

**CHENNAI – PONDICHERRY**

**Mobile Cloud Performance Evaluation using Stochastic Models**

**Abstract:**

Mobile Cloud Computing (MCC) helps increasing performance of intensive mobile applications by offloading heavy tasks to cloud computing infrastructures. The first step in this procedure is partitioning the application into small tasks and identifying those that are better suited for offloading. The method call partitioning strategy splits the code into a set of method calls that are offloaded to remote servers. Quite often, many applications need to make use of multiple servers for parallel processing of intensive computational operations. Predicting the behavior of such parallelizable applications is not an easy task. Deciding the number of remote servers determines the performance of the applications and the costs of the cloud usage. On one hand, users are interested in improving the performance of their applications, so they would like to use as many servers as possible, but on the other hand, they would also like to reduce their costs by using fewer cloud resources. In this paper, we propose a Stochastic Petri Net (SPN) modeling strategy to represent method call executions of mobile cloud systems. This approach enables a designer to plan and optimize MCC environments in which SPNs represent the system behavior and estimate the execution time of parallelizable applications.

**Existing System:**

Many applications that benefit from using the cloud have real-time constraints. These constraints become hard to meet expectations, mainly considering sophisticated cloud infrastructures.

Manufacturers keep increasing these devices capacity by integrating multiple CPU cores, high quality cameras graphic processing units, and all-purpose sensors. Nevertheless, such advances escalate applications’ complexity at a fast pace. Mobile Cloud Computing (MCC) aims at offloading resource demanding operations from resource– constrained devices to powerful machines on the cloud. By applying such an approach, applications’ executions can benefit from extra resources.

**Proposed System:**

We design and implement an SPN modeling approach which enables to predict the system behavior in terms of execution time by calculating three statistics: (i) estimated application’s execution time based on the number of remote server instances; (ii) the number of method calls per time unit; and (iii) the probability of finishing the application execution by a specific time. \_ Using the same SPN modeling approach, we can represent the MCC infrastructure and the application. \_ An SPN modeling approach which represents the distribution of tasks enabling to predict the number of needed target resources. \_ We build MCC-Adviser, a graphical tool that generates and solves SPNs based on the proposed model. The tool can be used by an application developer or by a company willing to plan and design an MCC environment.