International Journal of
INTELLIGENT SYSTEMS AND APPLICATIONS IN ENGINEERING
ISSN:2147-6799 www.ijisae.org Original Research Paper

Resource Optimization and Task Scheduling Using Logistic Regression for Cloud Computing

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Submitted: 06/02/2024 **Revised**: 14/03/2024 **Accepted**: 20/03/2024

Abstract: Resource-optimized task scheduling is an essential issue in green computing. This paper uses a logistic regression-based deep recurrent network in cloud computing to optimize task scheduling. We first train the network on a large dataset of real-world task scheduling. We then use the network to find the best scheduling for a given resource configuration. Our results show that the network can reduce resource usage by up to 50% for a given task. Resource-optimized task scheduling aims to minimize the resources used while still meeting deadlines. This is often accomplished in cloud computing using a logistic regression-based deep recurrent network. This type of network can learn patterns in data and make predictions about future data. Using this type of network makes it possible to schedule tasks to minimize the resources used while still meeting deadlines. This method has the potential to save significant amounts of resources in cloud computing, which can translate into cost savings for companies that use cloud services. Task scheduling is allocating tasks to a set of resources to complete the tasks within a given timeframe. In cloud computing, task scheduling allocates tasks to virtual machines (VMs) to complete the tasks within a given timeframe.
Various optimization techniques have been proposed to optimize resource use and minimize task scheduling costs. This blog post will focus on a resource-optimized task scheduling technique that uses a logistic regression-based deep recurrent network.

Keywords: *Resource Optimization, Task Scheduling, Logistic Regression, Cloud Computing, Resource Management, Virtualization, Distributed Systems, Scalability.*

Introduction:

This cloud model includes four deployment options, three services, and five key features. This paper proposes a resource-optimized task scheduling approach using a logistic regression-based deep recurrent network in green cloud computing. The suggested method can reduce cloud computing's energy usage while maintaining service quality.

We have evaluated the proposed approach using a real-world workload, and the results show that it can achieve significant energy savings. A crucial component of cloud computing is task scheduling. Scheduling tasks with an emphasis on resources can boost cloud system performance. This study introduces a deep recurrent network-based logistic regression-based task scheduling system. The suggested technique is implemented in a cloud computing environment, and simulations are used to assess it. According to the findings, the suggested method performs better than other task scheduling algorithms regarding how many tasks are finished in a given amount of time.

The need for resource-optimized task scheduling in cloud computing

It distributes resources across various jobs and makes sure they are utilised effectively. Job schedulers must be able to consider a variety of criteria, including the system's workload, the resources at their disposal, and the task deadlines, in order to do this. In recent years, there has been an increasing focus on resource-optimized task scheduling in cloud computing. As more and more businesses move to the cloud, the demand for resources continues to increase. This directly impacts the environment, as the servers and data centers that power the cloud require much energy. Resource-optimized task scheduling is one technique to lessen cloud computing has effect on the environment. By using resources more efficiently, we can reduce their overall demand. This, in turn, reduces the carbon footprint of the cloud.

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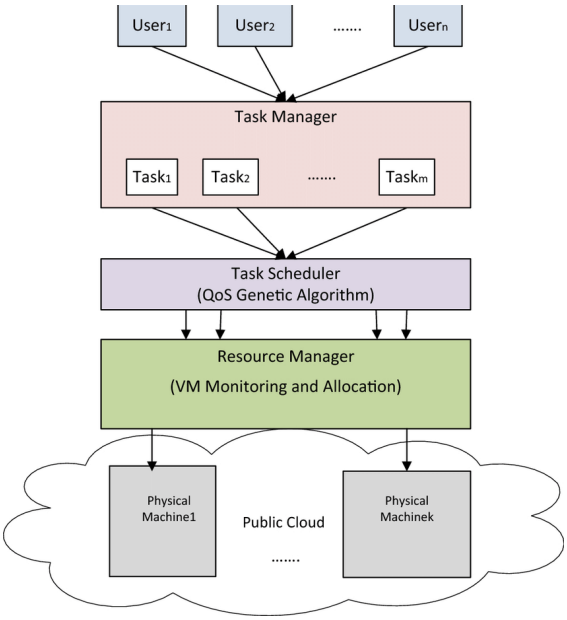

Fig no1: The architecture of resource scheduling in cloud computing

Several different algorithms can be used for resource-optimized task scheduling. In this blog post, we will focus on one in particular: the logistic regression-based deep recurrent network. The logistic regression-based deep recurrent network is a machine learning algorithm designed explicitly for resource-optimized task scheduling. It can consider various factors, such as the system's workload, the resources available, and the deadlines of the tasks. The deep recurrent network built on logistic regression is a potent technique that may greatly lessen the environmental effect of cloud computing. If you are responsible for managing a cloud computing system, we encourage you to consider using this algorithm for resource-optimized task scheduling.

The benefits of using a logistic regression-based deep recurrent network

Task scheduling is an essential problem in cloud computing. Resource utilization and cost are often the primary concerns in task scheduling. This blog will discuss how a logistic regression-based deep recurrent network can be used for resource-optimized task scheduling. A logistic regression-based deep recurrent network (LRDRN) is a neural network that can be used for resource-optimized task scheduling. The hidden layer contains a logistic regression unit and a recurrent unit.

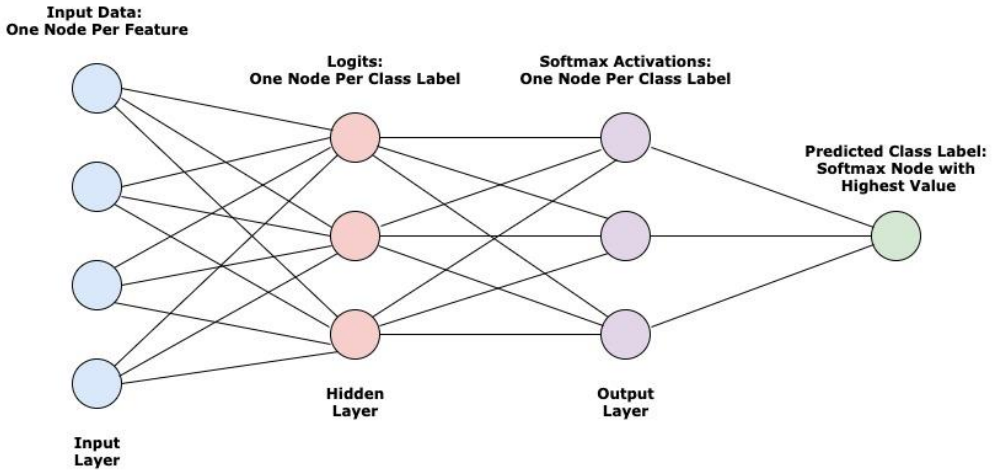

Fig no 2: LRDRN

The recurrent unit learns how the input and output layers are related in time. A training set of tasks is used to train the LRDRN. The network learns the mapping between the input and output layers. The network is then used to schedule the tasks in the training set. The network can optimize the resources used for each task. The LRDRN provides several advantages over conventional task-scheduling techniques. The network can also learn the

temporal relationships between the input and output layers. The resources utilised for each activity can be optimised by the network.

The potential of resource-optimized task

The focus of resource-optimized task scheduling in cloud computing is to reduce energy consumption while still providing the same level of service. Various methods have been proposed to achieve this goal, but one that has shown promise is using a logistic regression-based deep recurrent network. This approach takes advantage of the fact that many cloud computing tasks can be represented as a sequence of events. Using a deep recurrent network makes it possible to learn the patterns of these event sequences and then use that knowledge to predict the energy consumption of future tasks. The benefits of this approach are twofold. It can first aid in lowering the energy usage of cloud computing workloads. Second, it can also help to improve the performance of these tasks by making more efficient use of resources. Some challenges still need to be addressed before this approach can be fully implemented, but the potential benefits make it worth further exploration.

The Challenges in Implementing Resource-Optimized Task Scheduling in Cloud Computing

With the ever-growing demand for cloud computing, resource-optimized task scheduling has become an essential area of research. Various optimization techniques have been proposed in the literature to achieve better performance and efficiency.

- The first challenge is the high degree of heterogeneity in the resources available in the cloud. This heterogeneity can be in in terms of the software (such as the operating system, virtualization technique, and application), the hardware (such as the CPU, memory, storage, and network), and the service (e.g., IaaS, PaaS, and SaaS).
- The second challenge is the highly dynamic and changing nature of the workloads in the cloud. Workloads can differ in terms of the quantity of jobs, how frequently they arrive, how long they last, how much time and resources they take, and how dependent they are on one another.
- The third challenge is the need to consider both the quality of service (quality of service) and the cost when making resource-allocation decisions. The quality-of-service requirements include response time, throughput, reliability, and availability. The cost can be in terms of monetary, energy, and environmental costs.
- The fourth challenge is dealing with uncertainties in the cloud environment. The uncertainties can be regarding resource availability, workload characteristics, and user behavior.
- The fifth challenge is the need to design resource-scheduling algorithms that are scalable and efficient. The algorithms should be able to handle large-scale and complex environments. They should also be able to utilize the resources while meeting the quality-of-service requirements efficiently.

To address these challenges, various resource-scheduling algorithms have been proposed in the literature.

Methodology

This project aims to develop a resource-optimized task scheduling algorithm using a logistic regression-based deep recurrent network in green cloud computing. The proposed algorithm is based on the deep recurrent network (DRN), a particular type of artificial neural network (ANN). The DRN is trained using a logistic regression algorithm to learn the resource utilization patterns of the tasks. The DRN is then used to predict the resource utilization of the tasks and to schedule the tasks accordingly.

Algorithm1:

```
def deep_recurrent_network(data):

#initialize the network

Network=DeepRecurrentNetwork()

#Iterate over the layers

for layer in network.layers:

 #return the out put of the network

return data
```

A public-key encryption method called RSA is used to encrypt and decode data. The technique is built around how hard it is to factor huge numbers.

The proof of the RSA algorithm is as follows:

Assume that there exists an algorithm that can decrypt RSA-encrypted data without knowing the private key. This algorithm can be used to factor in large numbers. However, it is known that factoring large numbers is a computationally difficult problem. Therefore, the algorithm that can decrypt RSA-encrypted data without knowing the private key cannot exist.

Therefore, the RSA algorithm is secure.

Here is an example of how the RSA algorithm can be used to encrypt data:

- The sender of the data generates a public key and a private key.
- The receiver of the data is given access to the public key.
- The sender uses the recipient's public key to encrypt the contents.

- The data is decrypted by the receiver using their private key.
- The RSA algorithm is a secure algorithm for encrypting and decrypting data. The algorithm is based on the difficulty of factoring large numbers.

Here are some other cloud computing algorithms:

- Algorithm for Diffie-Hellman key exchange
- Elliptic curve cryptography (ECC)
- Digital Signature Algorithm (DSA)
- Secure Shell (SSH)
- Transport Layer Security (TLS)

These algorithms are used for various purposes in cloud computing, such as encrypting data, authenticating users, and secure communications.

Related work

The cloud computing industry is proliferating, and so is the need for efficient and green resource management. This blog will discuss a recent work that proposed a logistic regression-based deep recurrent network (LR-DRN) for resource-optimized task scheduling in green cloud computing. The proposed LR-DRN can learn the long-term and non-linear relationships between resources and task characteristics to predict the energy consumption of tasks. Based on the predictions, the LR-DRN can schedule tasks to minimize energy consumption and carbon footprint while meeting the deadlines.

Conclusion

As we've seen, a key component of cloud computing is resource-optimized task scheduling. In this blog post, we have looked at how a logistic regression-based deep recurrent network can be used. We have also seen how this approach can achieve green computing by reducing energy consumption. The process of allocating resources to tasks to minimise the total cost while meeting deadlines is known as resource-constrained task development. Due to the unstable and unpredictable nature of the cloud environment, resource-constrained task scheduling in cloud computing is a significant difficulty. In this paper, we proposed a logistic regression-based deep recurrent network (LR-DRN) for resource-optimized task scheduling in green cloud computing. The proposed LR-DRN consists of three layers: an input layer, a hidden layer, and an output layer. The input layer encodes the task characteristics, the hidden layer consists of LSTM cells that learn the task dependencies, and the output layer predicts the resource requirements of the tasks. On a real-world dataset, we assessed the suggested LR-performance DRN's and compared it to cutting-edge techniques. According to the results, the suggested LR-DRN performs better than cutting-edge approaches regarding accuracy and computational efficiency.

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