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A Hybrid model for load balancing in cloud using file type formatting

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ABSTRACT

Nowadays, cloud computing is playing a significant role by providing on-demand services on a pay as you go basis.

The service models like SaaS, PaaS, and IaaS are being exploited by the vendors for the provision of quality services which has shown huge growth (21.5 % approx.) in public cloud computing markets during the last five years.

This QoS provision also involves other internal and external factors such as environmental issues, economy, sustainability, performance, energy consumption, development of new policies and techniques.

This means that cloud computing success is highly dependent on efficient supported polices and intelligent decisions by the vendors and consumers.

I. INTRODUCTION

Nowadays, development of searching technology provides learners a new way to break free with the more traditional educational models by exploring ways in which Web-based could adapt their behaviour to the goals, tasks, interests, and other characteristics of users. In response to individual needs, personalization in education facilitates students to learn better by using different strategies to create various learning experiences. In recent years, one of the new form of learning personalization that has been expressed as a need by several studies is to give recommendations for learners in order to support and to help them through the learning process.

Indeed, recommender systems are becoming increasingly important in various interesting application domains such as e-commerce, e-entertainment, e-health and other domains. The aim of the first Recommender Systems (RSs) is to provide useful suggestions for users (books, movies, products, etc.) among their preferences and the other similar users. In summary, recommendation strategies can be divided into three major classes: the content-based recommendation, the collaborative-based recommendation, and the hybrid-based recommendation.

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ASP.NET

The .NET Framework is a new computing platform that simplifies application development in the highly distributed environment of the Internet. The .NET Framework is designed to fulfill the following objectives:

To provide a consistent object-oriented programming environment whether object code is stored and executed locally, executed locally but Internet-distributed, or executed remotely.

To provide a code-execution environment that minimizes software deployment and versioning conflicts.

To provide a code-execution environment that guarantees safe execution of code, including code created by an unknown or semi-trusted third party.

To provide a code-execution environment that eliminates the performance problems of scripted or interpreted environments.

To make the developer experience consistent across widely varying types of applications, such as Windows-based applications and Web-based applications. The .NET Framework has two main components: the common language runtime and the .NET Framework class library. The common language runtime is the foundation of the .NET Framework. and Remoting, while also enforcing strict type safety and other forms of code accuracy that ensure security and robustness. In fact, the concept of code management is a fundamental principle of the runtime. Code that targets the runtime is known as managed code, while code that does not target the runtime is known as unmanaged code. The class library, the other main component of the .NET Framework, is a comprehensive, object-oriented collection of reusable types that can use to develop applications ranging from traditional command-line or graphical user interface (GUI) applications to applications based on the latest innovations provided by ASP.NET, such as Web Forms and XML Web services

INPUT DESIGN

Input design is the process of converting user-oriented inputs to a computer-based format. The quality of the system input determines the quality of system output. Input design determines the format and validation criteria for data entering to the system.

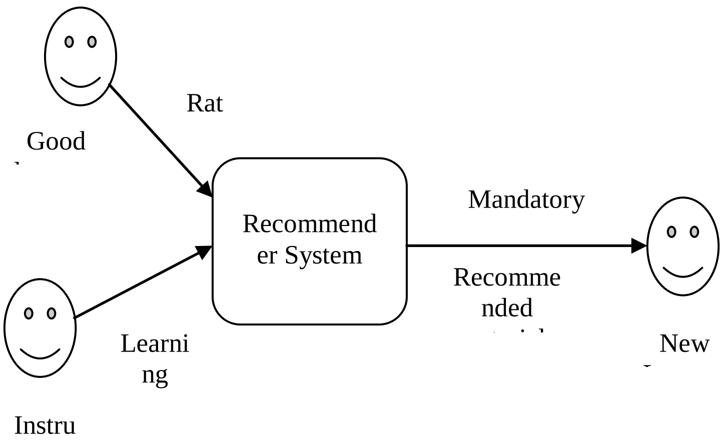
Input design is a part of the overall system design, which requires very careful attention. If the data going into the system is incorrect then the processing and output will magnify these errors. Input can be categorized as internal, external, operational, computerized and interactive. The analysis phase should consider the impact of the inputs on the system as a whole and on the other systems.

Any abnormality found in the inputs are checked and handled effectively. Input design features can ensure the reliability of a system and produce results from accurate data or they can result in the production of erroneous information.

Input Design is one of the most expensive phases of the operation of computerized system and is often the major problem of a system. A large number of problems with a system can usually be tracked backs to fault input design and method. Needless to say, therefore, that the input data is the life blood of a system and have to be analyzed and designed with utmost case and consideration.

Designs are used to enter the separate value for the process and methods. Development can be made by one of the user. In this input design the user and admin login to the page. Both also have an separate userid and password. User can up[date their status. Admin is verify the user status.

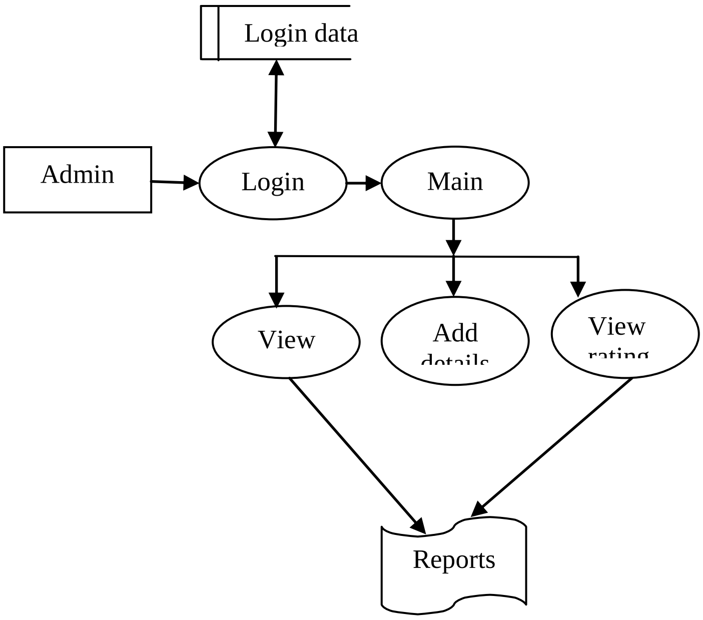
The input design is the link between the information system and the user. It comprises the developing specification and procedures for data preparation and those steps are necessary to put transaction data in to a usable form for processing can be achieved by inspecting the computer to read data from a written or printed document or it can occur by having people keying the data directly into the system..



BLOCK DIAGRAM

This design is important to avoid errors in the data input process and show the correct direction to the management for getting correct information from the computerized system.The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

A. Ig



DATA FLOW DIAGRAM

A.ACOFTF Approach:

The process starts with the collection of data inputs in the form of videos, texts, audios, and images which are stored in the cloud environment. Data classification is then performed using SVM, which gives the data class in the form of output. Then load balancing of data is carried out using ACO..

B. ACOFTF Algorithm:

takes various formats as inputs such as audio, video, image, and text from the cloud and performs classification using one to many classification techniques. The algorithm iterates 100 times before it assigns the data to the proper class. To entertain high dimension complex data, POLYSVM kernel is used. The output of this SVM classifier is a data class.

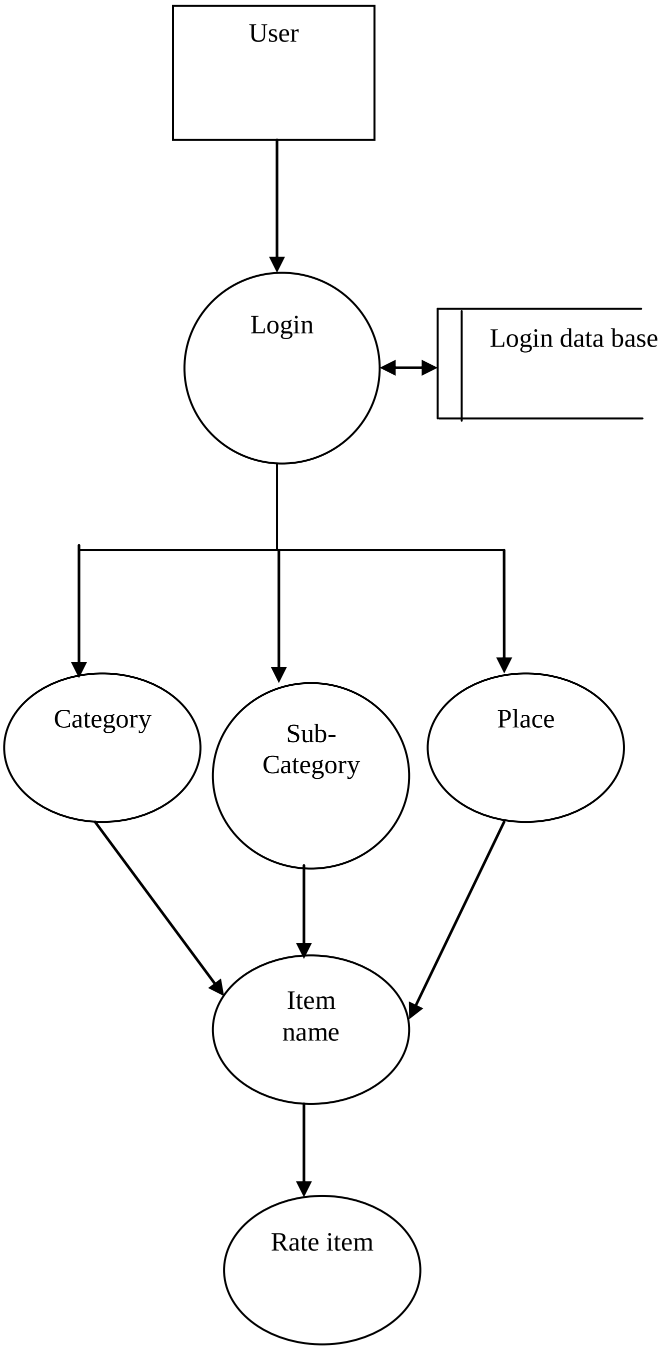
C. Initialyzing Pheromene:

In our proposed approach, we set the initial pheromone level as 0.1. Initial pheromone value lies between two nodes that is VMi and VMj . After first iteration, this pheromone level is globally updated.

D. Input/Output Interface

Each ant ‘k ’ moves from current node i (VM) to next node j (VM) by calculating the probability of ρkij of crossing the edge using the following equation

ρkij=(τij)α(nij)β∑n1(τij)α(nij)β.



IV.TECHNIQUES

A. Key Concept (C#.NET)

C# (pronounced C Sharp) is a multi-paradigm programming language that encompasses functional, imperative, generic, object-oriented (class-based), and component-oriented programming disciplines. It was developed by Microsoft as part of the .NET initiative and later approved as a standard by ECMA (ECMA-334) and ISO (ISO/IEC 23270). C# is one of the 44 programming languages supported by the .NET Framework's Common Language Runtime. C# is intended to be a simple, modern, general-purpose, object-oriented programming language. Anders Hejlsberg, the designer of Delphi, leads the team which is developing C#. It has an object-oriented syntax based on C++ and is heavily influenced by other programming languages such as Delphi and

Java. It was initially named Cool, which stood for "C like Object Oriented Language". Hotover, in July 2000, when Microsoft made the project public, the name of the programming language was given as C#.

B. Accuracy of FTFSVM:

Performance metrics comprising of accuracy, sensitivity, specificity, precision, recall, F-Measure, G-Mean, Area Under Curve (AUC), Kappa, and Mathews Correlation, are used to provide the classifier performance. On average, highest classification performance is observed in the developed classification model. This shows that FTFSVM is classifying files quite accurately which will have a huge impact when used in scheduling..

C. Complexity of FTFSVM:

We have computed the evaluation of ACOFTF model based on time complexity. As our model follows a hybrid approach that is the combination of SVM and ACO, so we have used parameters which are specified in evolutionary algorithms as well as classification algorithms..

D. Input Data:

The input data is collected from the cloud source to feed into the system. The collected data has a type format of video, audio, text, and images.

E. Classify data using SVM:

The data collected are then classified with the help of SVM. For these types of cases SVM introduces Kernel function to change the original data space into a higher dimension space having a function that includes the transformation function with dot product. Now the hyperfunction is given as:

$$K(ui,uj)=f(uj)=\varphi(ui)\varphi(vj),\sum i=1N\propto iuiK(uiuj|ui)+c$$

F. Load Balancing using ANT Cloud Optimization:

Each task is executed for a period of 100 iterations and is evaluated using computational cost in the form of time. The mapping of tasks on virtual machines is computed using a metaheuristic algorithm called ACO where each machine is assigned a task based on available resources in cloud environment. The VMs network can be represented as an undirected graph G = (V, E) where V represents the virtual machine (VM) or node and E represents the undirected edge having pheromone weight that shows the overload and underload intensity between two nodes and is updated in the form of pheromone.

G. Approaches used for Load Balancing:

SVM classifiers are extensively used in cloud computing in combination with metaheuristics. One of the studies discussed intensification and diversification using scheduling in cloud computing showing that there is a need to maintain a balance between them so that quality solutions are achieved. It has been observed that a careful combination of various metaheuristics results in a more efficient performance, accuracy, and strong convergence because the best features of metaheuristics are combined into a single metaheuristic. As a drawback of this study, only response time is considered and it further lacks a multi-objective approach. In one of the studies by, SVM is combined with cloud scheduling algorithm to obtain better performance efficiency with good accuracies in classification. Studies have shown that in metaheuristics, modifications are required in operators used, fitness function, and their hybrid with proper optimizations. This work considered only a few metaheuristics that are discussed for intensification and diversification. A study by discussed the firefly algorithm adjusted using fine-tuning with SVM for error rate classification.In their study, results were evaluated using McNemar's test showing 12% overall accuracy with the help of SVM. In this approach, only a small number of features are used which needs to be extended to determine the scalability of the system. Classification technique for the detection of beverages using tongue is suggested by that aimed to produce the best classification accuracies as compared to various classifiers but, the presented approach is computationally intensive. Convolutional Neural Network (CNN) for classification detection of frauds in credit/debit cards is proposed . This technique provided good accuracy for detecting frauds during transactions. However, the technique has performance constraints. Further, comparative accuracy and performance need to be checked on more datasets.

V. RESULTS

A. Average no for SLA Violation:

SLA violations by baselines over 14000 tasks taken randomly. Further, results are generated over varying VMs' such as 5, 10, 50, 100, 500 and 1000. Similarly, tasks are chosen as 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000, 1000, 11000, 12000, 13000, and 14000 randomly. It is observed that ACOFTF has done fewer SLA violations over varying tasks.

B. Average no for Migration Time:

migration time by baselines over 14,000 tasks taken randomly from 100,000 datasets. It is observed that ACOFTF has done smallest migration time over varying tasks.The impact of VM migration time is reflected in the data center performance with varying memory sizes with every run. Soon after starting the simulation, in the very first run, few migrations to other physical hosts get activated which keeps on getting larger after every run. When a simulation is finished, the migration time is calculated for every baseline and the target performance is observed. It is important to say that the VMs' are increased with every run in which one VM migration takes the least time as compared to 2,3,4,5…. VM migrations taking more time.

C. Picture placement

optimization time by baselines over 14000 tasks taken randomly from 100000 datasets. It is observed that ACOFTF has optimized itself in earliest possible time over varying tasks.The same faster convergence fact is demonstrated during simulation resulting in better earliest optimization than other baselines. Further, the inherent property of quick optimization helps ACO to solve even complex problems in less computational time..

D. Averaging throughput Time:

throughput time by baselines over 14000 tasks taken randomly from 100000 datasets. It is observed that ACOFTF has shown maximum throughput time over varying tasks. This is because the earliest response time by ACOFTF helps in getting faster throughput whereas, response time in other baselines is higher resulting in low throughput (higher values). Further, the stability provided by a higher throughput

VI. CONCLUSIONS

In this paper LARS*, the proposed location-aware recommender system, tackles a problem untouched by LARS* employs user partitioning and travel penalty techniques to support ratings and items, respectively. Both techniques can be applied separately or in concert to support the various types of location-based ratings. Experimental analysis using real and synthetic data sets show that LARS* is efficient, scalable, and provides better quality recommendations than techniques used in traditional recommender systems.

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