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Secured way of Offloading Mobile Cloud Process for Smart Phone

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Abstract - *Nowadays Smartphone have become popular among people since they are running more number of applications at the same time which helps the user do things quicker and easier. Few computation intensive task applications cannot be run on smartphone due to the availability of limited resources like storage space, network speed and processor performance. We have addressed this problem to implement the task offloading system for smartphone so as to increase the efficiency of its energy level and time. This mechanism determines portion of applications that can be offloaded for remote execution. The TDM (Ternary Decision Framework) framework is used to take the correct decisions of choosing the appropriate device (i.e. smart phone or cloud process) for performing the offloading process. This results in reducing the computation power of using our applications in mobile cloud rather in smart phone. In addition to that it also provides security for offloading data in mobile cloud.*

Key Words: *Smart phone*, *Android App*, *offloading*, *Security*, *AES*, *TDM*, *Mobile Cloud*

1. INTRODUCTION

In human life mobile device become essential part "information at your fingertips anywhere at any time". When compared to conventional information processing device these mobile device are lack in resourse.in our daily life, mobile device have become a common entity. The applications and features of smartphones are increasing day by day our life. Because of the usage of the smart phone is very high. this mobile device providing with many more exiting applications like speech recognition, image processor, video processor, online games. These are the applications which require a large computing power, memory, network bandwidth, resource constraints. Battery power is drained due to more number of applications. The mobile devices still suffer from battery life time. The new applications could be very resource exhaustive and the phone have a limited memory, computational power and battery life, people are replacing their laptops and personal computers with these smartphones thus the demand for processing and memory is increasing. The mobile battery as their power source which has a limited capacity as compared to play in devise like personal computers. The smart phones are not able to perform compute intensive task which our laptop or desktop could perform. The solutions to these problems implement the concept of offloading. The task should be transforming to the external devise. In this paper to use the mobile cloud computing. The task should be transferring mobile to the cloud. The mobile cloud computing is the solution for resource limitation of the mobile device. The compute intensive tasks are offloaded to the cloud. These tasks are processed in the cloud and then result is given back to the mobile devices. Cloud computing on the other hand provides computing resource as a service through internet.

1.1 Mobile Cloud Computing

Mobile cloud computing is the combination of cloud computing and mobile computing. The mobile cloud is the internet based data, applications and related services accessed through the smartphone (laptop, tablet). Mobile cloud computing is differentiated from mobile computing because the mobile devices run cloud based web app rather than native app. Users subscribe to cloud services and access remotely stored applications and their data over the internet.

1.2 EXISTING SYSTEM

Smartphones have constraints, limited battery energy, processing capability, and memory capacity. However, the limited battery energy constraint has not been reasonably addressed. Task offloading is a hopeful technique to reduce energy consumption in smartphones with the emergence of high speed broadband wireless Internet access. Ex: A smartphones can upload a video file to the cloud and then request to encode the file into a desired format right the smartphone capability with less energy consumption than doing the encoding on the device itself. We introduce models to estimate the energy exhausted in a smartphone to

perform task offloading file downloading using WLAN and 3G/4G network interfaces file uploading using WLAN and 3G/4G network interfaces. We developed models so that provide an exact estimation to the total energy consumed for task offloading by only taking the amount of data that the smartphone would transfer for task offloading as an input. In these experiments, we measure the actual energy consumed in the smartphones for each of the network activities.

1.3Disadvantage of Existing System

- The main difficult which is identified in the earlier Architectures is that offloading a compute intensive Application partially can improve the battery life of Smartphone.
- When a few numbers of applications are actually required to be offloaded.
- security does not provide the uploading data in transferring of smartphone to the cloud.
- More extensive data transferring the problem of power efficiency as well in the wireless network communication network.
- Low performane.

2. PROPOSED FRAMEWORK

In this proposed article, we are creating an application in the smart phone to upload the data into the cloud and hence the TDM technique (Ternary Decision Making) is used to calculate the execution time and energy consumption of a module. This TDM can only decide whether the task is offloading or not and then performing a task to calculating the energy level in smartphone. The AES technique is used for security purpose. Security is provided for the uploading files on the cloud. The data is encrypted before transmitting the data over the internet. Only the Authenticated users can access the data in the cloud. Developing models so that provide an exact estimation to the total energy consumed for task offloading by only taking the amount of data that the smartphone would transfer for task offloading as an input. In this paper, we measure the actual energy consumed in the smartphones for each of the network activities.

2.1 SYSTEM MODEL

System consists of two main elements smartphones and Cloud Computing both are linked to the Internet. The smartphones are connected to the Internet through a WLAN access point or cellular data network to base station (3G/4G). This smartphones provide computing functionality to the users via special applications. On the other side, Cloud Computing part consists of cloud data center and cloud provider, which are available through the Internet.

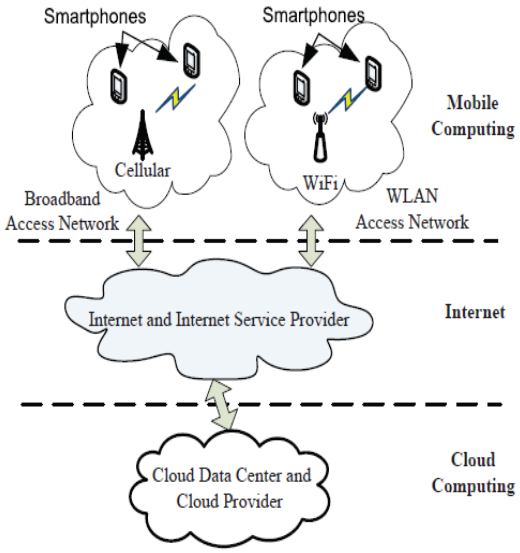

Fig-1: System Model

Step1: The users register the application where each user Login with a specific User-ID and password. The application allows the users to access the cloud.
Step2: If the files are uploaded then it is stored in the cloud.
Step3: If the file needs to be downloaded from the cloud, then the user sends the request to the application which in turn sends the request to the cloud.
Step4: If the requested file exists in the cloud, it sends the file to the phone as per the request of user.
Step5: The user can then view the saved battery status and Mobile data or Wi-Fi
Step6: User's data can be encrypted over the internet.

1. Time and energy aware
2. Register page
3. View files
4. Current directory
5. Upload screen
6. View connection details

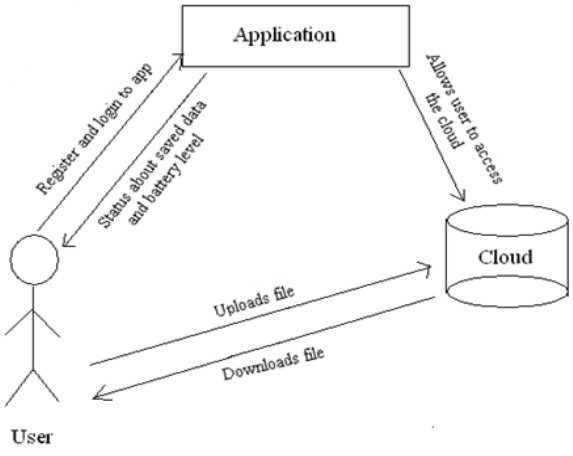

Fig-2: Task Offloading Procedure

2.2 OVERALL ARCHITECTURE

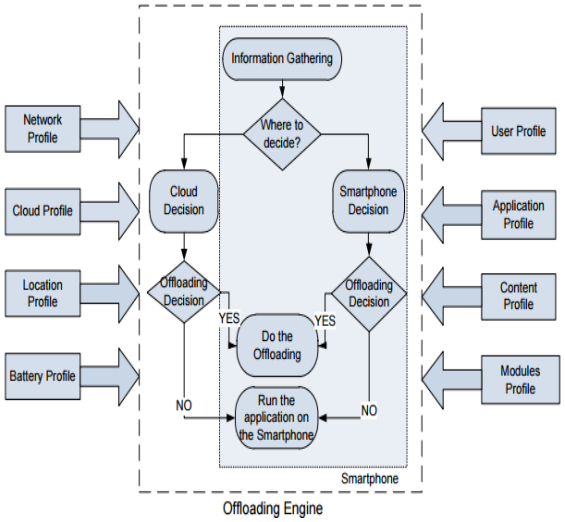

Fig-3: Offloading Process

2.3 Offloading

The first introduction to the offloading concept was in early at 1970s for load balancing between servers of a cluster. Offloading in general is defined as the process that is used to improve the performance, quality, or efficiency of a Computation task by assigning this task completely or Partially to a remote computing machine that is usually has a powerful computation capability more than the local machine. The task should be transform to the external platform. The offloading has been proposed for few many purposes such as load balancing, improve the performance, and save energy. The offloading to a cloud provides its ubiquitous computation resources, such as processing and storage, to a mobile device. The computation capability can be in one or more of computation forms such as processing, memory, storage, execution time, and energy consumption.

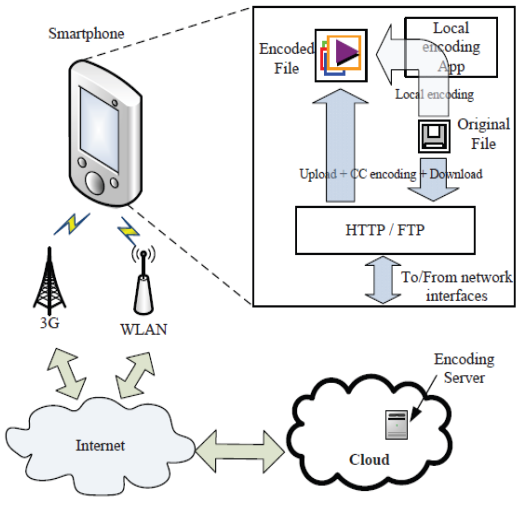

Fig 4: Task performing on the smartphone

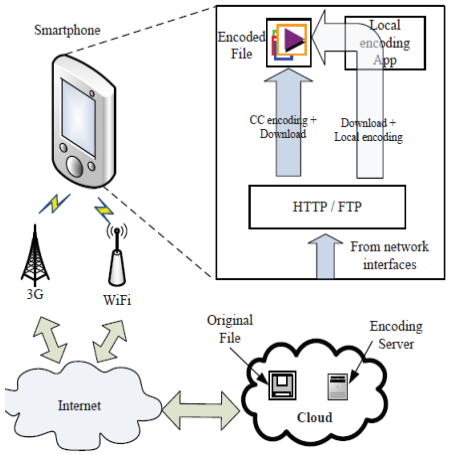

Fig5: Task performing on the cloud

2.4 AES Technique

Encryption is of primary importance when private data is transmitted over the network. The most widely accepted algorithm is AES algorithm. We have to developed application on Android platform which allows the user to encrypt the data before it is transmitted over the network. We have used the Advanced Encryption Standards algorithm for encryption and decryption of the data. This application provides a secure, fast, and strong encryption of the data. The data transfer mobile to the cloud encrypting data. This AES perform consistency well in both hardware and software.

2.5 ADVANTAGE OF PROPOSED SYSTEM

- Ternary decision is suitable for multiple offloading targets.
- To save both execution time and energy consumption at the same time.
- To providing security to the user attributes.
- To be used for in heterogeneous application.
- Security, privacy and trust related models in the proposed system.

3. DESIGN OF IMPLEMENTATION

In this paper we are using the three modules:
1. Registration Process
2. Upload data in cloud
3. Download data from the cloud

3.1 Registration process

Step1: This procedure describes the login method
Step2: The first page application page in which we can login to any existing account or register to a new account.
Step3: Login the username and password.
Step4: The list of files is displayed which are already in the Cloud

3.2 Upload data in cloud

Step1: Go to menu and click on upload option.
Step2: records to be uploaded are displayed.
Step3: uploading data to be processed on the cloud.

3.3 download file from the cloud

View and Download Procedure This procedure describes the methodology adopted to view and download applications which is given in detail below
Step 1: Files already available in the cloud are displayed.
Step 2: Click on the download button next to the file, so that The user can able to download the file.
Step 4: The file download after estimating the battery level in smartphone.

4. SCREENSHOTS

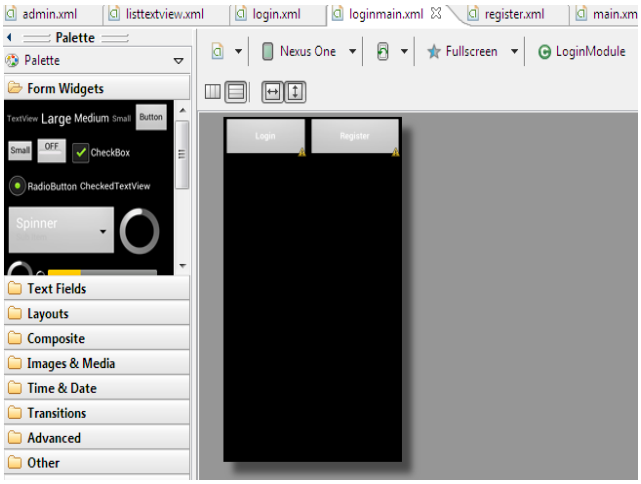

Fig-6: Login Page

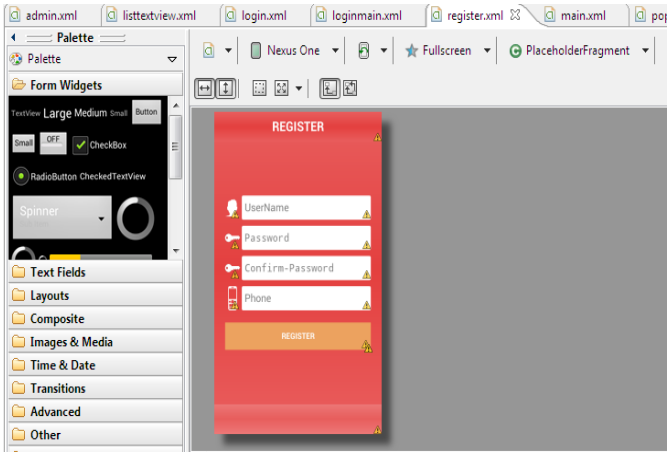

Fig-7: Register Details

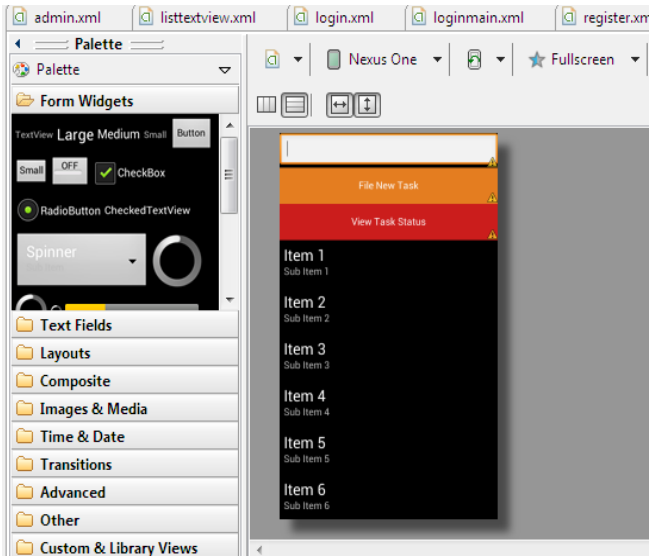

Fig -8: Uploading Data

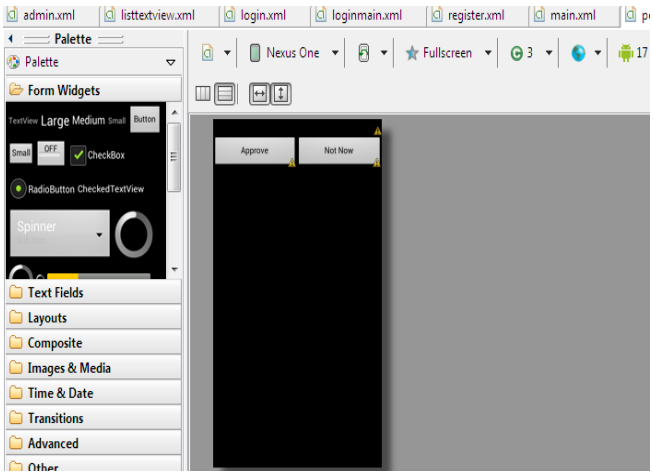

Fig- 9: Task Offloading

5. CONCLUSION

In this paper, we have to design and implement a decision framework for computation offloading. The decision is based on estimated execution time and energy consumption. Which consider only our ternary decision is suitable for multiple offloading targets. Framework, the matrix multiplication modules have a tendency to be offloaded to more powerful processors, such as local GPU or cloud. By offloading these modules we achieve at most 75% savings in execution time and 56% in battery usage. The proposed work has shown considerable amount reduction of both time and energy consumption. This results exhibit that the energy saving in batteries is possible as a result of closing down of applications used for execution.

6. FUTURE WORK

Further it can be extended to different wireless technology. On-going research is the development of a

framework that targets the Fog computing orientation for allowing computation intensive and interactive applications to be efficiently manipulated using a social model. With the assistance of Fog-passive devices (i.e. set-top-boxes, passive home appliances etc.) and by using a reflective Software Define Network (SDN) middleware, available resources will be reactively manipulated on each device within a Virtual Vicinity (VV).

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