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A REVIEW ON HYBRID PROCESS PARTITIONING ALGORITHM FOR MOBILE CLOUD COMPUTING

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ABSTRACT

The mobile cloud computing is the evolving branch of mobile and cloud computing which is associated with the task management, application load balancing, online storage of personal data, etc. The proposed model has been designed as the major improvement in the task management or the process offloading in the mobile cloud computing. The proposed model is based upon the earliest finish time combined with cpu time based time analytical function for the process cost evaluation in the given time series. The process cost and communication cost plays the important role in process of task or process offloading. The time cost prediction for the processing cost or the communicaton cost verifies the overhead for the both of the processes and the processes are offloaded only when their communication cost is significantly lesser than the processing cost. The proposed model is expected to solve the problem fo the existing model and to improve the performance of the process partitioning model and offloading.

Index Terms : Process partitioin, Process cost precition, Task offloading, directed acyclic graph (DAG), Heterogeneous earliest finish time (HEFT).

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INTRODUCTION

Mobile cloud computing leverages powerful computing and storage resources in the cloud to provide abundant services in mobile environment conveniently and ubiquitously. The features of MCC include no need of up-front investment, lower operating cost, highly scalable and easy access, etc. However, with the characteristics of user mobility and the wireless access pattern, many obstacles such as mobility management, quality of service (QoS) guarantee, energy management , security and privacy issues are brought to MCC. [3] One of the most critical issues among them is the energy efficiency of mobile devices. Since the battery manufacturing industry moves forward slowly (battery capacity grows by only 5 % annually), but the demand for computing and storage capability is rapidly increasing, providing better user experience with constrained battery power supply has become urgent in recent years. Plenty of research has been proposed during the course of the last 5 years. [8] As one of the most typical services in MCC, location-based services (LBS) which make use of the geographical position of mobile device, have the advantages of both user mobility and cloud resources in MCC. These services gain user's current position via locating, and provide various location-related services. [7]

OFFLOADING

Mobile cloud computing enables mobile devices to augment their resources through computation offloading of a task to resources in a cloud. The computation offloading stems from enabling mobile devices to run heavy applications and saving their resources including battery energy [2], [3], [4]. However, computational offloading of a task involves additional data communication, which may increase the task's completion time and/or energy consumption in transferring task related data. Thus offloading is beneficial if the cost of executing a task on a cloud is less than cost of running the task locally [5], [6]. This proposed approach will helped in (i) reducing the time delay experienced by mobile devices due to resource monitoring of multiple surrogate nodes, and (ii) reducing the communication traffic created from a large number of mobile devices during resource monitoring. In our recent work, we focused on the task scheduling process by using a broker node

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in a large cyber foraging system. The proposed scheduler helped in minimizing the amount of energy consumed across all mobile devices in the cyber foraging system with latency constraints. In this paper, we have modified the task scheduler model proposed in [1] such that it can be applied to mobile cloud computing environments. More precisely, we propose a mathematical model for the centralized task scheduler problem in a mobile cloud computing system. The model minimizes the total energy consumption across all mobile devices of the system.

EXISTING SYSTEM

Xia, Feng et. al. (2014) has developed the Phone2Cloud framework which is used for manipulating computation offloading for energy saving on smartphones in mobile cloud computing. Phone2Cloud offloads computation is an application running on smartphones to the cloud. The objective is to improve energy efficiency of smartphones and at the same time, boost the application's performance through dropping its execution time. In this way, the user's experience can be improved. The authors have implemented the prototype of Phone2Cloud on Android and Hadoop environment. Two sets of experiments, including application experiments and scenario experiments, are conducted to evaluate the system.

Wang, Lian et. al. (2014) has worked on Energy efficiency on location based applications in mobile cloud computing: a survey. Due to the severity of the issue of battery consumption by the location based services in the mobile platforms, the considerable researches have focused on energy-efficient locating sensing mechanism in the last a few years.

Ma, Xiao et. al. (2012) has conducted the survey on Energy efficient location based applications in mobile cloud computing. With the emergence of mobile cloud computing (MCC), an increasingly number of applications and services becomes available on mobile devices. In the meantime, the constrained battery power of mobile devices makes a serious impact on user experience. As one increasingly prevalent type of applications in mobile cloud environments, location based applications (LBAs) present some inherent limitations surrounding energy. For example, the GPS (Global Positioning System) based positioning mechanism is well-known to be extremely power-hungry.

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Nir, Manjinder et. al. (2014) has worked on an energy optimizing scheduler for mobile cloud computing environments. Task scheduling problem has extended for a large number of mobile devices to a mobile cloud computing environment. They optimally resolve the task scheduling problem for task assignment to reduce the total energy consumption across the mobile devices subject to user defined constraints.

Ma, Xiaoqiang et. al. (2013) has worked on the mobile terminals meet the cloud for computation offloading as the bridge. An overview of computation offloading in mobile cloud computing. We identify the key issues in developing new applications that effectively leverage cloud resources for computation-intensive modules, or migrating such modules in existing applications to the mobile cloud. They then analyzed two representative applications in detail from both the macro and micro perspectives, cloud-assisted distributed interactive mobile applications and cloud-assisted motion estimation for mobile video compression, to illustrate the unique challenges, benefit, and implementation of computation offloading in mobile cloud computing.

DRAWBACKS OF PREVAILING SYSTEM

- ✓ The prevailing system is not capable of analyzing the dependency of the processes.
- ✓ The prevailing system does analyze the process cost in the single layered fashion which is based upon the data size and number of cpu instructions, which may produce the fault in the case of dizzy data, where the process takes longer time irrespective of the process cost.
- ✓ The threshold calculation algorithm is also being improved under the proposed model in order to create the highly efficient process partitioning and offloading model.
- ✓ The proposed model is based upon the dynamic cost calculation method which will definitely perform better than the existing model based upon the pre-stored mobile resource information.

PROPOSED IDEA

The proposed model is based upon the combination of heterogeneous earliest finish time and the cpu time evaluation algorithm, which in turn will improve the cost calculation process and will

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make it more efficient in comparison with the existing models. The dynamic offloading decision alogirhtm has been designed to utilize the process cost against the offloading of the directed cyclic graph to the cloud computing platform, which directly affects the performance of the process offloading mechanism. The proposed model dynamic offlaoindg decision algoirhtm will utilize the comparison between the directed acyclic graphs of different process trees against their individual or combined cost. The process dependency would be analyzed by summarizing the output and input pointer position of each function. The dependent functions or processes in the process queue would be grouped and aligned together to facilitate the continuous process and to minimize the process lag or wait time. The proposed model is expected to resolve the problem of performance lag due to the unmanaged process hierarchy will be solved priority.

ADVANTAGES OF PROPOSED SYSTEM

- It is more efficient and accurate in terms of cost computation.
- It makes mobile cloud computing platform flexible and more robust.
- The proposed model can be used with other innovative methods which consumes less energy than the esisting ones.

CONCLUSION

The proposed model has been designed for the purpose of process partitioning in the mobile cloud computing platforms. The proposed model is designed on the basis of heterogeneous earliest finish time along with the cheapest algorithm for the process management and process offloading. From the propseod model desinge, we conclude that by using this we can improve the accuracy in the process of cost computation. Also the proposed model can be combined with other innovative methods, which consumes less energy than the existing ones. By using this system the processing cost will become efficient and more secure due to which the energy can be saved. The proposed model performance would be obtained in the form of process partitioning accuracy, execution time, communication cost and other appropriate parameters, The proposed model is expected to solve the

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problems of the exiting models as well as will improve the performance of the prevailing model.

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