traditional hosted environment based on peak load needs" [3]. As the Cloud environment data store and its computation emerge as a good way to leverage available remote usable entitiess in a flexible, cost-effective manner with its scaling way thanks to a usage-based available here a cost model, security is one of the available critical concerns that directly impact the adoption working rate of the scenario Cloud paradigm [4]. System virtualization, for example, has become extensively accepted to provide compute usable entities as a service, allowing the dynamic spawning of virtual machines and their linked nodes and communication infrastructure in data centres. [1]. When given by a provider to a group of set consumers, one cloud service type known as software as a service (SaaS) has attracted the attention of attackers who aim to exploit its working weaknesses [5]. For security reasons, a defined VM in the cloud is used with a proxy that replicates inbound traffic to the devices and transmits it to the emulation platform [6]. Below figure 1.1 shows discussion point from cloud.

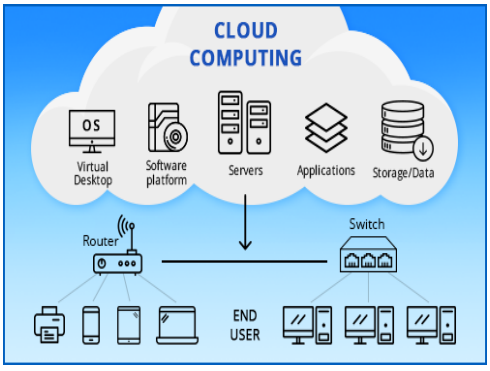


**Figure 1 Complex Structure of Cloud environment data store & its Computation**.

### 1.1 LOAD BALANCING

Load balancing is a procedure that distributes workload evenly among all available nodes in the cloud. By spreading workloads between multiple nodes, this enhances overall system performance. When resources are not utilised effectively, they might get overheated, resulting in carbon emissions. Carbon emissions can be reduced by utilising resources wisely [4]. A few measures that can be used to evaluate load balancing systems include performance, scalability, response time, resource consumption, and fault tolerance. These criteria enable us to determine whether the approach or algorithm for balancing the given load is adequate for balancing the load [5].

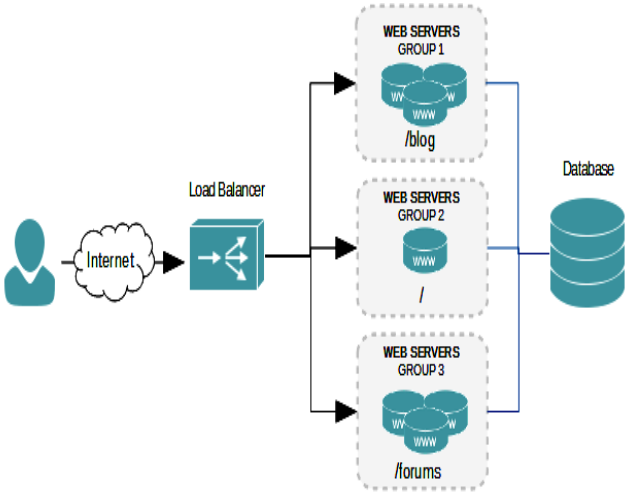


**Figure 2 General Structure of Load balancing in Cloud Environment.**

## 2. PROBLEM DEFINITION

According to the writing review, many methods are used to do calculations, and different results are seen, such as PRISM, SVM, and other different techniques for planning procedures on a large number of arranged information packages available dataset.

Following confirmation of the specific circumstance and the available approach, a variety of shorts accompany the existing booking computation, which serves as the foundation for our investigation work. The checked focuses are next, which were identified as an issue and were further broken down and completed with improvements.

**1.** Previous strategies, such as PRISM and other booking calculations for handling model age, have an evident issue in creating better results and information allotment strategies when the virtual matchine network is broken. This method produces a better result than the present system, but it also requires improvement, which the proposed system provides..

**2.** Previous approach Due to a lack of rules, nave based characterization does not provide a superior enrollment grouping, and hence a superior probability model cannot be produced using the method.

**3.**In the past, dispersion was used since the knowledge of the points varied, determining the disadvantage of unexpected substances in contrast to recommended tasks such as heuristic hunt and circulation calculation.

As a result, in order to propose a better forecast model utilising arrangement and further join approaches, it is necessary to promote a scheme that contributes to improving results and framework; in this case, our proposed procedure heuristic is to use conspire instead of the traditional booking approach.

## 3. PROPOSED METHODOLOGY

As a result of our observations of the prior technique and its drawbacks in various contexts and scenarios. Our research presents a novel approach that is both productive and high-value, resulting in improved computational results when applied to a large number of datasets. Our research proposes a novel method, Heuristic Based Prediction Model that employs a new logistic normal distribution technique to establish a relationship between the topics as well as a flexible environment for the entire process, resulting in a superior data transmission prediction model. The proposed algorithm is described below:

1. **Loading of all available data and packets from the created message that are involved in the communication.**
2. **Loading the dataset's whole node dictionary pair.**
3. **Execute the specific algorithm that the user has chosen for continued execution, such as an existing or developed algorithm.**
4. **If any single match is obtained, perform node down and matching operations, and conclude whether or not utilising the model for data shifting is working.**
5. **If the system performs at least two or more dictionary matches, do the model and match action.**
6. **Keeping parameter-by-parameter data for the historical model.**
7. **Observing the values and thus it effect accuracy and efficiency for the complete scenario.**
8. **Exit .**

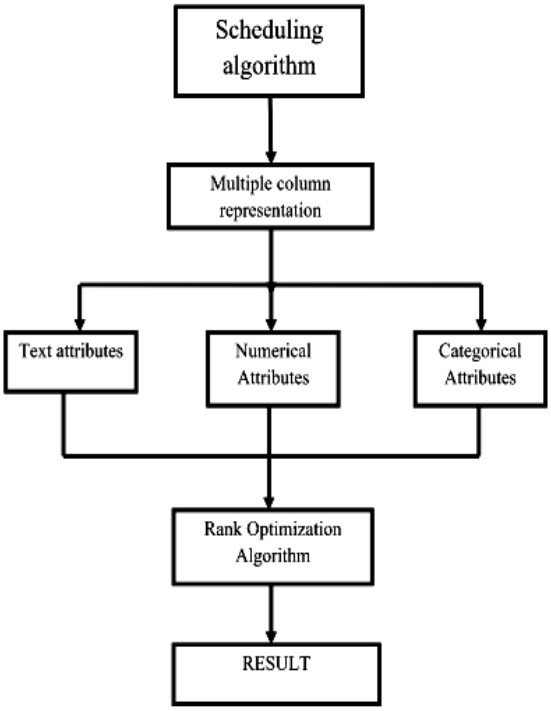


**Figure 3 Flowchart of proposed algorithm**

In this fig 3 tool and here as we load the dataset and verifies the eligibility and taking their features for consideration or not is the time taking process to identify and to load the images and selection of password comes under training time of a dataset, extracting the properties and making them in process format is training time.

## 4. RESULT ANALYSIS

In this section, we'll go over the results that were achieved after using the proposed technique instead of the old method.

**Parameters Description**

**Throughput:** In general, throughput refers to the pace at which something is produced or processed.

**Computation Time:** The amount of time it takes to finish a process. Time to compute. The length of time necessary to complete a computational process is known as computation time (also known as running time). The computation time is proportional to the number of rule applications when the computation is represented as a sequence of rule applications.

In the table present below is a statistical comparison of the values which are retrived as time taken by the different process algorithm, throughput and other parameter can be observe.

**Table -1: Data distribution for different data packet.**

| Technique Approach Date packets | Proposed | Existing |
|---|---|---|
| 1024 | 3374ms | 3889ms |
| 2048 | 4098ms | 4158ms |
| 3072 | 5229ms | 5344ms |
| 4096 | 5310ms | 5391ms |

The above table shows the amount of data values extracted from the data and the algorithm used to extract them

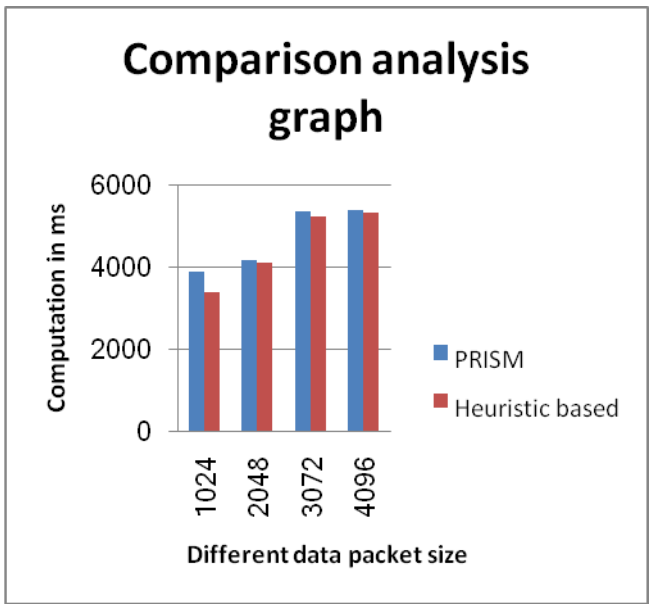


**Figure 4 Comparison of Line graph for technique analysis**

In the above graph, the x axis represents the data from which posts were extracted for query processing for the specified dataset, and the line graph is printed using the chart library provided by Microsoft, allowing for easy further analysis. As a result, the Heuristic based approach outperforms the best.

Our proposed approach outperforms the low forcasting value in terms of efficiency, as shown by the graph representation.

## 5. CONCLUSIONS

We investigated various load balancing strategies in the Cloud Computing context in this article. We've also gone over some of the primary difficulties that must be considered while developing any load balancing algorithm. There is no concept of a one-time password in existing work that is based on single authentication, where only the user name

and password are required. To address this issue, a key-based authentication system for multiple users has been implemented to safeguard data. A one-time password is issued and expires once the procedure is completed. A emphasis will also be placed on throughput, with many processes running at the same time. Using the proposed approach, we were able to overcome the drawbacks of earlier algorithms. A comparison was made based on several factors such as throughput, reaction time, and so on. Existing algorithms are used to calculate the performance of various topologies based on computing time and throughput.

## 6. FUTURE WORK

More cloud Computation over the Environment providers, unlimited services, established quality, and best practises can be expected in the future. In the future, we'll concentrate on developing algorithms that maintain a better trade-off between all performance characteristics.

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