Grass Covered Computing and its challenges towards environment

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Abstract

Grass Covered computing is the practices and procedures to analyze, designing, manufacturing, using of computing resources in an environment friendly way while maintaining overall computing performance and finally disposing in a way that reduces their environmental impact. Usage of risky materials and maximizing output from the product during its lifetime while minimizing energy consumption and also reusability or recyclability and biodegradability of used products and wastes. Number of organizations is taking initiatives to reduce the harmful impact of their operations on the environment. Economic development means developing new things without damaging the requirements of the generations that is following. In order to meet human development goals while preserving natural resources and ecosystems on which the society depends. This writing emphasizes the importance of grass covered *computing for sustainable and economic development and its challenges.*

Keywords: Grass Covered Computing, Challenges, Environment, Survey, Information Technology

I.   INTRODUCTION

A brief discussion is made on various problems and challenges related to green computing.

Computing aims to minimize the impact of carbon emissions on the environment. The study and practice of designing, manufacturing, using, and Reducing the hardware needs of power and cooling systems are the goals that enhanced research and development of green computing trying to achieve. Nowadays, not only the companies have an increased awareness of green technologies, but consumers have also gained more awareness in the last decade. Considerably, this has increased demand for environmentally friendly products.

Disposing of computers, associated accessories .The Grass covered Computing started during the year efficiently and effectively with slight or no impact on the environment.

In information Technology Systems, Grass covered Computing plays a vital. It presents problems to system

designers. The designers need to find solutions to reduce the energy consumption during the system design. Designing cheap and low-power-consumption systems are important challenges to designers because green computing involves all aspects of IT systems. In today's competitive world, low operational expenses of goods and materials rules in huge for the business advantage. 1991 with the title "Green Light" by Environmental Protection Agency (EPA). Slowly in 1992, the "Energy Star" program followed the same concept. These programs were based on energy efficiency specifications. Although the concept of green computing has been there for a long time, it is only in the last decade that the world has witnessed the speedy growth of this concept. The main key drivers for the research to develop this concept are the growth of cloud computing and the amount of energy consumption that led to the increase of the carbon footprint on the environment.

II. Grass covered computing

Grass covered computing is the practice of using computing resources efficiently. It is also defined as the study of designing, manufacturing/engineering, using and disposing of computing devices in a way that reduces their environmental impact. The goal of green computing is to manage the power and energy efficiency, choice of eco-friendly hardware and software, and recycling the material to increase the product's life. Go for green computer reduce your electricity bill and the use of hazardous materials, maximize the energy efficiency during product's lifetime. Nowadays, we use the star management strategies and technologies that reduce energy consumption waste.

III. Need of User Friendly Computing

Nowadays Green computing is very popular. By using the computer, we save our lot of time and efforts of humans. But the use of computers, the power consumption increases and also generates the more amount of heat. Great heat generation means greater emission of Carbon- di- oxide (Co_2).

Causes for Grass covered computing:-

- **More usage of electricity: -** Basically, an average PC consumes half the energy which not only results in additional electricity bill but also the wasted electricity contributes to global warming. In order to overcome this, use power management feature of a computer or buy energy efficient systems. This reduces the impact of computers on the environment.

- **Creates more noxious waste: -** The rapid expansion of technology and the consumption driven society results in the creation of a very large amount of e-waste in every minute. This lead to adverse human health effects and environmental pollution. For this reason, we have to use Green Computing.

IV.   SURVEY:

The areas where research in green computing is being carried out: Energy Consumption, e- waste Recycling, Data Center Consolidation and Optimization, IT products.

The studay on Grass coverred Computing exploring the development of efficient computer programs using all the available cores of a CPU resulting in faster execution as compared to any single-core implementation of the program which further results in energy savings, as said by Sharma, Manoj Kumar. The study also pointed out that when number of computation is more the multi core approach showed superior performance else the performance is inferior as compared to the single-core computation.

An analysis of the current computing initiatives provided by Mesaad et al. and an overall comparison between them to show their efficiency. HP program is the greenest computing waste-management initiatives from the point of e-waste management. Considering Energy consumption, the Energy Star and EPEAT initiatives happen to be the most successful program based on the latest energy savings statistics and their users trusted labeling.

Shaikh et al. discussed about green Internet of Things by exploring ways of successful and efficient deployment of various enabling technologies like the Internet, smart object and sensors to name a few. They have also made a review on various IoT applications, projects and standardization efforts going on at present along with identification of few challenges that has to be addressed in the near future to successfully enable a green IoT. Proposal by Lin et al. a new green video transmission (GVT) algorithm using video clustering and channel assignment that will help in video transmission. Design is also made of a video clustering model based on the basis of game theory for grouping the different video parts stored in mobile devices.

The simulation demonstrates a superior video transmission performance by the proposed GTV algorithm.

A scheduling algorithm proposed by Sofia et al. called Grass Task Scheduling (GTS) Algorithm to lower the use of cloud resources. A decrease in cost of hardware is also an advantage of this algorithm. In order to manage the voltage as well as the frequency of the processor without impairing the performance, a technique called as Dynamic Voltage Frequency Scaling (DVFS) is used. Favorable results are obtained by implementing GTS along with DVFS in cloud computing environment.

Discussions about the developments and challenges were made by AlMusbahi et al. of green computing. Kern. Biswajit have made analysis about various issues related to green computing like the relation between environment and information technology, green information technology advantages, adoption of green computing, eco- friendly practices, green computer design, green information technology standards and regulations and about industry associations.

V.   GRASS COVERED COMPUTING CHALLENGES

Current world, computers consume a great portion of the world's available energy. Moreover, computing

needs to growing faster, therefore this extravagant practice of using computing technology is considered as the major challenge faced in the field. For that, green computing should focus on reducing the IT infrastructure and equipment associated costs as natural resources are being consumed greatly. While the focus was concentrated on the services of infrastructure and computing efficiency. This shift considers a super challenge for the Information technology (IT) industry. Also, the researchers in the green computing were determined some of the challenges that Grass Computing is facing today which are as following:

- *Return of Investment:* It is difficult to convince companies and their collaborators to invest in eco-friendly computing. The issue behind is that they need an immediate impact, but it takes a significant amount of time to reveal real benefits and changes. This is one of the difficult in green computing.

- *Disposal of Electronic Wastes:* The major problem in today's world is disposal of e- waste. It could be better if there is a change of materials used in the manufacturing of computers and chips which are more dangerous to environment and hard to dispose as well.

- *Power Consuming:* Experts are trying to find an efficient IC chips that should provide more performance without consuming too much power. For this, highly skilled engineers are required. This is not a simple process; it takes a significant amount of time and huge effort as well, to reach the goal.

- *Increase in energy requirements:* People prefer high processors to achieve this task. However, these requirements need sufficiently greater amount of power with the green computers with the same specifications. For example, Apple's power range of computers including their iMacs that is extremely green.

VI.   CONCLUSION:

The researchers and various organizations have worked and undergoing a lot of effort to achieve eco-friendly technologies. The stake holders must work jointly for a greener world and overcome all the challenges else, the human race will face severe problems in the years to follow. There are as such no limitations of this survey but in future it is expected that there will be lot of research related to grass covered computing. Despite the challenges, computing industry witnessed an improvement in energy efficiency.

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