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The Implementation Paper on " Cloud Based Optimal Energy Management For Handheld Devices"

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ABSTRACT

While using mobile application,the improving anumber of portable purposes, minimizing the energy utilization of mobile phones is a important problem in keeping video streaming purposes. That paper explores how you can minimize the energy utilization of the particular backlight any time presenting any online video supply without in a harmful way affecting the particular user's aesthetic experience. Very first, we all design the issue as a energetic backlight scaling optimization difficulty. And then, we all recommend algorithms to fix the primary difficulty in addition to prove the particular optimality with regards to electricity cost savings. Finally, based on the algorithms, we all found any cloud-based energy-saving assistance. We have likewise produced any prototype implementation integrated together with present online video streaming purposes to be able to verify the particular practicability with the approach. The effects regarding findings executed to gauge the particular effectiveness with the offered approach are extremely stimulating in addition to present electricity cost savings regarding 15-49 per cent about business mobile phones

Keywords— Energy-efficient optimization, dynamicbacklight scaling, multimedia streaming applications, mobile devices

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I. INTRODUCTION

Mobile consumer-electronics devices, especially phones, are powered from batteries which are limited in size and therefore capacity. This implies that managing energy well is paramount in such devices. Mobile devices derive the energy required for their operation from batteries. In the case of many consumer-electronics devices, especially mobile phones, battery capacity
devices is very important to their usability. Hence, optimal management of power consumption of these devices is critical. Modern high-end mobile phones combine the functionality of a pocket-sized communication device with PC-like capabilities, resulting in what are generally referred to as Smartphone. These integrate such diverse functionality as voice communication, audio and video playback, web browsing, short-message and email communication, media downloads, gaming and more. The rich functionality increases the pressure on battery lifetime, and deepens the need for effective energy management.

II. OVERVIEW

Advances in information and communications technology have added the popularity of mobile devices. This in turn is motivating the lifestyle of a growing number of mobile applications and services, which are having a profound effect on people's lifestyles. However, reducing the energy rate of mobile devices that utilize the applications and services is a major challenge. In different decades, researchers have been exploring various low-power system designs by targeting diverse energy comprehensive components, as lightly as power management policies from various perspectives. Recent studies on mobile user activity intended that the backlight used to illuminate the disclose subsystem consumes most of the energy; herewith, it should receive the closely attention with respect to improving energy efficiency Furthermore, mobile users nowadays are becoming increasingly addicted to multimedia streaming applications, such as YouTube, and the ability to disseminate videos using social network communities like Facebook .

Such usage manner will keep to a consistent increase in the energy disbursement of mobile devices, especially with the strong demand for larger, higher-resolution screens. This comment motivates us to penetrate how to reduce the backlight's energy consumption when browsing multimedia streaming applications on mobile devices. The show subsystem needs to quit in active mode for as long as the video stream is displayed; thus, a factual way to minimize the energy consumption is to dim the backlight. However, this may lead to image distortion, which is normally marked as the relationship between the original video image and the backlight-scaled image.

III.LITERATURE SURVEY

The following points had been found from various literatures.

Energy Efficient optimization

Privacy is an enormous problem in online social networking sites. While sites such as Facebook allow users fine-grained control over who can see their profiles,it is difficult for average users to specify this kind of detailed policy. We propose a template for the design of a social networking privacy wizard.[1]

To build a machine learning model that concisely describes a particular users preferences, and then use this model to configure the users privacy settings automatically.[2]

Offloading Policy

This article investigate energy-efficient offloading policy for transcoding as a service (TaaS) in a generic mobile cloud system. Computation on mobile devices can be offloaded to a mobile cloud system that consists of a dispatcher at the front end and a set of service engines at the back end.[2]

The proposed offloading policy can reduce energy consumption on both mobile devices and the cloud jointly ,which provides guidelines for the design of green mobile cloud.[3]

Scalable Video Multicasting and Energy Consumption

The resource allocation problem for scalable video multicast with adaptive modulation and coding in 4G wireless systems. The objective is to minimize the total energy consumption of all mobile devices for reception, provided the video quality required by all the users is satisfied.[3]

It presents an approach that minimizes the energy consumption incurred by the backlight when users access multimedia streaming on mobile devices.[4]

This proposes a power saving mechanism for embedded system and multimedia streaming service design based on digital signal processor. It simultaneously achieves two main functions: a high-quality multimedia service in cloud computing ,and a power saving control mechanism for extending the lifetime of hand-held devices used on multimedia streaming server applications.[5]

IV.PROPOSED SYSTEM ARCHITECTURE

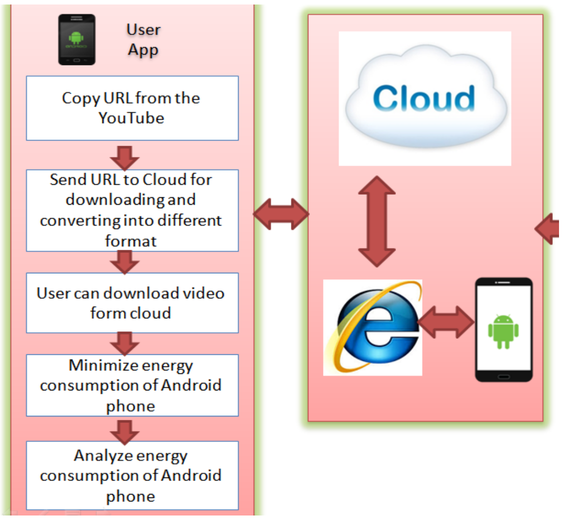

Fig-Proposed System Architecture

The system consist of a mobile device. In a system the user has to give the URL of video that can be downloaded. These URL can be download by the cloud service and the format of video can be decided by the user. Then user can download the video from cloud at any time. The video is stored in cloud in a compressed format. From these proposed system the limitations can be overcome.

V. ALGORITHEM

Backlight optimization algorithm-

we propose an optimal algorithm to solve arestricted version of the dynamic backlight scaling problem. In the version, we consider only the distortion and differential constraints, and set the duration parameter d at 1. The algorithm will demonstrate the basic idea used to deal with the differential constraint when we solve the general version in a subsequent section.

Let **X** and **Y** two NxM arrays representing the (Y) luminance channel of the frames to evaluate; **X** represents the reference copy, while **Y** the lossy/distorted sample. Let **x** and **y** their monodimensional versions, obtained by merging together the columns (or the rows) of the bidimensional arrays. This is a useful step in order to eliminate a summation in formulas and to write a cleaner code in numerical softwares, but doesn't affect the generality of this treatment. Let N = NxM for simplicity. So, the first step is to measure the luminance of **x** and **y**, which is understood as the the average of their values, here respectively indicated as $\boldsymbol{\mu_x}$ and $\boldsymbol{\mu_y}$:

1. $\mu_x = 1/N\sum_{i=0}^{N-1} x_i$
2. $\mu_y = 1/N\sum_{i=0}^{N-1} y_i$

3. SSIM (x , y) = $[\, l(x,y)\,]^{\alpha} \,.\, [\, c(x,y)\,]^{\beta} \,.\, [\, s(x,y)\,]^{\gamma}$

4. $SSIM(x, y) = (2\mu_x \mu_y + c1)(2\sigma_{xy} + C_1) / (\mu^2_x + \mu^2_y + c_1)(\sigma^2_x + \sigma^2_y + C_1)$

5. $SSIM(x, y) = 1/M \sum_{j=1}^{M} SSIMj(x, y)$

VI. COMPARATIVE ANALYSIS

The Comparative analysis can be done in the two different ways –

MICROMAX CANVAS SPARKMICROMAX CANVAS NITRO

In first case , if the same video can be downloaded from two different mobile devices with different battery capacity.In this case , if same video can be downloaded on above two phones then battery optimization is different as their battery capacity is different.
In Micromax canvas nitro 311, the approximately 26% of battery can be optimized.
In micromax canvas spark , the approximately 23% of battery is optimized.

Calculations –

Micromax canvas nitro – The average brightness is taken into consideration.The average brightness is calculated by taking the readings after every 5seconds.The average brightness of nitro is 189.The total battery consumption is (brightness is full ie 255.) Is =(189/255) =0.7417
Therefore to calculate percentage of consumed battery is (0.74 * 100) =74 %
Therefore battery consumed is 100-74 ie. 26%.

Micromax canvas spark – The average brightness is taken into consideration.The average brightness is calculated by taking the readings after every 5seconds.The average brightness of nitro is 197.The total battery consumption is (brightness is full ie 255.) is - = (197/255) =0.77
Therefore to calculate percentage of consumed battery is (0.77 * 100) =77 %
Therefore battery consumed is 100-77 ie. 23%.

VII. RESULT ANALYSIS

The result can be obtained by comparing two devices.
The result can be shown by following graph.

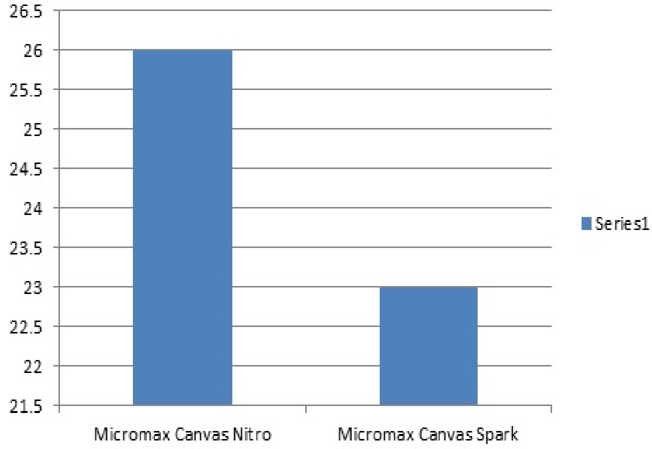

Fig-Result Analysis By Graph

VIII. CONCLUSION REMARK

This paper proposes an approach that minimizes the energy consumption incurred by the backlight when users accessmultimedia streaming on mobile devices. Specifically, the approach exploits backlight scaling and models a fundamental optimization problem with scaling constraints.

IX. ACKNOWLEDGMENT

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REFERENCES

[1]"Dynamic Backlight Scaling Optimization: A Cloud-Based Energy-Saving Service for Mobile Streaming Applications",Chun-Han Lin, Member, IEEE, Pi-Cheng Hsiu, Member, IEEE, and Cheng-Kang Hsieh, Student Member, IEEE,feb,2014.

2]"Power-Aware Scalable Video Multicast in 4G Wireless Systems" Ya-Ju Yu , Pi-Cheng Hsiu , Ai-Chun Pang and Chi-Ping Lai {acpang,d93944005}@csie.ntu.edu.tw,2010.

[3] "Toward Transcoding as a Service: Energy-Efficient Offloading Policy for Green Mobile Cloud",Weiwen Zhang, Yonggang Wen, and Hsiao-Hwa Chen,2014.

[4]"Dynamic Backlight Scaling Optimization for Mobile Streaming Applications",Pi-Cheng Hsiu, Chun-Han Lin, and Cheng-Kang Hsieh Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan 115.

[5]"A Power saving mechanism for Multimedia streaming services in cloud computing"Yi-Wei Ma , Jiann-liang

Chen , Ching-Hesign Chou , Shyue-kung Lu,2014.

[6] T. Acharya and A.K. Ray, Image Processing: Principles and Applications. John Wiley & Sons, 2007..

7] "Toward Transcoding as a Service: Energy-Efficient Offloading Policy for Green Mobile Cloud",Weiwen Zhang, Yonggang Wen, and Hsiao-Hwa Chen,2014.

