

Green and Environmental Friendly Domain and Discipline: Emerging Trends and Future Possibilities

Prantosh Kumar Paul¹, Kalyan Kumar,² D. Chatterjee,³
M. Ghosh,⁴ J. Ganguly⁵ and K.L. Dangwal⁶

^{1,4,5} FBAS, Indian Institute of Engineering Science and Technology [IIST], Shibpur- An Institute of National Importance, Howrah West Bengal, India.

² Vice Chancellor, Vinayaka Missions Sikkim University, Gangtok, Sikkim, India.

³ Institute of Engineering and Management, Saltlake, Kolkata, WB.

⁶ Department of Education, Lucknow University, UP, India.

Corresponding author: Prantosh Kumar Paul; prantoshkumar@gmail.com

ABSTRACT

Green Science and Technology is one of the important agenda for building eco friendly institutions, organization and Governance system. Today many domain are dealing with Green and environmental aspects for better and healthy sustainability. Among so many knowledge domain Green Computing, Green Information Technology, Green Business gain popularity. These domains are mainly responsible for the design and development of system and mechanism which may be manual or computational dedicated to Green and Eco Friendly environment creation. Many organization and institutions are engaged healthy strategy and policy towards building of Environmental health system and computing platform and to bring complete sustainability. This paper is about Green Science and Technology; their basic feature and importance. Paper is also illustrated future possibilities as academic programme on these domains.

Keywords: Environmental Science, Green Computing, Trends, IT, Information System, Green Technology, Sustainability, Social Development, Green Information Infrastructure, Science and Technology

Green Technology and Computing is mainly responsible for designing and development of information system and technological infrastructure which is responsible for sustainable infrastructure creation [04, 06, 12]. Electronic gadgets and tools are also responsible for sustainable infrastructure creation of harmful

environment many ways and hence adopting Green principle and technologies can lead s society which better for human being many ways. Electronic gadgets and weapon are responsible for the increasing temperature world wide and which is indirectly increase the sea level, by the melting of glacier, drought and increasing of the temperature of the earth. Hence apart from technologist and scientist, academics are engaged in the research and development activities for the promotion of sustainable tools, techniques and technologies for better world or more clearly future [06, 12, 18].

Objective

The main aim and objective of this study is includes but not limited to as follows—

- (1) To know basic Green Computing and Technologies including feature and facets;
- (2) To learn about the Green Computing and allied technologies and domain responsible for the Eco Friendly environment and culture;
- (3) To know about the Green and Eco Friendly subject and domain towards information system building;

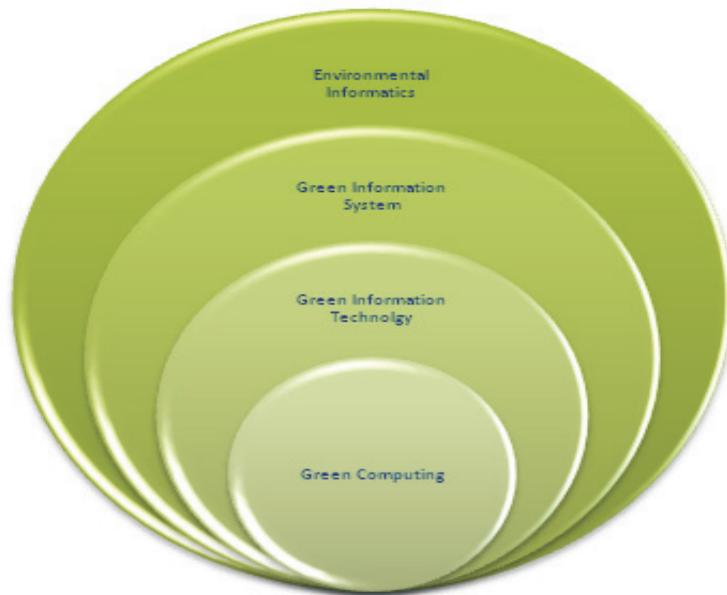


Figure 1: Showing the domain and disciplines related to Green and Environmental Technology-
From small to large periphery

- (4) To learn about the current educational programme in the field of Green Science and Technology;
- (5) To know basic about the feature potentiality of educational aspects in relation to computing and technologies.

Green and Eco Friendly subject and domain towards Information System building:-

Green Technologies are mainly responsible for the improved environment and society. The world is changing rapidly and increasing very much quickly; many electronic goods and equipments are responsible for the global warming many ways; as these are releases carbon and CFC type of gases; which are very harmful for the environment. Electronic gadgets such as computer, networking, system, web tools, air conditioning system, medicine and transportation system are rapidly using in most of the organization and institutes, Governmental purposes and enterprises and so on [05, 16, 22]. Hence these are harmful for us many ways. These products are builds by the harmful chemical [such as lead] and so on and thus bad for the society. As far as power is concerned, technologies and computing devices are depended on power and most of the devices are depend on power and most of the devices are power consuming. So, organization and institutions are facing another challenge i.e. power. Releasing harmful chemical and increasing temperature and concerned environment is another problem as most of the devices releases CO₂ and indirectly some other gases such as NO₂, Fluorocarbon CCl₄ and more clearly CFC.

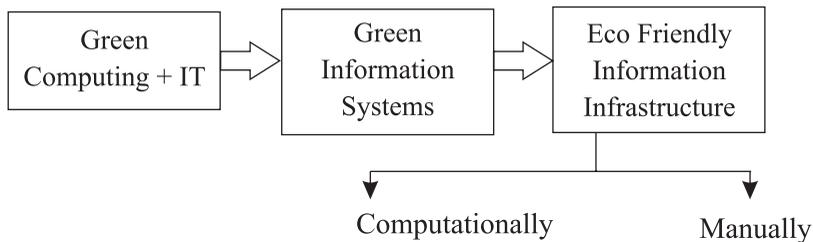


Figure 2. showing Green Computing and possible application in Information System

Today academicians are working for building eco friendly and Green environment powered by the Green Technologies and Computing for the following reason—

- (a) It may be helpful to reduce the amount of pollution in air or surrounding i.e. building of concerned office;
- (b) It is helpful as this kind of technologies saves the power consumption and decreases the amount of heat which is practically evolved the products [23, 25];
- (c) In paper and manual documentation industry too, power consumption is an important issue; so that managing electronic way with eco friendliness dealing may solve these problems;
- (d) Such domains are helpful as such technologies are helpful in effective utilization of natural resources and also renewal resources are encouraged to use again [26].

Hence, academically universities and institutions are designed and developed some domains which are very much helpful for keeping and designing healthy information and computing infrastructure power by Energy consumed tools.

Green Computing is an important and valuable computing platform which is mainly responsible for the design of computing products which are energy consumed, less carbon emission based and less harmful for the direct uses and society. Green Computing is purely engaged in the academic and professional research for designing and development of computing devices which are efficient to use and releases very general gas. Green Computing is also practiced for development of algorithm and other systems which are eco friendly and prepare with sustainable tool or chemical. We can implement Green Computing in computer field as CPU server and other peripheral devices. Many ways Green computing is promotes resource consumption and disposal of electronic waste [27, 29].

- ✓ Keep power off machine, when not needed
- ✓ Use power consumption principle
- ✓ Designing product according to Green Algorithm
- ✓ Minimizing use of toxic and other harmful material
- ✓ Use of Wireless system, laptop, solid state system and so on

Figure 3: Important and key requirement of building Green Information Systems

Green Information Technology or Green IT is very much close with Green Computing but it is mainly bigger domain and includes wider areas of data base technologies, web technologies, communication technology. Hence simply Green Information Technology is responsible for designing of Green IT products which including Database, Communication and Networking System with green agenda for minimum resource utilization, sharing of resources and consumption and also for building and implementing product for less pollution by releasing less CO₂, CFC and other gases [14, 21].

Green Information System is another and important domain responsible for eco friendly information system building compared with Green IT tools. Green Information System is mainly deals with the policy and strategic management which is for eco friendly information system creation.

Current Educational Trends and Future Possibilities

There is a growing trend towards launching of Green and Eco friendly Information Technology infrastructure enable educational programme around the world. As Watson [2010] reported, apart from in Information Technology and Computing programme, many universities and colleges started Green Computing and technological degree in Business and Management studies. And hence the scope to offer Green Computing and Technologies are extended enough [11, 17]. There is a huge possibilities to offer Green related study with following nomenclature—

- ✓ BSc-Green Computing/ IT
- ✓ MSc- Green Computing/ IT
- ✓ BTech- Green Computing/ IT
- ✓ MTech- Green Computing/ IT

Or programme may be offered as specialization with other related Degree and may be nomenclature as—

- ✓ **BCA** [Green Computing/ IT/ Information System]
- ✓ **MCA** [Green Computing/ IT/ Information System]
- ✓ **BSc-IT** [Green Computing/ IT/ Information System]
- ✓ **MSc-IT** [Green Computing/ IT/ Information System]
- ✓ **BTech/BE- IT/CSE** [Green Computing/ IT/ Information System]
- ✓ **MTech/ME- IT/CSE** [Green Computing/ IT/ Information System]
- ✓ **BTech/ ME-ECE** [Green Computing/ IT/ Information System]
- ✓ **MTech- ECE** [Green Computing/ IT/ Information System]

Although, programmes may also offered in several academic programmes which are directly and indirectly related to Green Computing or Green IT. And an elective may be offered in several academic programme such as—

- ✓ Electronics and Communication Engineering
- ✓ Computer Science and Engineering
- ✓ Computer Application
- ✓ Information Technology
- ✓ Information Science and Technology
- ✓ Information Studies
- ✓ Information Science
- ✓ Software Engineering
- ✓ Telecommunication Communication Engineering and so on.

Academically Green Computing and allied programme may be offered with following nomenclature

- ✓ Green Computing
- ✓ Green Technology
- ✓ Green IT
- ✓ Environmental Information System
- ✓ Environmental Informatics
- ✓ Environmental Informatics
- ✓ Green Information Science

Though, research programme and activities leading to MPhil, PhD, DSc and Post Doctoral research may be offered by the universities or by joint venture between academics and corporate houses. As corporate houses are the largest stakeholders of Green Computing Technologies. Some emerging and probable research areas are listed in figure 4—

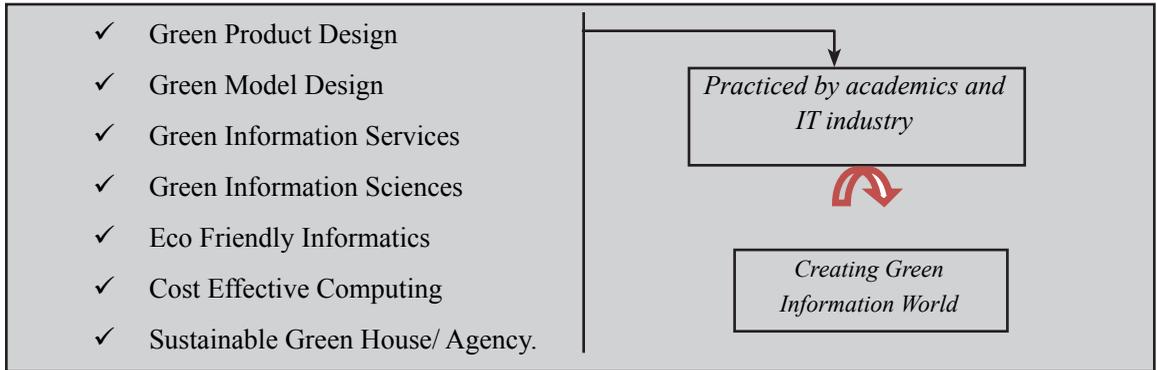


Figure 4: Depicted some important domain and research field of Green Information Systems in contemporary scenario

A separate list of the institute with Green IT and allied programme as main and allied programme are listed in *Figure 6 [Watson, 2010]*.

Suggestion

- ✓ Organization and Institutions need to aware about Green IT and product and thus they need to buy only those products which are efficient, cost effective and sustainable to society.
- ✓ During product design and development organization may use only such products which are eco-friendly and based with less harmful chemical.
- ✓ IT Governance policy with Green Focus is very much essential for a sustainable corporate world creation.

Conclusion

Organization and institutions are today moving towards implementation of Green IT and computing platform for developing their strategy towards Eco Friendliness and sophisticated environmental creation. Many universities are also launching academic initiative in this field and doing several jobs for the Green world [10, 14]. Though, general people need much more awareness towards implementation of Green IT and Information System infrastructure. Organization and in houses, we may employ some basic requirement such as keep ‘log off’ computer; when not using, use of LED/ Flat monitor or LCD, remove hard disk and Green chip based computing; and information architecture powered by the Green and power management principle[15, 16]. Governmental ministry, enterprises and associations have to do many things for complete sustainable development.

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