CHAPTER 7

SUMMARY OF FINDINGS AND CONCLUSION

7.1 INTRODUCTION

The core objective of the research work addressed here was to provide an optimized scheduling solution in cloud based applications. As per theory, the maximum resource utilization was the intention behind the development and determination of appropriate scheduling. To maximize the utility of such resource services like applications, data and infrastructure over the internet, it is mandatory to enable optimized scheduling of resources in cloud environment.

As per the detailed narrations indicated in previous chapters and performing thorough analysis in lieu of theoretical research perspective, experiments and simulation augmentations was carried out. In the upfront, identification of the procedures for utilizing the cloud based resources, in an optimized way, based on the on-demand strategies were considered loyally. The purpose of this chapter is

i) To aggregate the findings of research investigations carried out.
ii) To list down the major activities involved in the research.
iii) To provide suggestions for possible extension of future work in the arena of conducted research.
7.2 RESEARCH FINDINGS

Amongst the hindrances and/or ill effectors, the sky scarping issues in the distributed environment was managing the available resources effectively. Resource management as a whole consists of task management, load balancing, task scheduling, utilization of services etc., during the on-demand connections. To endure with the optimized fuzzy based scheduling, variety of feasible techniques are proposed in the cloud computing environment. In order to corner out the tangling issue, 8 different research investigation methods were prosecuted for determining the optimized scheduling pathway in close adherence to the reality.

The first method proposed was for load balancing using swarm intelligence optimization, which reported as a helping hand to speed up the convergence rate and optimized load balancing in cloud environment.

The next method was originally meant for job scheduling using Fuzzy Neural Network (FNN). This particular analysis envisaged a dimensional change with low total turnaround time and thereby instantaneously increased the job scheduling performances.

The third intellectual approach concentrated primarily on Many Task Computing (MTC), with the help of data aware scheduling mechanism. Upon implementation, it was instituted that the computational time/task, caching performance, execution time and node utilization efficiency got increased as a final point.

The fourth method accommodated itself for efficient utilization of resources in cloud scheduling problems. A parallel genetic algorithm with Dynamic Deme-model is used to increase the utilization rate with the existing genetic approaches.
In the midst of repelling procedures and methodologies, the investigation continued for MTC applications, applied in various cloud methods like private, public, and hybrid. A path clustering heuristic algorithm was used for analyzing the scheduling schemes, cluster throughput, cost optimization, utility and scalability which were considered to be the vital parameters of antique importance that clustered in the cloud set up.

As a dwell to the methods approached, the next method was meant for parallel data processing by the way of novel utility accrual scheduling approach. The practicality of the originated approach was used for evaluating the performance of resources in data processing. This hi-tech entity provided an optimized scheduling method for data utility function and in turn reflected as a show case for new generation technique.

In line with the series of investigation, it was befallen as a significant task of the next propounding methodology to reside energy oriented scheduling in cloud environment. An enhanced parallel bi-objective hybrid genetic algorithm was meant for reducing the energy consumption; the same was adopted for the current research also for the scheduling operations in cloud based application. The adoption of this methodology provoked itself to frame out the necessitated variables during scheduling.

In a bird’s eye view, the above seven investigations are meant for scheduling methods and categorizes by self into load-balancing, task scheduling, resource allocation for MTC, resource scheduling, resource deployment and data utilization scheduling from the energy aware scheduling respectively. Upon the literate’s expertise over the scheduling operations and by thorough review over the stipulated results, it turns up as the need of the hour to impose a novel fuzzy inference based optimization algorithm for optimizing the resource allocation at its best. The primary objective of this particular approach was to cut down the execution time, with the help of fuzzy based algorithm.
The performance of all the proposed investigations, were tested with its close rivals empirically with the help of CloudSim toolkit and JDK 1.7. in PC with Pentium IV processors with 2.40 GHZ speed and 256 MB RAM.

In due considerations of the investigations through expertise and by matured evaluations over the yielded results, it was privileged to emphasis that the scheduling efficiency increases by enlarge and this novel, fuzzy inference based optimization algorithm, ensures the maximum utilization of resources, within the lower time rate.

7.3 SIGNIFICANT RESEARCH CONTRIBUTIONS

Currently, the research has stepped in to accomplish the existing methodologies with a best suited alternative. In spite of inhibiting vigorous searches over the literatures, exhaustive scope with best suitable alternatives to fill in this particular research dent was found to be immediately bridged. As a concrete solution to this research gap, the current work furnishes an aggregate mechanism for identifying the optimal algorithm and to perform resource scheduling in the cloud environment. The throughput of the algorithm was in close adherence the main objective of the research work i.e., to maximize the utilization of resources in cloud environment by using the optimal algorithms.

As an adjunct to the prevailing theories, varieties of algorithms in respect to the field of research were tested with its own input and output methods. After thought full expeditions over the influencing factors, the parameters involved in the investigations are number of resources, cost, load evaluation, compilation time, bandwidth utilization, work utilization task, throughput, and scalability, profit, pending, utility and energy consumption.
To throw away the adulating amalgamations of showcased results, the current research have passed a new gateway for future technocrats in the field of cloud computing.

The fuzzy optimization algorithm categorizes the input variables as a member function, for classification technique.

i) Response time
ii) Execution time
iii) Memory
iv) Bandwidth
v) Processor
vi) Profits
vii) Penalty

Moreover, the application input variable is declared as fuzzy member function for fuzzy based decision making. It categorizes the application into scientific and general classes.

Finally, application type for member function is focused on the following:

i) Time
ii) Utilization
iii) Cost
iv) Scalability
v) Energy Saving

The above are the member functions for algorithm identification of decision making in Fuzzy Control Logic (FCL). Each one of the above approaches contributed a distinct methodology for addressing the solutions of
scheduling problems. Bearing the necessity for the introduction of new and advanced techno editions in the field of optimization scheduling, the proposed technology assumes by itself to act as a building block and setup procedure for novel attempts in the technological age.

7.4 CONCLUSION

The conclusions in a broad-spectrum obtained through the current research work states that, the Quality of Service (QoS) parameter like size, bandwidth, memory utilization, process utilization, time, cost, scalability and energy saving are the deciding factors about performance, while taking care of the optimization. Currently, various studies about the scheduling algorithms which include Load Balancing, Job Scheduling, Many Task Scheduling, Source Allocation, Energy Aware Scheduling and Cost Optimization have been analyzed.

In the optimization of cloud computing scheduling, a Fuzzy based optimization model have emphasized the scheduling reason by evaluating the entire group of task. According to the features of the Cloud optimization, the work discusses various types of scheduling mechanism which meets different user’s requirement in terms of source utilization, cost, time...etc. The investigational outcomes bliss optimization, a better platform to realize the proper load balancing and system resource utilization, effected by current scheduling approaches for various cloud based applications.

The proposed work formulates a sequence, to build a prototype for optimization, in the cloud computing based scheduling environment. Thus in the era of simulation, the proposed model impinges a societal impact for major domain integrations and establishes a clean room for new research tabulations. After this novel attempt it feeds itself with enriched technologies by netting to wide range of researchers worldwide.
This research work confers a strategy of optimizing the resources of a cloud based scheduling system. It will be quite interesting to find out the enhancements of these non toxic approaches to get another way of handling the scheduling related problems. But it is an astonishing fact that in the real world of cloud computing domain, the situation might be different. Such states of affairs are to be addressed because various dynamic changes are possibly bound to facilitate interactions that differ with time zone.

Furthermore, analyzing the uncertainty of scheduling demands will be an interesting work area, which helps incumbent researchers to solve major issues of crucial scheduling in possible alternate ways. In order to broaden these sensitivity analyses, usage of larger and more comprehensive database, including important parameters generated by suitable experimentation and documentation is mandatory. Thus a lot of scope is available for further work to be done in this particular area of engineering.